The Savin Rock Gavioli
(Technical Specifications)

Dick Lokemoen

The Savin Rock Gavioli was always utilized in permanent, indoor park locations, resulting in the current excellent condition of the organ. The pipework, in particular, is free of any appreciable wear and provides a very original Gavioli sound (**Figures 1 & 2**).

Figure 1. With the first section of violin pipes now removed, the restoration and rebirth of a potentially fine Gavioli band organ has begun. An instrument whose caretakers kept it mostly high and dry. A rather rare instance in the history of existing band organs.

Figure 2. At some point in the past it was decided a bolder shade of green on the saxophone reed blocks and boots would enhance the saxophone voice by covering over the wimpy mint shade as provided by the Paris factory. During restoration the makers mint green color was renewed. Playing with cello helper pipes these saxophones provide a wonderful rich baritone voice .

Before any work commenced, extensive study was conducted of the organ (**Figure 3**), as well as inspection of three other 65-key Gavioli instruments (**Figures 4,5, & 6**).

Figure 3. Backside of Savin Rock Gavioli shows duplex roll system for playing 66 key B.A.B. Rolls. After weighing the views offered to him by knowledgeable collectors, historians, and technicians, Gavioli owner Ken Harck made the decision to return the instrument to the basic design and intent of its' maker. Shortly after this picture was taken the roll system components were removed and declared surplus.

Figure 4 A pre-restoration pipework view of the 65-key "Aalster Gavioli" displayed in the National Museum Van Speeldos tot Pierement at Utrecht, Holland. In subtle ways not all 65 key Gavioli organs are exactly alike either due to modifications in the past or intended design by the builder. Photo by Fred Dahlinger, Jr.

The Savin Rock Gavioli was always utilized in permanent, indoor park locations, resulting in the current excellent condition of the organ.

Figure 5 The pipework of the magnificent 65 key Gavioli in the Sanfilippo Victorian Palace is shown shortly after the truly fine restoration by the late Mike Kitner and prior to the fitting of the elegant facade. Mike was a very skilled craftsman who unselfishly provided much useful information and advice to the restoration of the Savin Rock Gavioli. Photo by Fred Dahlinger, Jr.

Figure 6. The stunning like-new pipework of the 65 key Gavioli in the Gilson collection shortly after a masterful restoration by Johnny Verbeeck. The generosity of Bob Gilson offered yet another opportunity to examine a similar 65-key instrument. (Image taken prior to completion of artistic treatment of facade.)

Figure 7 One never knows what lurks in the bowels of a band organ bellows. A well meaning repairman of the past made restoration of this pump a good challenge. Although many components needed to be made new, about 70% of the wood structure was made reusable. Any future rebuilds should be pleasurable.

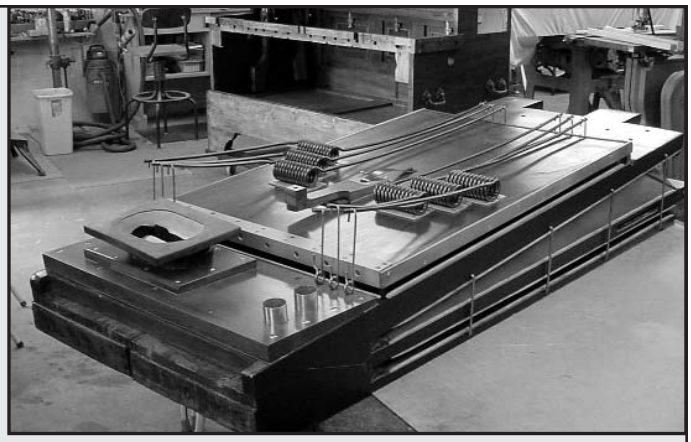


Figure 8. The completed pump covered in black cowhide is ready to be reconnected to the rods and crank of the Gavioli case in the background. The materials used should provide for a very respectable lifetime.

The entire restoration was carefully planned in advance and executed with due diligence. Photographic and written documentation was made of all activity and the materials utilized. A premise of the restoration was to preserve and re-utilize the maximum amount of existing material within the instrument (**Figures 7 & 8**).

