

Hupfeld Phonoliszt-Violina

Rick Crandall

The following article includes text excerpted from works by Q. David Bowers and Art Reblitz listed in the end notes. Complete catalog of all original Phonoliszt-Violina Rolls can be found by clicking <http://rickcrandall.net/wp/pv-rollography/>.



During the period 1895 to 1935 music was spread geographically through the use of automatic music players controlled mainly with pneumatics. Air pressure and vacuum conducted through a maze of tubing allowed for astonishingly responsive actions needed to actuate a piano action (as with player pianos), organ pipes (imitating string and wind instruments), percussion (drums, xylophone, triangle, etc.) and eventually the most difficult of all – plucking a banjo and bowing real violins. Control was from a punched paper roll that traveled over a metal “tracker bar” that enabled sensing the holes in the roll as they passed over the holes in the tracker bar. Automatic music machines were important to the music scene not only for their technological cleverness and eye-catching appeal, but they did a good enough job musically to enable the spread of a popular or classical tune as a standard, as opposed to individual performances by musical troupes. They also enabled an economic means for many more establishments to have on-site music

– restaurants, bars and even houses of ill-repute.

In the late 1920s with the advent of electrical devices and sound amplification, the jukebox and radio took over and these machines, quite large physically, were destroyed, with small numbers surviving. Automatic musical instrument makers used organ pipes voiced to sound like a violin for their basic sound or solo voice in many different instruments. The best violin pipes sounded very realistic, but only a few people were inspired to create mechanism to play a real violin automatically with expression. This ultimate music machine would not only sound realistic, but would



Play Recording # 37245

The Thieving Magpie , Rossini

also have outstanding visual appeal.

Hupfeld, the world's largest maker of automatic musical instruments in its day, began working on a mechanical violin player around 1900. By 1908, Hupfeld marketed the Phonoliszt-Violina, an instrument combining three real violins with a Phonoliszt expression piano.

"Phonoliszt" means "Sounds of Liszt." Franz Liszt (1811-1886) was born in Hungary and became known as the world's greatest pianist. He lived in Germany for years. His daughter, Cosima, married the renowned German composer Richard Wagner, further endearing people to Liszt's music

The Phonoliszt-Violina is perhaps the ultimate automatic music collectible today due to its rarity, its realistic performance with expression on the piano and the violins and its solo capabilities combined with its visual impact. Its New York City distributor described the Phonoliszt-Violina: "*The self-playing Violina is provided with real violins operated by a bow and made of 1344 horse-hairs means the solution of a problem that has been vainly sought for centuries.*"

In April, 1912 in a testimonial by noted violinist Efram Zimbalist: "*Certainly the Phonoliszt-Violina is the eighth wonder and marvel of our time.*"

PHONOLISZT-VIOLINA AT GAIETY.

Clever Instrument Proves Thoroughly Acceptable Substitute for Real Orchestra at the Gaiety Theater—E. Boecker in Attendance on Opening Night.

The audiences at the Gaiety Theater, where "Officer 666" resumed its successful run on Monday evening of this week, had an excellent opportunity to learn of the wonderful qualities of the Phonoliszt-Violina, which Cohan & Harris have been trying out with a view to its use in all their theaters following the strike of the musicians. The instrument, which has been described at length in The Review, possesses in addition to the regular player-piano and attachments, three violins played by means of a circular revolving bow of horsehair, and the effect of the music thus produced closely resembles that of a small orchestra.

The members of the audience at the Gaiety displayed great interest in the Phonoliszt-Violina during the intermissions between the acts when the instrument was playing, and gathered closely around to observe the method of operation. There were many comments made regarding the excellence of the music produced, one man declaring to his party that the piano might be played automatically, but that the violins were being played by a human agency. E. Boecker, who has the agency for the Phonoliszt-Violina in the United States, was present in person at the Gaiety on Monday night to watch over the instrument and answer the questions of those interested. The automatic orchestra proved so effective that the live musicians were not missed.

PIANOS SUPPLANT ORCHESTRAS

In a Lot of Theaters in New York During the Past Week Owing to the Demands of the Musicians for More Money Not Being Complied with by the Managers—Pianos and Automatic Players Help to Entertain Audiences Most Satisfactorily.

As a result of the refusal of the theater managers to grant the demands of the Musical Mutual Protective Union for higher wages, the entertainments in the various playhouses were given under unusual conditions this week.

