

930,294.

A. KELLER.  
TALKING MACHINE.  
APPLICATION FILED NOV. 23, 1907.

Patented Aug. 3, 1909.  
2 SHEETS—SHEET 1.

Fig. 1.

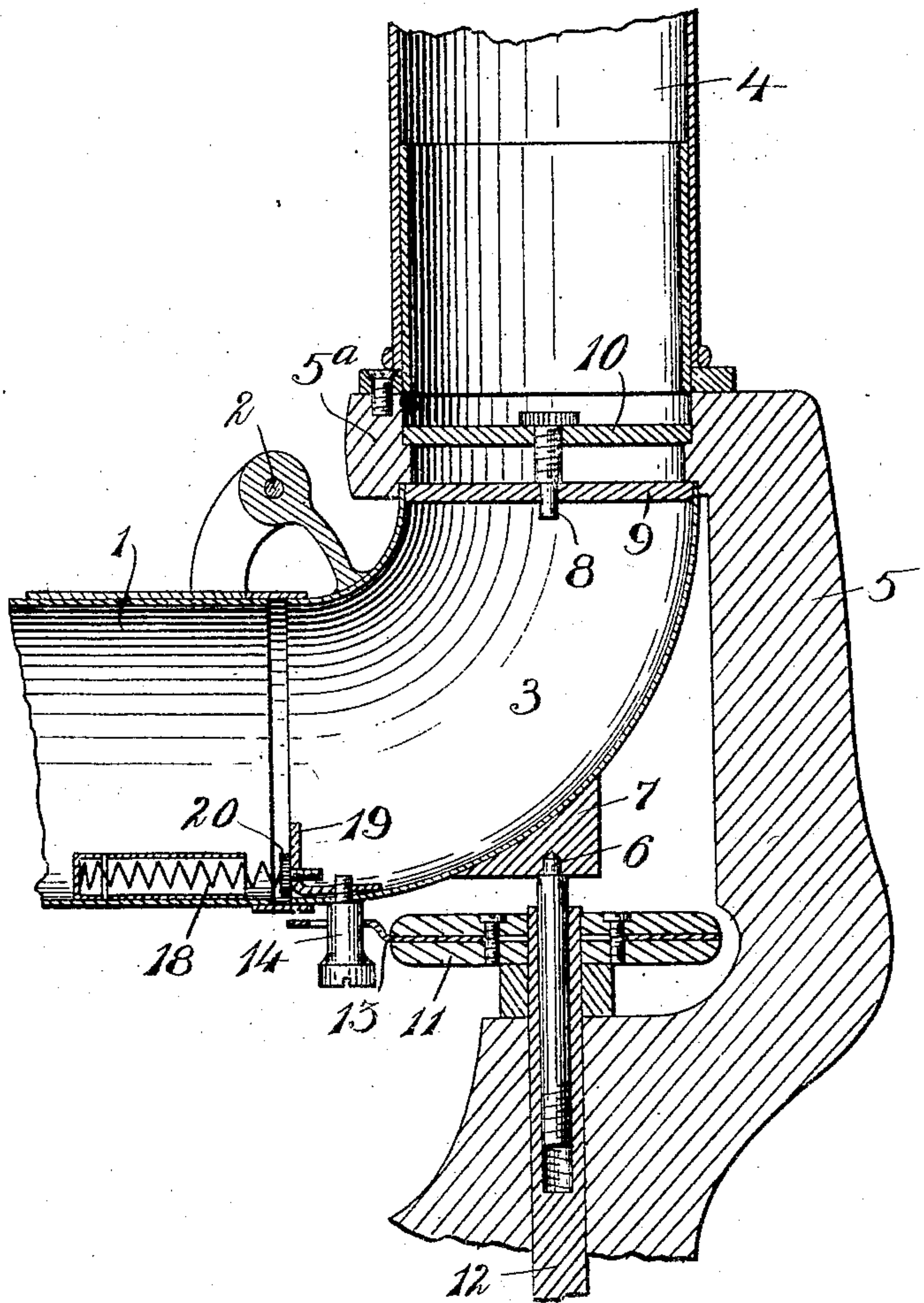
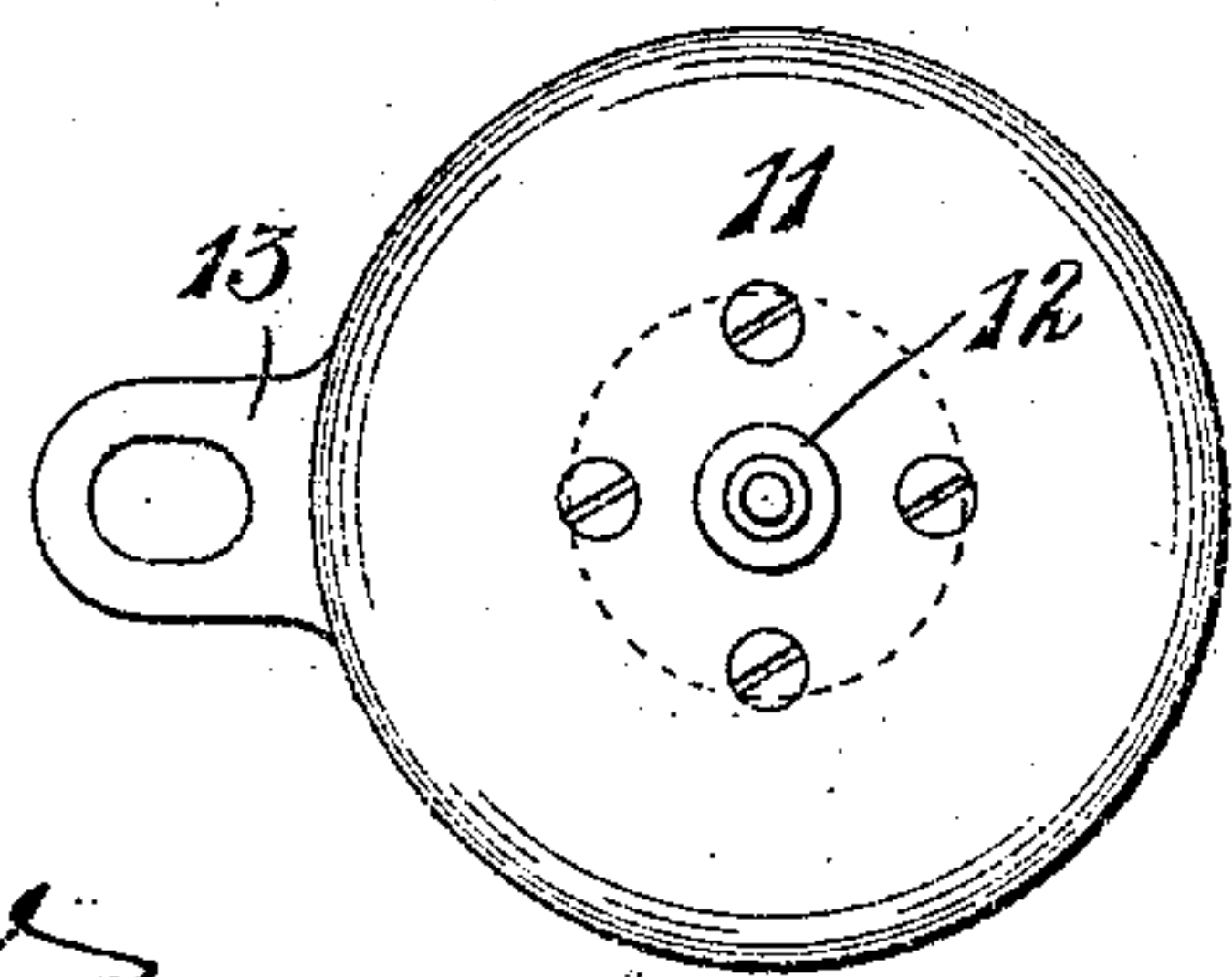


