

H. JARDÉ.
SOUND BOX FOR TALKING MACHINES.
APPLICATION FILED NOV. 26, 1907.

917,076.

Patented Apr. 6, 1909.

Fig. 1.

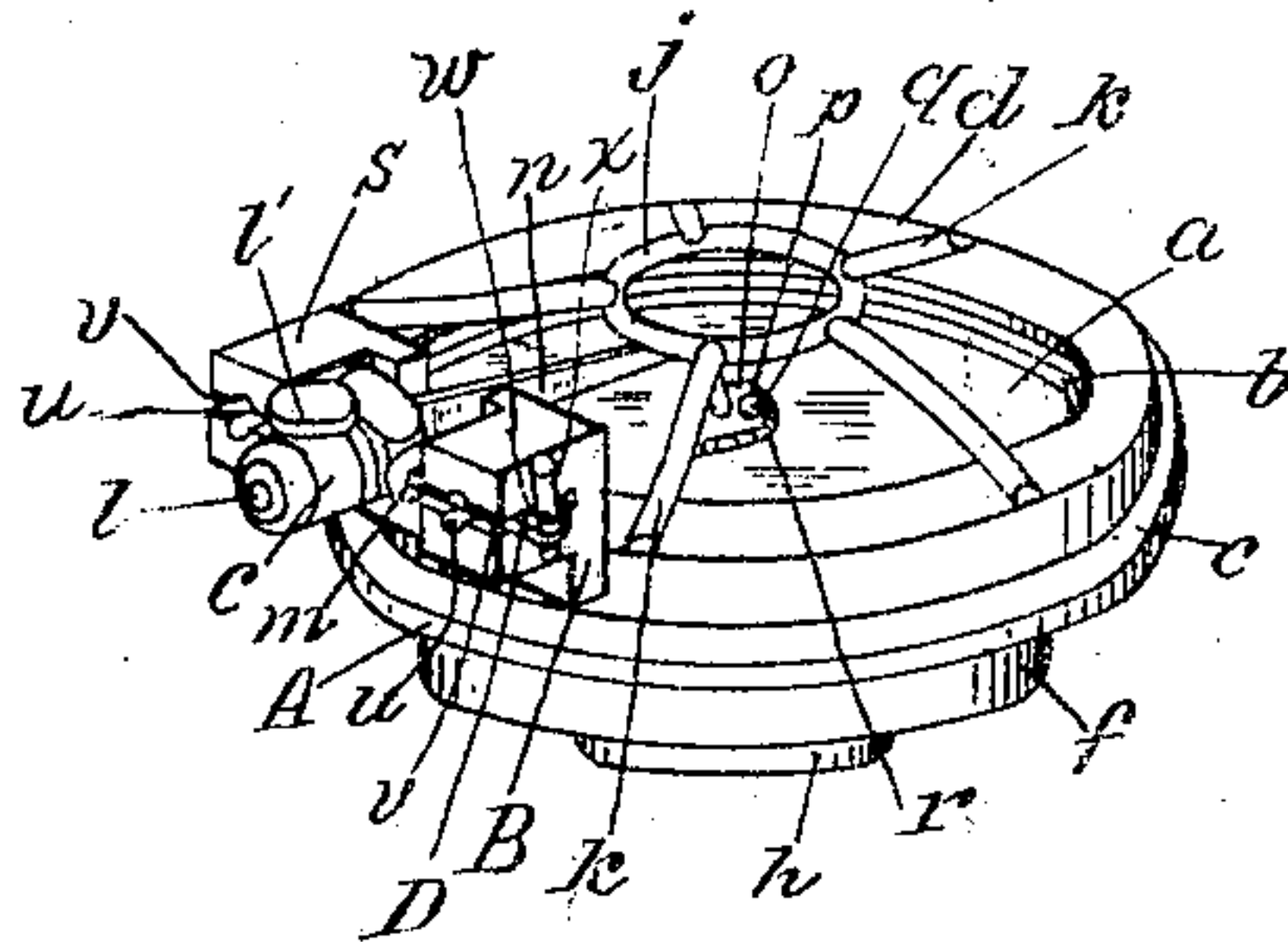


Fig. 2.

