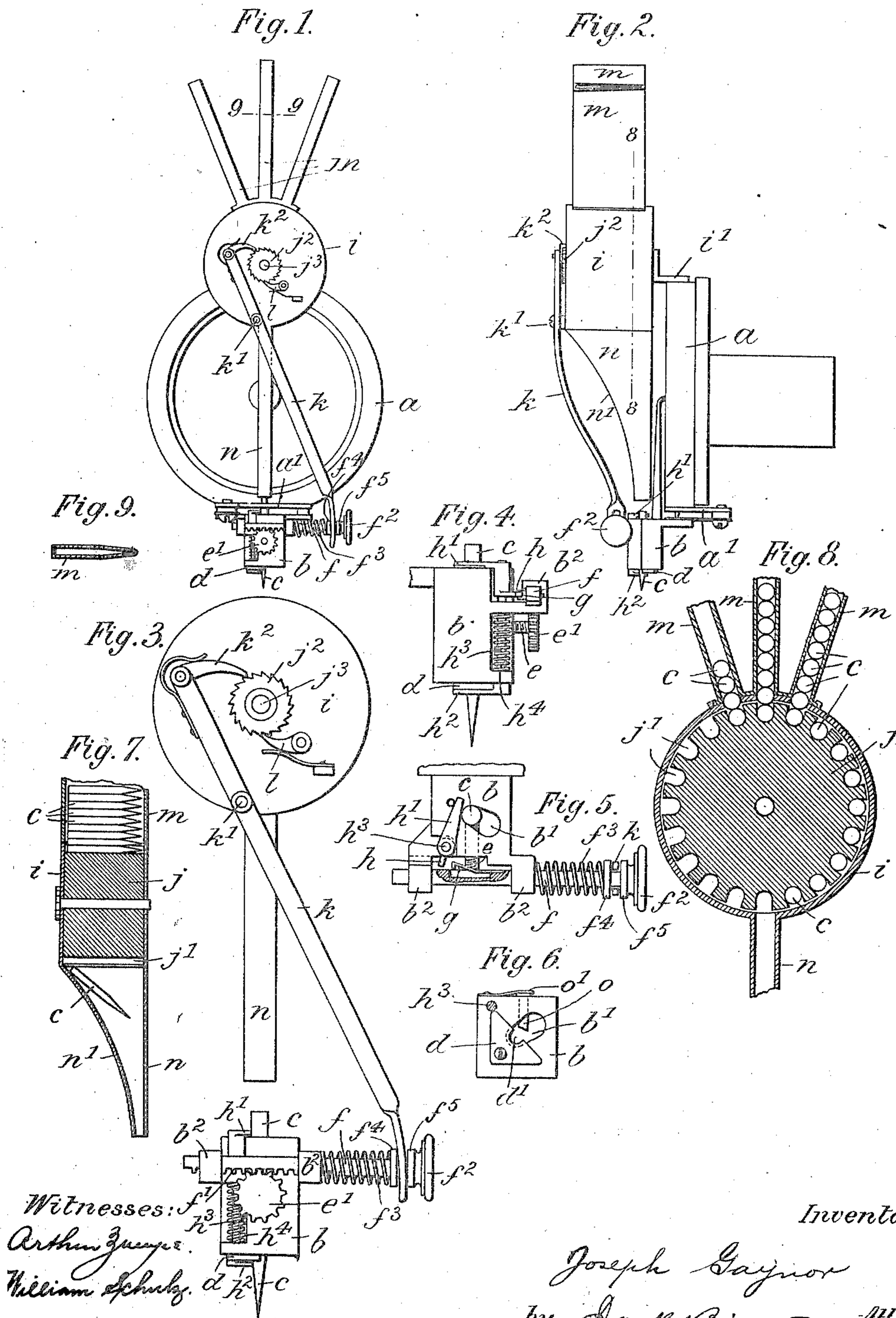


No. 816,908.

PATENTED APR. 3, 1906.

J. GAYNOR.
SOUND BOX.

APPLICATION FILED OCT. 27, 1905.



UNITED STATES PATENT OFFICE.

JOSEPH GAYNOR, OF NEW YORK, N. Y.

SOUND-BOX.

No. 816,908.

Specification of Letters Patent.

Patented April 3, 1906.

Application filed October 27, 1905. Serial No. 284,616.

To all whom it may concern:

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

This invention relates to an improved sound-box for talking-machines of the class having disk-shaped records. With these machines it is necessary to frequently replace the needle engaging the record.

The object of the invention is to provide means whereby the exchange of a new needle for the worn needle may be quickly effected in a simple manner and by a single manipulation.

In the accompanying drawings, Figure 1 is a front elevation of my improved sound-box; Fig. 2, a side view thereof; Fig. 3, an enlarged front view of the needle-operating mechanism; Fig. 4, a side view of the needle-holder; Fig. 5, a plan, partly in section, thereof; Fig. 6, a bottom view thereof with some of the parts omitted; Fig. 7, a detail of the needle-feeder; Fig. 8, an enlarged section thereof on line 8-8, Fig. 2; Fig. 9, a cross-section through the magazine on line 9-9, Fig. 1.

