

AN INSIGHT TO  
MILLS NOVELTY CO., THE INDUSTRY MAKER  
BY DONALD BARR

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The following is a resume of interviews with Bert Mills, a mechanical innovator with Mills Novelty Co., Chicago, Illinois. To the Collector of musical antiques, the name, Mills Novelty Co. is synonymous with Violano-Virtuoso, slot machines, and juke boxes. Mr. Mills credits himself with having developed or contributed to every successful product manufactured by the Company during his employment which dates from his early teens. He refers to himself as a high school dropout because of his lack of formal education. His lack of education did not hinder his inventive mind nor preclude his financial success. His ability to recall distant facts would be enjoyed by anyone one-quarter of his eighty-two years. We thank him for answering the numerous questions propounded to him, to which he responded without hesitation. The following contains many of the questions and answers relating primarily to the musical items made by Mills Novelty Co., the history and personalities involved. All bracketed material has been inserted by the editor in the interest of clarification.

Q: Mr. Mills, to present day collectors, the Violano-Virtuoso is probably the most familiar of the Mills Novelty Co. products. During its long period of its manufacture, numerous modifications were obviously made. Can you describe the machine as it existed in its early period of development?

A: Yes. About 1904, Henry K. Sandell (hereinafter, Sandell) brought into the factory his patented mechanical violin. It was not encased and was mounted in what we call a "breadboard design." The fingerhead was high above the strings. The most important feature it had was the revolving discs which played the strings in place of a violin bow. The bow motor ran at a constant speed and so naturally, there was no expression. Tuning was done by screws similar to a guitar. Naturally, it would get out of tune whenever there was a change in temperature or a draft.

My brother, Herbert S. Mills (hereafter referred to as HSM) who owned the Company, liked violin music and thought that the machine could be improved, and if so, would have commercial possibilities. Sandell worked on it for about the next six years. The machine was improved somewhat and a few were put out on the market about 1906 or 1907. It was called the "Virtuosa" and was an automatic violin only. They sounded poorly but the people played them anyway because they were so unusual. They were definitely not played for the enjoyment of the music. The piano with the symmetrical harp was added about 1911 or 1912, all of which did not really make the machine any more practical but did make it more interesting. The name of the instrument was then changed to the "Violano Virtuoso." About 1915 or 1916, the Violano Virtuoso was more or less turned over to me for commercial development. I developed many patents for the machine which made it more practical for commercial use. Many of my early patents were put in my brother's (HSM) name or in Sandell's name, but I was given credit for almost all of my later ones. I have roughly fifteen or sixteen Violano patents in my name and was paid a patent royalty on every Violano sold.

Q: How many of the Virtuosas which contained no piano were produced?

A: Probably about fifty of them. The Virtuosa which had no piano was the instrument that won a prize in the Alaska-Yukon Exposition. Most of the Virtuosas were later taken or traded back to the factory. On the curved case model, which housed the Virtuosa, we built a cabinet addition to the rear in which we put the piano. (This is today sometimes referred to as the "bow front" model). This was also done on some other case designs as well.

Q: Is it a fact that Kaiser Wilhelm bought one of the Virtuosas (without the piano)?

A: Yes, that's true. He got his machine about 1912 or 1913.

Q: How did the Company promote the early Virtuosas?

A: Well, they weren't promoted very much or well. Of course, being such a novelty, we sold a few of them, but as I said, they were so impractical we took most of them back. Few of the buyers kept them.

Q: Did you send them out to dealers for distribution?

A: No, they were all sold by us directly to the user. We didn't have any dealers in the early days as we did later on.

Q: Did the early machines generally go into homes?

A: No, the early ones actually went to taverns and that sort of thing. They were coin-operated right from the beginning. We made a few for home use without coin operation, like for Mr. Charles W. Dawes who was Vice-President under Taft. Mr. Dawes asked me to come out to his home in Evanston to dinner. He said that he wanted to talk to me and see if we could take the Violano he had in his house and fix it up so that he could sit back and put in the

expression as he wanted, rather than have it use the expression which was cut into the rolls. I said that it would be very simple to do. I went to the factory the next day and made a little device whereby he could sit down and give the expression to the violin by remote control. I just cut out the brushes so that they would get no current from the perforated rolls and wired in the remote control buttons. That one, however, was the only one of that type that was ever made.

Q: Early advertising pictures of the Violano show a piano harp or plate that wasn't the familiar symmetrical design that was patented in 1912. It was the more conventional type being from low to high. Was this design manufactured in quantity?

A: No, we never manufactured them and I don't recall even seeing any in the experimental room.

Q: Looking at the early home model Violano (see photograph), we find that it was made pretty much like the June 4, 1912 patent drawings. To your best recollection, how many of that model were made?

A: I would estimate that not over twenty of those Violano Virtuosas that have the fingers over the strings were made.

Q: That machine also plucks the strings?

A: Yes. I developed that pizzicato. It wore out the strings, especially the D and G which were gut, but wound with aluminum and silver. They would be scored by the pluckers and then break so the idea was dropped.

Q: This home machine seems to have far more expression devices than the later ones. For example, it will put on more bow pressure and can reverse the bows, and do other things that the later Violanos do not do. Why were these seemingly good ideas dropped?

A: Well, this machine was quite complicated. There was an adjustment to the bows at the top of the bow solenoids which were over the bows. People handling the machine would adjust these bows so that they would scrape, and just wouldn't or couldn't adjust them properly. I changed that method by setting the bow solenoids to the rear and employed a lever device to actuate the bows. The height of the bows would be regulated by turning an adjusting screw on the lever. Later, I put little springs underneath the bow lever to cushion the bows and did away with the adjusting screw. That made the machines on location more practical. The adjustments on the early home model, if properly made, would give you better expression, but if they were out of adjustment, they would be just terrible. I didn't know what the musical term for moving the bow back and forth was but I saw musicians do it rapidly and I thought it would be interesting to see if we couldn't do that with a roll. The sound effect did not justify the involved mechanism and that idea was dropped.

Q: Why was the violin string fingering changed from the top to the side?

A: The overhead fingers made a lot of noise. I suggested to Sandell that we put them underneath the strings and just bring them up. He said, "No, you don't finger a violin below the strings." I said, "That's because you can't." All you have to do is mute the string at a given point. He said, "Well, go ahead, try it and see if it works out." I made one up with a couple of finger magnets and I called Sandell in. I put the bow down on the string and I said, "Well, how does that sound?" He said, "I don't see any difference." I said, "The only difference

is that there is no noise to that finger when it comes up." I did not like the big magnet box above the strings and so my arrangement was better for that reason too. It opened up the violin and was more interesting to the public because they could see the fingering.

