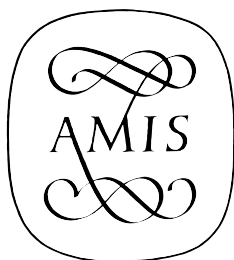


*Journal of the  
American Musical  
Instrument Society*

VOLUME XXXI • 2005



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# James A. Bazin and the Development of Free-Reed Instruments in America\*

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**B**ETWEEN ABOUT 1820 AND 1860, James A. Bazin (1798–1883), of Canton, Massachusetts, constructed a variety of musical instruments that use free reeds for their tone production. Although his work had limited influence on later manufacturers of such instruments, his designs bear closer examination than has heretofore been afforded, not only because of their diversity and ingenuity, but because his instruments are in many instances the earliest of their type made in the United States.

## *Historical Sources About Bazin*

Bazin has been briefly covered in three modern surveys of reed organ history and in a recent, well-illustrated article.<sup>1</sup> Various nineteenth-century sources contain further information about Bazin, however, that has yet to be fully interpreted. The first of these is an article by G. W. Chase, titled “History of Reed Instruments in the United States,” that was published in the April 9, 1853, edition of *The Musical World and Times*.<sup>2</sup> Writing at a time when Bazin had already accomplished his most

\*A preliminary version of this article was presented as a paper at the twenty-fifth annual meeting of the American Musical Instrument Society, held at the Shrine to Music Museum (now the National Music Museum) in Vermillion, South Dakota, on May 18, 1996.

1. See Robert F. Gellerman, *The American Reed Organ* (Vestal, N.Y.: The Vestal Press, 1973), 5–7; Arthur W. J. G. Ord-Hume, *Harmonium* (Vestal, N.Y.: The Vestal Press, Ltd., 1986), 49; Robert F. Gellerman, *The American Reed Organ and the Harmonium* (Vestal, N.Y.: The Vestal Press, Ltd., 1996), 9–16; and Howard Alan Jewell, “James Amireaux Bazin,” *Reed Organ Society Bulletin* 8, no. 1 (February 1989): 3–8. Jewell’s article is particularly useful in providing a good summary of Bazin’s work and in bringing to light information from his obituary. Initial renewed awareness of Bazin’s musical instruments in the twentieth century can probably be credited to the description of several examples (though not always with complete accuracy) in Christine Merrick Ayars, *Contributions to the Art of Music in America by the Music Industries of Boston, 1640–1936* (Boston: The H. W. Wilson Company, 1937), 291–292, 303, and 306.

2. G. W. Chase, “History of Reed Instruments in the United States,” *The Musical World and Times*, April 9, 1853, pp. 227–228. I am grateful to Joseph Peknik for bringing this source to my attention and for supplying me with a copy.

significant work with musical instruments, Chase indicates that much of the article's contents were derived directly from Bazin himself. Indeed, the majority of the article deals specifically with Bazin, outlining the chronology of his experiments with free reeds. Chase takes pains to defend the originality of certain concepts that Bazin had used in the design of his reed organs, which Bazin felt other instrument makers had unjustly claimed as their own ideas. But Chase is unrealistically chauvinistic in suggesting that America in general or Bazin in particular should be credited with the actual invention of the first free-reed instruments.

Bazin personally penned a second article about his work, titled "First Reed Organs in America," for the February 14, 1880, issue of *The Musical and Sewing Machine Gazette*.<sup>3</sup> Published just three years before Bazin died, it repeats much of the information in Chase's article, but with a varying amount of detail about certain points. A follow-up story about Bazin appeared on March 13 in this same periodical, but under its new name, *The Musical and Sewing Machine Courier* (later renamed again as *The Musical Courier*). The article was written by an unidentified "regular correspondent," who visited Bazin in Canton to learn more about his fascinating work and background.<sup>4</sup>

Two pieces published in 1883 in a local newspaper, *The Canton Journal*, provide vital information about Bazin's personality, extra-musical activities, and family history. The first is his obituary that appeared on January 12, while the second, which followed on January 26, is an article about his family. Both were contributed by Daniel T. V. Huntoon, a prominent resident of Canton and author of the town's official history, published in 1893. To these published sources may be added a small amount of manuscript material from Bazin's estate, housed at the Canton Historical Society. Among these documents are a few miscellaneous letters and Bazin's working drafts for his 1880 article and for two reed-organ patents he was issued, along with handwritten copies he made of various published materials on the subject of free-reed instruments. Except where noted, what follows is drawn from these nineteenth-century sources and my own observations about Bazin's surviving instruments.

3. James A. Bazin, "First Reed Organs in America," *The Musical and Sewing Machine Gazette*, February 14, 1880, p. 23.

4. "Boston Notes," *The Musical and Sewing Machine Courier*, March 13, 1880, p. 85. Both articles are reprinted in their entirety in Gellerman, *American Reed Organ* (1996), 10–16. The portion of the February article that deals with reed organs is also reprinted in *Reed Organ Society Bulletin* 5, no. 1 (February 1986): 8–9.

### *Bazin's Life*

James Amireaux Bazin was the son of French Huguenots who immigrated to Boston in 1788 (fig. 1). He was born in Boston on March 29, 1798, the fifth of ten children, two of whom died in infancy. His father, John (1756–1848), was trained as a watchmaker, but sold and manufactured hardware after arriving in the United States.<sup>5</sup> In 1812 the family moved about fourteen miles south of Boston to an area of Canton called Ponkapoag, where James lived and worked until his death on January 5, 1883.<sup>6</sup> Early in life Bazin showed interest in a wide range of subjects, including mathematics and astronomy, and exhibited the kind of inventive and mechanical abilities that gives rise to the oft-used expression “Yankee Ingenuity.”<sup>7</sup> Among the many items that survive from his estate is a small planetarium, which is a geared device that demonstrates the movements of celestial bodies.<sup>8</sup> Also present is a model, constructed

5. A number of sources mistakenly state that it was James Bazin himself who emigrated from abroad, whereas it was actually his father, John (anglicized from Jean), who came from the town of Helier, on the Isle of Jersey. This small community off the northwest coast of France was one of various places that Huguenots sought refuge during their religious persecution in the seventeenth century. Bazin's mother's maiden name was Jeanne Amireaux (1769–1837), though she anglicized her name to Jane after moving to America. See Daniel T. V. Huntton, “The Bazin Family,” *The Canton Journal*, January 26, 1883. Regarding John Bazin's business as a hardware dealer, see Robert D. Mussey, Jr., *The Furniture Masterworks of John and Thomas Seymour* (Salem, Mass.: Peabody Essex Museum, 2003), 42–43.

6. At least in his later years, Bazin is said to have shared his house with a sister, probably Delicia (born 1801), who was also unmarried. Although it has been considerably modernized, Bazin's house is still extant, as is a greatly deteriorated outbuilding that may have served as a workshop. A visitor to Bazin's home in 1880 refers to “descending to his workshop in the southern end of this house,” suggesting that he also maintained an indoor workspace; see “Boston Notes,” 85. A photograph of this house, taken about 1900, is shown in Jewell, “James Amireaux Bazin,” 4.

7. Inventiveness and mechanical ability were present in other family members as well. As mentioned, Bazin's father was trained as a maker of watches and clocks. An older brother, John, Jr. (1792–1860), is said to have invented the country's first stocking loom in 1812, and he is known to have received patents for at least two other textile manufacturing devices, a “knitting machine” (October 28, 1814) and a “loom temple” (August 8, 1823).

8. Various personal items, scientific artifacts, the aforementioned documents, and the majority of Bazin's surviving musical instruments were all donated to the Canton Historical Society some time after his death. Included in this group of objects is the only known non-free-reed instrument made by Bazin, a harp of somewhat unusual design, pictured in Jewell, “James Amireaux Bazin,” 6. I am deeply grateful to the late Edward H. Bolster, former president of the Canton Historical Society, and to current president Jim Roache for allowing me ample access to all of Bazin's materials.





FIGURE 1. James A. Bazin in a pastel drawing by R. C. Steadman of Boston, about 1860–1880, Canton Historical Society (photograph by David Ciolfi, courtesy of Howard Jewell).

from walnut, for a type of water pump,<sup>9</sup> and an apparatus that may be related to his design for a machine that would braid cordage in a manner that prevented it from developing kinks.<sup>10</sup> Bazin was also very interested in optical science, and is said to have been the first American to manufacture folding stereoscopes.<sup>11</sup> On the second floor of his home he constructed a *camera obscura*, a contrivance that projected a 360-degree view of the surrounding outdoor area onto the interior walls of the room in which it was installed.

Never married, Bazin was remembered as one of the most esteemed citizens of Canton, where he served as town clerk between 1842 and 1845, sang in the choir of the Unitarian Church at Canton Corner, and composed sermons. He was well versed in local history, skilled at sketching and painting, an avid gardener, and the donor of a fine collection of old books, in both English and French, to the town library. Highly literate for his time, Bazin was a capable writer; among his papers are various poems and amusing pieces bearing the humorous penname Phelix Phudge. Recollections by local townsmen attest that he was unassuming in nature, always impeccably dressed, and spoke with a noticeable French accent, although Bazin's father reportedly chided all of his children when they attempted to actually speak French.

### *Free Reeds in Europe and the United States*

A free reed is composed of a thin, narrow tongue of flexible material that is held fixed at one end and rapidly vibrates up and down in a slot (without touching the sides or far end of the slot) when activated by air pressure or suction. Such reeds are first documented in East Asia, employed in mouth organs such as the Chinese *sheng*, an instrument that may date back as much as three thousand years. It was reportedly the

9. Bazin's model for a water pump is pictured in Jewell, "James Amireaux Bazin," 4.

10. This invention is reportedly the only one from which Bazin ever realized much profit, as the design was purchased and used by the Silver Lake Company in Newtonville, Massachusetts (a town a few miles west of Boston). It is presumably the same device that Bazin patented on October 17, 1817, as a "cordage machine." This patent was issued to "S. and J. A. Bazin," the initial "S" possibly representing James's older brother Stephen (1793–1874). Bazin took out patents for various other non-musical inventions as well, including an improvement for textile bobbins and a "solitaire board."

11. Bazin received a patent for folding stereoscopes on June 3, 1873 (U.S. no. 139,534).

French scholar Père Amiot who first sent a *sheng* back to Paris in 1777, subsequently touching off the invention of several different free-reed instruments, including the harmonica, accordion, concertina, and reed organ. Experiments with reed organs were reported at various points during the second half of the eighteenth century, but instruments did not begin to be manufactured with regularity until the early nineteenth century.<sup>12</sup>

There is ample evidence that free reeds were known in Boston in the early nineteenth century. Ebenezer Goodrich (1782–1841) is said to have made a reed organ in 1808, at the urging of Lowell Mason, and to have presented it to the celebrated painter Gilbert Stuart. Goodrich is also reported to have had “an old Chinese instrument made of cane hung over his desk, from which he probably obtained his idea of the famous reed.”<sup>13</sup> This was presumably a *sheng* or similar instrument, and given New England’s sea trade with East Asia, the story is certainly plausible. It does, however, echo the story about Amiot from a quarter century earlier. Goodrich reportedly produced a total of twenty-six chamber organs that contained a free reed stop in addition to their regular flue-style pipes.<sup>14</sup> Three such instruments have been documented, though not all survive with their reeds intact.<sup>15</sup> Regardless of whether Goodrich ever

12. The history of how and when free-reed musical instruments were introduced into Europe has yet to be fully and carefully examined in any one published source. Some have suggested that in addition to Asian mouth organs, the Jew’s harp may have been an equally important source of inspiration for the development of Western free-reed instruments; see James Howarth, “Free-Reed Instruments,” in Anthony Baines, ed., *Musical Instruments Through the Ages* (London: Faber and Faber, 1961), 286–294. Three important early sources on the subject of free reeds in Europe are Joseph Amiot, *Mémoire sur la musique des Chinois, tant anciens que modernes* (Paris, 1779); Christian Gottlieb Kratzenstein, “Essai sur la naissance et la formation des Voyelles,” in l’Abbé Rozier and J. A. Mongez, Jr., eds., *Observations sur la physique, sur l’histoire naturelle et sur les arts, Supplément 1782*, vol. 21 (Paris, 1782): 358–380; and Strohmann, Mechanicus in Frankenhausen, “Verbesserung der Rohrwerte in der Orgel,” *Allgemeine musikalische Zeitung* 13, no. 9 (February 27, 1811): cols. 153–159. (I thank John Koster for informing me of these early sources and for supplying their citations.) Regarding some of the earliest experiments with reed organs, see Barbara Owen, “Reed Organ,” *Grove Music Online*, <http://www.grovemusic.com> (accessed August 25, 2004).

