

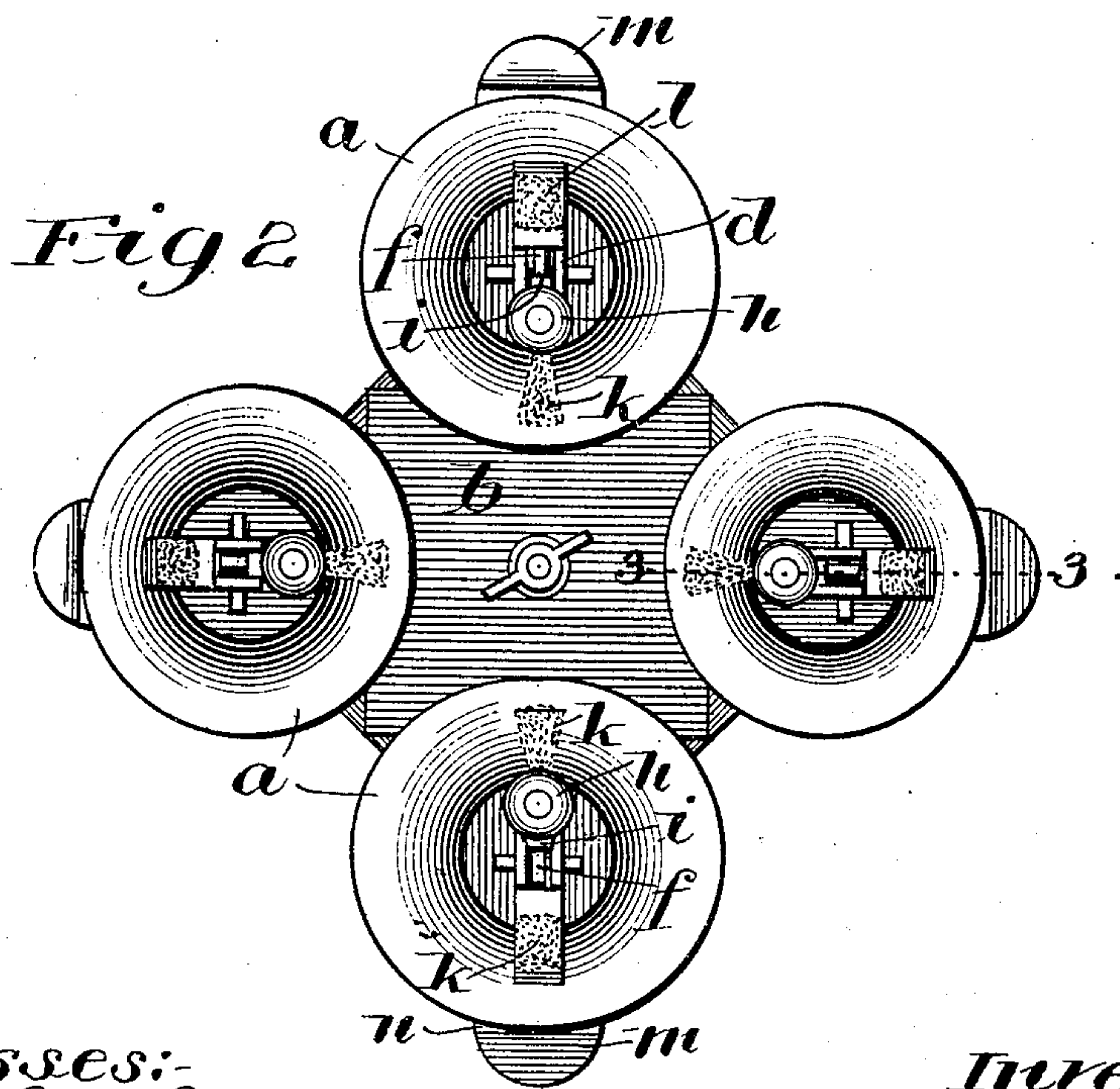