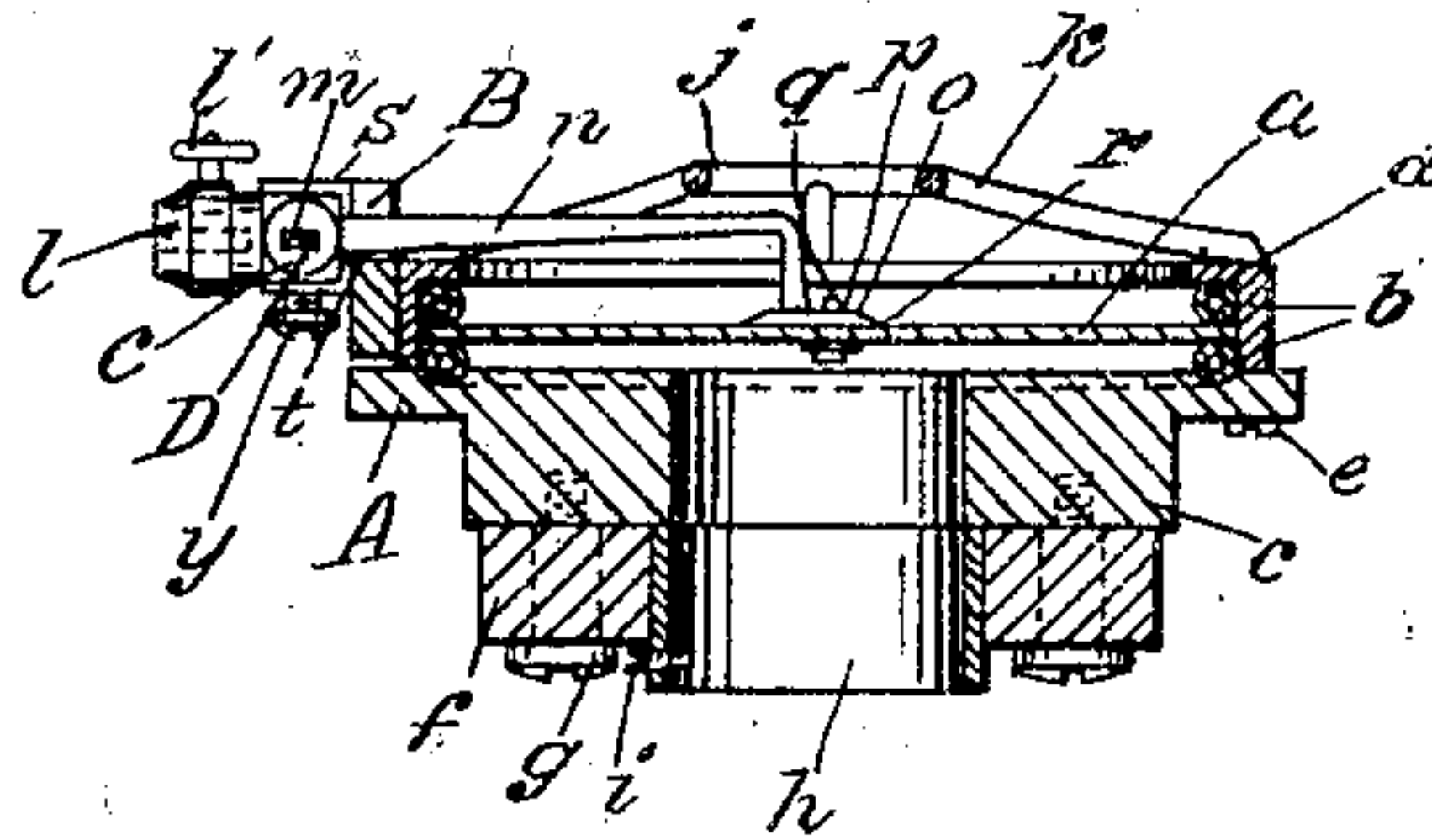


Fig. 4.