Q: The early violins were tuned by turning a worm gear and later by moving weights hung on a lever. Who came up with the idea of tuning by weights?

A: I did. One day when I was working on devising a better method of tuning, I went in to see my brother, Herbert, and I told him that for a string to stay in tune, it must have a certain amount of tension, whatever it be, say ten pounds, and that if a system could be devised with a weight, it should keep the tension constant and the string in tune. He listened intently, picked up the phone and asked to have Sandell sent in. He came in and listened to my idea and Sandell said, "That will work and I will have one made up right away." This he did with the weights hanging down into the lower part of the machine. Because I was so young at the time, I believe that the patent on tuning may have been put in Sandell's name. After that incident, my brother gave me a pretty free hand in further development work. We argued quite often about my ideas and very frequently the argument would be settled when I got fired. Customarily, in a day or so, my brother would visit our parents' home where I lived and after an apology one way or the other, would re-hire me at a slightly increased salary.

Q: The early home model machines had a feeder which is quite different from the later ones. It didn't rewind automatically. The end of the roll is cut out on the left side just before the end. A

roller rides the left side of the roll and when the roll comes to the end, it contacts the metal core of the spool where the paper is cut away, thus energizing a solenoid which pulls a switch that shuts off the machine. Then, the operator shifts gears to reverse, starts it up again, and the machine rewinds, shutting itself off when the roll is rewound.

A: That's the way that some of the first home models were originally made. Later and for the coin-operator, the feeder had an automatic rewind which in effect and with about twenty more parts than the ultimate design, would reverse the feeder motor as distinguished from reversing by shifting gears. Basically, the rewind was dependent upon the diameter of the paper remaining on the spool. The roll would play and would get to a point when the diameter of the paper on the feed spool would be small, thus with a riding wheel and other parts, throw a switch energizing a reversing switch. It was quite similar to the wheel and mechanism which rides the take-up spool and causes the machine to stop rewinding at the proper point. Once, I went to Calgary, Canada, where there was a machine purchased by Northwest Novelty Company. I went up there to set it up. It was back about 1919 or 1918 and it was 15 or 20 below zero outside. When I got into Calgary that morning, it was 43 below zero. That afternoon, it warmed up and we opened up the packing box. The machine was white with frost and condensation on the top. The music rolls were like putty; you couldn't adjust the machine to rewind properly; it was just simply impossible. We had brushes on the machine that we weren't using and I remembered that one of them was on the 19th brush. I thought to myself, "Well, why not wire the 19th brush to the solenoid for the reversing switch and cut a hole in the music roll at the end where the 19th brush

is so that when it plays and comes to the end of the roll where the hole is cut, it can throw the switch." I asked Mr. Fenwick, who was in charge, to let me unroll the rolls on the floor so that I could modify them. I made up a little template and took a pen knife and cut the slot in the proper place but just a little wider to make sure that the brush would go through. It even played a violin note because I made the hole so wide. I fixed all his rolls up and took all the other junk off the feeder. I wired back to Chicago, and I said, "Don't send any more music rolls to Canada until I get back." I didn't want to send up any more without the rewind slots cut in them. When I got back, my brother (HSM) said, "Now, what did you do in Canada?" And I said, "Well, I took all this junk off the feeder and made the rolls rewind with a brush," and he replied, "I don't want you monkeying with these machines on the outside - you're fired." And I said, "Fine, I quit." On the eighth floor of the factory, we had an experimental room. I went up there without him knowing it and got one of the men aside, and I said, "Now, I can't be around this machine because my brother (HSM) may come up and raise the devil," so I said, "Now, here's what I want you to do. Tie that rewind arm (roller) down so that it can't operate, and take one of these rolls and cut a hole where the 19th brush is." At first, he was hesitant and said, "I'm going to get fired too." I assured him that he wouldn't. He did it and I went down to my brother's office and said, "Herbert, I want you to see something." Well, after a little argument with him, I got him to come up. I said to him, "You see how that junk is tied down; we don't use it anymore." He watched the roll get down to the end and rewind, and he said, "How did you do it?" I said, "Find



out for yourself," and I turned around and walked out. Of course, he could tell from the men how it worked. I used to play pinochle with my brothers and my father every Sunday, and Herbert came over the following Sunday and he said, "Bert, where have you been for the last three or four days?: I said, "I've been fired. don't you remember?" He said, "I didn't fire you. You get down to work," and I replied, "I will like the devil - I quit!" "Well," he said, "I'll give you a ten dollar raise." And I said, "Okay, I'll be back."

Q: Some of the very early rolls that are still around have written in pencil, "No automatic rewind." What, if any, is the reason for that?

A: That is because the 19th brush which is the automatic rewind was not cut in by the factory. The factory probably did not put the writing on the rolls. Someone probably cut in the hole at the 19th brush but never crossed out the marking.

Q: The violin expression tracks on the early rolls seem to be very short in length, but on the later rolls, they were longer in length. What is the reason for this?

A: Well, there was just more expression in the later rolls to be used with an improved motor. That was all.

Q: The later rolls were described as "handplayed." If the earlier ones were different, how were they made?

A: Originally, when the musical department made up a roll, the musicians, of which we had fourteen, would each sit at a long table with uncut master roll paper going from one end to the other that was lined vertically and horizontally. The horizontal lines were to determine the length of the notes. They would sit down with their music in front of them and they'd

pencil mark out all the notes. It would take one man, probably a week or two, to make just one selection. Then we had girls who would chop out the marked-up master roll, all by hand. I did not like the musical arrangements of the early rolls. Once I said to Professor Fredrickson, the head musician at Mills, "why don't you put some jazz on that piano so there is more than just the ump thump thump that you have there?" He got mad at me, and went to my brother and said, "you keep your brother out of here or I quit." My brother called in his secretary or the timekeeper and said, "Professor Fredrickson just resigned." He then called me at my office and he said, "well, you're going to make the music rolls now." All the other musicians quit in sympathy after my brother refused to rehire Professor Fredrickson. I was in a heck of a pickle! I did not know anything about music, but my wife knows music, so I took a roll of the master roll paper home with me one night and I said to her, "Now look, I'm going to make a roll, but I've got to make it mechanically. You read music. Tell me what those notes are and I'll mark them on the master roll by hand. Then, I'm going down and make a machine that will do it automatically." Actually, the first machine I designed to hand play the music was the keyboard for the violin. There was an upper keyboard and a lower keyboard for the violin, which took care of the overlapping notes. I had on the side a little deal whereby you moved your knee to put in the tremolo. The pedals were for the expression. I didn't know how to play the keyboard machine so I had a musician come out and I said, "Now, you put your fingers on these keys. Tell me what they are,