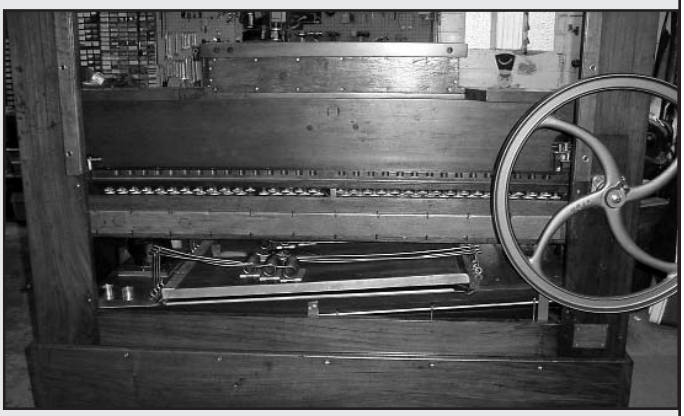
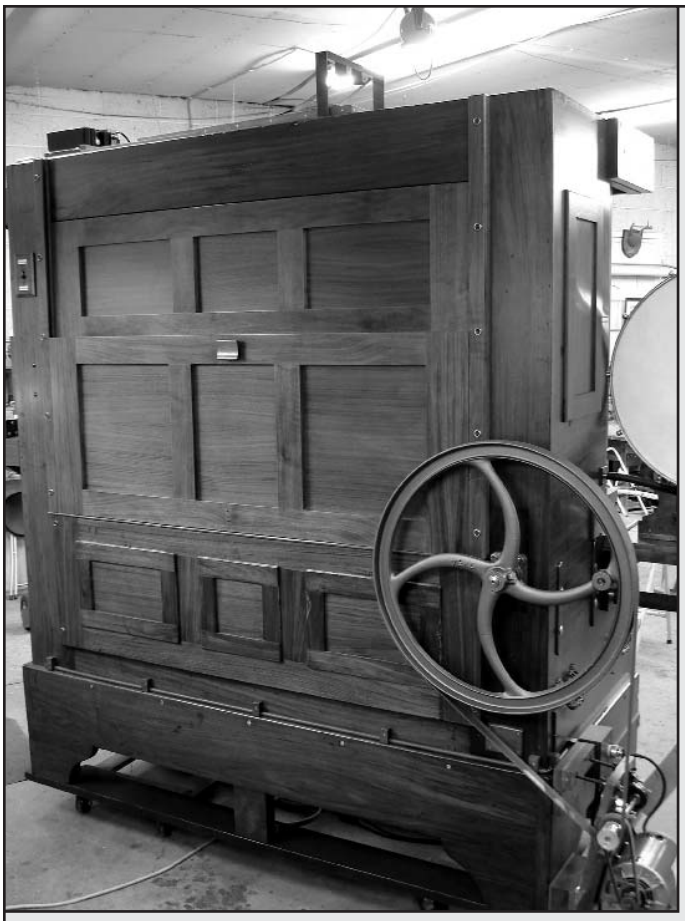


Figure 9. A frequent comment of shop visitors regards the craftsmanship of the Gavioli cabinet makers. Indeed the cases were thoughtfully designed and constructed to withstand the abuse of climate and man. The effects of age and use were for the most part left as is during case refurbishing. Loose veneer was glued fast and sharp or rough surfaces were made smooth but the various "warts" were retained. They enable one to relate to the instrument history by both sight and touch in addition to sound.

The entire restoration was carefully planned in advance and executed with due diligence.

Gavioli designed their organs with generous proportions and imbued them with accomplished workmanship. The case is of solid core wood construction, fabricated with quality joinery techniques. An outer veneer was applied over the core for appearance. It was finish-sanded, orange shellac applied and rubbed, followed by the final placement of a clear lacquer finish (**Figure 9**).



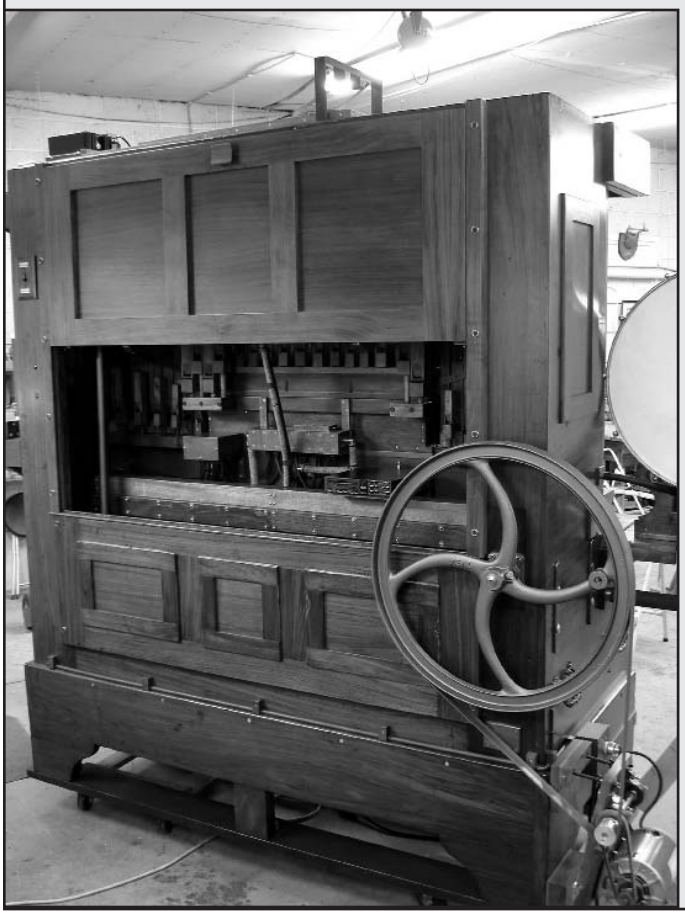


Figure 10 (left, upper). The upper two panels were constructed in the Gavioli style to replace two outward sliding plywood panels that were likely installed when the organ was converted to the 66 key duplex roll system. The bottom panel is original to the organ with the three inset panels being removable for quick access to the main wind-chest.

Figure 11 (left, lower). With the middle panel in the up position one may gain access to the various relay valve chests, crank and rod bearings, and also the MIDI file player system. The upper two panels can be removed quickly and easily for additional access to systems.

