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The Cheney Talking Machine

By R.J. Wakeman

Some of the most unusual and interesting "off brand" internal horn acoustic phonographs were made by the Cheney Talking Machine Company of Chicago, Illinois. These often have square and boxy cabinets, but most intriguing are their unusual sound-constricted air passages, as well as "step chambered" tone arms and internal horns.

The Cheney Talking Machine Company was founded in Grand Rapids, Michigan, in 1914 by Forest Cheney, a concert violinist of the early 1900s. He designed the Cheney talking machines to suit his ideas for sound transmission. Cheney claimed that his design was superior to that of any other talking

machine. Instead of sound waves generated from one source and passing through an ever expanding and unrestricted tone arm and horn (he referred to this as the "megaphonic" sound), he visualized the sound waves entering through a series of chambers which were essentially separate sound boxes where the sound waves could develop and be released "under control." He claimed this method was the only one which could permit the sound to generate delicate overtones and be "enriched and blended into one triumphant whole."

Cheney considered the "cubical chambers" and violin-shaped horn to be the crowning glories of his design. They were made of seasoned maple and spruce woods which were purposely left unfinished "so that their resonating quality may not be impaired." Cheney advertisements state, "The Cheney--like a rare old violin--constantly enhances in musical value."

Did Forest Cheney truly believe in the superior sound quality of his series of tone chambers? Was it logical to design a method with sound constriction? Or did he merely develop a design which he knew would not violate basic patents of the Victor Talking Machine Company?



Cheney held to the theory that the tone and quality of musical sounds depend on the geometrical form of the sound waves. As such, a resonator's walls should be geometrically formed and should have flat surfaces to reflect the vibrations more perfectly. He even designed and built several violins using this theory (square violins?). A Cheney talking machine won the gold medal at the Panama-Pacific International Exhibition in San Francisco in 1915. Did it have the best sound quality of any talking machine there? Was it awarded for some other reason?

Soon after models began to appear on the market in 1915, Cheney representatives went to the Victor Talking Machine Company to determine if the Cheney design would be considered an infringement of any Victor patents. At first Victor declined the comparison but then in November filed a lawsuit for patent infringement at the Northern District Court of Illinois. It took over a year before proofs had been taken and the case was ready for hearing. In March 1917 the suit was dismissed with the consent of both plaintiff and defendant due to the war. Court records state, "Litigation of this character was frowned upon by public officials, was discouraged by the courts, and as far as possible was avoided by every one."

In August 1920, Victor and Cheney were again ready for the formal hearing. Victor claimed that the Cheney company was in violation of two of Eldridge R. Johnson's 1906 patents. One was for the "basic structure and means of attachment of the horn," patent No. 814,786. The second was the "amplifying horn comprising a continuously tapering tube," patent No. 814,848.

By November the court decided that both Victor's patents were still valid, but only the first one was infringed by the Cheney design. The court declared that the Cheney tone arm cannot be considered as a unitary structure or a continuously tapering tube. The ruling failed to satisfy either company and both appealed.

The case was deliberated before the Sixth Circuit Court of Appeals in December, 1921. Both companies presented long and detailed cases. In the end, Victor lost on both counts. The court paid close attention to the unusual "sound constriction," the straight tube "tone conveyor" (which the court considered a sound spacer--not a coupling device), and the bayonet reproducer attachment which was characteristic of the Cheney design. The court declared that the Cheney method was unique and that it was not infringing Victor patents. The company could sell Cheney machines on the market.

I have examined three different models and noticed ways they differ from other machines. One model is an average-sized upright oak cabinet. Another is the well-designed "Early English," illustrated on the back cover of V78J's fourth issue. The third model is the "Queen Anne," which has room for slide-out drawers and nine 12-inch record albums.