eighth notes, quarter notes, or whatever they are while I move this roll of paper by hand." I had a cable going up to the marking machine which was designed so that it would put little lines or marks on a master roll as the keys were played. After practice, within a couple of hours, the musicians (violin and piano) and I would make up a marked roll. We then had the girls chop out the markings. This became the "hand played" music. That method worked pretty well until I thought up a better way. I wondered why I couldn't cut out the master roll as the musicians played by connecting the cutting machine to perforate while the musicians were playing. Furthermore, why couldn't I hook up a violin and let the musician hear the violin as he played and do the same for the piano? These modifications were made up. I knew a couple of musicians (one of which was Walter Blaufus) at the Tip Top Inn in Chicago who I got to come over and I said, "Now sit down and try this for a while and one of you play the violin and the other play the piano." They got intrigued with the set up and liked the violin because it played like an organ. I connected the violin and piano keyboards to one of our cutting machines that made regular rolls. They sat down and played and when they got all through, I took that roll off which was then a master roll and put it on a machine to play. Expression and everything was in there. It worked just fine. So, instead of using fourteen men, each of which would take two or three weeks to make one selection, in three minutes we had the whole song. In an afternoon they (the musicians) could come over and make two or three rolls.

Q:           Labels on the music rolls indicate that a lot of your music was arranged by a fellow named J. F. Stelzel.

A: Yes, Stelzel was one of the first musicians that we had and he played the keyboard operated violin.

Q: How did the roll cutting machinery work and how was it set up?

A: Well, two sets of copies were run off from each master. Each set consisted of ten sheets. Each set was run through a separate perforating head and would be cut in about an hour and a half. The master roll and reader was in the center between the two perforators. The reading was done electrically and the punches were actuated by solenoids but driven mechanically.

Q: Was the master roll just as long in length as the production roll?

A: Yes, it was identical. You could take the master and play it on a machine or you could take a production copy and use it as a master for making other copies. In fact, the later master rolls looked identical to the ones you would play on a machine.

Q: Your cutting machines were evidently high-speed units. Is that not true?

A: Yes, they were. The one on which I made the master rolls was run at very high speed, but in the production of copies, it would take about four times as long to cut the copy. When we made a master, we cut two copies at a time and, of course, the perforator could run much faster. The <sup>perforated</sup> slots of all rolls are slightly scalloped because the punches were round. Because in making the master roll it went faster and the punching head did likewise, the master rolls were no more scalloped than a production copy.

Q: Well, your perforators were evidently much more high-speed than the pneumatic actuated perforators used by the makers of piano and other rolls.

A: Oh yes, definitely yes.

Q: Did you have any problems developing a suitable paper with which to make rolls?

A: Yes, we had some problems but the paper mill helped develop a paper for us that wouldn't expand and contract too much. They came out with one that was pretty good and could stand quite a little change in the temperature and humidity. We still had problems if the temperature and humidity went extremely low.

Q: Who developed the Melody Violins?

A: The violin arrangement used in roll cutting gave me the idea of making the "quad" (Melody Violins). We made up a unit for a symphony orchestra where one man played sixteen violins, that is, both the first and second violins from a double (organ type) keyboard. The one man took over the whole string section. That was quite a concert and so unusual to have one man play the whole violin section. Of course, the musicians kicked at the whole thing.

Q: When using the multiple violins, did you use relays to handle the switching, thus minimizing the arcing?

A: I didn't on the quad (Melody Violins) but I did on the sixteen. We made up one group of violins for The Fair Store in Chicago. It was an anniversary event - 40th or 50th anniversary, something like that. The owner of the store was a very close friend of my brother (HSM). My brother offered to install violins in the store for the event and asked me, "How many can you put in?" I replied, "Well, how many do you want?" He said, "Well, they figured that they'd need about fifty in there and I said, "Okay, we'll put in fifty." Well, then I had to have

relays, of course, because the keyboard's contacts would have burned up. We made that up and it was terrific. That was the only installation ever made like that. I don't know how many thousands of dollars it cost but it was done just for the week long celebration.

Q: How many of the quad or Melody Violin units were built?

A: They were never produced in quantity and we probably made about a dozen.

Q: Mills Novelty Co. made a unit called the "Four Feeder." It consisted of four Violano feeders. What was the primary purpose and use of that unit?

A: Well, the reason for its use was because there were only five selections of music on a roll, or say, five popular songs on a roll. These feeders would work on relays so that you could either select different rolls with perhaps different types of music or you could let them run continuously so that you could get twenty different tunes instead of five before repeating any of them. They were not too popular and we did not build over a dozen of them.

Q: How did musicians regard the Violano?

A: Some of them commented favorably. I remember the time when Mischa Elman, who was one of the top Violinists of the day, came over to the factory and we played I. Palpiti by N. Paganini. He listened to it, danced around, and was quite favorably amazed with the quality of the fingering.

Q: The Mills Piano Orchestra was pictured in some of your advertising of the late 1920's. No known Collector of today has one. A former customer of Mills recalls that he saw one at a convention in Chicago. What is the story about them?

A: They came out rather late as an effort to compete with amplified music which was just coming into being. They were not competitive musically and were never put into production. Not more than about six were produced.

Q: The "Orchestra Attachment" for the Violano was a percussion unit that was in a separate cabinet and wired to the Violano. A few have survived. Do you know how many were made?

A: We probably made about thirty to forty.

Q: You made another unit called the "Expression Piano and with the addition of a race track, called it the "Race Horse Piano."

A: Yes. Both of the pianos were the same, but the Race Horse Piano had a half dozen moving horses. This was not a gambling device per se. I mean, it was intended as a gambling device because you and I could gamble on it. That was the idea. We'd put our nickels in and then you'd take the book and let me bet on the horses, or you take three and I take three or any other combination. All types of bets could be made and that was the idea.

Q: Your advertising gave the message that it was very good for use among friendly people.

A: That's right. That was the idea. It was intended as a gambling machine, but it wasn't gambling as such because it didn't pay out - it didn't take your money, except for the music.