In a majority of theaters pianos, player-pianos and in one theater the Phonoliszt violina replaced the customary orchestras, while those that retained their orchestras cut down the number of men in them.

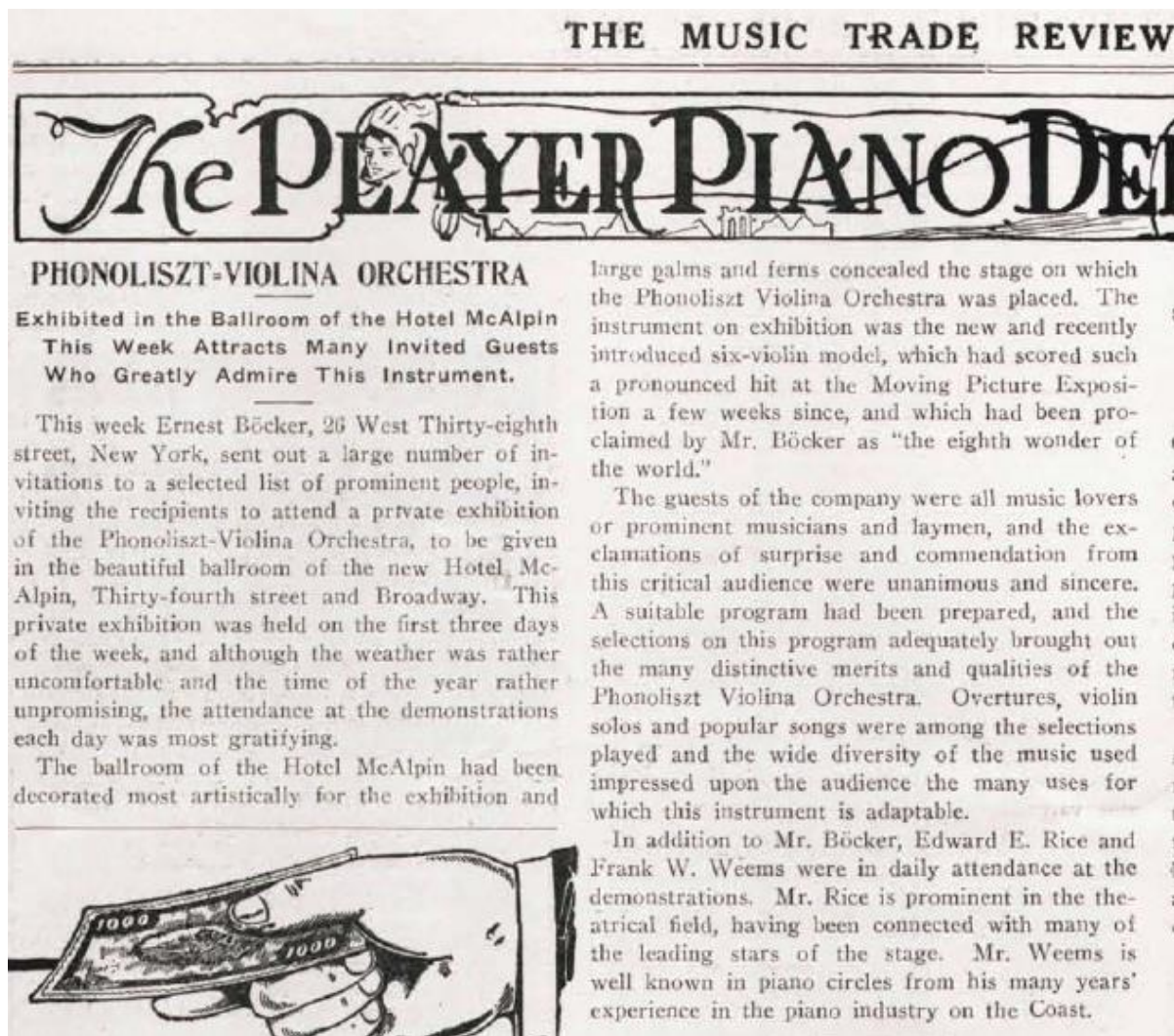
The former agreement between the musicians and managers terminated Sunday night and the new wage scale, carrying with it increases of from 15 to 25 per cent, went into effect Monday. The houses most affected were the vaudeville theaters and those where musical shows are being presented.

Outside of the outlying vaudeville and stock houses only nine first-class playhouses remain open in the theatre district, the others having closed for the summer. The methods adopted by the various managers in dealing with the situation were almost as numerous as there were theaters.