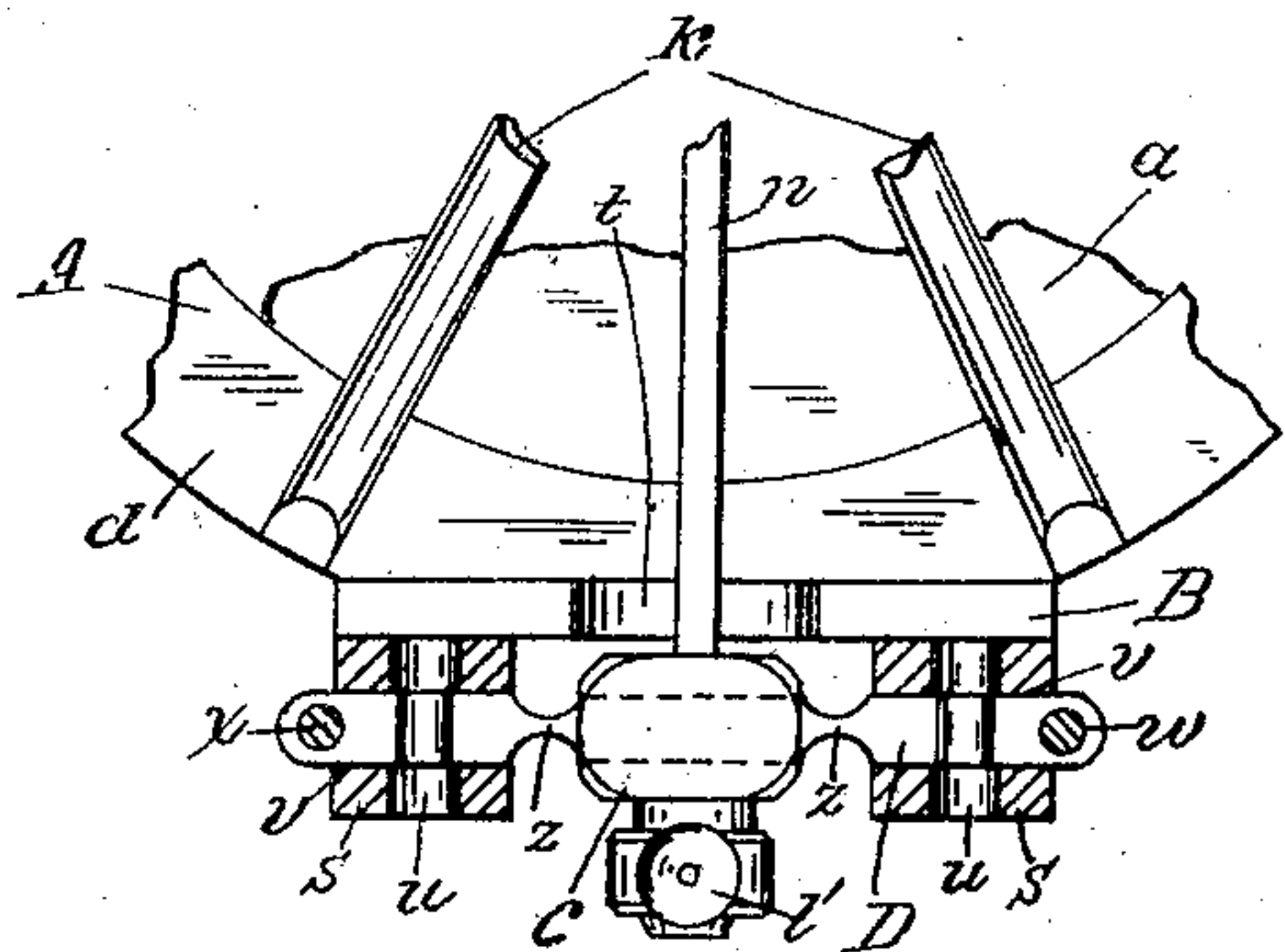
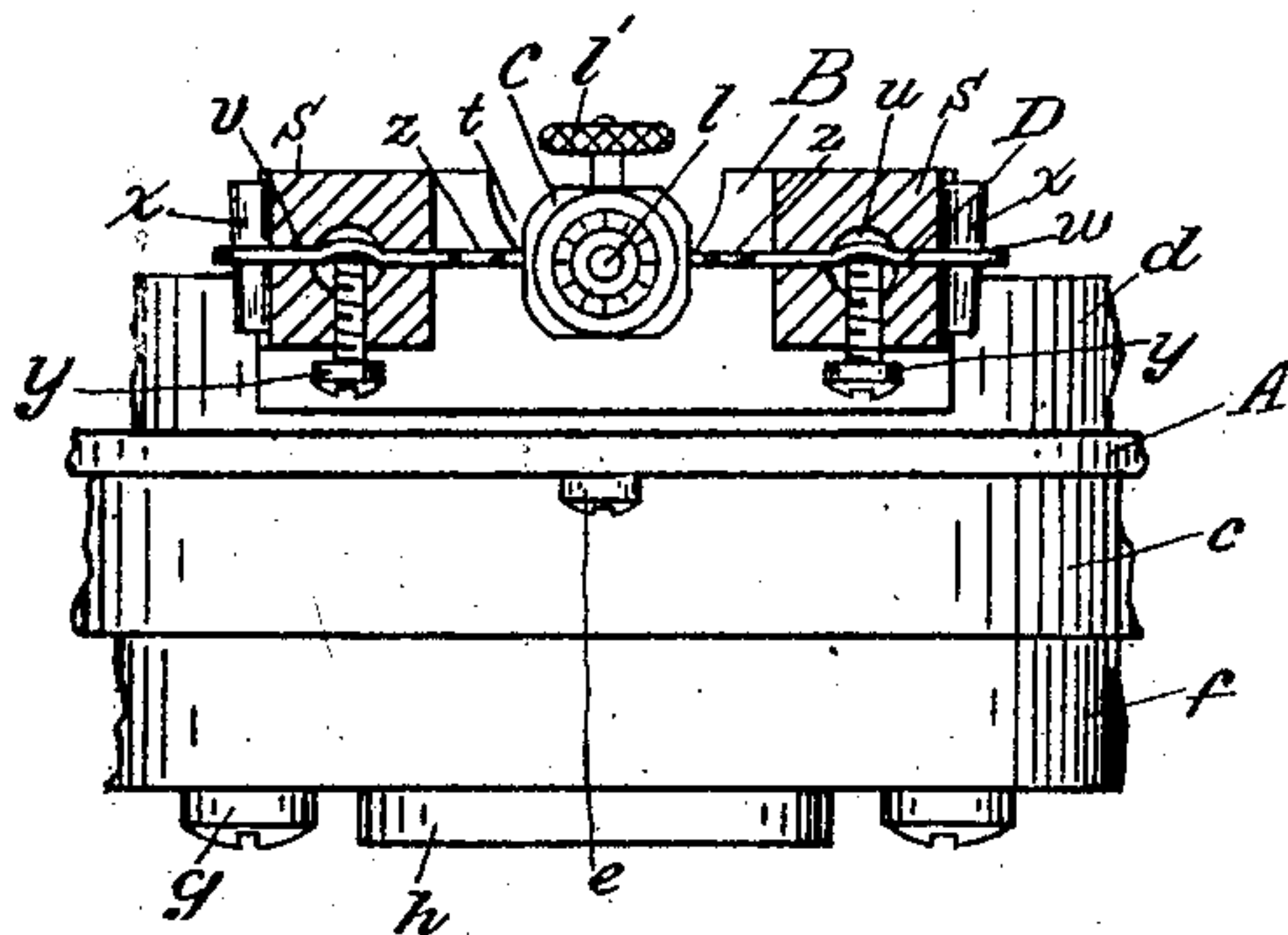