13. See Henry A. Goodrich, *Church Organs: Some of the Early Builders in New England* (Fitchburg, Mass.: Sentinel Printing Company, 1902), 10–11.

14. See “Organ-Building in New-England,” *New-England Magazine* 6 (March 1834): 211.

15. These instruments belong to the National Museum of American History (Smithsonian Institution) in Washington, D.C. (catalog number 76.35), the North Reading (Massachusetts) Historical Society, and the Lawrenceville (New Jersey)

saw a *sheng* or related instrument, he would have had another opportunity for examining free reeds in something called the Panharmonicon, an elaborate automated instrument that contained regular organ pipes, percussion, various means of imitating wind and string sounds, and free reeds. First exhibited in Vienna in 1804 by its German inventor, Johann Nepomuk Maelzel (1772–1838), the Panharmonicon was sent to the United States for a tour during 1811 and 1812, and was maintained during that time by William Goodrich (1777–1833), Ebenezer's older brother.<sup>16</sup>

On November 11, 1818, Aaron M. Peaseley took out a patent in Boston for some kind of organ using free reeds. As with most other early American patents, no text or drawing describing his invention is known to survive among official government records, owing to a fire at the United States Patent Office in 1836 that destroyed its contents. In an issue of *The Musical Courier* from October 15, 1884, however, it is stated that the Mason and Hamlin Company of Boston had in their possession a copy of Peaseley's patent. Whether a copy has survived anywhere is unknown.<sup>17</sup> In one of Bazin's letters, he indicates that he had "heard him [Peaseley] frequently mentioned, as long ago as 1821, as one of the first mechanics in Boston."<sup>18</sup> Bazin goes on to say "I knew nothing of his

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School. The reeds were at some time removed from the Smithsonian instrument, but survive in the Lawrenceville example, even though the flue pipes in this latter organ have reportedly been compromised by poor restoration. It is uncertain whether the North Reading instrument still contains its reeds, as it is currently unavailable for examination. A photograph of the Smithsonian instrument is in Barbara Owen, *The Organ in New England* (Raleigh, N.C.: The Sudbury Press, 1979), plate IV-8. I am grateful to Barbara Owen for sharing information about all of these instruments.

16. Maelzel is best remembered today as the inventor of the metronome. Regarding Maelzel and the Panharmonicon, see Alexander Wheelock Thayer and Dixie Harvey, "Maelzel, Johann Nepomuk," and Barbara Owen and Arthur W. J. G. Ord-Hume, "Panharmonicon," *Grove Music Online*, <http://www.grovemusic.co> (accessed August 25, 2004). Regarding the Panharmonicon in Boston, see H. Earle Johnson, *Musical Interludes in Boston, 1795–1830* (New York: Columbia University Press, 1943), 92 and 274; and Owen, *Organ in New England*, 51.

17. For further information about Peaseley, see Gellerman, *American Reed Organ* (1996), 9.

18. This letter, at the Canton Historical Society, is dated March 10, 1857, and is written by Bazin to Messrs. Rice and Harrington, who apparently were lawyers. They were soliciting Bazin's knowledge about the earliest use of exhaust bellows in reed organs, for the purposes of an ongoing suit to be tried in New York regarding whether Jeremiah Carhart's 1846 patent (U.S. no. 4912) was actually the earliest application of this system. For further information about Carhart's patent and this suit, see Gellerman, *American Reed Organ* (1996), 18–19.

having made reed instruments until I heard him say so at one of the Fairs of the C. M. A. Association [Charitable Mechanics' Association] in Boston."<sup>19</sup> Bazin consistently claimed that he was mostly unaware of experiments by others with free reeds, either in Europe or the United States, and his relatively unique designs for musical instruments would seem to reinforce this claim.

### *Bazin's Earliest Free-reed Instruments*

Bazin first examined a free-reed instrument in the fall of 1821, when some young men from a neighboring town brought him a small pitch pipe in need of repair, the brass tongue having broken off. They had borrowed it from "a singing master from Boston."<sup>20</sup> In addition to repairing it, Bazin was asked to replicate the pipe, and in the process of doing so devised a means of adjusting the vibrating length of the reed tongue in order to vary its pitch. The result was a brass sliding pitch pipe that he supplied to Boston music stores for a number of years afterward. A surviving example, stamped with Bazin's name, is shown in figure 2.<sup>21</sup> Measuring 6 by 1 cm (2  $\frac{3}{8}$  by  $\frac{3}{8}$  inches), it is constructed in two parts; as the outer sleeve is pulled backward, a slightly curved projection presses down on the reed tongue. As more of the tongue is allowed to vibrate, the frequency of the pitch produced becomes lower. Notches on the upper edge of the sleeve denote positions for nine diatonic pitches ranging

19. The first exhibition held by the Charitable Mechanics' Association was in 1837, providing an earliest possible date that Bazin could have learned this fact about Peaseley.

20. As related by Bazin in Chase, "History of Reed Instruments," 227.

21. The instrument is in the Museum of Fine Arts, Boston (accession number 2002.182). Additional examples are owned by the Metropolitan Museum of Art in New York (accession number 1989.330.98) and the National Music Museum in Vermillion, South Dakota (catalog number 8924). I am grateful to Joseph Peknik and Stewart Pollens in New York and John Koster in Vermillion for providing information and photographs for the latter two examples. The instrument in New York is identical to the Boston example, but the one in Vermillion (which is from the Alan G. Bates Harmonica Collection) does not bear Bazin's stamp and has notches marking only the pitches D, F, A, and C, although intermediate notes were probably available by positioning the outer sleeve between these notches. Its construction is identical to the other two marked examples, and it was almost certainly made by Bazin. In February 2005, a fourth pitch pipe, signed by Bazin and apparently identical to the MFA example, was offered for sale on the Internet through eBay by a private owner in Massachusetts.



FIGURE 2. Sliding pitch pipe made by Bazin, Museum of Fine Arts, Boston, no. 2002.182 (photograph courtesy of Museum of Fine Arts, Boston).

from c" to d". The Canton Historical Society owns a small trunk from Bazin's estate, containing numerous small brass tubes that may be unfinished examples of this same type of pitch pipe, although they are round in cross section rather than square like the one illustrated here. Bazin, in fact, described the pitch pipe that was initially brought to him for repair as being "a small round pipe." It is also possible that this cache of round pipes was intended for some other kind of free-reed instrument.

Soon after devising his sliding pitch pipe, Bazin began creating an assortment of small instruments that produced multiple pitches with free-reed pipes of differing sizes, joined together in various manners. His first attempt took place during the winter of 1821–22, when he assembled nine pipes in a circular fashion. As there is no surviving example of this instrument, it is worth quoting Chase's description in full.

During the same winter he constructed a small instrument, by making the pipe large enough to allow nine openings for reeds, which were made of different lengths. Inside of this, was a smaller pipe, with one opening, which, by turning the pipe round, could be brought to each of the outer ones in succession. Over the whole was a case, fitted tight around the heels (or butt-ends) of the reeds; which gave the instrument the appearance of a small



pocket inkstand. Any tune within the compass of nine notes, could be played on this simple instrument; and by placing a bell, like a trumpet, on the end of the inner or revolving pipe, the tone produced was nearly as powerful as that of a bugle.<sup>22</sup>

What Bazin had created was essentially a mouth organ or harmonica, albeit one where individual notes were selected by a revolving mouthpiece rather than by blocking the unwanted tones with the tongue, as is typically done with modern harmonicas. It seems doubtful, however, that such an instrument would be as loud as a bugle, even with a bell for amplification. Bazin left some of these “pipes” with a music dealer in Boston, where John Osborne (1791/92–1835), a successful local piano maker, had the opportunity to examine them. Osborne is said to have considered using free-reed pipes in combination with a piano, but ultimately concluded that “the cost of a whole set would be too great for practical purposes.”<sup>23</sup> Given the numerous interconnections between keyboard instrument makers in Boston, Osborne also would likely have come into contact with William Goodrich after about 1810, and might have learned about free reeds from him based on Goodrich’s experience with the Panharmonicon.

During the following summer of 1822 Bazin arranged twenty-two pipes in a linear fashion, forming three octaves of a diatonic scale. Again, there is no known surviving instrument of this type, and it is useful to quote Chase’s article.

These pipes were placed in a series of boxes forming a cap over each reed, and the whole were put in a wooden case about four and a half inches long, two inches wide, and three quarters of an inch thick, in such a manner as to allow a free passage for the wind through the pipes, and for a mouth piece to slide on the ends of the boxes.<sup>24</sup>

Here the description and size of the instrument sound fairly similar to a regular harmonica, but again with a moveable mouthpiece to select the notes, in this case sliding side to side.

22. Chase, “History of Reed Instruments,” 227.

23. Ibid. Regarding Osborne, see Cynthia Adams Hoover and Darcy Kuronen, “Osborne [Osborn], John,” *Grove Music Online*, <http://www.grovemusic.co> (accessed August 25, 2004).

24. Chase, “History of Reed Instruments,” 227.

### *Reed Trumpets*

It was two years later, during the summer of 1824, that Bazin completed his next prototype for a mouth-blown instrument, one in which his mechanical inventiveness came to the fore. Being dissatisfied with his two previous instruments, which could play only a diatonic scale, Bazin created what he called a reed trumpet (fig. 3). In this design, thirty-six reeds encompassing a chromatic scale of three octaves radiate from the center of a disk like the spokes of a wheel. By turning a large knob at the center, the reeds can be rotated in front of a mouthpiece to select the desired notes for a melody. The sound emits from a large copper bell opposite the mouthpiece, and the mouthpiece contains a fine mesh screen, probably to keep debris from coming in contact with the reeds. The reeds are arranged in chromatic sequence (from  $c'$  to  $b'''$ ), but a small lever placed on the same side of the disk as the rotating knob allows the player to select any key desired to play in, the letter for each key being marked on a scale along the disk (fig. 4). When this lever is engaged for the desired key, the scale aligns the requisite reed pipes with particular square holes in an outer ring to produce a diatonic scale, while blocking the unwanted notes. The pitch of this reed trumpet is about  $a' = 445$  Hz, but whether it is tuned in equal or non-equal temperament cannot be ascertained, as the instrument is not fully functional at present. It is quite large, measuring 37 by 18 cm ( $14 \frac{5}{8} \times 7 \frac{1}{8}$  inches), and commensurately heavy, being made almost entirely of brass and copper. This reed trumpet was among Bazin's belongings donated to the Canton Historical Society, and Bazin himself is said to have played it for many years to accompany the choir at his Unitarian church, including (according to his obituary) on the occasion of the church's fiftieth anniversary on January 26, 1875. Some persons assert that they heard this reed trumpet a mile away, but having experimented with the instrument personally, I can report that this is highly unlikely, since the tone is only marginally louder than a modern harmonica. It is, nonetheless, a marvel of the machinist's art.

Bazin was at heart an inventor, not a businessman, and it was said that he had very little monetary success with any of his inventions, musical or otherwise.<sup>25</sup> He showed the reed trumpet and his two earlier reed instruments to a number of music merchants in Boston, hoping to generate

25. According to Bazin's obituary by Huntoon (cited on p. 134 above).



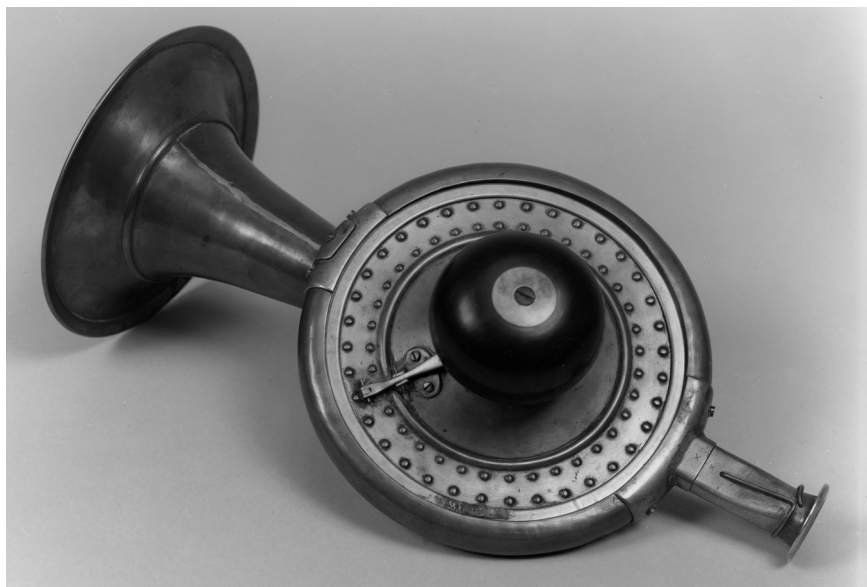


FIGURE 3. Reed trumpet made by Bazin, dated 1824, Canton Historical Society (photograph by Stephen Korbet).