Q: What year was the Race Horse Piano introduced?

A: I would say probably 1924 or 1925, or thereabouts.

Q: Were many of them made?

A: Oh, probably fifty to a hundred - not over that.

Q: Well, some of the surviving Race Horse Pianos in this Country came back from England.

A: Yes, Samson Novelty Company bought most of them from us.

Q: Did the Expression and Race Horse Pianos use the same roll?

A: Yes. It was narrower, and, of course, different than a Violano roll. They, like all of our instruments, used electrical contacts. We never made anything pneumatic.

Q: Now, did you have different roll-making machinery to make the Expression Piano rolls?

A: No, we just had a different feeder but they all ran through the same cutting machine.

Q: Did you use the same piano type keyboard for making up the piano rolls?

A: Yes.

Q: What kind of roll did the piano orchestra take?

A: We used the same size roll as for the Expression Piano, but the tracker scale was quite different.

Q: On the original Violina that had no piano, were the brushes for the notes on the violin arranged the same as on the later Violano?

A: Yes. We just added an additional group of tracks for the piano. For the "Violina," the feeder and the roll weren't as wide as those for the Violano.

Q: Violanos which had the orchestra units attached to them had some rearranging of the expression tracks. I think they disconnected a couple of expression tracks on the bow motor and used them for other purposes, and so on.

A: That's right.



Q: Now, on the orchestra attachment, your catalog says that you could attach that to any machine that had a serial number on the piano harp high than 1200.

A: Yeah, that's true.

Q: What was the big difference at 1200?

A: We always started numbering our products with 101 - we never started with No. 1, so 1200 was actually 1100. There was probably a change made at that point but I can't recall what it was.

Q: What method did you use for making the rolls with the orchestra attachment? Were they hand played by the musicians?

A: The master rolls for this were made the usual way and the other tracks for the orchestra attachment were edited and cut in by hand. We didn't use a keyboard to play in the percussion because we never got that far with it. We could have done that but we never made enough of them to make it worthwhile.

Q: Was the number of a machine the one that was on the piano harp or was it somewhere else on the machine?

A: When we made the piano and the violin as one unit, the number of the machine was then on the piano.

Q: Gayno Senter, who was a distributor for Violinos in the Rocky Mountain states, said that the Company was always very sticky about selling just the violin and that you had to have a good reason before the factory would sell one.

A: That isn't true. We used to sell the violins to a lot of musicians and would get \$500.00 to \$600.00 for them. They were very well built and very fine instruments. The front and back of each violin was matched tonally. Of course, those sold to musicians were fitted with tuning pegs and a fingerboard.

The wood was seasoned. The Company was always seeking out sources of seasoned wood from which Violins could be made. On one occasion, Herbert (HSM), while touring Europe, procured a large quantity of suitable spruce lumber taken from old buildings being demolished. It was carefully stacked and shipped to the Plant in Chicago where it lay in a pile for a few weeks. The Plant Manager, thinking it was waste, had it hauled to the dump. Luckily, his job survived the episode.

Q: Was the factory aware of the German machine that played the violin and the piano which was called the Hupfeld-Phonolist Violina?

A: Yes. I remember that they were actually out with their machine before we were out with ours. They played pretty well, but I think they were quite complicated. They could play several notes the same as we could. They were not as rugged as our machines and the public could not play them. If any machines were fitted for coin-operation, they would really get the gaff of the public that didn't really know how to play them and can break all but the best made machines. I doubt that those German machines would have stood the test of coin operation. They had a better full scale expression piano though.

Q: Was the Mills "Violina" which was exhibited at the Alaska-Yukon Pacific Exposition given to the Smithsonian Institute?

A: No. The Smithsonian was given a later model with a piano. The one in the exposition that won the prize had no piano.

Q: Did Mills Novelty Co. have any kind of commercial relationships with Seeburg or Wurlitzer, or did Mills distribute for them or visa versa?

A: No. J. P. Seeburg Co. at that time made automatic pianos and we knew them very well but had no relationship with them. Later

many years later, I sold my coffee machine business to the Seeburg Company, which by that time, had been taken over by others. We had no arrangement with competition, just direct distributors.

Q: Did the Mills Novelty Co. ever think in terms of building bigger orchestrion units, like Wurlitzer used to market?

A: Not really. The closest we came to it was the drum unit and so forth.

Q: Did you ever accept other manufacturer's machines as trade-ins?

A: I don't believe we ever did but we took our own in trade.

Q: No long before Farney Wurlitzer passed on, he said that the Mills Novelty people were real scrappers, that they were constantly in litigation and had many lawsuits with the Wurlitzer Company.

A: Well, we had some lawsuits with Wurlitzer. Nevertheless, Farney would come to the factory and have lunch with my brother (HSM) and so forth. They were friendly enemies. The litigation was over patent infringements and we beat them all the time. They never sued us for anything.

Q: Some early literature would indicate that there was a separate division or company called the Violano Virtuoso Company. Was that just publicity, or was there a separate company with that name?

A: I don't recall it ever being a separate company but it could have been a sales company organized for that purpose.

Q: Were the fancy curved case Violanos (bow front) which had the piano added, made before or after World War I?

A: The cases were made before World War I but the pianos could have been added after the War.

Q: Do you recall what year it was that you switched over from the cast iron feeders to the cast aluminum feeders?

A: I don't remember exactly when we switched over. The Violano feeder was revamped a great deal from the original cast iron model. I designed the last model, but I don't remember exactly what year it was.

Q: In England, there are at least a couple of old Violanos which have cases not seen in this country. They have leaded art glass on the front window, etc.

A: Yes, some of the early ones were made with art glass. They were not our very first models but were made before the ultimate design.

Q: Did you ever put the Violanos in custom cases on special order?

A: Not that I can recall.

Q: Were special installations made, like in churches or dance halls and so forth?

A: Yes, we had various keyboard operated violins. We put them in some churches where they were attached to organs so that they could be played right from the organ keyboard by putting in the stops. We made a special installation for the Fishers who were the people who built the car bodies for General Motors. For a Fisher brother, I set one up in his home and attached it to a big organ which had pipes that went up through two floors.

Q: A Collector in San Francisco has a double or twin Violano that is fitted with a keyboard that slides out so that the violins can be played manually. Are you familiar with that?

A: Yes, we made just a few of those units. Some people ordered those with the keyboard so that they could play the violin as the roll played, thus adding to the music on the roll or they

would let only the piano play and they would play the violins from the keyboard.