The vaudeville theaters went back to first principles and got along with pianos only. At Keith's Union Square one act required what are known as "drum effects," and these were supplied by a stage hand off the stage. Hammerstein's Roof Garden did very well with a grand piano, placed on one side of the stage. The pit, where the musicians used to sit, was filled with palms, making what William Hammerstein chose to call "a green orchestra." When the piano was required by a performer it was moved to the center of the stage and then put back on the side when another act came on. Mr. Hammerstein was very much pleased with the result. He said he had discovered that he had been paying out \$25,000 a year needlessly, and that it took the demands of the union to show him that he could get along without an orchestra. He said that he would not employ an orchestra again for vaudeville.

Above and below: Various 1912 “The Music Trade Review” articles

A boost was further given to the machine’s sales when the musicians union went on strike. Technology to the rescue! (note that the “Phonoliszt-Violina Orchestra” mentioned in the article below is just a nickname used by the publication for the Phonoliszt-Violina. They’re not referring to the later Violina Orchestra with drums, ranks of pipes, etc., introduced in the late 1920s.)



THE MUSIC TRADE REVIEW

The Player Piano

PHONOLISZT-VIOLINA ORCHESTRA


**Exhibited in the Ballroom of the Hotel McAlpin
This Week Attracts Many Invited Guests
Who Greatly Admire This Instrument.**

This week Ernest Böcker, 26 West Thirty-eighth street, New York, sent out a large number of invitations to a selected list of prominent people, inviting the recipients to attend a private exhibition of the Phonoliszt-Violina Orchestra, to be given in the beautiful ballroom of the new Hotel McAlpin, Thirty-fourth street and Broadway. This private exhibition was held on the first three days of the week, and although the weather was rather uncomfortable and the time of the year rather unpromising, the attendance at the demonstrations each day was most gratifying.

The ballroom of the Hotel McAlpin had been decorated most artistically for the exhibition and large palms and ferns concealed the stage on which the Phonoliszt Violina Orchestra was placed. The instrument on exhibition was the new and recently introduced six-violin model, which had scored such a pronounced hit at the Moving Picture Exposition a few weeks since, and which had been proclaimed by Mr. Böcker as “the eighth wonder of the world.”

The guests of the company were all music lovers or prominent musicians and laymen, and the exclamations of surprise and commendation from this critical audience were unanimous and sincere. A suitable program had been prepared, and the selections on this program adequately brought out the many distinctive merits and qualities of the Phonoliszt Violina Orchestra. Overtures, violin solos and popular songs were among the selections played and the wide diversity of the music used impressed upon the audience the many uses for which this instrument is adaptable.

In addition to Mr. Böcker, Edward E. Rice and Frank W. Weems were in daily attendance at the demonstrations. Mr. Rice is prominent in the theatrical field, having been connected with many of the leading stars of the stage. Mr. Weems is well known in piano circles from his many years’ experience in the piano industry on the Coast.