Fig. 3.



Witnesses:
M. L. Wickers
E. B. Yeaton

Henri Jardé
Inventor
By his Attorney
S. Charles Yeaton

UNITED STATES PATENT OFFICE.

HENRI JARDÉ, OF NEW YORK, N. Y.

SOUND-BOX FOR TALKING-MACHINES.

No. 917,076.

Specification of Letters Patent.

Patented April 6, 1909.

Application filed November 26, 1907. Serial No. 403,974.

To all whom it may concern:

Be it known that I, HENRI JARDÉ, a citizen of France, and a resident of the United States, residing in the city of New York, borough of Manhattan, county and State of New York, have invented certain new and useful Improvements in Sound-Boxes for Talking-Machines, of which the following is a specification.

The object of my invention is the devising of suitable mechanism for retaining the needle arm in a sound-box of a talking machine whereby it is feasible to employ a diaphragm for the sound-box made from suitable card-board in place of the more expensive mica diaphragm commonly used. While my endeavors have been directed with this end in view, the construction which I employ is, however, capable of operating the needle-arm in conjunction with a mica diaphragm also, but better results are obtainable with an inexpensive disk of card-board. In like manner the mechanisms employed in the several sound-boxes in common use may be used in conjunction with card-board diaphragms, but not with the good results realized when they are used with mica diaphragms. Briefly then, in the sound-boxes in common use attention has been directed toward devising mechanisms for obtaining the best results when using mica diaphragms, and accordingly the mechanisms in use are best suitable in connection with mica diaphragms and with such diaphragms give the best results. The construction I employ is best suitable for ordinary cheap card-board diaphragms and with such diaphragms I obtain the best result. Not only is the card-board inexpensive as compared with the mica, but it is also far more durable. Where mica is used care must be taken else the mica will be broken, especially if the sound-box is dropped, or otherwise encounters a severe blow. Attempts have previously been made to use card-board, but as far as I am aware they have met with failure, which is evidenced by the fact that mica is universally used in practice.