All three of these Cheney models have a gold medallion either under the lid or just behind the tone arm. In the Queen Anne model the medallion is quite large, measuring 2 3/4 inches across. The Queen Anne model also has a small decal under the lid stating in gold letters "C. F. Johnson Piano Co., Portland, Oregon." The Queen Anne and small oak upright also have small round medallions under the lids which state "Berkey and Gay Furniture," a well-known furniture manufacturing firm at the time. The Early English does not have this medallion. No

models have metallic tags or plates indicating model or serial numbers. The Early English and Queen Anne have dual spring-loaded lid supports. Surprisingly, the Early English has the spring loaded mechanisms above the motor board and readily visible. As such, the outside housing of the mechanism is also gold plated. The Early English has the tone arm and turntable recessed within the cabinet, while the other two models have the tone arm assembly, turntable, and other hardware positioned level at the top of the cabinet. They have deep lids.

Diaphragms on Cheney reproducers are not made of mica, glass, copper, or aluminum. They are made of guttapercha, a tree sap with properties somewhere between a rubber and a hard resin. It is harvested from trees of the Sapodilla family, including the Palaquium and Payena trees which grow in Malaysia. Guttapercha is used in modern dentistry as a dental cement and is used for insulating electric wires.

Cheney's guttapercha diaphragms are the same size and basic shape as those found on the standard Victrola No. 2 reproducer. However, the guttapercha diaphragms are three times as thick and more than twice as heavy as the mica diaphragms on the Victrola No. 2. One Cheney diaphragm weighed 1.81 grams and measured 0.024 inch thick; a Victrola No. 2 mica diaphragm weighed 0.87 grams and measured .0075 inch. The guttapercha diaphragms were formed by a mold which produced images of three concentric rings on the diaphragm. The rings appear to have the same thickness. The visible "outside" area of the diaphragms is painted with either a gold or silver-like finish to match the plating on the reproducer's hardware.

Although the stylus bar design is similar to those found on Victrola No. 2 reproducers, the Cheney bars appear twice as large and twice as heavy. All are painted black. One Cheney stylus bar (with thumb screw but without needle) weighed 7.67 grams while a Victrola No. 2 stylus bar weighed 4.29 grams. The needle chuck has a typical triangular hole to hold bamboo needles. Cheney reproducers seem not as well-crafted as standard Victor reproducers. The Queen Anne and Early English have gold plated metal parts while the simple oak upright has nickel plated parts. All Cheney reproducers I have seen have stamped on the outside "Cheney Reproducer Ptd. Applied For" or "Cheney Reproducer Ptd. Feb 8 16."

The Cheney diaphragm is gasketed between two die-cut rubber circles. The rubber gaskets have now hardened and are not compliant, so sound quality of the unrestored reproducers is not very good. They have a compressed and "ringey" sound and give blasting noise if medium or loud steel needles are used.

Assuming the guttapercha diaphragms have hardened and warped with time, I sent several unrestored Cheney reproducers to Bob Waltrip at the Waltrip Laboratory (1821 Avenue "I" Place, Levelland, Texas, 79336) to learn if cleaning and re-mounting the diaphragms in semi-solid gasketing would help. The reproducers are made of brass. By removing five screws from their side plates, one may easily disassemble them.

Waltrip soon returned one restored reproducer, and when it is played on the Queen Anne, sound quality has improved one hundred percent. But it is still without the sharpness and

clarity of a restored Victor reproducer. To Waltrip's surprise, one Cheney diaphragm was made of Celluloid, no doubt a repairman's replacement long ago.

The Cheney reproducer has a cleverly designed "needle adjustor" and "breach loading device." The breach loading device is part of the stylus bar assembly. Soft and medium volume needles at times stick to the breach loader's sides. The reproducer must then be tapped gently for the needle to emerge. Needles can also be set in place at the bottom of the needle chuck. Another unique feature is that when the reproducer is placed on top of the needle adjuster and the needle screw is loosened, the used needle will neatly fall into the discard cup placed strategically below.

All three of the Cheney machines came with two separate reproducers. One is for regular lateral 78 rpm records, the other for vertical cut discs. For the latter there is no breach loading device as part of the stylus bar. The reproducers came inside a small brown cardboard box. The boxes have special holes at either end for holding the two reproducers while the center has a hole for the "used" needle cup (plus lid). Near the needle cup are two very small matching brown boxes. On the lid of one is printed in gold letters "Ball" and this box contains the stylus for playing Pathe disc records. The stylus is mounted on a long metal shank. The other box states "Point" on the top and contains an Edison-type stylus also mounted on a metal shank. Inside the small boxes the styli are wrapped in soft grey paper.