How the Phonoliszt-Violina Imitates a Human Violinist

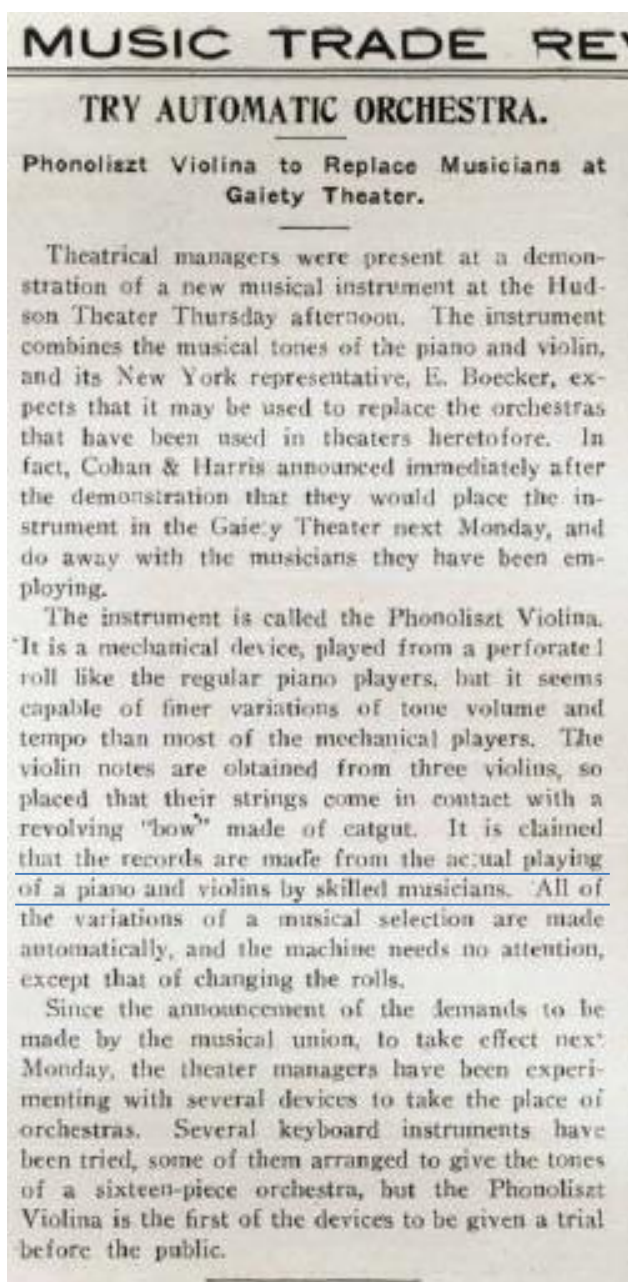
A human violinist plays different notes by pressing the string against the violin fret-board to change its speaking length. Hupfeld’s mechanism has steel fingers with wood finger tips covered with thin rubber or leather pads, to simulate the texture of human fingers.

A real violin bow uses horsehair to play the strings. Hupfeld’s bow took the form of a large ring holding 1,344 strands of horsehair, tied around little steel pins. To simplify the complex problems of bowing, Hupfeld stood each violin upside down inside the circular bow. Only one of the four

strings on each violin plays automatically. One, two or all three violins can play at once to provide solos, duets and occasionally, trios.

To keep the horsehair of an ordinary violin bow at the correct tension, a violinist tightens or loosens it with a threaded adjustment. When the violin is in storage, the violinist lowers the tension so it will not deform the shape of the wooden bow. The Hupfeld bow is metal, so there is no need to let down the tension between the performances. A clever spring-loaded mechanism keeps the horsehair tension the same regardless of humidity changes.

For good tone quality, a violinist occasionally applies rosin to the bow. In the Phonoliszt-Violina, the owner of the instrument applies rosin as needed by pushing a button. This causes a pneumatic to press a rosin cake against the bow. All violins go out of tune when the strings stretch and the humidity or temperature changes. The Phonoliszt-Violina has three tuning buttons. Each button plays one violin string and its corresponding piano note.



Hupfeld's music roll editors understood how to arrange the expression control perforations in the rolls for human-like performance with realistic phrasing. The Phonoliszt-Violina is quite impressive when it plays a delicate pianissimo passage of staccato notes, or a quickly sweeping chromatic glissando. It is truly amazing when it plays an intricate phrase with accented notes superimposed on a slow, dramatic crescendo.

The roll library includes the usual high quality Hupfeld repertoire, from Handel, Mozart, and Beethoven to salon music, opera, and operetta selections. Hupfeld made popular music rolls for the Phonoliszt Violina as late as the sound-movie era of the early 1930's.

It is not clear from available historical accounts whether the music was arranged by real musicians playing a device that marks a master roll from a recording instrument such as a piano keyboard or whether it's musically competent professionals actually marking a master roll on a drafting table. If the latter, the process would take a musician who really understood the mechanism as there is much complication to the multiplexing of hole positions to get all the expression and other controls out of the tracker bar layout.

The article shown, if accurate, would seem to support the first theory that *"the records are made from the actual playing of a piano and*

violins by skilled musicians.”



Circa 1912-14 catalogue illustration of



Crandall Model A machine made circa 1916

How Does the Phonoliszt-Violina Sound Realistic?

Each violin has a pneumatic that presses it against the bow. Control perforations in the roll vary the speed of the bow. When the bow turns faster, an adjustable cam mechanism also increases the pressure of the violin string against the bow. Three speed/pressure combinations produce soft, medium and loud play. Three rates of speed/pressure change provide faster or slower crescendos/decrescendos. The mechanism provides two types of accent: *Heranbringer stark*, causing the violin to move more quickly, and *Betoner*, which increases the bow speed and pressure. The music rolls use them separately and together for various accenting effects.