Q: On the cover for the finger magnets there are numerous patents listed as being issued by various foreign countries. What was the purpose of getting the patents issued in the different countries?

A: Well, so that no one manufactured them in the other countries.

Q: In many of the listed countries it would seem as though there would not have been much of a market.

A: That is true, but we figured that if they manufactured them in those countries, they could sell them elsewhere. On most of our stuff, we took out patents in England, France, Germany and in other countries where a particular item could receive competition.

Q: Did you sell many Violanos in countries other than the United States and England?

A: No.

Q: Regarding the Violano patents, many appear to be secured by Bertie E. Mills. Who is that?

A: I'm Bertie. My family is of English descent on both sides. That goes back many generations, of course. All of my brothers had English names; Cecil, Franklin, Guy, then Oliver, and Steven Herbert. He liked Herbert better so he switched his name around - it was never registered or legally changed; he just adopted the use of Herbert S. instead of Steven Herbert. When they got to me, they ran out of names, so I was christened, Bertie. When I was in grammar school, the kids used to kid me about my name. I later cut off the "ie". On all my first patents,

they read, "Bertie." Our patent attorneys were Darenforth, Darenforth Lee, Crittenden and Wiles, in Chicago at that time. Mr. Darenforth was an old friend of the family and he always called me Bertie, and he always put "Bertie" on my patents, regardless of what I wanted.

Q: You patented a mute device for the Violano. How successful was that?

A: Well, it was added to all the machines right after that time. They were later disconnected because if this device wasn't adjusted property, it would sometimes make a fuzzy sound. It had to be adjusted about once a month and didn't work out too well.

Q: A patent for rosin compound was issued to your brother (HSM). What was unusual about that formula?

A: We used to make our own rosin into little squares. We needed something that wasn't too hard or too soft. The rosin that a violinist uses is pretty soft, and when we used it on the Violano, it would just powder all over and cover the violin. My brother had a Chemist make it up but had the patent put in his own name.

Q: You secured a patent on Motor Controlling Means. This idea was used on the bow motor of late model machines and it is essentially a governor-controlled limit switch. What gave you the idea for that?

A: The bow motor was made with four field magnets. Some of the magnets had more than one winding. They were wired together in shunt and in series so that the bow motor would work fast or slow, depending upon which magnets were energized. As a matter of fact, the idea of the governor was to ease the speed

changes and eliminate the jerking. The limiting switches on fast and slow was to avoid stalling or too high a speed.

Q: The patent for the continuous tremolo is yours.

A: Yes, the tremolo on the violin is comprised of a weight that hangs on a rod. The weight would be pulled to a solenoid and would, as it got close, break the electrical contact, thus falling back and giving a tremolo effect through the movement of the rod which was attached to and would shake the violin tail-piece. You could have one long tremolo track cut in the roll which would not affect the operation of the tremolo because it would break the contact and move back and forth. Sandel came out with still another tremolo device which we never used. He always got very jealous when I would come up with a better idea. He would invariably say to my brother (HSM), "Your brother doesn't know what he's talking about. His idea is contrary to all electrical ideas and theories." I would reply, "If we always worked by theory we'd never invent anything. We have to go contrary to what the books say once in a while."

Q: The after-tone damper patent is also yours and was quite an improvement. Before that, was there any damping device?

A: No. The after-tone resulted when the bows would come up after playing. Before the damper was put on, you had to be satisfied with hearing the after-tone.

Q: You have another patent for tremelo effects. What was the need for it?

A: Yes, that was devised for the following reason. There was a Canadian ocean liner that had a Violano placed in one of their lounges. A ship always lists, and those tuning weights would go wrong, so the violin couldn't be played, there was no way to tune it. They came back and said that they couldn't use

the violin on ocean voyages. In quiet waters, it was alright, but when they started to move on the ocean, it wouldn't work. Peterson, one of our machinists in the experimental room and I did the mechanical work necessary to eliminate the weights after I had invented the method. Basically, it employed springs instead of weights to put tension on the strings. Adjusting screws would increase the tension on the springs. It worked almost as well as the weights. I had a patent for a tremolo device used in conjunction with the spring tension tuning system. It had little pistons underneath each spring controlled tuning arm which were in turn connected to the tuning arms and vibrated the arms when the pistons were actuated by another larger piston. We actually never used it very much, but as I say, it was alright for the ships. The tremolo effect would be obtained because the piston bobs up and down, thus changing the string tension. It would naturally not vibrate the tailpiece, as the other tremolos would do, but as I said, the weights for tuning or tremolo could not be used on ships.

Q: Who made the pianos for the Violano?

A: We made our own.

Q: The early ones had "Strauch" on them.

A: That was the company that made the actions. We didn't make the actions. We made the sounding boards. We didn't cast the plates ourselves. We had our own plate patterns and Superior Foundry cast them for us.

Q: Did Strauch always supply the actions?

A: They did in the early days. Later on we got them from somebody else, but I can't recall who it was.

Q: Where did you get the percussion items for the orchestra units?

A: I'm not sure. We could have gotten them from Wurlitzer.



Q: Was there any profit made on the Violanos?

A: Well, in the last few years, yes, but if you take it over a period of time, all in all, no. They used to say my brother was a nut because he spent about a million dollars trying to promote the machine before it was really ready. He was just crazy about it. He never kept track of what it lost, cost, or made, because he didn't want to know.

Q: Was it true that your brother (HSM) was a "scrapper?"

A: Oh, well, he like to box, but I mean, not in anger. The minute you walked in the place he wanted to box with you. He used to box with me. He'd say, "Now I'll tell you something - just put your hands down - I want to show you something," and then he'd swat you and then say, "You see, you can never trust anybody."

Q: Is it true that he liked his whiskey?

A: Yes.

Q: Was that also true of the son, Fred, who later ran the Company after his father's death?

A: Yes. Fred liked scotch whiskey. He was told by the doctors that he had to stop drinking, so Fred went to sherry wine. He would drink a bottle of that in the morning and he would brag that he was off the hard stuff.

Q: Did the Company pursue an aggressive export business?

A: Oh yes. As a matter of fact, in Johannesburg, South Africa, we used to do about two or three hundred thousand dollars a year. We did a lot of business in France and England.

Q: Are you familiar with the early Mills jukebox of the old carousel design?

A: Yes. I invented it. I should recall it. That was in 1925 and we were in production in 1926. We were out first about a year ahead of Seeburg. Capehart was the second one on the market.