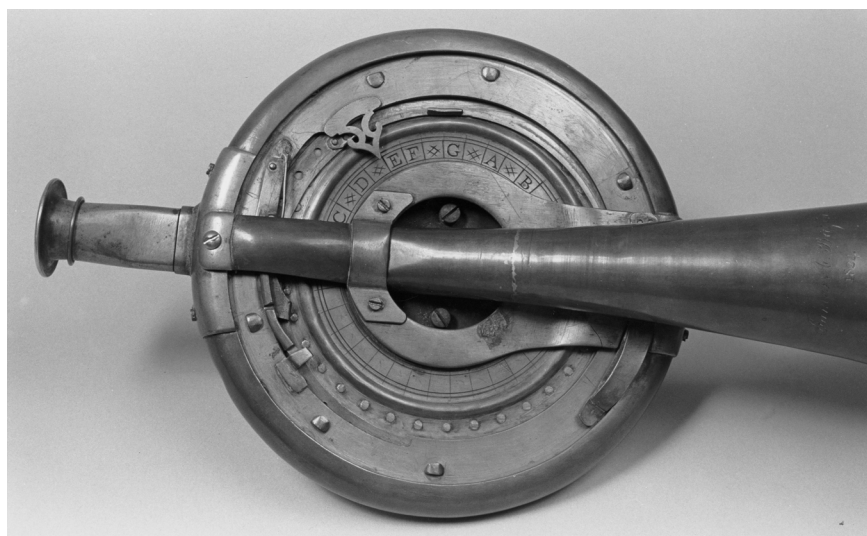


FIGURE 4. Marked scale on reed trumpet in figure 3 (photograph by Stephen Korbet).

some interest in distributing them. None, however, felt that these particular designs were commercially viable. This is little wonder with the reed trumpet in particular, since Bazin himself said that “it cost not less than one hundred and fifty dollars.”<sup>26</sup> Whether this was what it cost for him to produce the instrument or the amount for which he felt it should retail is not clear.

Although it is unmarked, there is another reed trumpet at the Canton Historical Society that also must have been made by Bazin (fig. 5). It is far smaller than the one discussed above, measuring only 20 by 14 cm (8 by 5½ inches). In this model there are twenty-four reeds (two chromatic octaves from c' to b"), again arranged in a circle, but this time placed on end. As with the larger reed trumpet, the player can select any key by means of a rotating scale, which in this instrument aligns the required reed cells with a specially-drilled disk at the base of the instrument (fig. 6). An added feature is that by engaging a lever, which opens or closes certain holes in the disk, the player can sound additional reeds to play two notes at once, mostly resulting in an interval of a major third. Unfortunately, the instrument is in poor playing condition, so it cannot be determined at what pitch standard it was constructed or whether it produces an unequally-tempered scale. Neither Chase nor Bazin specifically mentions the design of this smaller reed trumpet in their articles, but among Bazin's papers at the Canton Historical Society are diagrams of the components for a very similar instrument, along with brief, handwritten instructions on how to play it.

For a few years after 1824 Bazin stopped experimenting with further instruments and focused on supplying the demand for his adjustable pitch pipes. During 1827, though, he suffered a disabling cough that prevented him from playing any of his instruments. As a consequence, Bazin was forced to develop what he termed a “double-acting” bellows that could be used with his reed trumpet to allow him to continue to play it. The most complete description of these bellows is given by Bazin in his own 1880 article, where he says it “consisted of a centre block, with two inward and two outward valves, and two heads connected together by wires, so that when the chamber on one side was full the other would be exhausted. This was operated by a handle on one of the heads, the motion being similar to that of the bow of a bass viol.”<sup>27</sup> Although there

26. Chase, “History of Reed Instruments,” 228.

27. Bazin, “First Reed Organs,” 23.



FIGURE 5. Small reed trumpet made by Bazin, Canton Historical Society (photograph by Stephen Korbet).

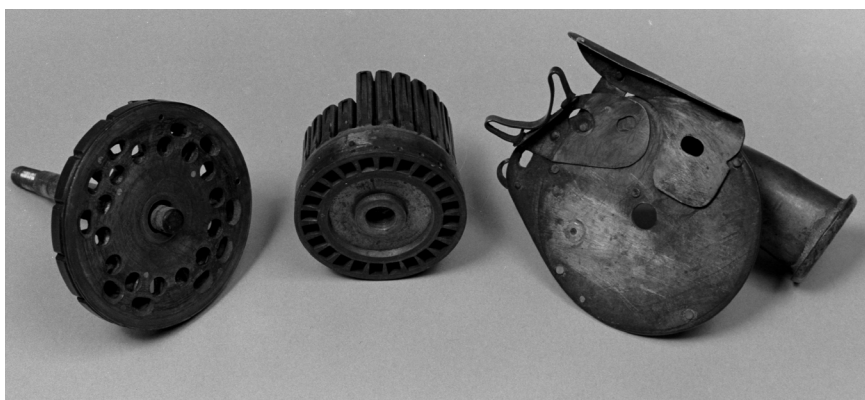


FIGURE 6. Disassembled parts of reed trumpet in figure 5, showing specially drilled disk in base (photograph by Stephen Korbet).

are no published diagrams of these bellows, Bazin's handwritten draft for his article contains a sketch of the device (fig. 7).

### *Harmonica*

In 1828 Bazin managed to sell his first two small instruments for "less than half their actual cost," but kept the larger reed trumpet.<sup>28</sup> By this same year he had also worked out a cheaper design for a harmonica-type instrument, apparently like the one shown in figure 8.<sup>29</sup> Having made two of them, he was able to sell one but put the other aside, perhaps discouraged by the poor reception his previous instruments had received from local music merchants. In February of 1830, though, Bazin "read in the papers a notice of a wonderful musical instrument called a Harmonica, invented somewhere in Germany, and which, by the description, appeared to bear a strong resemblance to his own."<sup>30</sup> He thereupon began offering such instruments to an unnamed dealer in Boston who engaged Bazin to supply him with as many as he could manufacture. Although Bazin claimed that he had created his harmonica without outside influence, he also realized that sales would be far greater by capitalizing on its European pedigree than by trying to promote it as his own invention.<sup>31</sup> As he himself put it, "I now found that though I could not

28. Chase, "History of Reed Instruments," 228.

29. The instrument shown is in the Museum of Fine Arts, Boston (accession number 1995.87), and is described in Darcy Kuronen, "Museum of Fine Arts, Boston, Acquires Early American Harmonica," *Newsletter of the American Musical Instrument Society* 25, no. 1 (February 1996): 6–7.

30. Chase, "History of Reed Instruments," 228, gives the name of this instrument as "harmonia," which may simply be a misunderstanding or typographical error, as there was little standardization of such instrument names at the time. Bazin's 1880 article states the name as "harmonica."

31. As with other types of free-reed instruments, it has proven difficult to determine exactly when the first instrument was made that properly fits the definition of a harmonica. Christian Friedrich Ludwig Buschman (1805–1864) has often been credited with inventing the first harmonica in Germany in 1821, but some researchers now suggest that it may have been someone else, such as Georg Anton Reinlein, who was issued a patent for such an instrument in 1824. For further discussion of the harmonica's history, see Christoph Wagner, *Die Mundharmonika: Ein musikalischer Globetrotter* (Berlin: Transit, 1996), 16–26; and Ivor Beynon and G. Romani/Christoph Wagner, "Harmonica," *Grove Music Online*, <http://www.grovemusic.com> (accessed August 25, 2004). Regarding another early American instrument maker (Louis Zwahlen) who worked with free reeds and produced a type of mouth organ, see Margaret Downie Banks, "From the Four Winds . . . A Rare Triple Æolina and a Typotone, Both Added to the Alan G. Bates Collection," *National Music Museum Newsletter* 30, no. 3 (August 2003): 4–5.

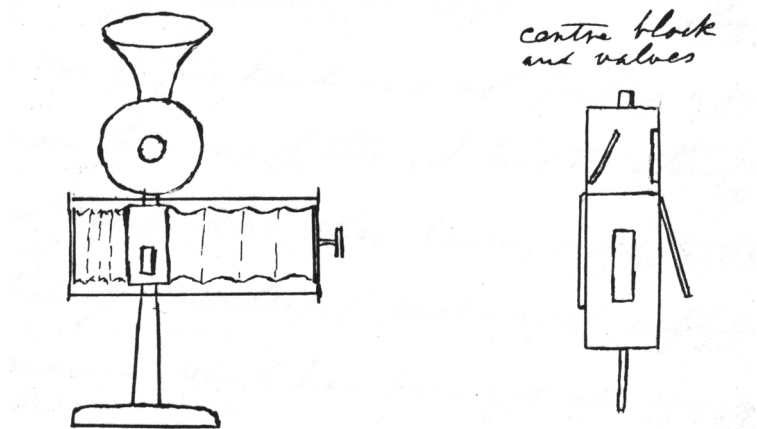


FIGURE 7. Bazin's drawing of bellows designed to blow his reed trumpet.



FIGURE 8. Harmonica made by Bazin, Museum of Fine Arts, Boston, no. 1995.87 (photograph courtesy of Museum of Fine Arts, Boston).

dispose of the article at any price as an original invention, I could scarcely supply the demand for it at three times its cost when it appeared to be only an improvement on a foreign one, the fact of its having come by way of Paris and New York to Boston establishing its claime [sic] to be received in good society.”<sup>32</sup>

The housing of the illustrated instrument is stamped with Bazin’s name at one end and engraved on its face with the name of John Ashton, who was one of the primary distributors of musical goods in Boston during this period. He is presumably the unnamed dealer Bazin was supplying. Although the word “patent” is included with Ashton’s name on the housing, there is no recorded patent for any aspect of this instrument’s design. Perhaps Bazin or Ashton simply included the word to scare off imitators. Ashton appears to have ceased doing business by 1844, so this instrument presumably dates from before that year, but after 1830. Regarding this harmonica model, Bazin wrote that he “contrived a cheaper way of making them, by dispensing with the boxes and using but fifteen pipes. Instead of the reeds being set outward, so as to be blown in to produce sound, they were set as much into the pipes so as to be blown outward. In this way the pipes could be soldered together and the mouthpiece made to slide on their open ends, thus greatly reducing the cost.”<sup>33</sup>

The one known surviving example of this instrument has fifteen brass reed pipes, soldered together as a unit that can be completely withdrawn from the housing (fig. 9).<sup>34</sup> As is the case with the earliest German harmonicas, Bazin’s instrument (like his two reed trumpets) sounds only by blowing and not also by suction as in modern harmonicas, since there is only one reed in each closed-end pipe. The sliding mouthpiece is missing, but is quite necessary for accurate playing; my experimentation shows that the reed pipe openings are so small that it is virtually impossible to block unwanted notes with the tongue alone. There are dummy reed cells without reeds at each end of the reed cartridge, which may have been to allow the sliding mouthpiece to better center itself over the last functional reed cells at each end. The outer housing is of copper painted or lacquered dark green and measures 9.4 by 5.7 cm ( $3^{11}/_{16}$  by

32. Quoted in Chase, “History of Reed Instruments,” 228.

33. Ibid.

34. Chase is apparently mistaken in stating (ibid.) the number of pipes as eighteen, which Bazin, in 1880, gave as fifteen.





FIGURE 9. Disassembled view of harmonica in figure 8 (photograph courtesy of Museum of Fine Arts, Boston).