All three Cheney models appear to have the same standard spring-wound motor with double springs. All have 12-inch turntables.

Cheney record albums are typical of most albums of the era except the inside of the back cover has a cut-away sectional view of the special Cheney sound reproducing system to illustrate the "step" tone arm and internal horn. The front cover also has imprinted the shape and design of the Cheney medallion. Album covers are brown or dark blue.

The Cheney tone arm is unique. The reproducer is attached to the tone arm by a firm bayonet slot. The tone arm is comprised of four increasingly larger octagonal sections. Each section is straight and has parallel sides. This, plus concentric rings in the diaphragm, gives the unit an Art Deco appearance though the Art Deco era did not begin for another decade. The open end of the tone arm turns down and attaches to the cabinet by a thick metal ring. The upper section of the ring permits the tone arm to move vertically whereas the lower section has horizontal movement. This connection is not well designed and causes serious air leak. Below this juncture the sound enters a long straight tube. The tube's diameter appears to be less than the open end of the tone arm.

The internal horns of all three models are made of a soft wood which is 1/4 inch thick. The horns are somewhat rounded to resemble the design and shape of a violin. The wood appears to be spruce and is stained a dark color, but all horns have a rough unfinished texture, both inside and out. This is a marked contrast with the finely finished internal horns of the Brunswick and Starr models.

For all three Cheney models, the horn is not attached to cabinet sides but is free standing, attached to the cabinet only at the back horn connections and by one screw which passes through the base of the horn at the front into wood attached to the bottom of the horn/motor

chamber. The screw is cushioned by passing through a felt washer. The back end of the horn is attached to three increasingly smaller cubical chambers that appear to be made of maple wood. These chambers are held together by ordinary cabinetmaker's glue joints. The smallest chamber is connected by a right angle to the straight sound tube at the back of the cabinet.

The horn opening of the small oak upright and the Early English models are the same size. They measure just 13 inches side to side and 7 inches top to bottom, measuring from the outside edges of the wood. This small size tends to give both models a feeble sound. The Queen Anne's horn measures 15 1/2 inches from side to side and 11 inches from top to bottom. For all three models the grille is well-made and not designed to lift out. Instead, it is hinged from the top and there is a knob at the bottom of the frame for lifting. There is no mechanism to hold the grille open.

The Cheney Talking Machine has an unusual design of the Cheney Talking Machine. Aside from the "stepped" tone arm and internal horn, the fundamental difference of the Cheney design from others is that at three distinct points the sound waves are constricted by apertures which are smaller in diameter! This condition is not obvious from casual examination of the existing models. One must dismantle a unit to observe the last two constrictions.

The first occurs just at the juncture of the reproducer and tone arm. The second occurs at point #3--three stepped concentric rings at the top of the straight tube sound conveyor. The rings constrict the opening some 40%. The third constriction occurs at point #6--the opening into the first and smallest of the stepped cubical chambers leading into the main horn. Here the sound is constricted by a palate bar. It constricts the opening some 15%.

The palate bar is a protruding block of wood with one of the edges rounded. In the initial Cheney patent the exact location of the palate bar was "a matter of adjustment, as its location varies to some extent the tones being reproduced by the apparatus." Sound waves pass from the reproducer through the stepped octagonal chambers of the tone arm, down a long straight tube, turn abruptly into a series of square chambers, and go into the main horn.

Forest Cheney was born on January 1, 1864, at Poland Center, New York. His English ancestors arrived in the New World in 1635. He was a musical prodigy in his youth and a concert violinist at the age of 23. He also taught violin and voice in New York City and for one year was curator of the Waldorf Art Gallery. He loved all the arts and collected paintings, etchings, and water colors. He was also a writer. He was known as a philanthropist, giving generously to charities and helping struggling artists and musicians. He married Leila Blodget of Philadelphia, Pennsylvania, and they raised three children: Marion, Elizabeth, and the adopted Ouida. Forest Cheney died in Chicago, Illinois, on December 16, 1925. I assume Cheney never designed a model to compete with Victor's Orthophonic line.

What I have written above is the most complete account of Cheney machines. No book covers the topic. If you have more information, please drop a line.

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