The case measures 83½ inches high by 34 inches deep and 75 inches wide. It spans the full width of the center façade panel. Removable panels cover the back openings, protecting the mechanism. The upper half slides within guide rails to enable ready access for routine service and tuning work (**Figures 10 &11**).

The best known 65-key Gavioli scale is the same one used by Chiappa in England. It is identified in Art Reblitz's "Treasures" (page 514) as "65-key Gavioli No. 2 (Waldkirch) Organ Scale." One assumes that the designation means it was the second variation on the 65-key scale and was used by both the Paris and Waldkirch factories. The Sanfilippo and Gilson 65-key utilize this scale but are actually 66-key. In those scales the glockenspiel key was made into key 65 and the key frame mute key shifted to the added key 66.

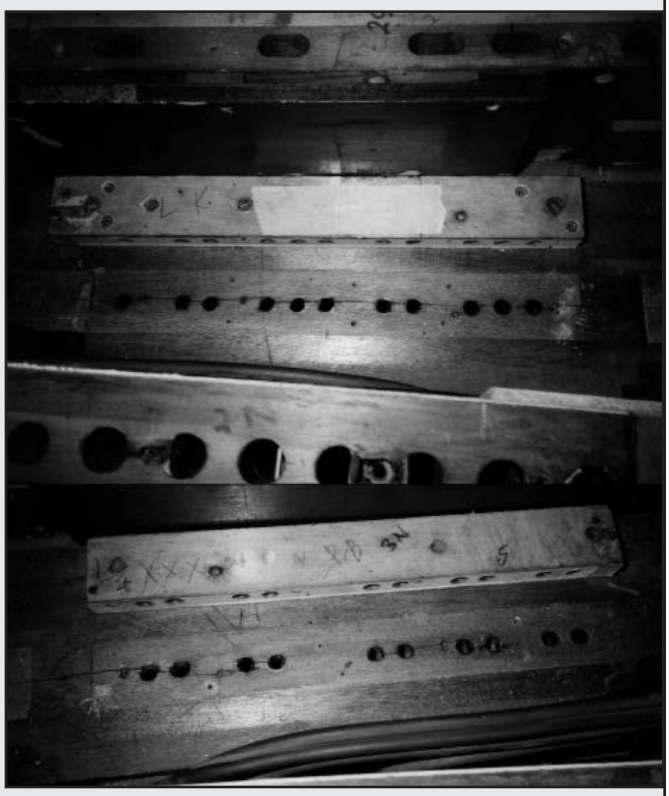


Figure 12 (above). Channel boards which convey wind to inflate the off-note chest pouches were found having channels that dead ended or were plugged with cork and alternate channels to a different location bored. These alterations appear to have been factory work as paper seal material were old French business ledgers. Another instance found two extra valve and pouch units in the saxophone off-note chest that could never have been used. Perhaps there was a bit of "design as we build" involved on some instruments.

Figure 13 Arrows point to the devices which signal a ventil to either open or close the wind supply to the valve relay chest thus preventing one heck of a noise!

The alterations made years ago to convert the Savin Rock instrument to play the 66-key roll scale made it impossible to completely discern the original internal layout. There was also evidence of alterations made to the chests when the organ was initially built at the Gavioli factory, as well as other pipe, valve and chest anomalies (**Figure 12**). As restored, the scale of the organ is somewhat different than others with a general 65-key specification as utilized by Chiappa. It actually has 70 keys. Something of a precedent exists in the 68-key scale in "Treasures," page 516, which is basically a 65-key scale with additions. Generally, it is in almost a reverse order as compared to the No. 2 scale, with some variations in notes. There were keys for the swell shutters (2 keys), bell ringers (one key), loud violin register (one key), with the keyframe mute key being deleted. A muting mechanism is incorporated into the keyframe, such that when either music passes out of it or the top is lifted the organ is muted (**Figure 13**).

The physical layout of the pipework, as previously rearranged, was retained so as to minimize any further alterations (**Figure 14**). To replace missing pipework, twelve pipes (three each, saxophones, cellos, stopped flutes, open flutes, as well as shallots and tongues for three clarinets) were fabricated and fur-

Figure 14 Refurbished pipework and components shown back in place as removed. The twelve pipes fabricated to replace those discarded in the past were placed in non-original locations rather than disturbing the re-arranged pipe configuration of the previous alteration.

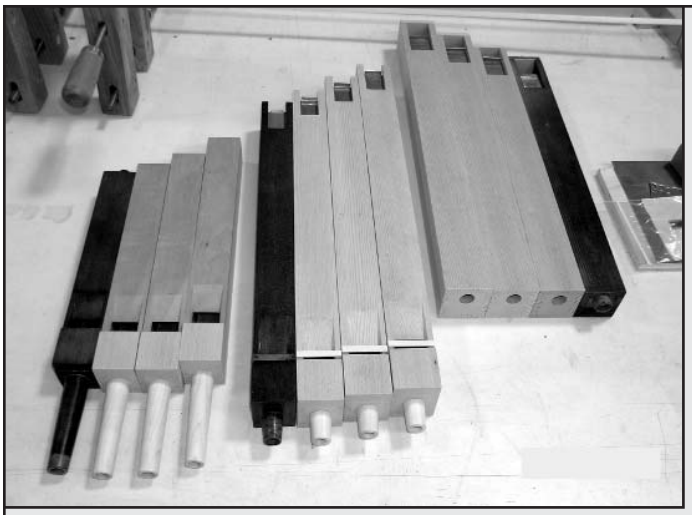


Figure 15. New replacement stopped and open clarinet mixture pipes on the left and middle and saxophone resonators on the right along with one sample pipe for each stop. Image taken during fabrication at Organ Supply Industries by pipe craftsman Dave Wasson.