Besides the advantages already mentioned, I claim for sound-boxes constructed according to my invention, and with the card-board diaphragm better results than obtainable from those now in use. When using my sound-box with a talking machine, much of the undesirable rasping and metallic sounds are eliminated and the gen-

eral effect is softened and more melodious. The benefits derived from my invention are more marked and noticeable in some records than in others, for instance, where bass music, a trombone, flute or cornet are played with a clarinet, the sound of the clarinet is hardly discernible when a sound-box with mica is used; whereas my sound-box gives to each musical instrument its full value and the clarinet is distinctly heard. This is also true where bells are played in a piece of music with other instruments; the bells are heard with my sound-box even when softly played, whereas with the ordinary box they may not be heard at all. Also where a piano accompanies a singer, with the ordinary sound-box the notes of the piano may at times be entirely drowned by the singer, whereas in my box they will be heard.

The distinguishing novel feature in my reproducer or sound-box is in the employment of a thin strip of metal preferably of steel and in the manner of securing it to posts or lugs that extend from the sound-box for that purpose. Upon this strip is mounted the needle arm. The tension of the steel strip is adjustable and the part of the strip on either side of the needle arm and between the posts is reduced in cross-section. The needle arm is snugly fitted upon the strip, and the contracted portions of the strip each side of the arm act as resilient pivotal connections for the needle arm.

Referring to the drawings: Figure 1 is a perspective view of my complete sound-box. Fig. 2 is a vertical sectional view; Fig. 3 is a broken front view partly a sectional view. Fig. 4 is a broken plan view partly a sectional view.

The card-board diaphragm *a* is secured between rubber washers *b-b* within a casing *A* composed of a body portion *c* and a cap *d* secured to the body or back portion by screws *e*. Upon the back of the part *c* is screwed a large insulating washer *f* by means of screws *g* and in this washer is cemented a bushing *h* which is adapted to fit upon the end of the sound conducting tube of the talking machine (which is not shown in the drawings). To properly position the sound-box to the said tube of the machine a screw projects in the bushing *h* and this screw is adapted to fit within a slot in the sound conducting tube of the machine making a bayonet joint for locking the sound-box to the machine. Such a sound-box as thus far de-

scribed is old and I do not lay any claim to it as my invention.

To guard the needle arm against accidental injury, I provide a guard preferably made of a circular central portion *j* and radial arms *k* formed integral with the ring at one end and with the cap *d* at their other ends.

Referring to the manner of securing the needle arm:—A plate B is secured to the periphery of the cap *d*. The plate is preferably made integral with the cap, or it may be brazed thereto, or if desired, it may be secured by screws. The plate extends above the face of the cap to a suitable distance to facilitate an easy mounting of the needle arm C. In the forward end of the needle arm is a longitudinal bore or socket *l* for retaining the needle point, and a set screw *l'* is provided for securing the needle within the socket. To the rear of the needle socket is a transverse slotted bore *m* for mounting the arm. The needle arm extends rearwardly forming the part *n*. This member *n* may be secured to the forward part of the arm C in any suitable way, preferably it should be brazed in a hole formed to the rear of the transverse slot *m*. The part *n* of the needle arm tapers rearwardly and is bent downwardly near the end to meet the card-board diaphragm at its center. Upon this end of the arm is a head *o* provided with a screw-threaded hole *p* for securing it to the card-board diaphragm by screw *q*. The joint is hermetically sealed with wax *r*.

Upon the ends of the plate B are formed blocks *s—s*. The needle arm is positioned between these blocks, and the plate B is provided with slot *t* to permit the arm extending rearwardly. Bores *u—u* and slots *v—v* are provided in the ends of the blocks *s—s*, or they may be formed in the upper or lower faces of the blocks instead. The two slots *v—v* must be in exact alinement. A thin strip of metal D (preferably steel) is snugly fitted through the transverse slot *m* of the needle arm and the ends of the strip are passed through the slots *v—v*. The ends of the strip extend beyond the slots and are provided with holes *w—w* into which are inserted tapering pins *x—x*. The blocks *s—s* are tapped for receiving the adjusting screws *y—y*. Suitable space is allowed between the needle arm and the blocks *s—s*, and reduced portions *z—z* are formed on the strip D extending through these spaces.