Q: Was it the jukebox that killed the Violano sales?

A: Yes, to a degree. Amplified music took over and eliminated all other mechanical music machines. My brother (HSM) used to spend six weeks in Florida every year, and before he left for Florida in 1925, I said to him, "Herb, there is going to be amplified music now. There are going to be coin operated phonographs made with amplified music. While you're away, I'll make one." He said, "Don't you dare touch or make anything. We're making the Violano and that's it. We don't want any more music." As soon as he left, I started in the experimental room on making one. I had to work like the devil and have it done before he came back, because I knew he would stop us. When he came back, I had the first one playing. It wasn't ready for production, but it was playing, and it sounded pretty darn good. It took me several days before I got my brother to go in there to hear it. In the meantime, I got fired because I made it against his wishes, but I would still come down to the factory every day just the same. When he seemed ready to go home, I'd ride with him. I wanted to talk to him and try to show him this thing. I finally got him in there about six o'clock one night. We didn't leave til one o'clock in the morning. We played all the records we had in the place about four times over and he just sat back and listened to them. The next morning when I got down to the factory about 9:30, he was already there and was down in the tool room where we had the model jukebox. He told them to tool up for it. I went in and said, "Herbert, it's not ready for tooling and it's not ready for the market. Let me work on it another couple of months and it will be ready." He said, "Get out of here. I'm doing what I want." He tooled up for it. Thereafter, I had to make a lot of changes

and we had to scrap a lot of the tools. The first jukebox was not selective. It just played the twelve records as they came. Afterwards, I made it selective. The recordings in those days were not uniform. Some played real loud and some were soft. When you'd put them in a jukebox, some would blast out if you had the volume set loud enough to hear soft ones. So I had a little gadget on the front hub of the machine so that when you put the discs on the machine, you could set the volume for each record so that they would all play at the same volume.

Q: Did the Company ever experience problems with the pot metal or die cast parts they used?

A: Yes, we had trouble. There was pot metal in the Violano weight arm tuning devices that gave the most trouble. They had a steel fulcrum insert that would break out when the pot metal swelled. In those days, the pot metal wasn't so good.

Q: Well, seemingly, some of the pot metal on the very earliest Violanos has held up very well, and some of the ones on the intermediate models fell apart.

A: We didn't cast the parts ourselves, we had it done on the outside.

Q: Didn't Sandel have some patents on pot metal formulas?

A: Yeah, and those were the ones we had trouble with.

Q: There is a tale about Sandell knowing the whereabouts of the body of a person who got washed overboard from a Mills boat. If you know the story, would you tell it?

A: Yes. Well, Sandell was a spiritualist of sorts. He claimed that all of his ideas came from the spirits in the spirit world. I always used to kid the devil out of him. We had a factory manager by the name of King. My brother had a sailing yacht on Lake Michigan and King and his two sons asked to take the

yacht out one time so that they could go up in Wisconsin. My brother let them take it. They were in quite a heavy storm on their way back and King was washed overboard about 20 or 30 miles out of Chicago. His sons stayed around on the lake for a couple of hours but couldn't find him, and they finally had to give up. There were boats and everything else out looking, but they couldn't find the body. One morning, Sandell came down to the factory and we were in the experimental room, and he said to me, "You know where King is?" and I said, "No," and he said, "He's at the Randolph Street Bridge in the piling." And I said, "Oh, is he? Was that in the paper this morning?" He said, "No, no. It just came to me - that's where he is." Two hours later they found King's body at the Randolph Street Bridge, washed into the pilings. So whether the spirits told him or what, he was right, but that was the only spirit thing he was ever right about.

Q: Mr. Mills, Fortune Magazine, November, 1932 issue contains an article about the Company entitled, "Plums, Cherries and Murder." Do you remember that article?

A: Yes, I remember it. The reporter who wrote the article came to me to ask about all the percentages on the reel machines. I made up all of the percentages from the very beginning. They had a phony story on the reels and asked me to help them correct it. I helped them out, but they didn't publish it the way I told it to them. It was erroneous.

Q: Rumor has it that someone who knew your nephew, Fred (son of HSM), very well said that Fred, who was at that time the President of the Company, believed that the Company was going to get a million dollars worth of good publicity out of the article. Is that true?

A: That whole article backfired and he (Fred) said and swore up and down that he would never let another reporter in that Company. You see, they twisted the story. They took stuff out of context and said that we said it. Like most reporters, they wanted to build up the story, and so they changed it to suit themselves.

Q: In the article, it is said that you sold these machines to the biggest gangsters in the country. Was that true?

A: As a matter of fact, before Prohibition went out, the gangsters never bought any machines. They were peddling booze. They didn't have to operate machines during Prohibition. After Prohibition went out, they had to find something to do and they would come in and buy slot machines. These slot machines purchased by gangsters were never located in the right places. Most of the legitimate operators didn't put them in where there were school kids to play them and they didn't put them in saloons and so forth, where there were poor people and where the machines would get their salaries. When the mobs took over the slots, they didn't care whether they put them in grocery stores or any place else. Women would come in to buy groceries and spend their money in the slot machine. It turned out to be pretty lousy, but it was beyond our control. As a matter of fact, one of these same mobsters came to me to buy coffee machines. He had been in the jukebox business. He said, "I want to get some coffee machines to put around Chicago," and I said, "What do you want them for?" I said, "There's no money in it. I sell them but the people who buy them are suckers. There's no money in these things. It would take you about two years to get your money back. I wouldn't buy it if I were you." I had to lie a little bit because some of the machines had paid for themselves in thirty days. Well, I talked

him out of it and they never got into the coffee vending business. What they would do is go into your plant and ask you to take a certain machine or else. You know, the first coffee machines I put out helped a lot of operators who were really on the rocks. In the wintertime, their business in cold drink machines dropped down very far and coffee built up their winter business. They used to tip their hats as they went past my factory. We had machines regularly selling a thousand cups a day.

Q: Did you think that Mills products were the leader in the industry?

A: Yes. We had a reputation for making quality products. That is one thing my brother struck for - no junk. Some of our stuff held up too long. People copied our products. Tom Watling copied our slot machines which by law couldn't be patented. Watling was in the scale business and made coin operated scales. Caille Brothers in Detroit did the same thing and so did Jennings who once worked for us. Pace also worked for us. Jennings, who became the second largest manufacturer to us, was our Philadelphia manager. And he'd go down to these towns that had been operating slot machines after they were closed down. People would have twenty-five or thirty slot machines down in their basement which he would buy. He would then put them in a new cabinet and then call them Jennings machines. The mechanisms were ours and the cases were his.