2 $\frac{1}{4}$  inches). The instrument produces a diatonic scale in the key of B, ranging from b to b". Stamped at the end of the housing is the letter B, which one assumes indicates the key of the instrument. This is a rather remote key for a harmonica, but presumably one could purchase these instruments in whatever key was desired. The pitch lies somewhere between a' = 433 and 438 Hz, but the function of the reeds is currently too uneven to ascertain with certainty whether the tuning is in equal or non-equal temperament.

About 1830, Bazin constructed a set of bellows that could be used for tuning his harmonicas, the demand for which was increasing. Again, no diagram was ever published, but one exists in Bazin's manuscript for his 1880 article (fig. 10). The framework for this contrivance was made like a small table, the bellows at first fabricated of cloth that was made airtight with India rubber. Since production of this cloth was not yet fully satisfactory, though, Bazin eventually changed the bellows to more traditional leather. These double bellows were actuated by means of "swinging treadles," a system that Bazin would soon use in reed organs as well.

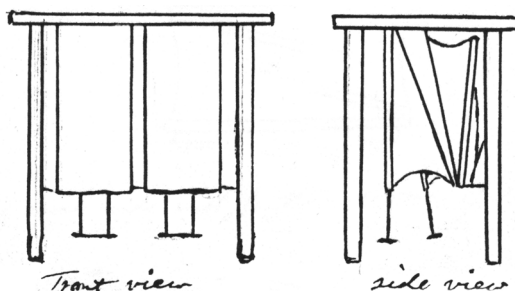


FIGURE 10. Bazin's drawing of a table with bellows for tuning his harmonicas.

### *Accordions*

Stepping slightly out of chronological sequence, it is useful to discuss Bazin's manufacture of accordions at this point. No accordions marked by Bazin have yet come to light, but he said such instruments were first introduced (at least to the Boston area) in the early 1830s, and that he was first sent one for repair in June 1834. He acknowledged having seen both German and French models, but stated that the ones he made resembled these only in the form of the bellows, and that he first sold his own models in Boston in January 1835.<sup>35</sup> He describes his accordions' reed plates as "made of thin sheet brass, the edges of the plates being turned so as to be let into the wood, leaving a channel for the two reeds to vibrate in, the point of one reed being turned upwards and the other downwards to answer the drawing and pushing motion of the bellows." The diagram in figure 11 illustrates this design, and is taken from Bazin's draft for his 1880 article. This particular style of reed construction, with turned-over edges, was apparently Bazin's own design, and is used, in a one-reed version, in most of his reed organs as well, as discussed below. Bazin may have begun making reeds of this form already in 1833, as Chase states that in September of that year "he made several sets of reeds riveted to flat brass plates, for persons in Boston. These reeds were for a

35. See Chase, "History of Reed Instruments," 228. Invention of the accordion is generally attributed to Cyril Demian (1772–1847) in Vienna, who patented an instrument of that name in 1829. Soon after, however, several other manufacturers began to produce accordions in quantity, especially in France. See Helmi Strahl Harrington, "Accordion," *Grove Music Online*, <http://www.grovemusic.com> (accessed August 25, 2004).



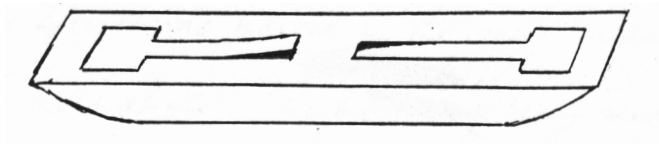


FIGURE 11. Bazin's drawing of reeds used in his accordions.

new instrument, called a 'Seraphine,' which was just then being introduced. It had piano keys, and was made on the plan of an instrument which had been imported, a short time previous."<sup>36</sup>

The reeds used in early French accordions are made from a solid brass plate, about 1.5 to 2 mm thick. There is a rectangular cutout in the center of the plate for the reed, which is riveted to one end of the plate. The longitudinal edges of the plate are typically beveled, allowing the reed to be held firm in a similarly beveled slot in a wood framework. Apart from differences in the style of reed plate construction, it is unclear how Bazin felt his accordions were otherwise different from European ones. For several weeks in 1835, an advertisement appeared in Boston's *Daily Evening Transcript* that reads: "Accordeons [sic]—Just received and for sale by John Ashton & Co., a few accordeons, with 33 notes, American manufacture, a more durable article than the French."<sup>37</sup> During this time, the same newspaper concurrently carried several ads for accordions that were for sale by various other Boston musical merchants, including Henry Prentiss, Joseph L. Bates, and Charles H. Keith. (As these advertisements are more plentiful than those for any other types of musical instruments, this probably underscores the accordion's new popularity at the time.) Given that Ashton makes a point of saying he specifically had examples that were of "American manufacture," and that no other local makers were known to be producing such instruments, it seems highly likely that these accordions were from Bazin's workshop. This hypothesis is, of course, reinforced by the fact that Ashton had previously carried harmonicas made by Bazin.

36. Chase, "History of Reed Instruments," 228.

37. See, for example, the July 1 issue of this newspaper.

### *Lap Organs*

Moving beyond small, handheld instruments, Bazin began to create a number of different types of reed organs, but descriptions given by both Chase and Bazin of the earliest models do not accord precisely with any surviving instruments. The relevant section of Bazin's 1880 article is quoted here in its entirety.

In the summer of 1831 I made a small instrument with pipes like the harmonica, but instead of playing by sliding the set of pipes, the wind was let into them by means of valves and knobs arranged in two lines, thus: [see fig. 12]. There being twelve pipes to the octave and only seven valves, there was a contrivance for changing the keys, as well as for sounding the accidental flats and sharps when required. Within two years after this I made two other instruments with knobs arranged in the same manner, but the valves and pipes differently, and with tilting bellows like those which were afterwards called melodeons [fig. 13]. I also, about this time, made an instrument which was called a reed organ, with swinging bellows and with square knobs for keys, the regular scale arranged the same as the others, but the semitones placed in another row back of the regular notes. There was a shifting movement in this organ, consisting of a bar behind the keys, with unequal projections, and a plain bar in front. The knobs being all of equal size and the keys of equal length, they could be all pushed back into one line. When in this position the bars could be moved lengthwise so as to bring the mark on the front one opposite to the knob which was to sound the keynote, when by drawing the bars forward the knob would be thrown into the position required [fig. 14]. In this organ the player was not obliged to use the shifting movement, as there was a knob for every semitone. Several more of this kind were made before the introduction of the kind which were first called seraphims [sic].<sup>38</sup> These were first brought from Germany, I believe, in the early part of 1833, as I find that in September and the following months of that year I made several sets of reeds, riveted in brass plates, for individuals in Boston, the instruments in which they were to be used having piano keys, and made on the pattern of one which had been imported a short time previous.<sup>39</sup>

Only one diagram (fig. 12) from the above paragraph was included in the published version of Bazin's article, but his handwritten draft included two more (figs. 13 and 14), which are included here. Although there are no known instruments by Bazin that completely match those

38. Bazin surely intended to say seraphine, another period name for a reed organ.

39. Bazin, "First Reed Organs," 23.



FIGURE 12. Bazin's drawing of a key arrangement for his lap organs.

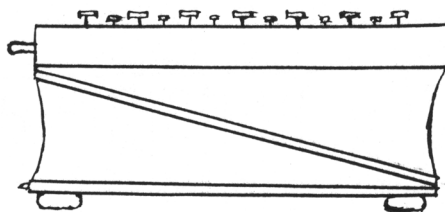


FIGURE 13. Bazin's drawing of the side view of a lap organ, showing its wedge-type bellows.

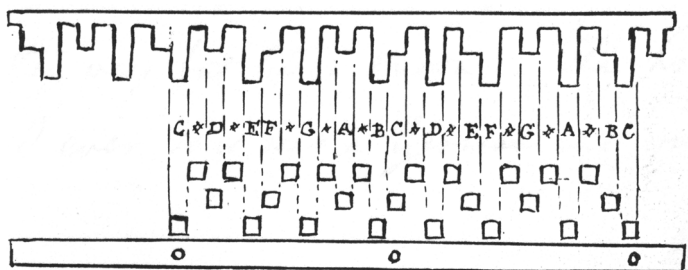


FIGURE 14. Bazin's drawing of the transposing mechanism in one of his early lap organs.

described above, the small reed organ shown in figure 15 seems to contain at least some of the specified features, and is apparently one of the earliest examples of what Bazin called a melodeon.<sup>40</sup> The details of this particular organ's construction are discussed below, but we should first address some issues of nomenclature. Bazin said he first used the term melodeon in March of 1836, acknowledging that it sometimes took the form "melodium" at first.<sup>41</sup> Surviving correspondence by Bazin suggests

40. This instrument belongs to the Canton Historical Society.

41. See Chase, "History of Reed Instruments," 228.



FIGURE 15. Transposing lap organ made by Bazin, Canton Historical Society (photograph by Stephen Korbet).

that this name was proposed by a friend of Joseph Bates (one of the Boston merchants who sold Bazin's products) and that this friend was particular about the word's spelling.<sup>42</sup> Another commonly used term in this period (already encountered above) is *seraphine*, which was first applied to a reed organ made about 1830 by John Green of London. It appears that Bazin and other American makers generally reserved the term *seraphine* for larger freestanding reed organs, a distinction which is further discussed below. Both Bazin and Chase acknowledge that a wide variety of terms were applied to all sorts of reed organs during the nineteenth century with little consistency.<sup>43</sup>

42. This is mentioned in the draft of a letter from Bazin to Alfred Little, dated June 2, 1880, and belonging to the Canton Historical Society.

43. Terms listed in Chase, "History of Reed Instruments," 228, include *Melodeon*, *Eolian*, *Seraphine*, *Reed Organ*, *Melophone*, *Seraphichord*, *Æolian Reed Pianoforte*, *Melo Pean*, *Emmoen Reed Organ*, and *Organ Melodeon*.

The type of instrument that Bazin called a melodeon is today often referred to as a lap organ, although at times it has also been informally dubbed a rocking melodeon, elbow organ, or teeter. These latter terms relate to the motion of Bazin's "tilting bellows," which the player operates by pushing down on the top of the case with the left forearm while operating its buttons (keys) with fingers of both hands. The wind supply for these instruments is composed of a double-wedge bellows, the lower part serving as the feeder bellows and the upper part as reservoir. A double leaf spring inside the feeder bellows returns it to its tilted or wedge shape when at rest. The player's orientation is well illustrated in figure 16, which depicts Alfred Little of Boscawen, New Hampshire, an accomplished performer on the lap organ, who in 1848 published a brief instructional manual titled *Directions for Playing the Melodeon and Seraphine*.<sup>44</sup> Bazin and Little corresponded, at least briefly, in 1880; the surviving portions of these letters are mostly about the article that Bazin wrote that year, with Little posing various questions about it.<sup>45</sup>

Only three examples of lap organs by Bazin are known, though there are likely many more that survive. Only one of these organs can be accurately dated, but the other two were presumably made sometime after 1833 and before 1850, by which time such instruments had begun to be superseded by freestanding reed organs with piano-style keyboards. Probably the earliest of these three lap organs is the one shown in figure 15, an instrument supposedly owned by Bazin himself until his death.<sup>46</sup> It is quite petite, measuring 37.8 by 19.3 cm (14<sup>7</sup>/<sub>8</sub> by 7<sup>5</sup>/<sub>8</sub> inches). The keyboard shows a recurring theme in Bazin's work, which was to experiment with unconventional arrangements. His main aim was apparently to create a layout whereby a performer could use the same fingering pattern to play in any key, although the use of buttons, rather than a traditional keyboard, already limits the player's speed so much that fingering considerations are probably secondary. The exact logic of

44. See Howard A. Jewell, "Alfred Little and the Lap Organ," *Reed Organ Society Bulletin* 12, no. 1 (Spring 1993): 5–9, which reproduces Little's manual in full. The illustration of Little is taken from *The History of Boscawen and Webster from 1733 to 1878* (Concord, N.H.: The Republican Press Association, 1878, 415).

45. This correspondence (housed at the Canton Historical Society) is fragmentary, making it difficult to decipher the exact nature of the discussion between the two men, but it apparently centered on the origins of the melodeon.

46. In a letter dated June 2, 1880, written to Alfred Little (in the Canton Historical Society), Bazin seems to suggest that an instrument of this model was at that time still owned by Albert Roach in Easton, Massachusetts.