The steel strip is cut away on both sides to leave the reduced parts or thin ribs of metal *z—z*, which act in the manner of pivotal spring connections. The cut-out portions to form the ribs *z—z* are rounding, leaving, proportionately, large fillets to strengthen the thin ribs. The adjusting screws *y—y* have their ends extending into the end bores *u—u* and abut against the metal strip D which passes through these bores. By adjusting

these screws, the strip D may be brought to the proper tension, as is needed to produce the best results from the sound-box. Such a mounting of the needle arm is very delicate, on account of the spring pivotal like contracted portions *z—z* on the strip D and is capable of very fine tensional adjustment by the screws *y—y*.

The posts or blocks *s—s* are made sufficiently large to form a protection for that part of the needle arm and the contracted parts *z—z* of the strip D between them. The parts are proportioned to allow the needle arm *n* to just clear the face of the cap *d* and the part of the arm through which the strip D passes to just clear the plate B. Such a construction amply protects the part *z—z* of the strip D against rupture, should the box be accidentally dropped. In such a case the needle arm would almost invariably strike against the cap *d*, and the resiliency of the parts *z—z* of the strip D are sufficient to permit of such a small displacement without rupture. The radial arms *k* and central part *j* protect the inner end of the needle arm against accidental blows. I have tested my sound-box in this respect by throwing it along the floor across the room, without in any way injuring it. I have also subjected it to such blows that were mica used for the diaphragm it would inevitably be broken.

By mounting the needle arm on such delicate pivotal connections under a state of strain the slightest movement of the needle point will be transmitted to the diaphragm, and it is doubtless on account of this delicate construction that my sound-box is capable of reproducing many sound undulations where other sound-boxes fail.

I have thus far received the best results from using diaphragms made from pressed paper board, having a calendered or glossy appearance and of a thickness of about 15/1000 of an inch. Where the board used is much thicker the sound produced is dulled and where thin board is used a high pitched or screechy tone is apparent, therefore care must be taken that a board of the proper thickness be selected.

I claim as my invention—

1. In a sound-box for a talking machine, mechanism for securing the needle arm in position comprising a flat strip of metal upon which the needle arm is snugly mounted, a post secured in fixed position on either side of the said arm, a slot in each post for receiving the ends of said strip, end portions of said strip having holes extending beyond the posts, tapering pins extending in the holes to retain the arm in transverse central position, and to keep the metal strip taut and a screw tapped in each post having its end abutting against the strip, to regulate the tension thereof, and to adjust the arm to transverse central position.

2. In a sound-box for a talking machine, mechanism for securing the needle arm in position comprising a flat strip of metal upon which the needle arm is snugly mounted, a post secured in fixed position on either side of the said arm, a slot in each post in a horizontal plane for retaining the ends of said strip, said slots being of greater width than the strip for longitudinal positioning of the arm, end portions of said strip having holes extending beyond the posts, tapering pins extending in the holes to retain the arm in transverse central position and to retain the metal strip taut, and a screw tapped in each post having its end abutting against the strip to regulate the tension thereof, and to adjust the arm to transverse central position.

3. In a sound-box for a talking machine, mechanism for securing the needle arm in position comprising a flat strip of metal upon which the needle arm is snugly mounted, a post secured in fixed position on either side of the said arm, an open slot in each post in a horizontal plane for retaining the ends of said strip and for longitudinal positioning of the arm and to facilitate an easy insertion and withdrawal of the strip when assembled with the arm, end portions of said strip having holes extending beyond the posts, tapering pins extending in the holes to retain the arm in transverse central position and to retain

the metal strip taut, and a screw tapped in each post having its end abutting against the strip to regulate the tension thereof and to adjust the arm to transverse central position.

4. In a sound-box for a talking machine, mechanism for securing the needle arm in position comprising a flat strip of metal upon which the needle arm is mounted, a post secured in fixed position on either side of the said arm, an open slot in each post in a horizontal plane for retaining the ends of said strip and for longitudinal positioning of the arm and to facilitate an easy insertion and withdrawal of the strip when assembled with the arm, end portions of said strip having holes extending beyond the posts, tapering pins extending in the holes, to retain the arm in transverse central position and to retain the metal strip taut, enlarged recesses formed in the walls of the slots, screws tapped in the posts having their ends abutting against the strip opposite the recesses to force the strip into the recesses when screwed inward to adjust the tension of the strip and to adjust the arm to transverse central position, and contracted portions formed on the strip between the arm and posts.

HENRI JARDÉ.

Witnesses:

ALEXANDRE SELMER,
EDGAR BRAILLY.