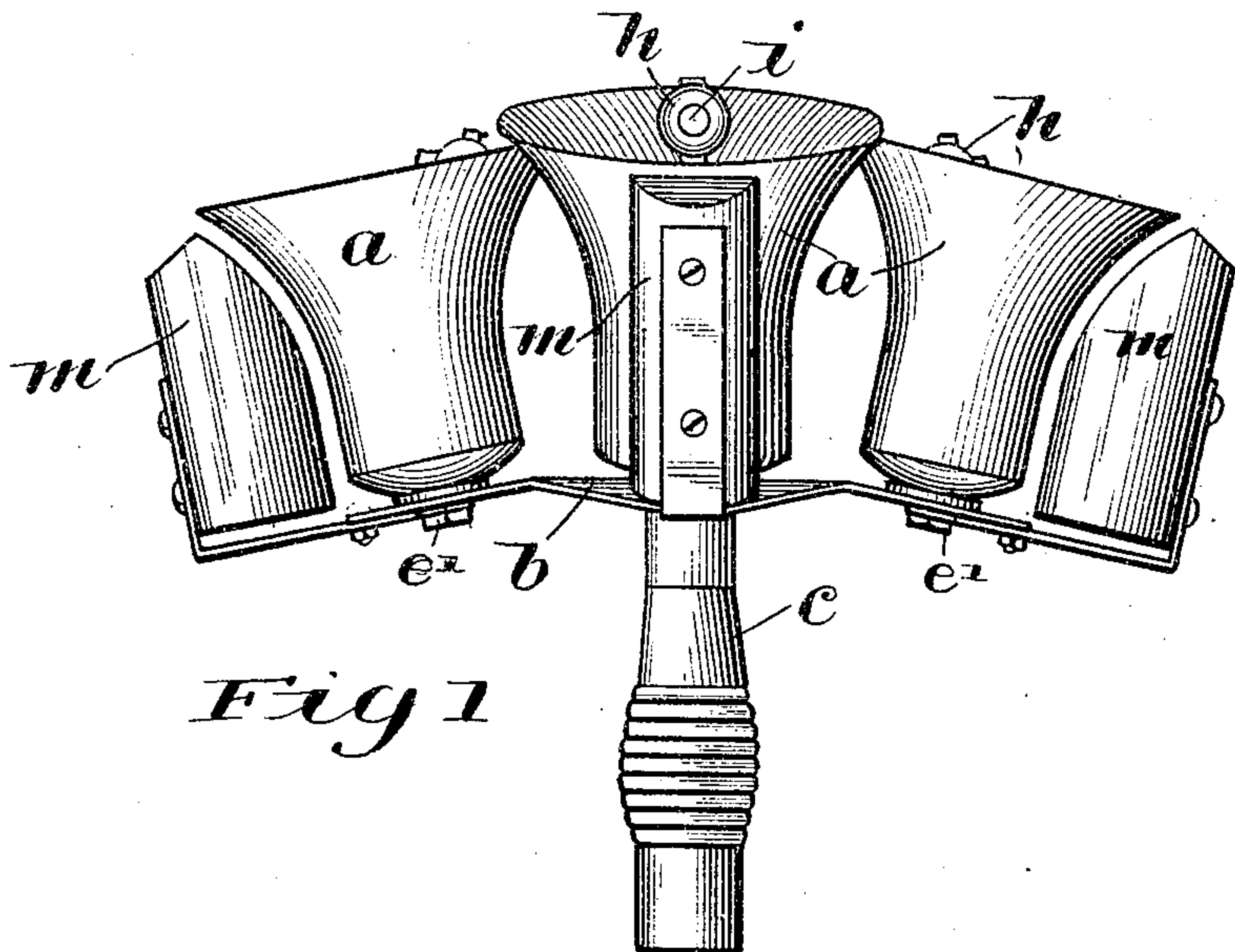
No. 774,234.