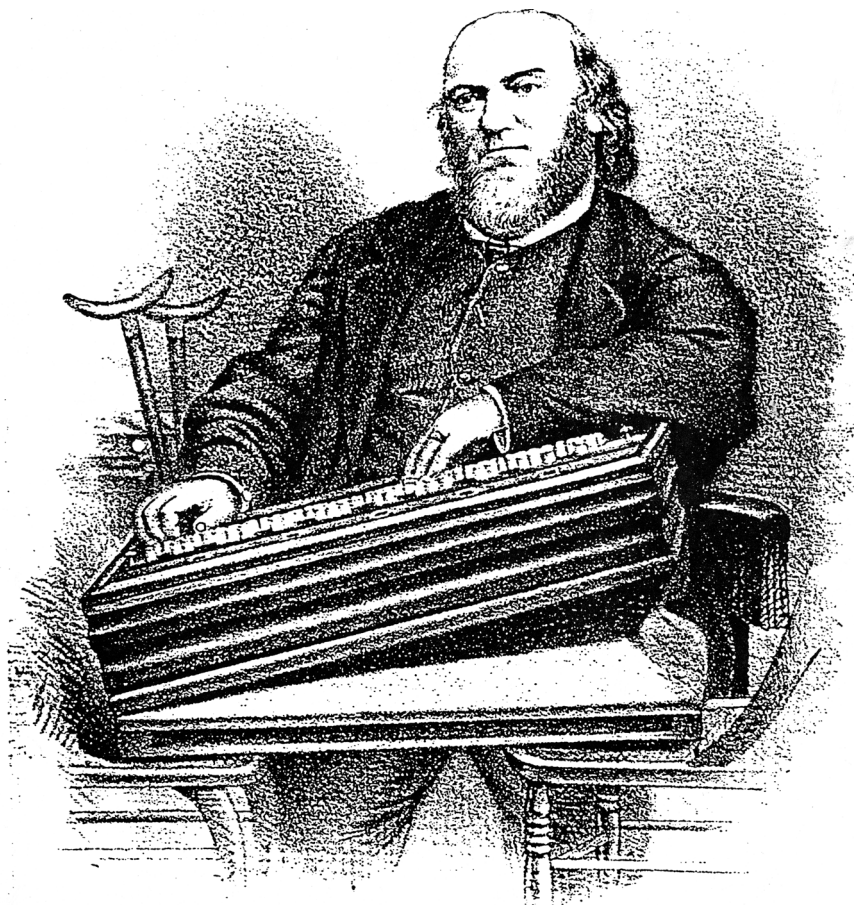


FIGURE 16. Alfred Little playing a lap organ.

the keyboard arrangement in this unusual little organ remains elusive, but it apparently presents a chromatic scale in which the notes simply alternate, in sequence, between the front and back rows. In other words, each row provides a whole-tone scale. The instrument is also designed to allow the player to transpose a piece of music into any key desired by shifting its two banks of reeds left or right (fig. 17). The reeds are very similar to those Bazin used in the harmonica illustrated in figures 8 and 9, constructed as cells of brass with square cross section and soldered together as a unit. Somewhat analogously to Bazin's reed trumpets, there



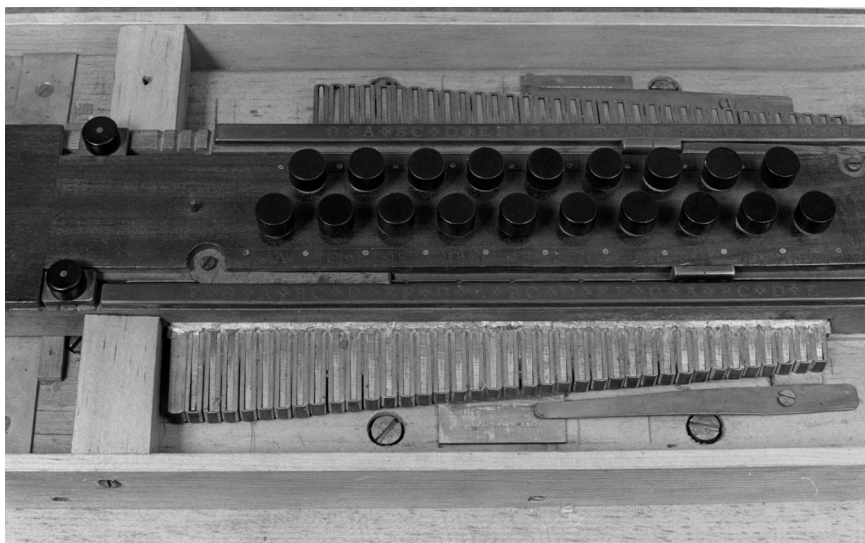


FIGURE 17. Interior of lap organ in figure 15 (photograph by Stephen Korbet).

is a plate behind the reeds with holes in particular positions that, when the banks of reeds are shifted laterally, presumably select the notes required for a given scale. (Figure 14 seems to represent a similar mechanism that Bazin used in a slightly earlier version of this type of lap organ.) The pitch is about  $a' = 445$  Hz, but the temperament could not be ascertained because of the instrument's present condition. It may be because of its unusual and sophisticated nature that Bazin retained this particular lap organ in his personal collection.

In his 1880 article, Bazin admits that musicians objected to his unusual keyboard layouts, so in later lap organs he changed to the normal pattern of staggered naturals and accidentals, though still employing buttons. One such instrument is shown in figure 18, which bears Bazin's name inked inside the reservoir bellows, along with the year 1837.<sup>47</sup> At slightly less than three octaves, the compass is rather small. The top note

47. The instrument belongs to the Arlington (Massachusetts) Historical Society (catalog number 925.6.3). Their records indicate it was donated by Walter Pierce, but previously owned by Mrs. Frank P. Dyer, who acquired it from her uncles, Erastus and Stephen Nash of Weymouth, Massachusetts. My thanks to former registrar Donna



FIGURE 18. Lap organ made by Bazin, dated 1837, Arlington Historical Society, no. 925.6.3 (photograph by the author).

is a", but the compass is chromatic only down to f. Below that are individual buttons for the notes e, d, c, and G.<sup>48</sup> The reeds, each stamped with the note name as well as Bazin's surname, are unlike those used in the lap organ discussed above, but are similar in form to those used in Bazin's accordions. This style of reed plate, with turned-over edges, forms a shallow channel, with a cross section like the letter U (fig. 19). In this particular lap organ they are held in place by small brass clips that are screwed into the surrounding wood. With a case measuring 38.5 by 22.7 cm ( $15\frac{3}{16}$  by  $8\frac{15}{16}$  inches), the instrument is only slightly larger

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Lambrechts and current museum administrator Doreen Stevens for allowing examination of this lap organ, and to collections chair Richard Duffy for granting permission to publish photographs of it.

48. This layout is somewhat analogous to the short-octave keyboards found in organs and harpsichords beginning in the sixteenth century. See Nicolas Meeùs, "Short octave," *Grove Music Online*, <http://www.grovemusic.com> (accessed August 25, 2004).



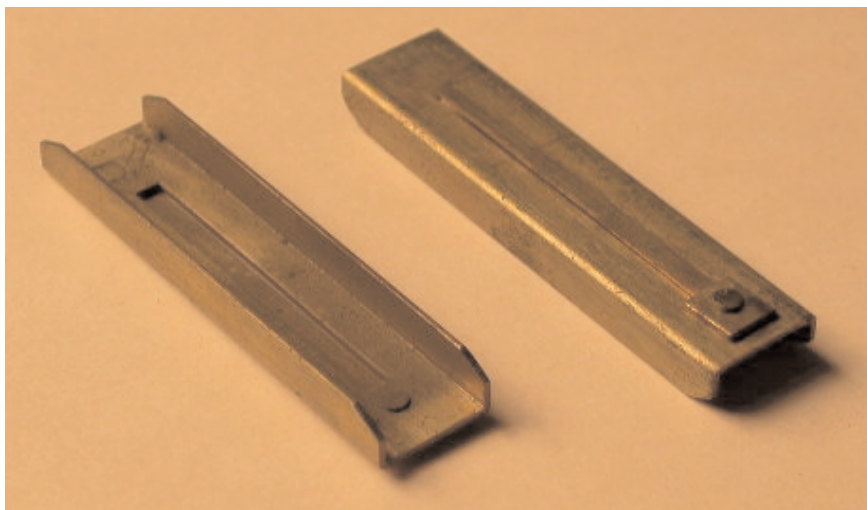


FIGURE 19. Reeds from lap organ in figure 18 (photograph by the author).

than the lap organ discussed immediately above. The interior casework appears to be primarily yellow poplar, the visible outside surfaces veneered with rosewood. The keyboard buttons are of mahogany, capped with ivory for the naturals and ebony for the accidentals. Two wood panels lying over the reeds can be slightly raised to act as a swell. By releasing a sliding wooden catch at the bass end of the keyboard these panels are pushed upward by small coil springs. Because of the instrument's condition, its pitch and tuning could not be ascertained.

A larger Bazin lap organ containing a traditional keyboard configuration is shown in figure 20.<sup>49</sup> The compass is four full octaves, from C to c''', with buttons made of a white metal that is probably nickel silver. (Note that the button for c''' is in the back row with the accidentals.) The reeds are like those in the lap organ discussed immediately above, but are held in place by thin slats of wood, tacked and glued in place along their sides. They are stamped only with sequential numbers. Glued to the inner surface of the reservoir is a printed label that reads: "James A. Bazin, Manufacturer of Reed Musical Instruments, Canton, Mass." The

49. This lap organ is owned by Howard A. Jewell, of Taunton, Massachusetts, and I am grateful to him for allowing me to examine and play it.



FIGURE 20. Four-octave lap organ made by Bazin, collection of Howard Jewell (photograph courtesy of Howard Jewell).

pitch of this lap organ is about  $a' = 450$  Hz and the tuning seems to be equal-tempered, although it is entirely possible that both were altered at some point. There is a U-shaped metal handle at the bass end of the case that when pulled outward activates a swell, which is composed of two wood panels lying beneath the surface of the case's top. When the pull is activated, the swell panels move sideways to uncover two longitudinal slots. At 61.2 by 23.1 cm ( $24\frac{1}{8}$  by  $9\frac{1}{8}$  inches), the case is much larger than the two previous organs in order to accommodate the greater range. The internal framework is primarily of pine, the exterior veneered with rosewood and inlaid on the top surface with holly in a foliate pattern. An original storage case, veneered with figured mahogany, has survived with the instrument. None of Bazin's other surviving instruments of any type exhibits decorative treatment on a par with this one, so its design may have been executed at the request of a particular customer.

From Bazin's 1880 article, it is clear that by the summer of 1833 he had created his first lap organs, which he then began to sell through Boston music stores. It is the one musical instrument with which he might have realized some commercial success, had he managed to patent its design. As he did not, however, it was not long before others co-opted the idea. According to Chase, it was in February of 1837 that Abraham Prescott (1789–1858), a successful maker of string instruments in Concord, New Hampshire, purchased one of Bazin's lap organs from the Boston music firm of Bates and Jordan.<sup>50</sup> When Bazin repeated this story in his 1880 article, he did not name Prescott specifically, but instead says "a music dealer in Concord, New Hampshire, bought one or two of them [lap organs] for a young man who worked for him to copy from."<sup>51</sup> Bazin provides further clarification in the follow-up piece to his 1880 article, stating that the year of Prescott's purchase was actually 1836 and that the young man in question was Charles Austin (1813–1884).<sup>52</sup> Bazin's reason for becoming more specific about all of this was to combat statements he had read in what he refers to as *Appleton's Annual Cyclopaedia* of 1868, where it was asserted that Prescott had begun manufacturing melodiums [sic] and seraphines about 1832 or 1833, and that they were the first such instruments ever seen.<sup>53</sup> Bazin goes on to criticize the poor design of the tilting bellows in Austin's lap organs, claiming that he failed to construct them in a manner that allowed the bellows to spring open properly.

The shortcomings of Austin's earliest reed organs are confirmed in a disparaging report by the judges for the Second Exhibition of the Massachusetts Charitable Mechanics' Association in 1839. Regarding a "seraphine" exhibited by Austin, the judges stated that "This instrument not being in proper order—the lower octave hardly producing anything like musical sounds—the committee were unable to pronounce upon its merits." Austin fared somewhat better with two instruments he exhibited in 1841 at the association's third exhibition. This time the judges' report read as follows:

50. See Chase, "History of Reed Instruments," 228.

51. Bazin, "First Reed Organs," 23.

52. See "Boston Notes," 85.

53. See the *Annual Cyclopaedia and Register of Important Events of the Year 1868* (New York: D. Appleton and Company, 1869), 664–667.