Q: What kind of quality did the Caille Brothers products have?

A: Well, Caille was the first other good manufacturer that made things well. As a matter of fact, Caille would come into our experimental room and we would let him see what we were working on.

They never actually stole anything from us. Caille Brothers were in the motorboat business in Detroit. They made outboard motors, and were about the first ever put on the market. They later went into making slots.

Q: Can you tell me briefly something about your family and the organization of Mills Novelty Co.?

A: Yes. Herbert (HSM) who really was the Mills Novelty Co., was my <sup>third</sup> oldest brother and was born in Iowa in 1870. The family moved to Chicago about 1874 or 1875, a couple of years after the big Chicago fire. I was the youngest in the family and was twenty <sup>two</sup> years younger than Herbert.

Q: Is it true that your brother, Herbert, was curly haired and started out as a newsboy?

A: That's possible. Of course, everybody that was a success is always said to have sold newspapers.

Q: Was your brother Herbert's first major invention the cigar vendor or was that your father's invention?

A: My father was quite an inventor and that was his invention.

Q: What was Herbert's first major invention?

A: I don't think he invented much of anything. He used to take some of my Dad's inventions and call them his own, but he didn't invent much of anything.

Q: Your brothers, Cecil and Herbert, together, are said to have invented the "Owl" (an upright slot machine)?

A: No, my father invented the "Owl." My brother, Cecil, being like my brother, Herbert, was one of those who, if you told him to take a screwdriver and tighten up a screw, he wouldn't know which way to turn it. They were not, aside from my dad, myself and one other brother, very mechanical or inventive.

Q: How did the Mills Novelty Co. come into being and who developed its early products?

A: My father, M. B. Mills, founded the Mills Railroad Gate Company during the 1880's. They manufactured my father's invention, pneumatic gates. After selling out in 1893 or 1894, my father started the M. B. Mills Manufacturing Company which produced some of the very first vending machines, including his patented cigar vendors. M. B. Mills (who passed on in 1938) was an active inventor with over 140 patents. He was quite proud of me when I had acquired more patents than he. I was the youngest of the family and my brother, Herbert S. Mills, was President of Mills Novelty Co. during its tremendous growth period. My brother, Herbert, took over the Company at the turn of the Century and changed the name to Mills Novelty Co. The Company, when owned by my father, built several slot machines, the first of which was called the "Klondike." The first big floor model machine made in 1898 was called the "Owl" and the "owl" which was pictured on the machine later, became the Company's trademark.

Q: Why was the Mills Novelty Co.'s gambling machine named the "Dewey?"

A: Well, this is because it was introduced right after the Spanish-American War and after the fight at Manila, everything was at that time "Dewey." Admiral Dewey was the Hero of the day.

Q: Was it then just a sales idea or did Admiral Dewey have an interest in it?

A: It was just a sales gimmick.

Q: Did Mills Novelty Co. invest in Company-owned Arcades?



A: Yes, I think we were the builders of practically all the Arcade machines, and back in the early days toward the turn of the Century in 1905, 1906 and 1907, along in that era. Our biggest business was Arcade machines, much bigger than the slot machine end of the business. We owned Arcades and sold Arcade machines to the people that operated them, which included a couple of the movie magnets such as the Warners.

Q: Were the Arcades owned in partnership with others?

A: No. We never went into partnership.

Q: It has been said that Charlie Fay invented the slot machine in '95 and thereafter, he manufactured them and put them out on location. One of his machines on location was stolen and turned up at the Mills Novelty Co. factory where it was copied and then manufactured in quantity.

A: That is entirely untrue. Charlie Fay invented the one-arm bandit in 1905. He was at that time a customer of ours and bought machines from us and operated them on the West Coast in the San Francisco area. I was there in the factory on the day that Charlie Fay brought his machine in. It was in an iron case, and he called it the "Liberty Bell." It had the cracked Liberty Bell cast on the front of the machine. It was a very crude machine but it operated alright. It was very easy to cheat. I mean the players could cheat the machine. Charlie Fay did have a good idea but could not do anything with it because he was not in the manufacturing business. When he brought it in to my brother, he said, "Herb, if you'll give me the first fifty machines you make, you can have it." He said, "I know you can copy it and steal it if you want to, but I know you won't." And so we built the machine and my brother gave him the first fifty machines we built. This

was after I had revamped the machine and made it practical.

Nearly 75% of the parts in the redesigned machine were to keep the public from cheating it.

Q: Is it true that the Liberty Bell Machine would take the money much quicker than the Dewey, thus making it more desirable?

A: The operation cycle of the machine which was called the "Liberty Bell" in those days, took about six seconds to complete and the people could drop their money in faster because they didn't have to stop and select colors, etc., as you did with the Dewey. Players would do a lot of things to try to win and they'd take a little longer time before getting the money into a Dewey, but with the "Liberty Bell" machines, it only took six seconds to get the money. Often, people have the idea that the machine was 40% or 50% against the player, but the worst machine, the strongest machine we ever made was 20% against the player, and those didn't get much play and, therefore, never made any money for the operator. The most liberal machines would make the money because the player put it all back in the machine. We jokingly called it working on the cupidity of the public.

Q: Is it true that your brother, Herbert, got into some trouble selling pictures through the mail and was given a jail sentence of some sort?

A: Yes and No. If what he did had been done today, he could have gone on selling these pictures without problems. We had a machine that we called the Stereoscope which was made for use in the Arcades. My brother was away on a trip. His father-in-law was managing the business and got hold of some pictures that were considered very lewd in those days. They weren't as bad or revealing as a bikini today, but they were considered very lewd, so the Federal Government arrested him because he was the President

of the Company and he was the one to take the gaff. He protected his father-in-law and took the rap. They gave him the sentence of a year and then suspended the sentence.

Q: Did he ever serve any time?

A: No. He was not sentenced to a Federal prison. He was sentenced to jail in Chicago. I mean, he could report once in a while, but that was all.

Q: With the good connections that your brother had, how is it that the case got that far?

A: Well, that's probably one of the reasons why he never was sentenced to jail. I remember it all very well. I was a young fellow when it happened back in 1904. The Judge was a good friend whom we all knew very well.

Q: There were several boats that were Company or family owned, one of which was called the "Minoco." It was kept off the Florida Coast, was it not?