Fig. 5.



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2 SHEETS—SHEET 2.

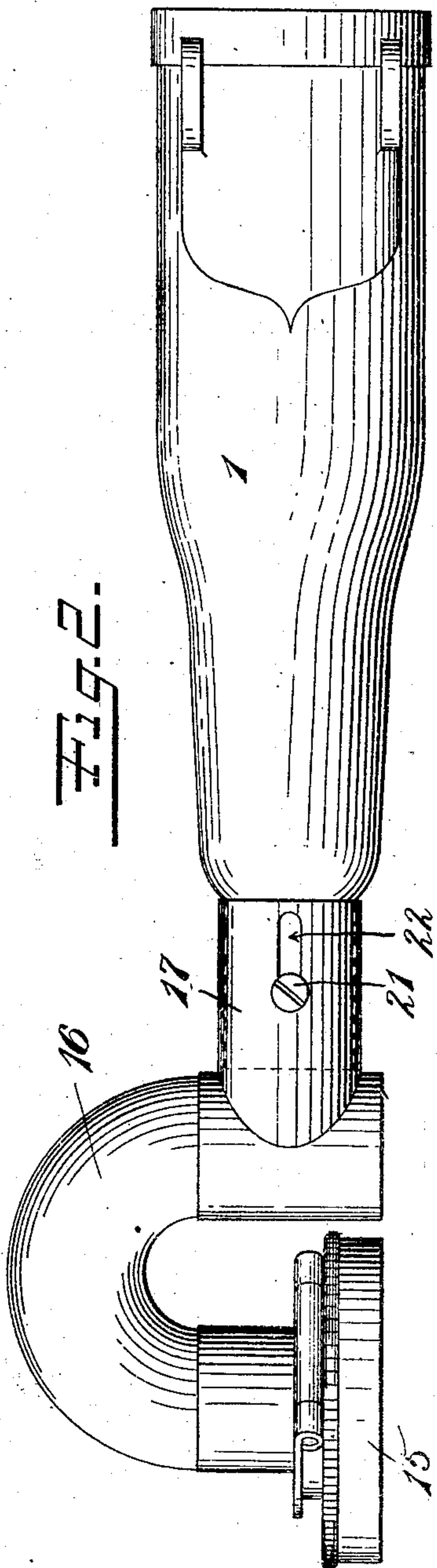


Fig. 4.