They seem to be an improvement, at least in point of size, on those formerly exhibited. The scale consists of four octaves. The tones are tolerably even, and are altered with as much readiness as is usual in this instrument. The mode of playing is very awkward, from the necessity of moving the whole key board, in order to inflate the bellows, and from the shape and disposition of the keys, which require a new system of fingering. The quality of tone is good.<sup>54</sup>

It is interesting that Bazin makes no mention of this somewhat redeeming report in any of his writings, suggesting that he probably bore a certain amount of ill will toward Austin (and presumably Prescott) for stealing his design in the first place. Then again, he might have had little reason to draw attention to it, since those of the judges' comments that are negative, i.e., the awkward mode of playing and the disposition of the keys, reflect directly on Bazin's original plan for the instrument. As is revealed below, Bazin himself entered a reed organ in the 1841 exhibition, but of a much different type.

Austin's and Prescott's production of lap organs was reportedly modest at first, but rapidly increased with customer demand. Various other instrument builders in southern New Hampshire followed suit, and there are numerous surviving examples made by craftsmen who were active in this region.<sup>55</sup> The style of reed they used was like that found in most of Bazin's reed organs, i.e., in a channel form with the sides turned

54. The reports for both exhibitions are taken from *Second Massachusetts Charitable Mechanics' Association Catalogue* (Boston: Henry Prentiss, 1839) and *Third Massachusetts Charitable Mechanics' Association Catalogue* (Boston: Henry Prentiss, 1841). Among Bazin's papers at the Canton Historical Society is a handwritten transcription of the 1839 judges' report regarding Austin's instrument.

55. Regarding Prescott and other early reed organ makers in New England, see *Moore's Musical Record* 2, nos. 1 and 2 (November and December 1868): 211–214 and 240–241; Edward Wall, "Abraham Prescott: Bass Viol Maker of Deerfield and Concord," *Historical New Hampshire* 42, no. 2 (summer 1987): 101–123; Gellerman, *American Reed Organ* (1996), 9–20; and Howard Alan Jewell, "The Prescotts of New Hampshire: 108 Years of Business Integrity," *Reed Organ Society Bulletin* 11, no. 2 (Summer 1992): 3–13. For illustrations of lap organs built by Prescott and others, see Laurence Libin, *American Musical Instruments in the Metropolitan Museum of Art* (New York: W. W. Norton and Company, Inc., 1985), 192–196. A computer database of nearly 9000 musical instruments owned by museums and private collectors in the northeastern United States (maintained at the Museum of Fine Arts, Boston) contains records for over sixty lap organs. The makers for a number of these instruments, however, are unrecorded by their owners, so future research may produce further examples made by Bazin. Many of these institutions also own unattributed accordions, some of which might likewise prove to be from Bazin's shop.

over.<sup>56</sup> On some later lap organs, builders employed piano-type keys rather than round buttons. Unlike Bazin, most of these lap organ manufacturers usually displayed their name on the exteriors of their instruments, providing easy identification of their origins.

Before leaving Austin, it is worth noting that Alfred Little began working with him in 1840. An observer of the period, J. D. Cheney, stated "I was at A. Prescott's, Concord, N.H., from the winter of 1845–6 to 1850, and I am sure that Alfred Little, who was then tuning for Charles Austin, used to bend the points of the reeds, as he said, 'to take away a part of the snarl!'"<sup>57</sup> Slightly twisting the end of a free reed laterally does, indeed, affect its tone, and such treatment eventually became a common aspect of voicing for all reed organs.<sup>58</sup> There seems to have been disagreement about who actually discovered this phenomenon; Austin received a patent (U.S. no. 6543) on June 19, 1849, that proposes a certain technique for voicing reeds, but it does not involve twisting them in the manner described above.

As has been shown, the terms melodeon and seraphine were used, and often paired, in various contexts during this period, but seldom with any clear differentiation. They are the two most common American names for a reed organ during the mid-nineteenth century, while contemporary European instruments are usually referred to as harmoniums. John Koster has observed that during the 1840s reed organ makers in New England seem to have usually reserved the term melodeon for lap organs and probably used the term seraphine to denote freestanding instruments.<sup>59</sup> This proposition is confirmed by Alfred Little's *Directions for Playing the Melodeon and Seraphine*. In his forty separate "rules" for playing or repairing the two instruments, Little always uses the former term for the lap organ and reserves the latter one for instruments with keys

56. This style of reed is different from that used by most other reed organ manufacturers of the nineteenth century, in which the reed plate is made from a solid piece of brass, about 2 mm thick, but milled thinner on its underside around the opening for the tongue. For illustrations of such reeds see John Koster, *Keyboard Musical Instruments in the Museum of Fine Arts, Boston* (Boston: Museum of Fine Arts, 1994), 286 and 312.

57. Cheney, a tuner and manufacturer of reed organs active in Maine, was quoted in the September 3, 1877, issue of *The Music Trade Review*, reproduced in Jewell, "Alfred Little," 5.

58. Regarding reed organ voicing, see Gellerman, *American Reed Organ* (1996), 90–91.

59. See Koster, *Keyboard Musical Instruments*, 292, n. 1.

(rather than buttons) and pedals (which would typically be associated with an instrument that had legs).<sup>60</sup> The names associated with Bazin's instruments seem to follow this pattern of terminology generally, but not strictly. As manufacture of lap organs gradually ceased (probably by at least 1855 if not earlier), and all reed organs were designed to rest on the floor, the term melodeon became the favored one for any such instrument.

### *Table Organ*

The Canton Historical Society owns another unique free-reed instrument, which is cataloged as a table organ (fig. 21). The donor was Mrs. Joseph Wattles, Jr., who was reportedly an accomplished player of the instrument. Although it is not marked with Bazin's name, it must surely have been constructed by him. Attached to its bellows is a T-shaped handle that presumably could be operated by an assistant. Situated above this handle is a sliding control knob that probably operated a swell panel. When the interior mechanisms are removed from the mahogany-veneered outer casework it can be seen that this is essentially a lap organ encased in a wooden box (fig. 22). There is again a non-traditional arrangement for the keyboard; the inner two rows of buttons produce two different whole-tone scales, while the outer rows of keys operate those same notes, but with octave coupling (fig. 23). Bazin has also used an unusual symbol for the accidental notes and for the entire coupler row. Regrettably, the reeds are all missing, but they were clearly of the channel type made from sheet brass with turned over edges. The compass appears to be four octaves, from D to d<sup>'''</sup>, but lacking its reeds, data about the instrument's tuning and pitch cannot be ascertained.

### *Seraphine*

The reed organ shown in figure 24 is apparently Bazin's earliest known freestanding model, reportedly purchased in 1835 for use in the

60. There are more than a few surviving examples of lap organs that were later fitted to a four-legged stand with a pedal arranged to operate the bellows, but such an arrangement is not mentioned by Little. Neither this nor the presence of piano type keys on later lap organs seems to genuinely affect his differentiation between melodeons and seraphines.



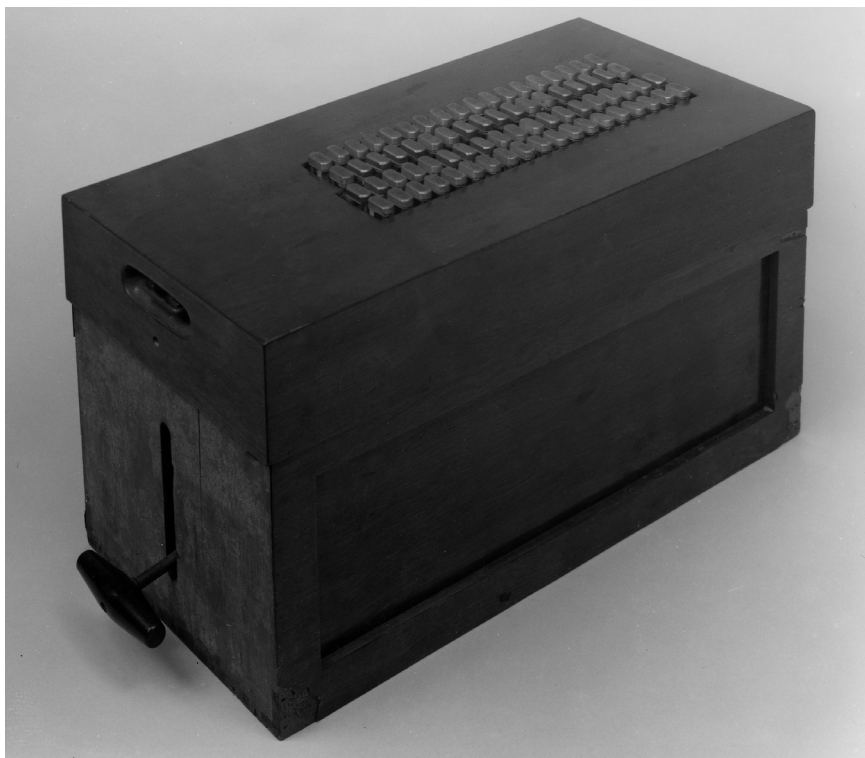


FIGURE 21. Table organ made by Bazin, Canton Historical Society (photograph by Stephen Korbet).

Unitarian Church in Norton, Massachusetts (about twelve miles south of Canton). It is owned by the Old Colony Historical Society in Taunton, Massachusetts, whose records catalog it as a seraphine.<sup>61</sup> The two bellows are operated by placing each foot in a metal stirrup and moving it for-

61. The Old Colony Historical Society's catalog number for this reed organ is 1929.25. I am grateful to former director Lisa A. Compton for allowing me to examine and photograph this instrument in 1995, and I thank current director Jane M. Hennessey for granting permission to reproduce those photographs. Among Bazin's papers at the Canton Historical Society are handwritten copies of three letters that Bazin wrote between April 1851 and November 1856 to persons involved with a religious organization in Norton, Massachusetts, that he referred to as the Orthodox Society. Bazin was attempting to obtain payment for rental of a reed organ to this group between May 1848 and May 1849, but whether they bore any relationship to Norton's Unitarian Church is unknown.

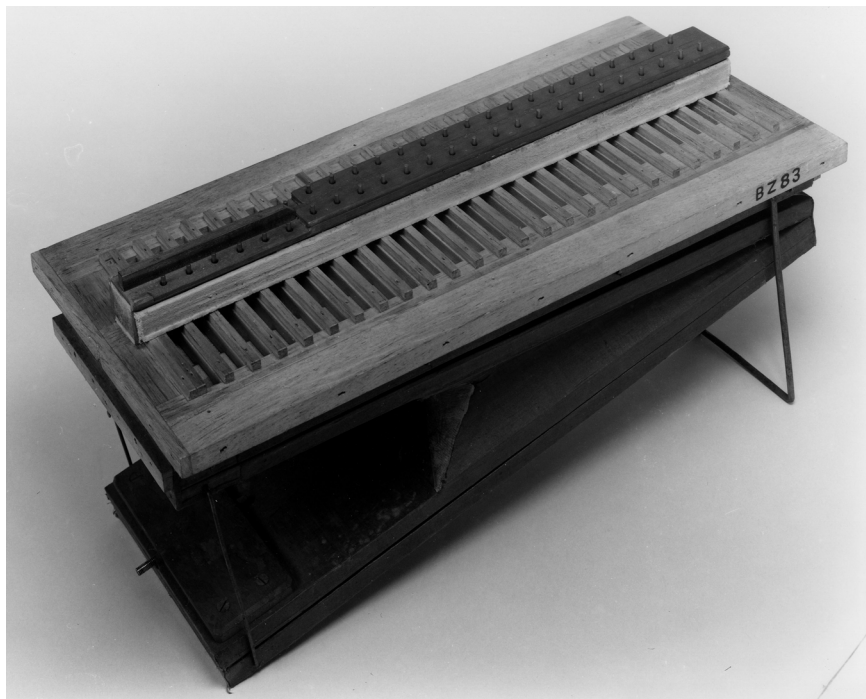


FIGURE 22. Interior of table organ in figure 21 (photograph by Stephen Korbet).

ward and back, rather than pressing up and down on a pedal. This is the same system of “swinging treadles” that Bazin devised for the bellows (shown in fig. 10) that he used to tune his harmonicas. The instrument once again has a non-traditional keyboard layout, with two rows of buttons, each row producing a whole-tone scale (fig. 25). The compass is six octaves from FF to f<sup>'''</sup>, which is quite large for a reed organ from the mid-1830s. The reeds are of the channel type, each stamped with Bazin’s name. Nothing like this instrument or the table organ discussed above is described in the articles by Chase or Bazin.