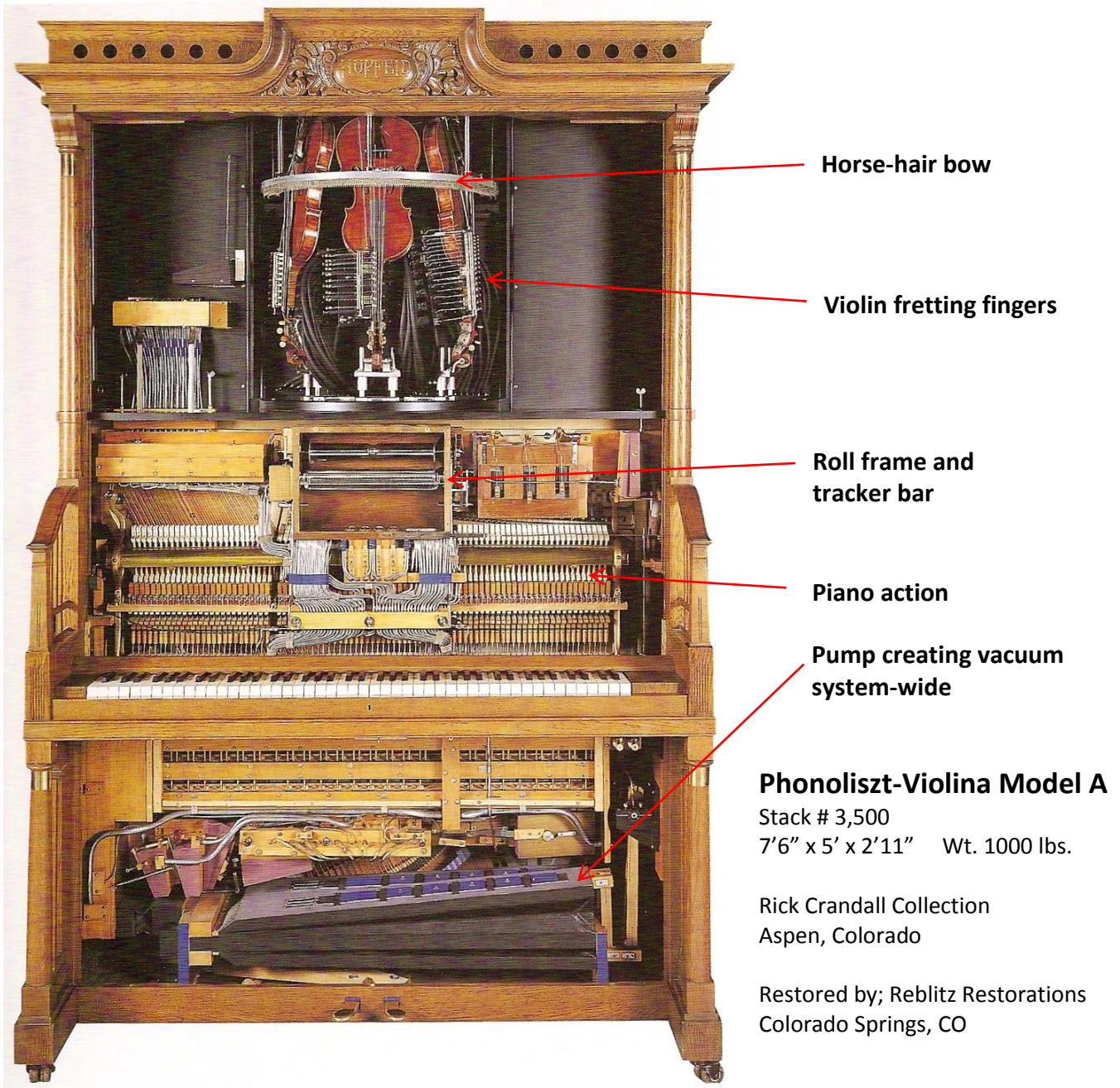
The vibrato mechanism creates a pleasing wavering in the pitch of the note being played. A human violinist accomplishes this effect by rocking his hand slightly against the string. In contrast, the Phonoliszt-Violina has a mechanism that pulls slightly on the end of each active violin string producing the same effect. A single hole in the roll activates the mechanism, producing one pulse of vibrato. With different hole spacing, the vibrato can be faster or slower, as needed for the music.

For an ethereal sound, a violinist attaches a mute to the bridge, damping the tone and loudness. In the Phonoliszt-Violina, a lever touches the bridge in a similar way when the music calls for a mute.