PATENTED NOV. 8, 1904.

J. C. DEAGAN.  
MUSICAL INSTRUMENT.  
APPLICATION FILED AUG. 7, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses:  
Carl A. Crawford  
Hubert C. Barton

Inventor  
John C. Deagan  
by George L. Bragg  
his Attorney

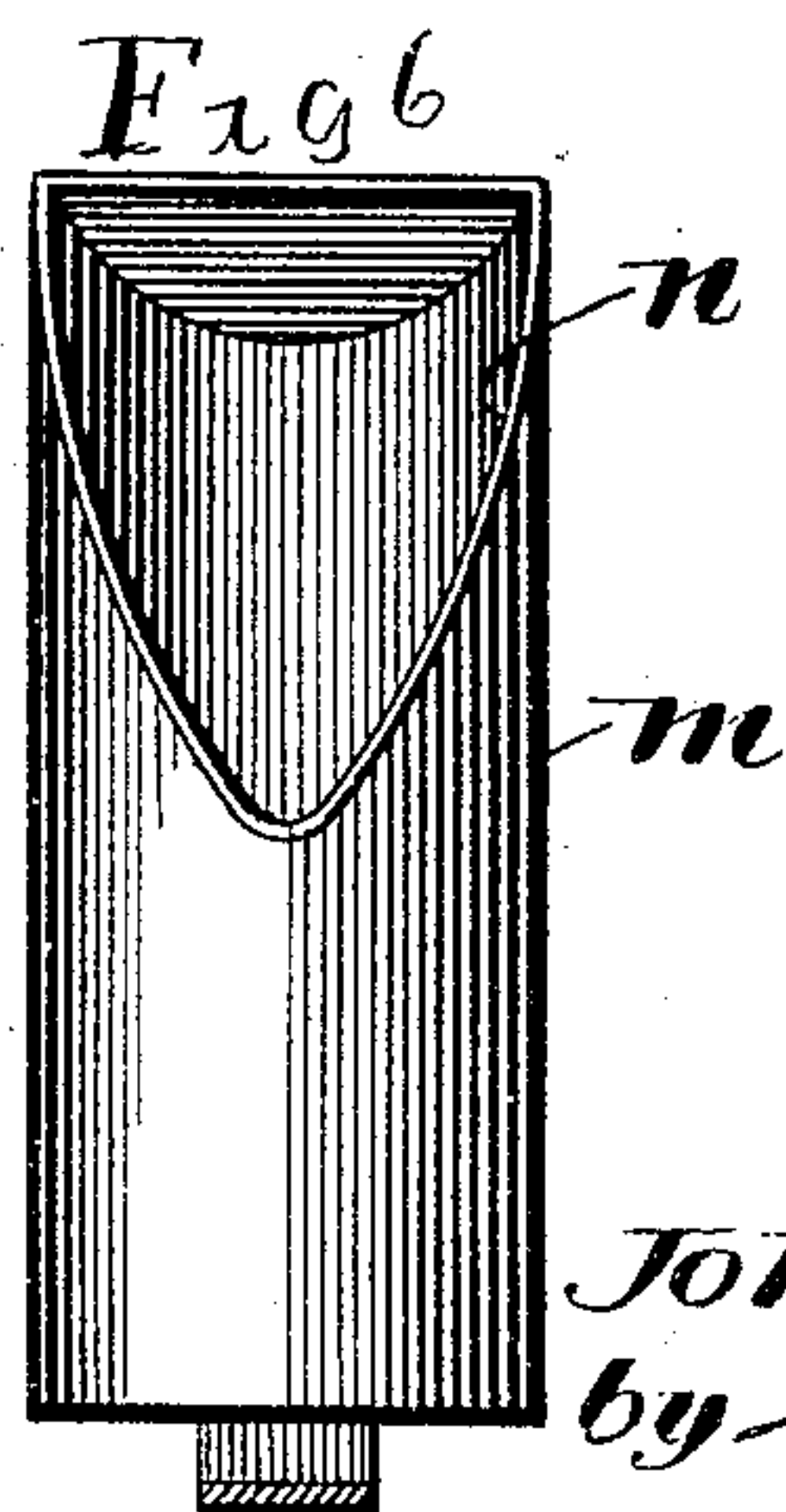
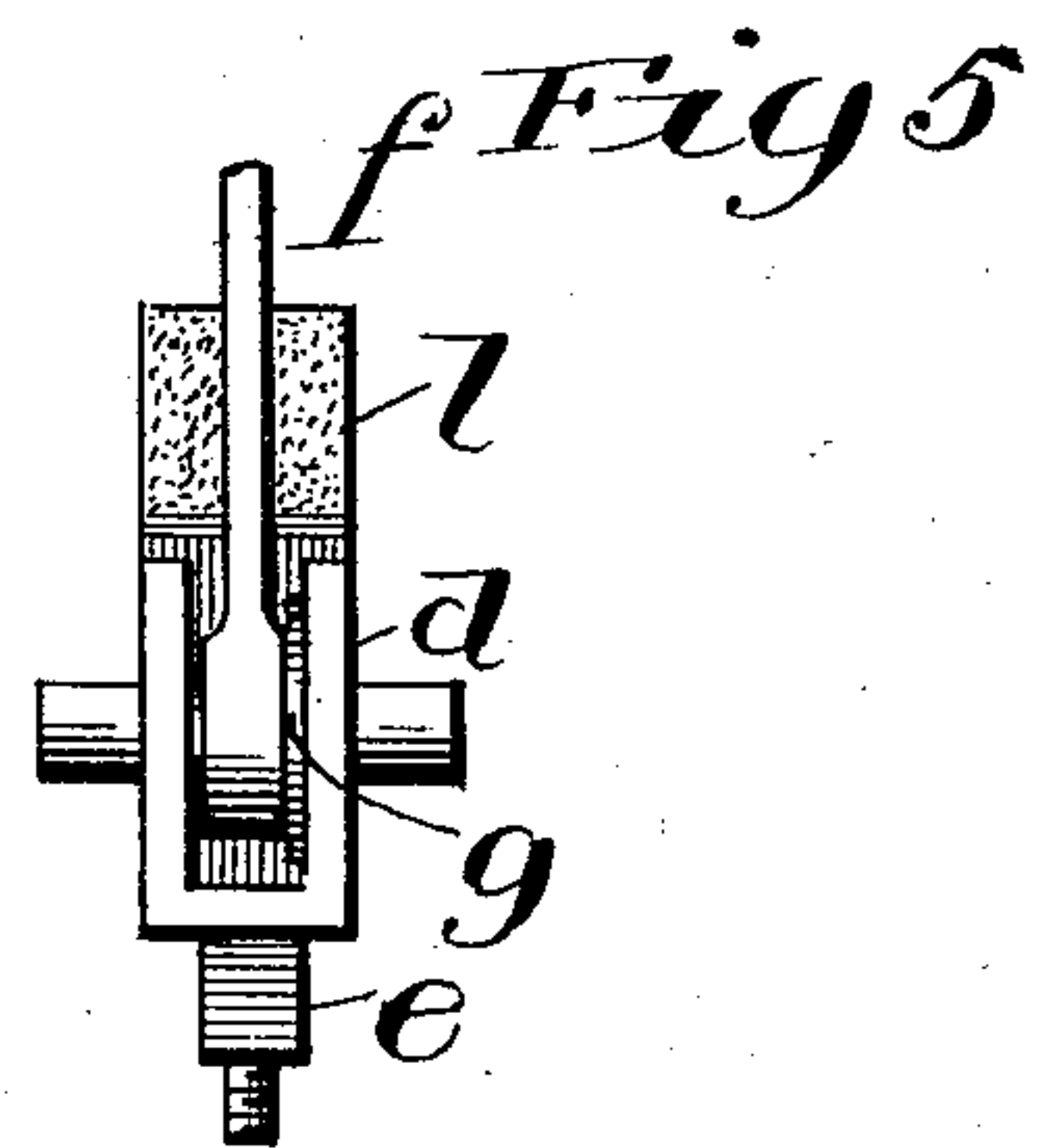