nished by Dave Wasson of Organ Supply Industries in Erie, Pennsylvania. Their design was based on the scaling of existing adjacent pipes, supplemented by dimensional data furnished by the late Ken Smith (**Figures 15, 16, & 17**). There are now a total of 259 pipes in the case, with four being dummy violins that provide for visual balance. The only pipes located under the floor of the case are six bourdons, mitered at 90-degrees to fit the available space (**Figures 18 & 19**).

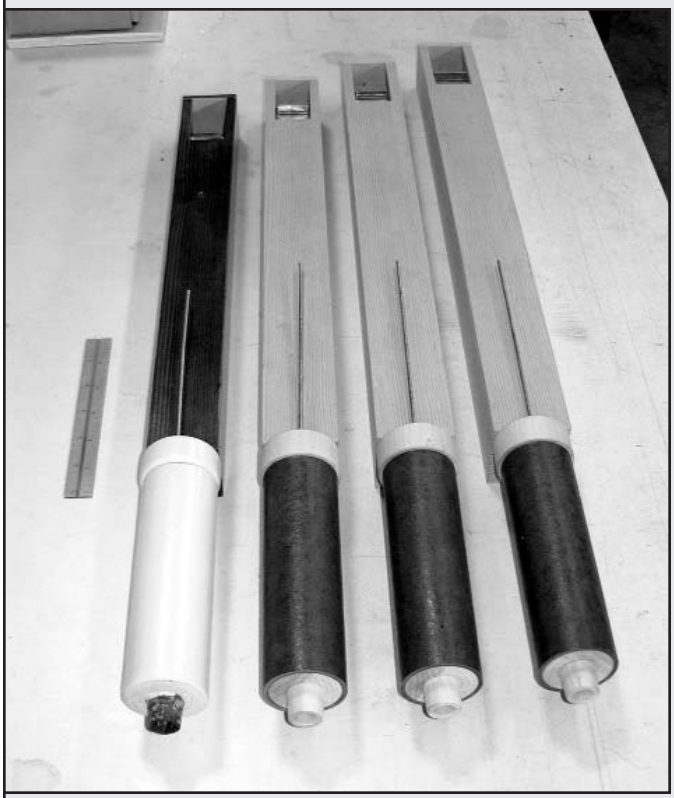


Figure 16. The three new saxophones along with original sample prior to the application of paint, stain, and shellac for a correct cosmetic match.

Figure 17. Two each of the replacement saxophone and cello helper pipes in their location under the roof of the case. Note the two supply conductors connecting the off-note chest fabricated for the operation of these two notes to the pipe table.

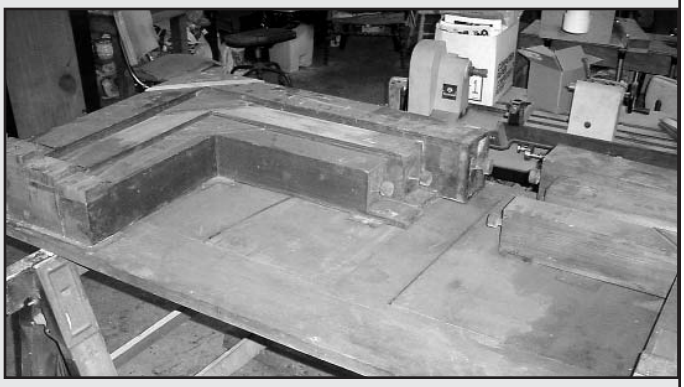


Figure 18. Bass bourdons mounted to floor of case before removal. Due to splits in mitered joints the pipes were mostly lifeless. A rodent nest was found in one pipe and nuts were in another.

Their (missing pipes) design was based on the scaling of existing adjacent pipes, supplemented by dimensional data furnished by the late Ken Smith.

Figure 19. Refurbished bass bourdon pipes reattached to the case floor ready to be flipped over and installed into base of case.

Figure 20 (left, upper). The lower unit is the four-stop Gavioli central register action with the clarinet register lock and cancel unit attached to the riser above. An additional register which controls the piccolo stop is located below the central unit and attached to the underside of the main chest.

Figure 21 (left, lower). The drum actions and related mounting boards had been painted with a thick coat of black paint which was removed and the surface refinished to match the case. The brass drums were in nice original condition and other than polishing required minimal work.

The organ incorporates Gavioli's central register box arrangement, which controls the wind that is delivered to each portion of the divided chest. Within each chest segment the pallets are always working, whether there is wind in the chest or not (**Figure 20**).

Figure 22. The bass drum beater motor in the inflated mode is connected to the cymbal striking action via a wood linkage. The valve activator motor can be partially seen directly under the drum shell. A badly worn and damaged cymbal was replaced with one of equal dimensions albeit new.

Figure 23. When the original bell action was removed is not known but there is evidence of such in the lower center section of the facade. An entirely new unit was fabricated in the Gavioli style and is shown attached temporary to the case by support legs. The bell action will be rejoined to the facade upon restoration completion.