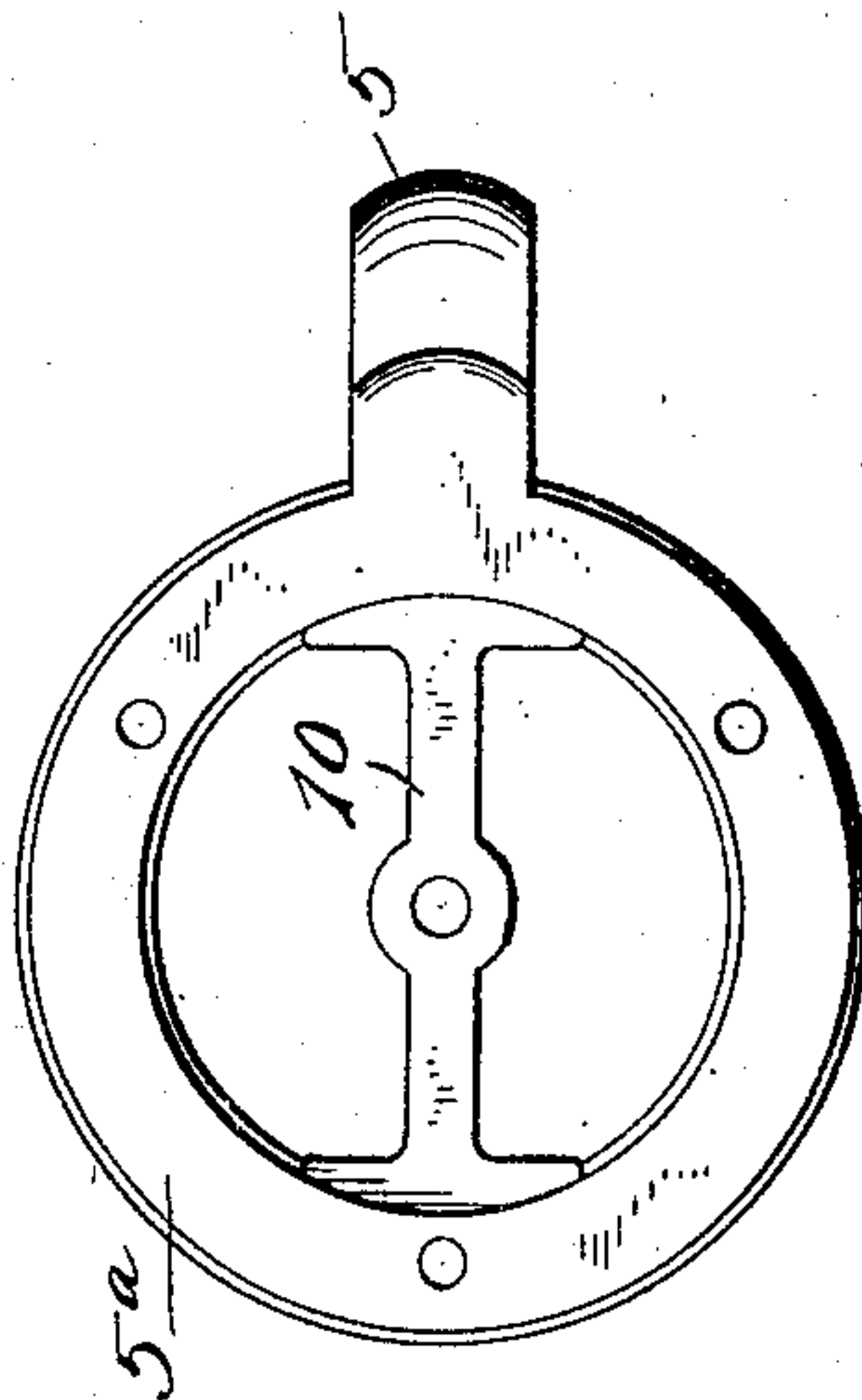
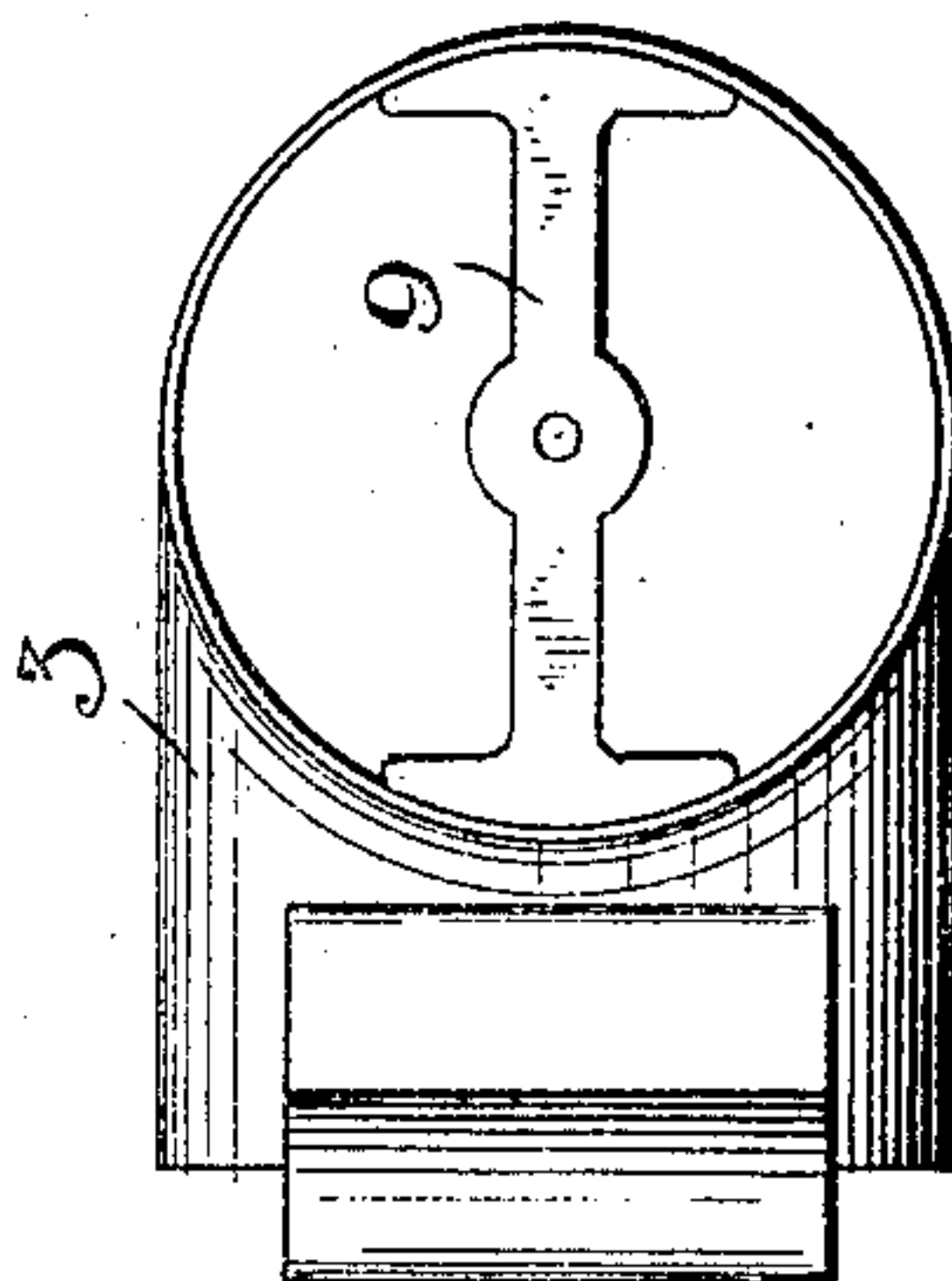