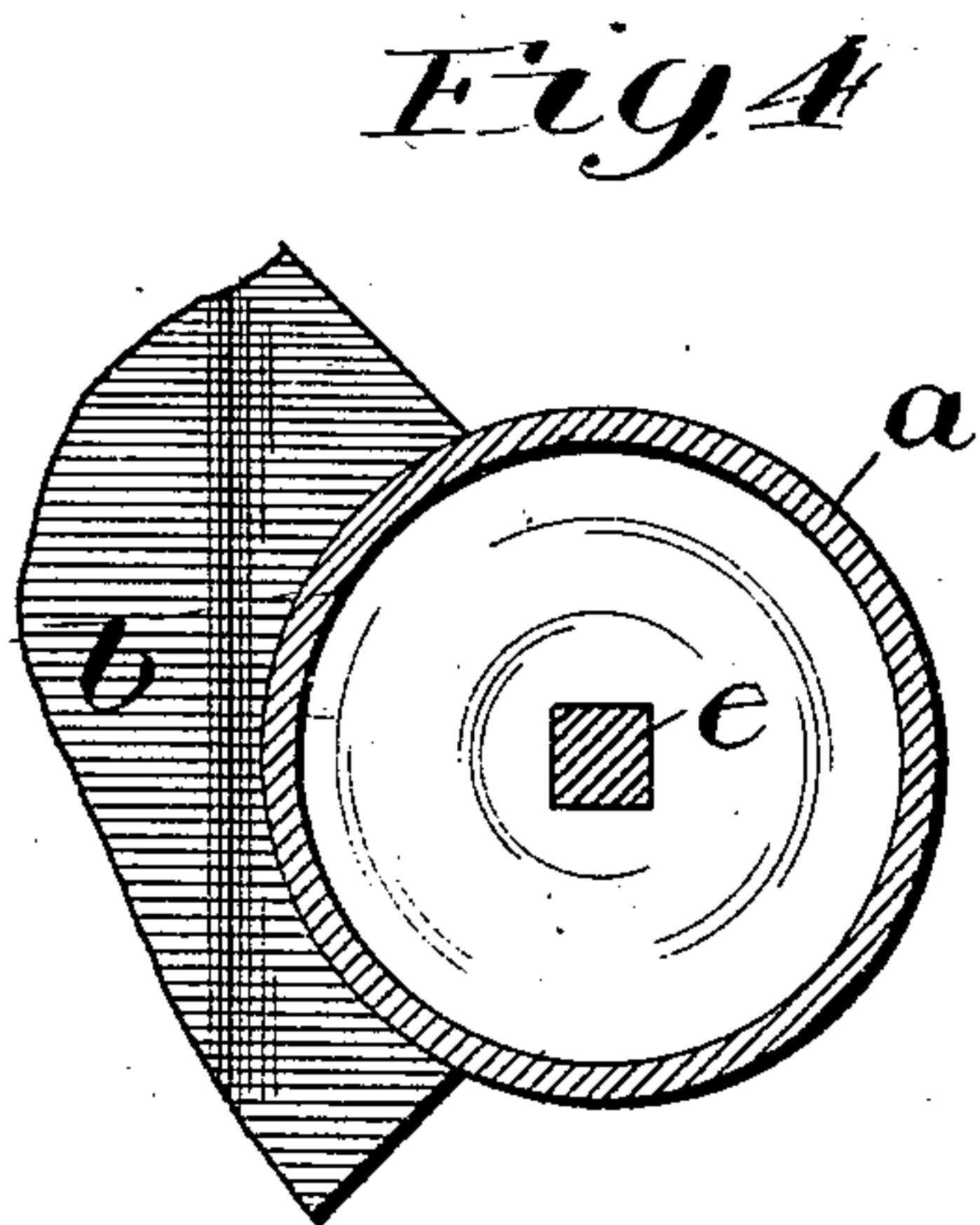
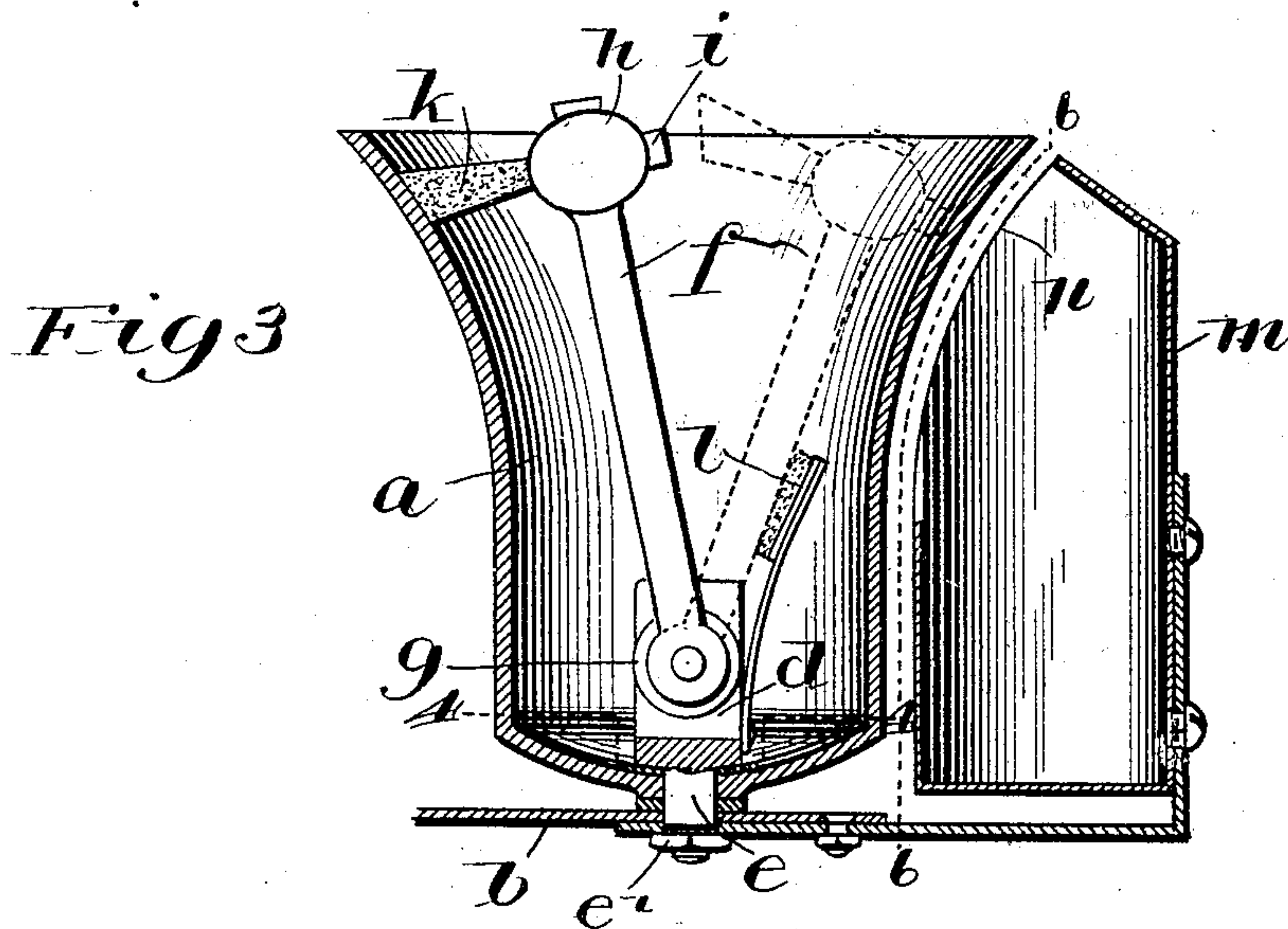
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2 SHEETS—SHEET 2.