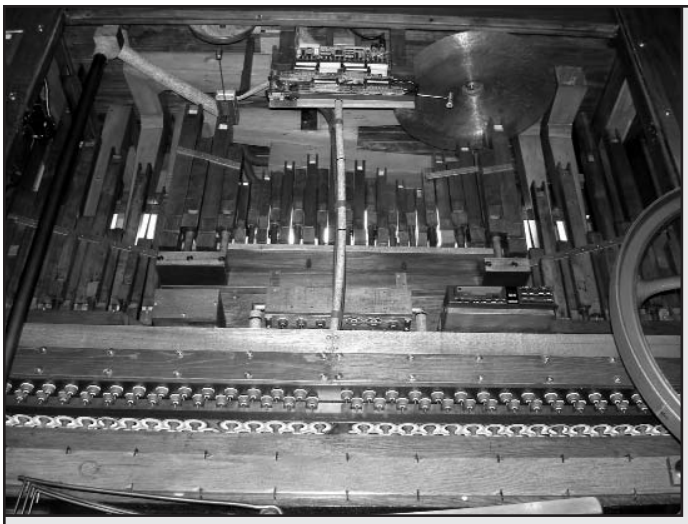


Figure 24. The vintage crash cymbal in the upper right of this image was added at the request of arranger Wayne Holton and plays from key 70.

The drums, cymbal and their actions are directly attached to the back of the façade wings (**Figures 21 & 22**). The bells are mounted on the shelf incorporated into the lower center section of the façade, with the actions attached behind it (**Figure 23**). A crash cymbal is mounted inside the case, suspended from the ceiling (**Figures 24 & 25**). There is also a 7½" brass bell mounted inside the case that is used in lieu of bell ringer figures at this time (**Figure 26**).

With seven registers, swell shutters and various percussion instruments available to the arranger, some very fine arrangements can be rendered by the instrument.

Figure 25. The crash cymbal and action fits as though Gavioli planned for one in the first place. It really adds to the music and other than a few screw holes no structural changes to the instrument were made.

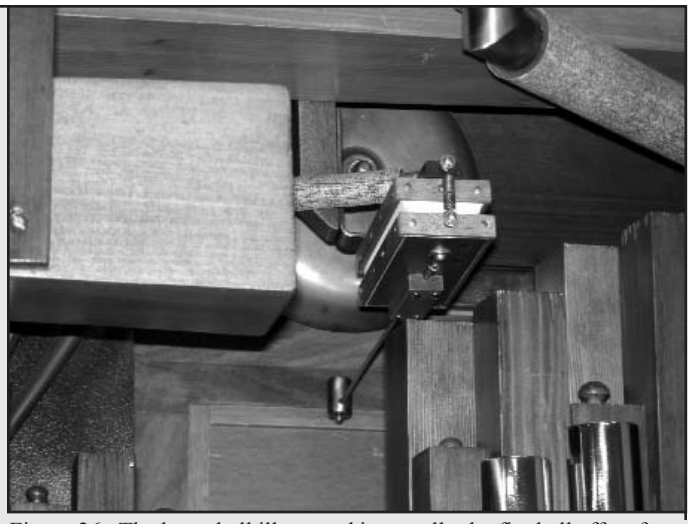


Figure 26. The brass bell illustrated is actually the fire bell effect from an American Photoplayer which was scrapped many years ago. It is taking the place of bell striking figures which may some day be added to this instrument.

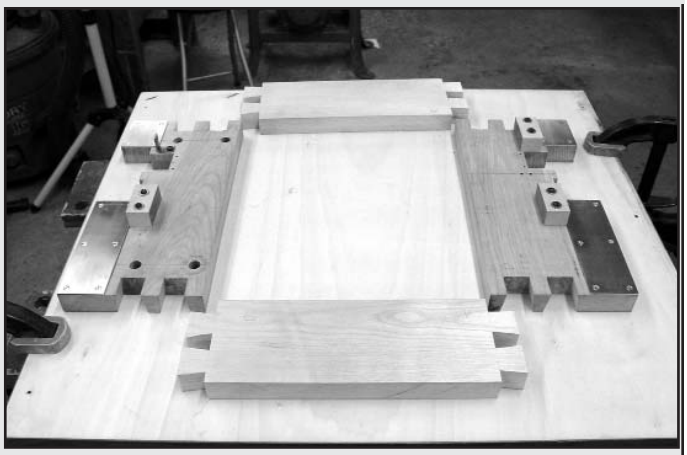


Figure 27. A 70 key(less) frame was fabricated to replace the long removed key(ed) frame that was fitted in the Gavioli factory. The basic wooden frame is shown in an early stage of construction. The wood is hard maple and the guide plates are stainless steel.

Figure 28 A portion of what makes a key(less) frame. The tracker bar, slotted roller and rubber covered transport rollers were crafted with precision by the Haughawout Music Company. The gears are stock. All remaining components were manufactured "in house."