Fig. 3.



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# UNITED STATES PATENT OFFICE.

ALFRED KELLER, OF STE. CROIX, SWITZERLAND, ASSIGNOR TO MERMOD FRÈRES, OF STE. CROIX, SWITZERLAND.

## TALKING-MACHINE.

No. 930,294.

Specification of Letters Patent.

Patented Aug. 3, 1909.

Application filed November 23, 1907. Serial No. 403,435.

*To all whom it may concern:*

Be it known that I, ALFRED KELLER, a subject of the Emperor of Germany, residing at Ste. Croix, Canton of Vaud, Switzerland, have invented certain new and useful Improvements in Talking-Machines, of which the following is a full, clear, and exact description.

This invention relates to improvements in talking machines, and has particular reference to the producing and magnifying mechanism.

Certain features of construction, notably the clutch feeding mechanism, are from a broad standpoint disclosed in my prior application, Serial No. 395,945, and is broadly claimed therein.

In the accompanying drawings I have shown only such parts of an instrument as are necessary to a full understanding of the invention.

Figure 1 is a vertical section of a portion of the sound arm and support therefor; Fig. 2 is a plan view of the sound arm and sound box or reproducer; Fig. 3 is a plan view of certain features of construction; Fig. 4 is a plan view of certain other features of construction; Fig. 5 is a plan view of the friction clutch.

1 is the sound arm, the same being of bottle-shaped outline. This sound arm is hinged at 2 (Fig. 1) to the elbow 3, which forms a continuation thereof.

4 is an upward extension from the elbow 3 arranged to carry the usual horn or sound-magnifying device (not shown).

5 is a bracket carried by the ~~ca~~ (not shown) of the talking machine, and which affords a support for the sound arm and extension, making suitable connection therewith, as by a collar 5<sup>a</sup>.

In the construction shown, the upper part of the elbow 3 is mounted to rotate in the lower side of collar 5<sup>a</sup>.

6 is a pivotal support for the lower end of the elbow 3, the same taking into a suitable bearing 7 thereon.

8 is an upper pivotal support, the same projecting into a skeleton frame or spider 9 fixed in the elbow 3. This pivotal support 8 is carried by a corresponding skeleton frame or spider 10 carried by collar 5<sup>a</sup>.

11 is a clutch composing two plates carried by a driving shaft 12 driven from any suitable source of power (not shown), be-

tween which plates is a friction washer 13 having a slotted extension arranged to embrace a bearing 14 carried by the elbow 3. Obviously, as the shaft 12 rotates, it will, through the medium of the clutch 11 and friction washer 13, rotate the elbow 3 and thereby the sound arm 1.