### *Bazin’s Ledger*

Among Bazin’s papers at the Canton Historical Society is a brief ledger recording the sale and repair of instruments. It is written out by



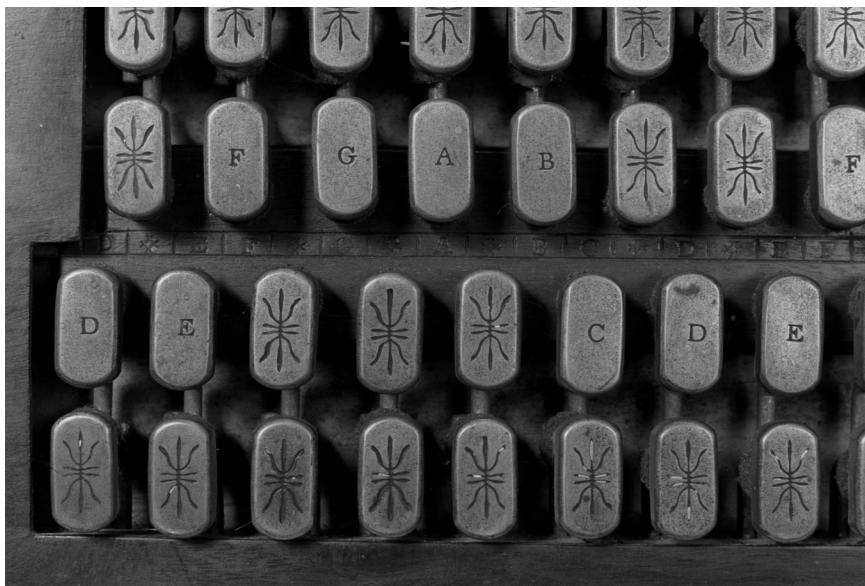


FIGURE 23. Keyboard of table organ in figure 21 (photograph by Stephen Korbet).

hand twice, in slightly differing forms, on two separate sheets of paper. Containing only about sixteen separate entries between 1835 and 1844, it surely represents only a partial record of Bazin's accounts regarding instruments, but provides critical information about his production, nonetheless. The earliest entry, dated November 7, 1835, indicates that a "reed melodium [sic] with piano keys" was "left" with A. Willard.<sup>62</sup> On December 23, however, the instrument was "returned to be altered." A subsequent entry dated October 7 records only that "the keys for this instrument were bought." Equally cryptic are the next two entries, on November 3 of the same year and on April 4, 1836, which apparently record either the sale or purchase (no monetary figures are given) of ivory and ebony for keys. Following this are two more mysterious entries

62. Although the surname Willard is certainly a common one, this might have been Aaron Willard (1757–1844), a noted clock maker who worked in Grafton, Roxbury, and Boston, Massachusetts. See Paul J. Foley, *Willard Patent Time Pieces: A History of the Weight-Driven Banjo Clock, 1800–1900* (Norwell, Mass.: Roxbury Village Publishing, 2002), 329.



FIGURE 24. Seraphine made by Bazin, Old Colony Historical Society, Taunton, no. 1929.25 (photograph by the author).



FIGURE 25. Keyboard of seraphine in figure 24 (photograph by the author).

from May 11 and July 20, 1836, each of which simply says “seraphine case and keys.” But the ledger finally provides some tangible data with the next four entries, dated between May 9 and October 16 of the same year, each of which records the sale of a seraphine to one of the following people: J. J. Low, H. L. Knight, Miss Doane, and Dr. Alden. The price for each is \$125, except for Dr. Alden’s, which is listed at \$100. Three entries from 1839 record “inside work of a seraphine” (once at \$75 and once at \$70.50) and “1 altered from a piano” (at \$85). At the head of the final group of four entries from 1844 is written “T. Gilbert & Co., being for reed plates and tuning. The same for Coleman’s attachment. These were required to be tuned equal temperament.” The cost was \$29.20. Three entries following this are marked ditto, at \$20, \$10, and \$64.98. Bazin’s use of both the terms *melodium* and *seraphine* in this ledger presumably indicates different types of instruments, probably lap organs and free-standing standing instruments respectively, but there is not enough additional evidence to be conclusive.

The last group of entries refers to Timothy Gilbert (1797–1865), a Boston piano maker whose firm built and successfully marketed a square

piano with a so-called Æolian attachment, which was a built-in reed organ that could be played separately or simultaneously with the piano from the same keyboard.<sup>63</sup> Of related interest is that Gilbert reportedly took note of a reed organ displayed at one of the exhibitions of the Massachusetts Charitable Mechanics' Association that had been tuned by Alfred Little, and was so impressed by its tone that he "ever after procured his reeds of Mr. Austin for the 'iolian [sic] attachment' to his pianos."<sup>64</sup> Presumably this took place after Gilbert had first obtained some reeds from Bazin.

### *Organ Pianofortes*

At the 1841 exhibition of the Massachusetts Charitable Mechanics' Association, Bazin entered a reed organ with a piano-type keyboard, for which he garnered a silver medal.<sup>65</sup> The heading in the judges' report called it an "Organ Piano Forte," though the text said it was "constructed upon the principle of the Seraphine or Melodeon." The judges opined that it "deserves much praise," and that "its tones are better in quality, and are more promptly uttered, than is common in instruments of this kind." They concluded by saying that it "may be used as a very convenient and agreeable substitute for an organ, to accompany the voices in church music, where it is not practicable to have an organ."<sup>66</sup>

63. An instrument of this type is in the Museum of Fine Arts, Boston (accession number 1980.269). Its reeds are of the same type used by Bazin, i.e., in the form of a channel with turned-over edges. See Koster, *Keyboard Musical Instruments*, 293–299. It is noteworthy that Bazin's ledger entries indicate that he supplied reeds to Gilbert in 1844, whereas it was supposedly not until 1846 that Gilbert purchased the rights to an 1844 patent (U.S. no. 3548) by Obed Mitchell Coleman of Philadelphia for a combined piano and reed organ, and not until 1847 that Gilbert's firm began manufacturing such instruments. In his 1880 article, however, Bazin confirms the year of this transaction with Gilbert as 1844.

64. Quoted from an entry about Alfred Little in *The History of Boscawen and Webster*, 415–418. This entry is reproduced in its entirety in Jewell, "Alfred Little," 5–6.

65. According to a letter dated June 2, 1880, written by Bazin to Alfred Little (now in the Canton Historical Society), this instrument had a compass of six octaves and was afterwards sold to J. J. Low of Jamaica Plain, Massachusetts (today a suburb of Boston). Bazin goes on to indicate that the instrument's ownership had since passed to Low's son, who apparently was one of the proprietors of Shreve, Crump, and Low, a noted Boston jewelry store that is still in business today.

66. The full text of the judges report is given in *Third Massachusetts Charitable Mechanics' Association Catalogue* (Boston: Henry Prentiss, 1841), 87.

It is uncertain how many of these organ pianofortes Bazin produced, but the number is probably small, as the complexity of their design would have been an obstacle to large-scale production. Only three have been documented, two of which, at the Canton Historical Society, have long been known.<sup>67</sup> A third example, at the Smithsonian Institution, was only recently recognized as Bazin's work. Their somewhat poor state of preservation prevents complete understanding of their specifications, but most of the vital components remain present and intact.

The instrument shown in figure 26 represents Bazin's patent of June 22, 1842 (U.S. no. 2682). On its nameboard it is labeled (quite faintly now) "JAMES A. BAZIN'S PATENT ORGAN PIANO-FORTE, CANTON, MASS.," although the patent text refers to it as a seraphine. There is nothing piano-like about it except for the shape of the case and the keyboard, which covers a compass of six octaves, from FF to f'''. The first essential aspect of the patent is a sliding keyboard that allows the player to transpose into any key, thus serving Bazin's recurring desire to retain the same fingering for every key. Secondly, there is a device to reduce the key dip and thereby soften the tone by opening the reed pallet less than usual. This is arranged, however, so that by pressing a little harder the player can push the key all the way down, opening the pallet fully and creating a swell for that note. The channel type reeds are held in place by brass clips (like those in Bazin's 1837 lap organ), and are made accessible for tuning and repair by means of a windchest that can be turned up ninety degrees and its front panel removed to get at the reeds themselves (fig. 27). In conjunction with this third patented feature, Bazin employed a flexible leather panel to connect the reservoir to the windchest. Not only does this make it possible to turn up the windchest in the manner he prescribes, but (according to Bazin) it creates an increased tone because of the leather's flexible nature. A lever, located at the right of the case, is apparently intended to open both the lid and a separate swell panel together, as also described in the patent.

Another reed organ containing at least some of the elements of Bazin's 1842 patent has only recently been identified as having originated in his shop (fig. 28).<sup>68</sup> The primary clue that led me to suspect

67. As with most of the Bazin musical instruments at the Canton Historical Society, these two reed organs were apparently part of Bazin's own estate when he died, and were subsequently donated to the society.

68. This reed organ is in the Smithsonian Institution's National Museum of American History in Washington, D.C. (catalog number 315,658), and was donated, along





FIGURE 26. 1842 patent reed organ made by Bazin, Canton Historical Society (photograph by the author).

that it was made by Bazin is the presence of swinging treadles for pumping the bellows.<sup>69</sup> Closer inspection revealed that Bazin's name is stamped on each of the reeds and that the words "Patent dated June 22, 1842" are handwritten on the reverse side of a wood panel that serves as a swell.<sup>70</sup> The compass is four octaves from C to c", but the keyboard does not transpose like the example in Canton. The reeds are in Bazin's

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with numerous other early keyboard instruments, by Hugo Worch. It had always been cataloged as German, dating to about 1855, and is captioned as such in Gellerman, *American Reed Organ* (1973), 41, fig. 51.

69. Another small reed organ, of similar size and design, but with bellows and swinging treadles more like those on the seraphine shown in fig. 25, is pictured in Robert F. Gellerman, "Reed Organ Orphans—Part II," *Reed Organ Society Bulletin* 21, no. 1 (Spring 2002): 17, fig. 39. My thanks to Robert Gellerman, who oversees an instrument database for the Reed Organ Society, for informing me that this reed organ was once owned by Sylvia Steeves of Bedford, New Hampshire, although efforts to locate her or this instrument have thus far been unsuccessful.

70. I thank Stacey Kluck for taking time in 1999, at my request, to examine this instrument's interior and discovering Bazin's name stamped on the reeds, and Gary Sturm for facilitating my own examination in 2001.





FIGURE 27. Wind-chest of organ in figure 26, turned up ninety degrees (photograph by the author).

usual channeled form, and, like the organ described above, are made accessible by turning up the wind chest ninety degrees. It also appears to have the same mechanism, described above, for slightly lifting the lid and activating a swell mechanism at the same time. Like the larger Canton instrument, its casework is quite plain, constructed primarily of pine veneered with mahogany, but the nameboard is veneered with rosewood.

The reed organ shown in figure 29 represents ideas patented by Bazin in 1853, and is apparently the only known example of its kind. The nameplate is missing, but handwritten in block letters on the reverse of the nameboard is "James A. Bazin, Patented Aug. 2, 1853." The specifications for this patent (U.S. no. 9892) are quite challenging to comprehend without careful study. There are five full pages of text, the language of which is among the most complex in any musical instrument patent during this period. Bazin was equally thorough with his illustrations, providing thirteen separate figures spread over four pages. It would require numerous pages to provide a complete understanding of every facet of this patent, so only the most salient points will be described



FIGURE 28. Small 1842 patent reed organ made by Bazin, National Museum of American History, no. 315,658 (photograph courtesy of National Museum of American History).

here.<sup>71</sup> Like the reed organ shown in figure 26, the one from 1853 has a sliding keyboard for transposition, with a compass of five octaves and one note, from GG to a<sup>'''</sup>. In this later model, though, the movement needed for transposition supposedly can be accomplished by only one hand rather than two. Bazin has devised two wind reservoirs in order to serve the treble and bass sections equally. These reservoirs are placed

71. Those desiring a complete understanding of Bazin's patents from 1842 and 1853 will necessarily need to examine copies of the full original texts and drawings, which can be done relatively easily by accessing the following website: <http://www.uspto.gov/patft/>.