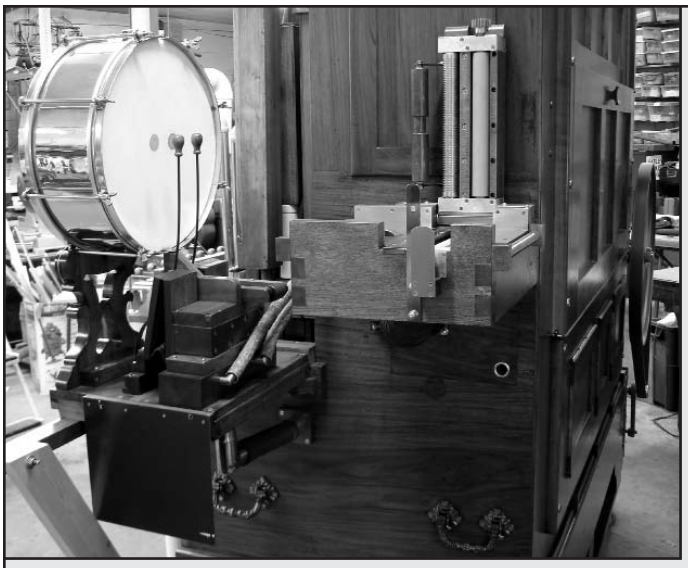


Figure 29. The completed keyframe in place and ready for book. In designing and building this unit, no particular brand of keyframe was faithfully copied. Instead it is a compilation of existing designs plus a few innovations. Once again, this builder is indebted to the late Ken Smith for his encouragement, advice, and sharing of printed materials for the fabrication of another keyframe.

A new keyframe of keyless design was fabricated to provide for reliable book operation (**Figures 27 & 28**). It was placed outside the case, in the usual back, right corner position, with the books moving front to back. Residual evidence confirms that the keyframe was originally mounted in the same general location (**Figure 29**). A simple MIDI installation was also installed in an unobtrusive, removable manner to provide for remote and commercial operation possibilities (**Figure 30**). The B. A. B. relay or valve chest was re-used (**Figure 31**).

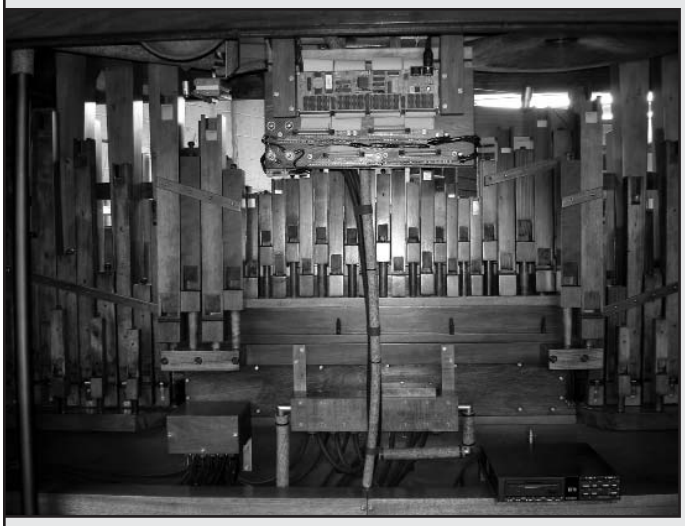


Figure 30. With the top back panel removed access is made to the MIDI decoder board. The Viscount media player can be seen in the lower right atop the magnet valve rail cover. An effort was made to hide the MIDI components and cables from view and make removal if desired simple. In fact it is estimated that all traces of the system could be removed in a few hours leaving only a few screw holes in the wake. Many thanks to Mike Ames and Ron Perry who provided MIDI components and understandable advice.

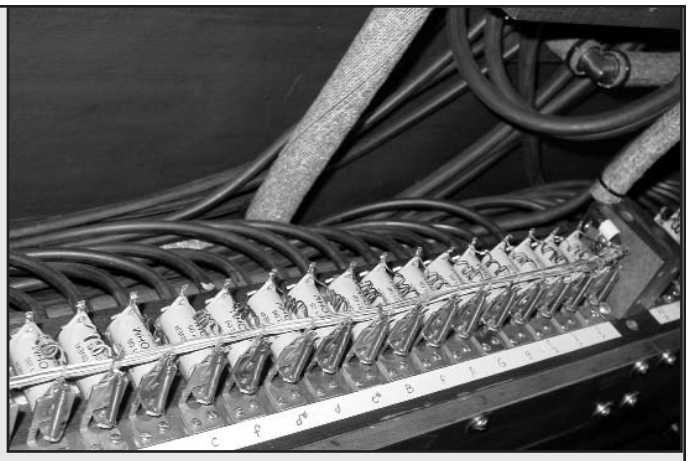


Figure 31. The B.A.B. relay valve chest containing Reisner 601 Direct Pallet Magnets shown with protective/concealment cover panels removed. This design has shown to be extremely fast and completely dependable. (Refer also to figures 11 & 24 for additional views).

The bass pipes consist of six notes playing a bourdon and a cello, notes C, D, E, F, G, A (keys 4 to 9). It does not have a "box reed" or saxophone playing on the bass notes as is sometimes found in other 65ers. The six wooden resonator trombones stand forward of the central pipe riser, three to either side. They play on the bass notes, added by a register (key 66) (**Figure 32**).

Figure 32. The six wood resonator trombones have a nice full sound without being "honky." One hopes no problems develop with the reeds as access is difficult and requires removal of much pipework. For that reason special attention is made that reed wedges are installed securely.