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# UNITED STATES PATENT OFFICE.

JOHN CALHOUN DEAGAN, OF CHICAGO, ILLINOIS.

## MUSICAL INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 774,234, dated November 8, 1904.

Application filed August 7, 1903. Serial No. 168,613. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN CALHOUN DEAGAN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Musical Instruments, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to musical bells and has several objects.

One object of the invention is the provision of improved means whereby metallic clapper-rods may enter into the construction of the instrument. This feature of the invention is practiced by interposing a sound-dampener between the clapper-rod and a trunnion-support therefor, the sound-dampener being desirably a leather washer surrounding the clapper-shaft.

A second object of my invention is the provision of an improved resonator in combination with the bell whereby a most effective collection of the sound-waves is secured and a most compact arrangement of bell and resonator is effected. To this end I preferably employ a resonator that extends longitudinally of the axis of the bell, the resonator being desirably tubular throughout the major portion of its length. The orifice in the resonator for permitting the passage of sound-waves thereto is desirably secured by cutting the resonator along a line that is substantially parallel in direction to the flare of the bell, whereby the sound-waves emanating from the bell find easy and speedy access to the resonator. The best result is secured by providing the orifice in the resonator opposite the sound-bow, and particularly opposite the point of impact of the clapper upon the bell.

Another feature of the invention is the provision of an improved form of musical bells whereby they may be assembled, if desired, into groups to more effectively and satisfactorily produce chords or other selected groups of musical sounds. To this end the clapper-rod of each bell is provided with two strikers or clappers, one a hard sound-producing striker and the other a soft sound-preventing

striker, which is desirably made of felt. These strikers are desirably located in the same plane and so act in coöperation with the bell-barrel that when the clapper-rod is moved in one direction with respect to the bell-barrel the sound-producing striker will impinge or strike upon the metal of the sound-bow, whereas a movement of the clapper in the alternative direction will cause the felt striker to strike the sound-bow, thereby preventing the production of sound. The bell may be so constructed that the silent striker will not only prevent the production of sound, but dampen the sound previously obtained by the hard striker.