A: He bought a boat down in Florida, back in or some time in the teens. It was a small boat, about fifty feet. It was not called the "Minoco." After my brother (HSM) died, his four sons inherited the business and they bought a boat which belonged to Dr. Baruch, a brother of Barney Baruch. It was a 98-foot yacht, and when they were wondering what to call it, I said, why don't you call it the "Minoco?" That is made up of the first two letters of each word in the Company name. They liked the idea and so named it. Then, after they had that boat for about a year, they had a new boat made at the Mathis Yards around Philadelphia. It was a larger boat - 110 feet. We carried an eleven man crew. We kept it off the Florida Coast in the Winter and would run it to Chicago up through the canals and down to Chicago during the Summer time.

Q: Did both boats have Violanos on them?

A: No, neither one had a Violano. The boat he bought in Florida had a Violano on it for a short time. I remember it well because it almost sunk the boat. My brother, Herbert, was crazy about the Violano.

Q: Gano Senter of whom we spoke earlier and who was a friend of your brother, Herbert, said that Herbert used to listen to the Violano a great deal of the time.

A: Yes. My brother would sit down and just listen to the Violano all day long.

Q: Was your brother referred to as the "Commodore?"

A: Well, he was Commodore of the Yacht Club - the Chicago Yacht Club, or the Columbia Yacht Club in Chicago. He was no real Commodore, and I don't think he ever wanted to be referred to as such, but they did refer to him as "Commodore."

Q: A gentleman in Chicago who wrote for one of the trade papers said that your brother did things in a big way. Once he wanted to entertain on the boat, which was then on Lake Michigan, and in order to get a good show, he had to buy all the tickets to a New York show for every performance during an entire week.

A: Yes, that was on a powered house boat. It was about 150 feet long and had a beam of about thirty feet. You could put a lot of people on it. It had two decks, so he used to buy all the tickets and have the show come over to the yacht club, etc., and put on a big party. He was always full of the devil.

One time we had about twenty Judges out to dinner. He had me wire the table up so that underneath the tablecloth, I ran a wire to a piece of tin which was under each plate and on the sides

underneath the forks and knives. When I was given a signal, I would press a button and when they'd go to pick up their knives and forks, they'd get a shock, and throw their knives and forks up in the air. Herbert didn't care who it was, he like to play practical jokes.

Q: Could you describe the facilities for eating and so on which were located on the top of the factory at 4100 Fullerton in Chicago?

A: Yes, we called that area the "Bungalo." It was a suite.

The dining room would accommodate about thirty. We had another area where we had handball courts and steam baths and that sort of thing. We could go up and play handball, take a steam bath, and come in to eat. We had an excellent Japanese chef whom my brother called Tu and who had been over in this Country for about twenty odd years. The funny part of it was that at that time, he had already been over here about twenty-four years, and he had sons over there twenty years old and of whom he was very proud. He had never seen his wife in twenty-four years. I used to say to him, "Tu, how under the circumstances, did you have sons over there?" He would reply that he had good neighbors.

Q: A rumor has circulated to the effect that on one occasion, Herbert was wearing a very expensive diamond ring which was stolen from him. After a few well-placed phone calls, he got it back the following day. Do you recall that incident?

A: Yes. It was not a ring. It was a watch charm that hung on a chain. It was in the form of an owl which was our trademark. It was about one and half inches high and a little narrower in width. It had several hundred small diamonds and two ruby eyes.

He had this made up or somebody gave it to him, I'm not sure which. He wore this owl, and clipped it on his watch chain. After it was stolen, a few telephone calls were made and they finally discovered where it was, and returned it.

Q: The "Owl" as a trademark was filed <sup>on</sup> /in 1906?

A: Yes, it was a red Owl.

Q: What was the origin of the use of the Owl?

A: Well, the Owl slot machine was invented by my dad in 1898. My dad was building the Owl in our basement because the factory at Jefferson and Washington burned down. That factory was only about 1000 to 1500 square feet or so. At the time it burned down, my dad had been working on the Owl. When the fire started, the first thing one of my brothers did was save the Owl, which was in the works of invention. My dad finished it in our basement and so the Owl became the trademark. They didn't protect it as a trademark until around 1906, but it was actually first used as a trademark around the turn of the Century.

Q: The trademark was originally claimed by the Mills Novelty Co. but was renewed in 1946 by Mills Industries. What caused the name change?

A: Our name was a misnomer. We didn't manufacture novelties. We manufactured coin-operated machines and all kinds of vending machines, Arcade machines and slot machines. During the War, the English Government came over to seek out different manufacturers to make things for them, ammunitions and so forth, and they wanted some bomb releases manufactured, and we were recommended. Well, the people from England thought that it was ridiculous to go to a novelty company to build bomb releases. They flew to Chicago, and we met them at the factory on a Sunday. They saw the

plant and the type of equipment we had and knew that there was no question about our ability to make what they wanted. We changed the name of the Company just after that to Mills Industries. When the United States got into the War (World War II), we went into making war materials for the government and stopped making vending machines.

I retired in 1944 just before the War ended. It got too tough to be retired. I was too young. I had belonged to two different gold clubs at the time and I grew bored with them because I had nobody to play with. It's not like out here in Arizona. In Chicago people that I played golf with were working except for the week-ends. During the week, I'd go down to the Club and have to play with the pro or a caddy. So, in 1945, I started working on my own. I worked on the coffee machine. My first patents were issued in 1945. In 1947, I went back into manufacturing on my own and in February, 1947, I shipped my first coffee machine. I started with twenty men, and when I sold out to Seeburg in 1959, I had just under five hundred employees.

Q: We know that the Mills Novelty Co. no longer exists. When did it go out of business?

A: During World War II. Nothing was manufactured except War material. When the War was over, there were no new products to come out with. The slot machine business was down to nothing because of laws that prohibited the shipment of machines or parts across state lines. There was never a company bankruptcy or anything of that kind. The company was sold. The people that bought it and the patents which had practically run out got it all for around \$100,000.00. A separate purchaser bought the factory and all of the tools, which were absolutely top quality. The equipment in that factory was worth about five million and I think that the new people bought it for \$2,000,000.00.

One of my nephews thereafter manufactured slot machines in Reno, Nevada. That ended the Company.

Q: What was done with all of the spare parts, etc.?

A: They were all junked out periodically after the items became obsolete.

Mr. Mills, on behalf of myself and fellow Collectors, we thank you for your time and patience.