FIGURE 29. 1853 patent reed organ made by Bazin, Canton Historical Society (photograph by the author).

below the bellows, which requires a flexible passage going from the reservoirs up through the bellows to connect them with the wind chest. The bellows are operated by a single pedal designed to swing from front to back, which Bazin says is less tiresome for the foot and leg than pumping up and down. This is essentially the same idea as the stirrups that Bazin first used with his bellows for tuning harmonicas (fig. 10) and in his seraphine from 1835 (fig. 24). (The stirrup is not shown in fig. 29, but survives separately.) The reed box is constructed in such a shape that the air passes by the heels of the reeds rather than at their points, which Bazin claims creates a better tone and allows them to speak more quickly.

One of the most interesting features in this patent is a two-part reed pallet in which either the entire pallet or just the front portion can be opened (fig. 30). With just the front part open, it is claimed that the sound will be softer, but also slightly lower in pitch. To take advantage of this feature, the instrument has what Bazin called a “presser bar” (made

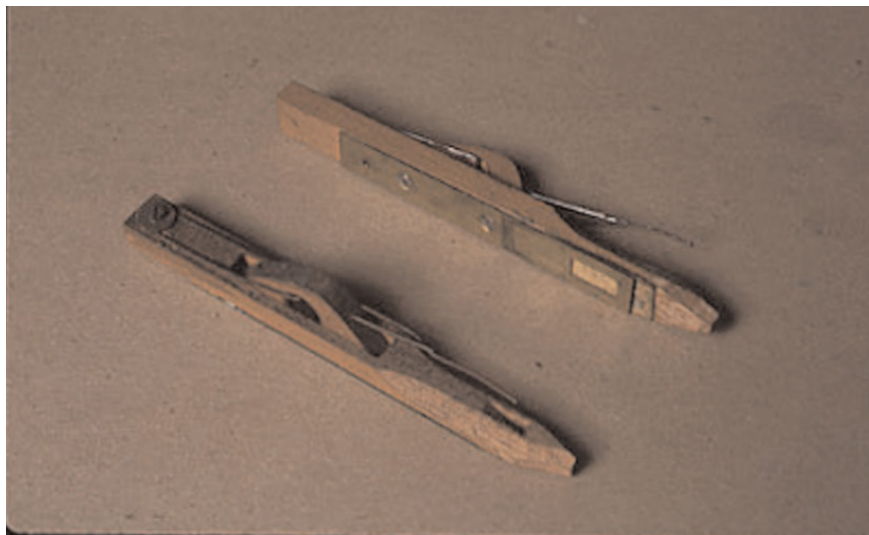


FIGURE 30. Two-part pallets from reed organ in figure 29 (photograph by the author).

of wood), which can be made to hold down the back ends of the pallets and thereby soften the sound. When the presser bar is disengaged, another device can be brought into play, namely a wooden cylinder running the length of the instrument, with notches (each the width of a reed pallet) cut into it rather like a camshaft. By rotating this cylinder to the desired key signature (marked on a dial at one end), one can flatten the thirds, sixths, and sevenths of that particular key (fig. 31). This occurs because the uncut portions of the cylinder hold down the back ends of selected pallets and make their notes flatter in pitch, while the notches allow the other pallets to open fully. As Bazin states in the preamble to his patent, not everyone likes equal temperament. His so-called regulating cylinder allows the player to quickly change to a non-equal temperament, with thirds, sixths, and sevenths that are pure in intonation. One might wonder, though, what happens when the transposing keyboard is used in conjunction with the regulating cylinder. But Bazin has thought of everything, so the instrument includes a means by which one can re-index the regulating cylinder to match the key to which the keyboard has been shifted.



FIGURE 31. Transposition dial from reed organ in figure 29 (photograph by the author).

### *Pressure versus Exhaust*

Instrument makers in Europe and the United States realized early on that free reeds could be made to vibrate either with air that is under pressure or by exhaust (i.e., suction). Aaron Peaseley's 1818 patent, mentioned earlier, proposed the use of exhaust, but it was Jeremiah Carhart (1813–1868) who was long given credit for this idea after patenting it in 1846 (U.S. no. 4912). Carhart may have popularized the use of exhaust bellows, but the originality of his patent was later contested and overturned, particularly in light of Peaseley's previous description of such a system.<sup>72</sup> Many observers have suggested that exhaust bellows create a better tone in reed organs than a pressure system. But Koster makes a persuasive argument that one of the reasons American reed organs with exhaust bellows have a comparatively pleasant sound is that the placement of their reeds on top of the windchest allows easier access to them,

72. Regarding Carhart, see Gellerman, *American Reed Organs* (1996), 18 and 19.



which in turn makes it easier to voice them well.<sup>73</sup> In his 1880 article, Bazin himself had the following to say on the subject of pressure versus exhaust.

In all the instruments which I have mentioned the valves were placed between the reeds and the reservoir but the reverse of this had been thought to allow of a quicker action, and has been claimed as a late improvement. This is altogether a mistake, as the action can be made as quick in one case as in the other. And in nearly all the German seraphims [sic] which were first imported the back ends of the keys were used as valves and of course the reeds must have been between them and the reservoir.<sup>74</sup>

In the follow-up to this article, Bazin offered further thoughts:

It is also a mistake to suppose that it was any improvement in the instrument that caused an increase in the demand for them, as it was only the fear of what Mrs. Grundy might say that prevented all but the very few who depend upon their own judgment from buying them, there having been as good-toned instrument made before Carhart's invention as afterward. Exhaustion bellows have had nothing whatever to do with the tone of the reeds, that depending altogether upon the form of the passage-way for the wind, the current of air having the same effect whether drawn through or forced through this passage.<sup>75</sup>

Bazin clearly felt that Carhart's patent for exhaust bellows was no great advancement in reed organ design, and all of Bazin's instruments make use of a pressure system. Bazin does, however, seem to provide for the possibility of using exhaust bellows in the text of his 1853 patent.

### *Meantone versus Equal Temperament*

Just as Bazin was not impressed with exhaust bellows, he was opposed to equal temperament. Although the condition of most of his surviving instruments does not allow precise determination of their tuning systems, it seems likely that most of them are (or originally were) tuned in some kind of non-equal temperament. This was also true of at least some other manufacturers' reed organs during this period, and was common in many early concertinas made in England.<sup>76</sup> Manufacturers of pianos

73. See Koster, *Keyboard Musical Instruments*, 287.

74. Bazin, "First Reed Organs," 23.

75. "Boston Notes," 85.

76. For example, a well preserved four-octave lap organ made by Abraham Prescott and Son about 1848–1850, in the Museum of Fine Arts, Boston (accession number



and organs likewise maintained the use of non-equal temperaments for tuning their instruments until well into the nineteenth century.<sup>77</sup> Bazin obviously took great pains in his 1853 patent to allow for both equal and non-equal tuning systems, recognizing that some people preferred the latter. And, as discussed above, he was perfectly willing to supply reeds tuned in equal temperament to Timothy Gilbert for his pianos with an Æolian attachment. But his negative feelings about equal temperament and thoughts about its history in American reed organs are most clearly stated in the follow-up piece to his 1880 article, where he offers the following remarks.

It is also a mistake to say that Mr. Peloubet<sup>78</sup> was the first to tune reeds in equal temperament, as he did not begin the business until 1852; and I find, by my books, that I sold, in 1844, to T. Gilbert & Co., who were proprietors of the 'Coleman Attachment,' reeds which were required to be tuned in equal temperament, a method of tuning which had been introduced about four or five years before, by an Englishman who pretended that he could tune instruments so as to be perfect in every key. Well knowing that this was impossible, I only tuned instruments in this way for those whose ears had become accustomed to discordant thirds. But as this method soon became the general practice I contrived a way of flattening the third, sixth and seventh of the scale, for which I obtained a patent (No. 9,892, August 2, 1853). The reason why a contrivance of this kind has never been brought into use appears to be that very few persons can distinguish between a true third and one

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2002.380), is tuned in a non-equal temperament. I thank Paul Groff for drawing my attention to English concertinas tuned in non-equal temperament; see Allan W. Atlas, *The Wheatstone English Concertina in Victorian England* (Oxford: Clarendon Press, 1996), 39–47.

77. For more information about meantone tuning generally, see Mark Lindley, "Temperament," *Grove Music Online*, <http://www.grovemusic.com> (accessed April 7, 2005). Regarding the tuning of pianos in England during the nineteenth century, see Alfred J. Hipkins, *A Description and History of the Pianoforte*, third revised edition (London: Novello, 1929; reprint Detroit: Detroit Reprints in Music, 1975), 46, where the author (originally writing in 1895) indicates that equal temperament "has been generally used in this country [England] for pianos nearly fifty years," i.e., only since about 1845. For more about the late adoption of equal temperament in organs, see Alexander Mackenzie of Ord, "The adoption of Equal-Temperament Tuning—A performer's imperative or a fashionable fad?" *BIOS [The British Institute of Organ Studies] Journal* 27 (2003): 91–111.

78. Louis Michel François de Peloubet (1806–1885) was a woodwind instrument maker active in New York City and later Bloomfield, New Jersey, who reportedly began manufacturing reed organs about 1842. See Robert F. Gellerman, *Gellerman's Reed Organ Atlas*, second edition (Lanham, Maryland: Vestal Press, 1998), 184.

which must invariably result from the tempered scale. But any one who will take the pains to tune all the thirds and fifths of one scale perfect cannot fail to perceive the difference in the effect.<sup>79</sup>

### *Conclusion*

There is little reason to think that James Bazin was not telling the truth when he denied having much knowledge of other inventors' early experiments with free reeds. And the curious designs of so many of his instruments certainly reinforce the notion that he did not directly copy the work of others. But it seems a little odd that a young man with such an inquisitive mind, living relatively close to Boston, apparently had no knowledge of the work of Ebenezer Goodrich and makes no mention of having seen Maelzel's Panharmonicon. This is all the more peculiar given that in the early 1820s Bazin had at least tangential contact with John Osborne, who, as a member of the rather small circle of professional keyboard instrument makers in Boston, would have surely known the Goodrich brothers. It is likewise curious that Bazin claims to have not learned about Aaron Peasely's work with free reeds until the late 1830s, even though he acknowledged being aware of this gentleman's reputation as a mechanic long before then. There are various instances in the nineteenth-century sources mentioned at the outset of this article that make it obvious that Bazin eventually became aware of others' efforts with free reeds, both locally and abroad. This ultimately may have been what caused him to tell his story to Chase in 1853 (the same year as his second reed organ patent), and in his own words in 1880, in order to substantiate the originality of his work.

No one would deny that James Bazin possessed a particularly inventive mind regarding free-reed instruments. Each of the surviving examples of his instruments shows a restless desire to improve their operation and versatility, with no one model bearing much resemblance to another (apart from his pitch pipes). Among his more interesting innovations are the means for altering the pitch of individual reeds (in his sliding

79. "Boston Notes," 85. Bazin recycled these same comments, and added some others, in a piece that was published as a letter to the editor in *The Musical Herald* 2, no. 10 (October 1881): 239. He was responding to what he felt was poor information about reed organs published in a question and answer section of *The Musical Herald* 2, no. 4 (April 1881): 95.

pitch pipe), his progressive designs for reed trumpets and harmonicas, his various alternative keyboard layouts to simplify fingering, his bellows stirrups that make pumping more ergonomic, and his two-part pallet and regulating cylinder for altering temperament (in his 1853 patent reed organ). To this must be added his invention of the lap organ, an instrument for which he has always been best known, if poorly credited.

It should be stated once again that all of this work took place concurrently with or soon after some of the most important developments for free-reed instruments in Europe. Unfortunately, the complexity of many of Bazin's instruments prohibited them from being commercially viable, and probably prevented his name and reputation from becoming better known in his own time. But even though Bazin's inventions seem to have had limited impact on the overall development of free-reed instruments in America or elsewhere, he surely deserves more recognition for his experiments than he has previously received in organological literature.