Accompaniment pipework consists of violin, stopped flute, open flute pipework, playing notes G, A, A#, B, C, C#, D, E, F and F# (keys 12 to 21) **Figure 33**.

The countermelody is played on two different registers; solo or together, chromatic from D to G except for top D# (keys 48 to 64). One register (key 23) brings a brass resonator clarinet, and a stopped and an open flute into play. They are all positioned on the riser in the center of the organ, on top of another riser that spans about the center third of the case width. Another register (key 45) operates a wooden resonator saxophone with cello helpers. These are generally located to either side of the riser (**Cover, back**).

Figure 33. The back left group of accompaniment pipes. Just below is the inside keyframe tubing junction manifold.

The melody is 21 notes, chromatic G to E except for top D#, (keys 24 to 44). Four registers control what is played by these notes, providing any one of 24 different tonal arrangements to be selected by the arranger. One register (key 46) brings two ranks of violins into play, with a second register (key 68) adding two more violin ranks. The piccolo register (key 11) consists of one rank of brass body panflutes with nodal holes backed by another rank of open harmonic flutes (**Figure 35**). The twenty-one aluminum bells are the final melody register (key 47). The bell action was constructed in the Gavioli style, replicating the action that was originally present (**Figures 36 & 37**).

Figure 35. The brass panflutes were stripped of the black paint to find rose/pink as the original color which was matched and reapplied. Gold paint was removed from the brass pipe bodies and then buffed and lacquered. The panflutes and open harmonic flutes in this instrument have a distinctive and very powerful sound. There are no signs of any alterations having been made to these pipes in the past and are as the maker intended.

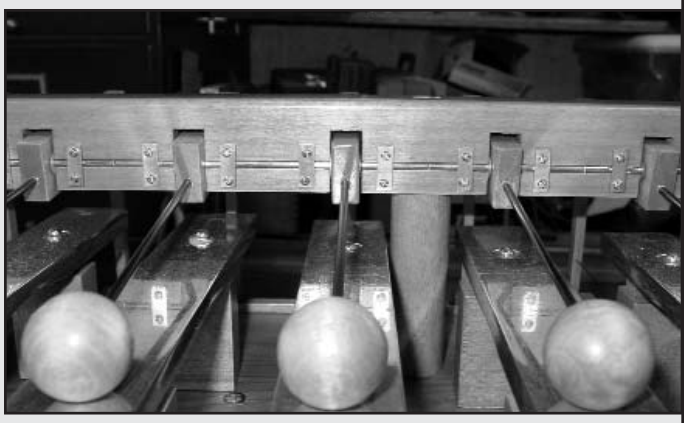


Figure 36. Front detail view of the bell action. The bars are a vintage set that was salvaged from a fire.

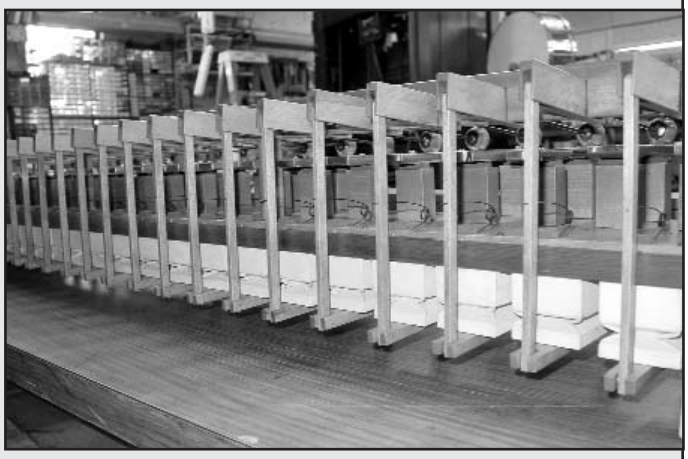


Figure 37. Back view of bell action prior to installation shows the ribbed motors connected to the mallet holders via wood linkages. The individual pieces needed to custom build a bell unit are numerous and time consuming to prepare. The brilliant sound and exciting action make it all worthwhile.

All registers are cleared by the general cancel (key 3). Volume modulation is achieved by the opening and closing of the swell shutters in front of the pipework (keys 69 and 1, respectively, to facilitate desired position without use of the general cancel). The scale has keys to activate a bandleader (key 10) and bell ringers or a larger, concealed bell inside the case (both key 22), play a bass drum and cymbal (key 2), snare drum (keys 65 and 67), and a crash cymbal (key 70).

An entirely new repertoire of tunes was arranged for the instrument by noteur Wayne Holton. Upon receipt of the arrangements, it was learned that the pump and reservoir were inadequate to support them. Consequently, additional reservoir capacity was installed on top of the case (**Figure 38**). Gavioli