The piano expression is a simple but effective mechanism. A suction regulator provides three levels of

loudness with gradual or sudden changes from one level to another. The piano hammer-rail is divided into bass and treble, with control of the bass half that allows treble piano solos.

A Hupfeld Model A Phonoliszt-Violina - Interior

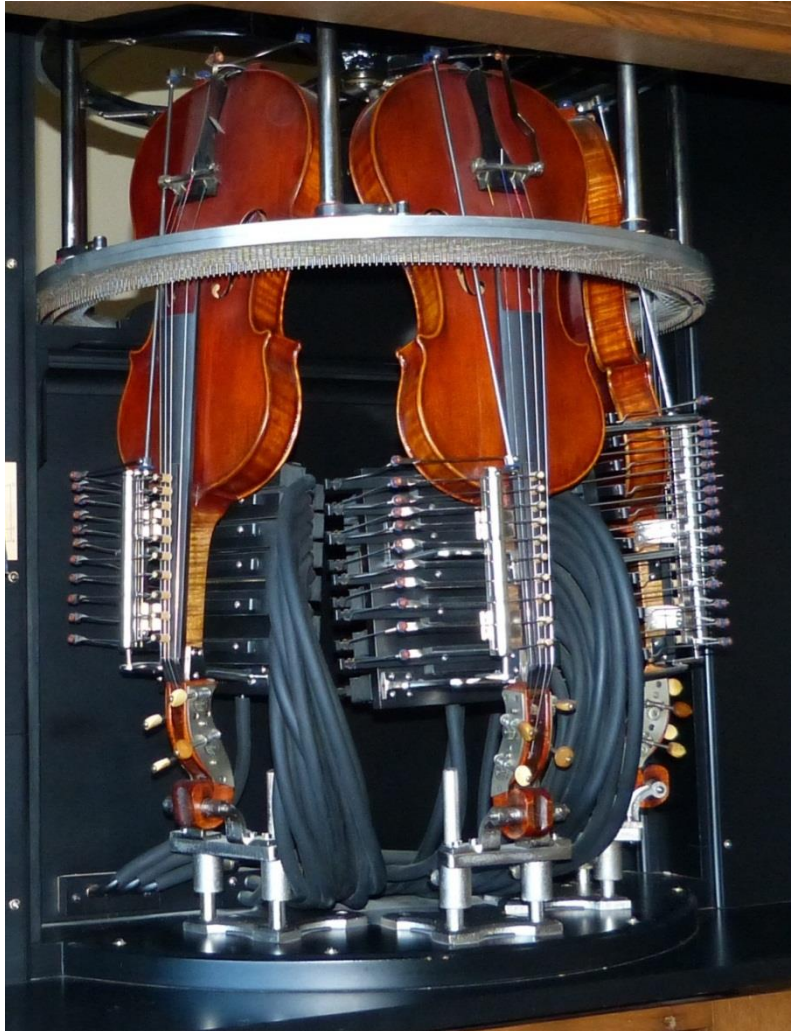


Restorer Art Reblitz: *"I had the violins repaired and polished by Eggen Violins in Denver who conserved the original finish. We cleaned and prepared all metal parts in my shop as we usually do instead of sending them to a plating shop for buffing, since the commercial buffing process often rounds off all the edges. I had them re-plated with electroless nickel, a little less shiny and consequently more original-looking than the typical modern plating job."*

We installed a new pin-block, Renner hammers, and Renner action parts in the piano as necessary. The high-quality piano was made by Schimmel. There's no marking on the piano plate, but the stack had the wording "Schimmel-Violina" written in pencil. The mechanical features are early, but not extremely early. It

has the conventional spring-loaded tensioners for the bow hair, while the very early ones have manually-adjustable tighteners. The machine was restored from top to bottom, inside and out"

Close-Up of the Actual Playing Violins and Fingering Assemblies



The "D" violin is on the left; the "A" violin at center; and the "E" violin at right.

In the Phonoliszt-Violina the violins pivot forward into the circular bow (close up below). The complicated-looking mechanism with many black tubes leading away from it is the fingering mechanism, each finger controlled by a pneumatic taking instruction from the perforated roll.

Note the visible lower portion of the circular horsehair bowing mechanism, which crosses each violin near its center.