At the free end of the sound arm 1 is a sound box 15 carried in any suitable manner, for example by means of a U-shaped tubular extension 16, which is slidable through an extension 17 on the sound arm 1.

18 is a buffer spring which is carried by one of the parts 1 or 3 and arranged to bear against the other part. In the particular form shown, this buffer spring 18 is carried by part 1 and is arranged to take up against an abutment 19 on the elbow 3 so as to carry part of the weight of the arm 1 and so as to check concussion when the arm descends. This spring tension 18 may be varied or may be adjusted by any suitable means, for example by means of a screw 20, such as shown in the drawings. The shaft 12 is driven in any suitable manner from the motor of the talking machine, such as described in my copending application, Serial No. 359,945, filed October 4, 1907, and always moves at a speed so proportioned thereto that the sound box 15 will be caused to traverse diametrically the record (not shown) at the proper speed to follow the spiral groove therein.

Inasmuch as some records vary from others in the width of the space between the grooves, it is desirable to have means to compensate for this variation, whereby the feeding mechanism will be adapted to the various grooves. This may be accomplished by shifting the extension 17 on the arm 1 toward or farther away from the axis of rotation of the elbow 3. When the desired adjustment is effected, the extension 17 may be locked on the arm 1 by means of the set-screw 21 moving in a slot 22 in extension 17.

The bottle-shaped sound arm is of great advantage in that it serves in a way the function of a sound-magnifying device intermediate the sound box 15 and the usual horn. By thus offering less resistance to the sound waves the record is reproduced much more satisfactorily. By making the arm bottle-shaped all angles are avoided, thereby offering less resistance to the sound waves.

As is well known, sound waves have a



tendency to expand as they proceed from their source. By providing this tapered sound arm 1 which increases gradually in diameter, from a point from close to the source of the sound waves, the latter are in a sense gradually released so that they may more readily adapt themselves to natural tendencies. In other words, by this arrangement less resistance is afforded to the sound waves and the danger of clashing is very largely avoided. In fact, by this arrangement the magnifying and development of the sound waves begins to occur almost immediately after said waves leave the sound box.

What I claim is:

1. In a talking machine, a sound conveying device comprising a sound arm, an elbow, a bracket pivotally connecting the sound arm with the top of the elbow, a driving shaft loosely pivoted to and supporting the bottom of the elbow, and an eccentric connection between said shaft and elbow.

2. In a talking machine, a sound conveying device comprising an elbow, a sound arm hinged thereto, a bracket pivotally supporting the top of the elbow, a shaft operatively connected with the driving mechanism and pivotally supporting the bottom of the elbow, and a connection between said shaft and elbow, including a friction disk.

3. In a talking machine, a sound conveying device including a sound box, a sound arm extending therefrom and increasing in diameter in a direction away from said box, and a loose pivotal support for the outer end of said sound arm and a friction driving clutch carried by said pivotal support and a connection between said sound arm and said clutch.

4. In a talking machine, a sound conveying device including a sound box, a sound

arm extending therefrom and increasing in diameter in a direction away from said box, a pivotal support for the outer end of said sound arm, and a frictionally driven means to swing said sound arm around the axis of its said support.

5. In a talking machine, a support for the sound producing mechanism, said sound producing mechanism including a sound box, a sound arm carrying said sound box, an elbow on said sound arm, a bearing for said elbow in said support, and a friction driving mechanism for said sound arm concentric with the bearing for said elbow.

6. In a talking machine, a support for the sound producing mechanism, said sound producing mechanism including a sound box, a sound arm carrying said sound box, an elbow on said sound arm, a bearing for said elbow in said support, and a driving mechanism for said sound arm concentric with the bearing for said elbow, said sound box being adjustable longitudinally on said sound arm, said driving mechanism including a friction clutch.

7. In a talking machine, a support for the sound producing mechanism, said sound producing mechanism including a sound box, a sound arm carrying said sound box and including a horizontally curved and hinged portion at its outer end, an elbow on said sound arm at its opposite end and having a horizontal hinge, a bearing for said elbow in said support, a friction driving clutch for said sound arm concentric with the bearing for said elbow.

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