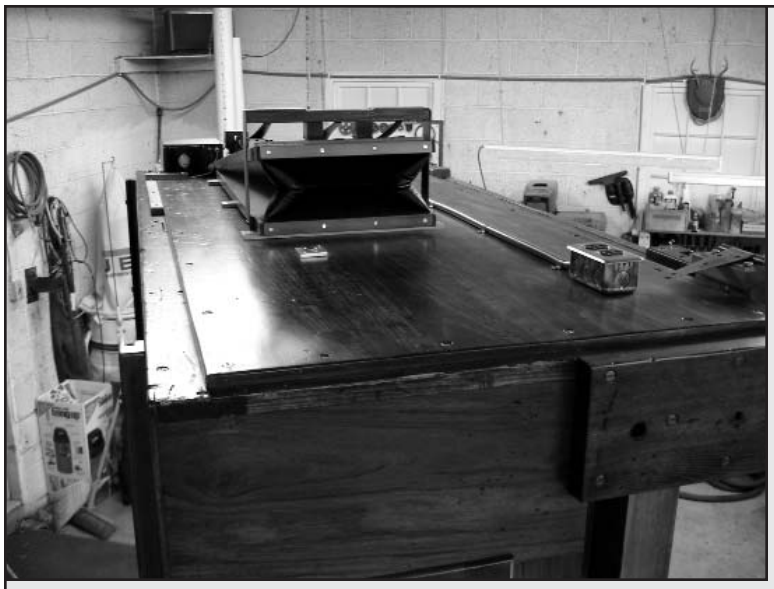


Figure 38. Topside view of the roof shows the added reservoir that enables the organ to play Wayne Holton's full arrangements without the need for over running the pumps. The hinge plate is used to fasten the skyboard of the facade. The 45 incandescent bulbs which are part of the facade plug into outlet boxes on each end of the case roof. The square box on the far left end is the DC power supply for the MIDI system.

design and construction that may have limited the ambitions of arrangers for the 65-key scale in the past have thereby been eliminated in this instrument. It is now capable of providing full orchestral delivery of very ambitious compositions. The repertoire now includes the following compositions, reflecting the owner's personal tastes, as well as showpieces that utilize the full resources of the Gavioli: *Barnum and Bailey's Favorite; Belfords Carnival; The Billboard; Bravura; Colossus of Columbia; Dance Macabre; Embossing the Emblem; Entry of the Gladiators; Follies Bergere; Invictus; Luna Park March; Officer of the Day; Robinson's Grand Entry; Royal Decree; Trombonium; Winterstorm Waltz; Gallop* (title unknown at present); *March* (title unknown at present) (**Figure 39**).

I sincerely thank Fred Dahlinger and Ron Bopp for the tremendous amount of help and literary courtesies extended to me with the writing, editing and publishing of this article. In addition to those previously acknowledged I wish to thank Savin Rock Gavioli owner Ken Harck for his trust and my shop helper Jim George for his unending patience. To anyone I missed, thank you very much!

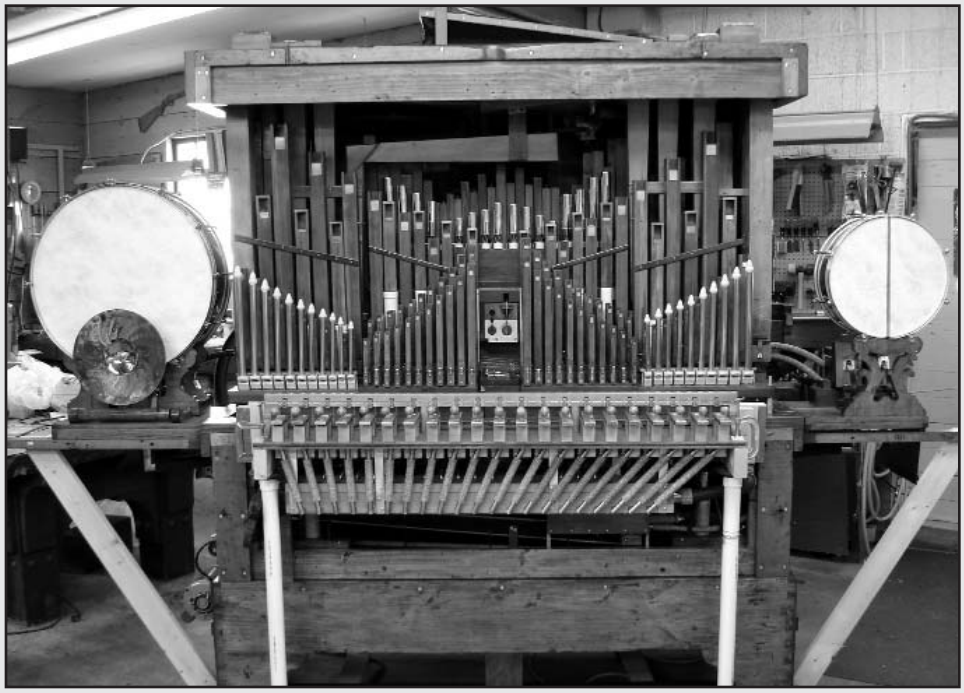


Figure 39. The Savin Rock Gavioli as it resides waiting to be fitted to a beautifully restored facade in the near future. The instrument restoration is at last complete. Now the Gavioli can entertain us all once again.

Dick Lokemoen became interested in mechanical musical instruments at age five and started "repairing" player pianos at age eight. At age 18 he began restoring instruments full time and has owned and operated Dick's Antique Music Repair for the past 34 years. Dick and his wife Becky live in Merrill, Wisconsin.

Organ Rally Participants—please note that the rally for St. Joseph, Michigan has been canceled due to downtown construction. Four COAA rallies remain, however including the Franklin, PA rally which has changed dates to September 15-17, 2006. The places/dates/contacts may be found on page