The letter *a* indicates the sound-box of a talking-machine, to which is secured by a plate *a'* the needle-holder *b*. The latter consists of a block having a perforation *b'*, which extends from top to bottom and is adapted for the reception of a needle *c*. The perforation *b'* is of elongated or oval form, as shown in Fig. 2. The needle *c* is normally contained within the inner portion of perforation *b'* and is supported upon a base-plate *d*, having a notch *d'* of less diameter than the maximum diameter of the needle. The plate *d* extends below the inner portion of perforation *b'*, but not below the outer portion thereof. By means of plate *d* the needle is normally suspended from the holder in such a manner that its point projects below the same to engage the record. The needle is secured in position by a clamp-screw *e*, tapped into the holder and bearing with its end against the body of the needle. Screw *e* has a toothed head or pinion *e'*, engaged by a rack *f'*, integral with a plunger *f*, carrying a push-button *f''* and retracted by a spring *f'''*. The plunger slides in guides *b''* of holder *b*, and by advancing the plunger screw *e* will be

slackened to release old needle *c*, while when the plunger is retracted the screw will be tightened against a new needle.

To plunger *f* is secured a laterally-extending resilient finger *g*, arranged in the path of the tail *h* of an ejector adapted to throw the needle *c* laterally out of inner part of opening *b'* and into the outer part thereof as soon as the needle is released. The ejector is composed of an upper arm *h'* and a lower arm *h''* integral with an upright connecting-spindle *h'''*, turning in holder *b* and influenced by a coiled spring *h''''*. The arms *h'* *h''* are arranged, respectively, opposite the upper and lower ends of needle *c*, so that when turned they will throw the needle off support *d* and out of inner part of opening *b'*. The movement of the ejector is effected by the advance of plunger *f*, which after slacking screw *e* will by finger *g* push against tail *h*, so that the arms *h'* *h''* are swung against needle *c*. As soon as the finger *g* has cleared tail *h* the ejector is returned to its normal position by spring *h''''*.

The plunger *f*, besides expelling the worn needle in the manner described, also actuates the means for feeding a new needle and clamping the same to the holder. These means consist of a tubular casing *i*, secured to sound-box *a* by bracket *i'*. Within casing *i* turns a cylindrical plug or needle-feeder *j*, having a series of parallel and equally-spaced grooves *j'*, each adapted for the reception of one of the needles *c*. The plug *j* receives intermittent rotatory movement from plunger *f* by two-arm lever *k*, fulcrumed to casing *i* at *k'*. The forked lower arm of lever *k* grasps plunger *f* between a pair of collars *f''* *f'''*. To the upper arm of lever *k* is pivoted a spring-pawl *k''*, engaging a ratchet-wheel *j''*, fast on shaft *j'''* of plug *j*. The ratchet-wheel *j''* is further engaged by a detent *l*, that holds plug *j* against backward rotation.

The plug *j* is charged, preferably, from a number of magazines *m*, Fig. 8, opening through casing *i*, to which they are detachably secured. These magazines are arranged side by side and will be successively emptied by the intermittent rotation of plug *j*. In cross-section each magazine *m* tapers to conform to the shape of the needle, Fig. 9. At its bottom casing *i* communicates with a chute *n*, having a curved or tapering side *n'* and arranged vertically above the inner contracted portion of opening *b'*. The tapering

side n' of chute n serves to right the needles c after the latter leave plug j , as indicated in Fig. 7.

A beveled spring-pawl o' , extending across opening b' , serves to prevent the needle from falling out of the inner part of the opening before it becomes engaged by screw e .

The operation of the device will be readily understood. A pressure on button f^2 will cause plunger f to advance and to perform during such advance three successive operations. First, it will, by rack f' and pinion e' , turn screw e to release the worn needle c , which will then remain suspended on support d . Second, it will, by finger g and tail h , turn the ejector to throw the released needle laterally out of inner part of opening b' and off support d . When this second operation has been performed, the ejector will be returned to its normal position by spring h^4 . Third, the plunger f will tilt lever k , and thereby turn plug j , so that the lowermost charged groove j' becomes alined with chute n to discharge its needle c through the latter into opening b' . The needle will thus fall through the holder until it becomes seated on support d . Upon the release of the plunger the latter is retracted by spring f^3 . During its return movement the plunger will by rack f' tighten screw e against the newly-introduced needle, so that the latter is clamped to the holder ready for use.

What I claim is—

1. A sound-box for talking-machines provided with a needle-holder, means for clamping the needle to the holder, and means for displacing the needle laterally from within the holder, substantially as specified.

2. A sound-box for talking-machines provided with a needle-holder having an elongated opening, means for clamping the needle to the holder, and means for displacing

the needle laterally from within the opening, substantially as specified.

3. A sound-box for talking-machines provided with a needle-holder having an elongated opening, a screw for clamping the needle to the holder, a spring-pawl adapted to extend across the opening, and means for displacing the needle laterally from within the opening, substantially as specified.

4. A sound-box for talking-machines provided with a needle-holder, a plunger, and separate means operatively connected to the plunger for clamping the needle to the holder and for displacing the needle laterally from within the holder, substantially as specified.

5. A sound-box for talking-machines provided with a needle-holder, a plunger, a pivoted ejector having laterally-extending arms adapted to engage the needle, and means for operatively connecting the plunger to said ejector, substantially as specified.

6. A sound-box for talking-machines provided with a needle-holder, a plunger, a clamp-screw, a pivoted ejector having laterally-extending arms, and means for operatively connecting the plunger to the clamp-screw and to the ejector, substantially as specified.

7. A sound-box for talking-machines provided with a tubular casing, an inclosed grooved plug, a plurality of magazines communicating with the casing, a needle-holder, and a chute intermediate the casing and said holder, substantially as specified.

Signed by me at New York city, (Manhattan,) New York, this 25th day of October, 1905.

JOSEPH GAYNOR.

Witnesses:

FRANK V. BRIESEN,
WILLIAM SCHULZ.