The Bow

Reblitz: I used a bow re-hairing jig that a fine local machinist made for me. It counts pins from end to end of each hair, and ensures that each hair is at precisely the correct height on its pins. It takes me between five and six days to re-hair a bow.



Phonoliszt-Violina on Location

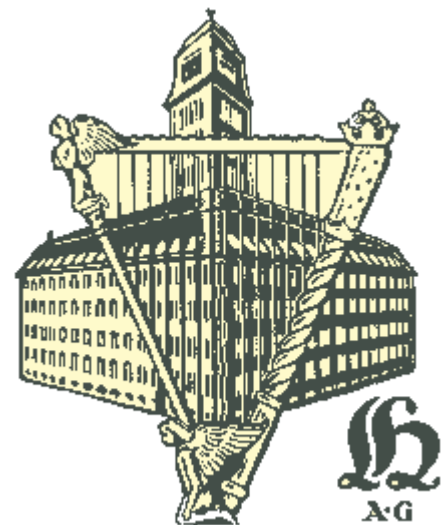
The Phonoliszt-Violina was ideal for restaurants, lounges, lobbies and other places where people congregated to relax. The music was rich but not overly loud and music was available for a broad range of tastes from classical to popular. Approximately 940 music rolls were created by Hupfeld over the years from approximately 1910 to 1932.



A Brief Look at the History of Hupfeld

Hupfeld grew to become the world's largest distributor and manufacturer of "self-playing" automatic musical instruments, eventually producing a wide variety of disc, pinned-barrel and music-roll operated music machines in its own factories. Some of the automated orchestras crafted were spectacularly large and very complex devices. While other contemporary large and well known manufacturers of "automatics" could boast an employee count well into the hundreds, Hupfeld, in sharp contrast, had a contingent of employees numbering in the thousands.

Sometime around 1880 to 1882 J.M. Grob, along with two partners, founded J.M. Grob & Company, opening a small "art shop" in Leipzig-Eutritzsch, Germany. The new company sold various mechanical musical instruments, such as disc music boxes and small hand-cranked organettes, but soon began manufacturing its own stable of mechanical instruments, which were marketed in the company's shop alongside products from other companies. By 1886 an attachment for automatically playing pianos and organs, using paper tune-sheets, had been perfected. The ingenious Grob player action was licensed to other manufacturers for incorporation into their own products.



In time Grob & Company acquired the distributorship of many prominent musical instrument manufacturers in the Leipzig area, making Grob a well-known entity for both sales and mechanical music innovation. Then, in 1892, Ludwig Hupfeld took over the company, changing the name to Hupfeld Musikwerke.

To keep up with the demand for automatic music, the giant 1,000,000 sq. ft. Böhlitz-Ehrenberg factory was built in 1911, with its imposing tower (depicted in the logo above). By 1912 some 1200 employees manned the sparkling new factory, a number that climbed to over 2000 a few years later.

By 1925 automatic instrument sales had slumped to a mere trickle, the complicated and often temperamental music machines being replaced by the phonograph and the radio. In 1926, Hupfeld merged with Gebr. Zimmermann, a piano manufacturer.

Production of pneumatic automatic musical instruments stopped altogether about 1930. Music roll production ceased about 1934. After the war, what remained of the once huge factory reverted to music-related manufacturing. But this time it made ordinary pianos, continuing to this present day, under the new name of VEB Deutsche Piano Union. After the war any remaining traces of the glorious days of automatic instrument making were destroyed and forever erased from what remained of Hupfeld.

Although a small number of Hupfeld instruments were distributed in the U. S. by Ernst Böcker of New York City, for instance, few of these machines exist today.

Bibliography.

Reblitz, Art, *The Golden Age of Automatic Music Instruments*, Woodsville, NH, Mechanical Music Press, 2001

Order from: www.mechanicalmusicpress.com/reblitz

Bowers, Q. David, *The Violin Playing Machines: Hupfeld Phonoliszt-Violina, Mills Violano-Virtuoso, A Study and Appreciation*, Automatic Musical Instrument Collectors' Association (AMICA), 2012

Order from: www.amica.org/Live/Misc/Sales/Books/Violin-Playing/index.htm

Crandall, Rick, *Phonoliszt-Violina Rollography*, Aspen, CO, Self-published, 2012

Entire list of all rolls originally produced by Hupfeld for the Phonoliszt-Violina shown in two formats, one sorted by roll number and the other sorted by composer.

Accessible at: <http://rickcrandall.net/wp/pv-rollography/>