In the most complete embodiment of the invention a group of bells is provided with a common handle, and the bells are so relatively arranged that when they are bodily moved in one direction but one bell will sound, in another direction another bell only will sound, and so on throughout the bells of the entire group. To this end the hard strikers of each pair of diagonally opposite bells are symmetrically disposed with respect to each other, and the soft strikers are also symmetrically disposed with respect to each other. For example, the hard strikers may be upon the outside and farthest removed from the handle common to all of the bells, while the soft strikers may be arranged to strike the portions of the bells nearer to the center of the composite structure.

In one embodiment of the invention I have provided four bells arranged quadrilaterally, the diagonally opposite bells of each group having their clappers moving in the same plane, securing results that will be obvious from the foregoing description. In order that the clappers of the diagonally opposite bells may be constantly retained in the same plane of operation, the mountings upon which said clappers, with their rods, are pivoted are made fixed with respect to the common support for the bells. This result is most desirably accomplished by providing an opening for each clapper-mounting that is polygonal in contour and making the corresponding clapper-mounting of corresponding cross-section.

I will explain my invention more fully by



reference to the accompanying drawings, illustrating one of its embodiments that I prefer.

Figure 1 is a side elevation of an instrument embodying the main features of my invention. Fig. 2 is a plan view thereof. Fig. 3 is a vertical section on line 3 3 of Fig. 2. Fig. 4 is a horizontal section on line 4 4, Fig. 3. Fig. 5 is a fragmentary detail of the clapper-bearing, and Fig. 6 is a section on line 6 6 of Fig. 3.

Like parts are indicated by similar characters of reference throughout the different views.

In the device shown a plurality of bells *a a* is mounted upon a common base plate or support *b*, to the central portion of which a handle *c* is secured, the bells being desirably on one side of their support and the handle on the other. The trunnion-bearings *d d* are provided each with a stem *e* of polygonal or equivalent cross-section, the base being provided with holes corresponding in contour to the shape of the stems, so that said trunnion-bearings are maintained immovable with respect to the base, whereby the planes of operation of the clapper-rods are fixed. The bell-barrels are desirably provided with apertures at their bases or caps that correspond in cross-section to the stems *e*, so that one portion only of each bell is constantly struck, whereby the best tone-producing portion of the bell may always be struck. Nuts *e'* serve to secure the bells, clapper-mountings, and support together. The nuts may be loosened, if desired, to give the bells required freedom for vibration. The clapper-rods *f* are permitted to swing by being provided with trunnions that engage the trunnion-bearings, and as the clappers are of metal a sound-dampener *g* is provided about a trunnion of each rod, this dampener being desirably a leather washer surrounding the corresponding trunnion and interposed between the clapper-rod and its trunnion-bearing.

The upper end of each clapper-rod is provided with an enlargement *h*, into which is inserted a hard striker *i*, that may be of wood, and a soft striker *k*, that may be of felt, these strikers extending transversely to and upon opposite sides of the rod, the strikers upon each rod being desirably in line. The hard and soft strikers of each bell are mechanically united in this preferred way. In order that the sound-bow may continue to cause sound after being struck by the hard striker, a buffer or check-spring *l* is provided that will remove the hard striker from the bell-barrel after striking. The drawings illustrate a group of four bells located at the corners of a square, the clapper-rods of the diagonally opposite bells operating in coincident planes. The soft strikers of each pair of diagonally opposite bells are symmetrically arranged with respect to each other, as are also the hard strikers of each pair of diagonally opposite

bells, the plane containing each pair of clapper-rods being the plane of symmetry. By this symmetrical arrangement of the strikers of each pair of diagonally opposite bells a motion in one direction will cause one bell to sound, the soft striker of the companion bell failing then to cause it to sound. A reverse motion will produce results vice versa. A movement of the instrument in one direction at right angles to the plane or general direction of the first two movements will likewise cause one of the bells of the remaining pair to sound, the companion bell remaining silent, while a reverse movement will be accompanied by results that are vice versa. Thus the bell to be sounded may be selected without operating the companion bells.

Each bell has a resonator *m* along its side, the axis of the bell and the axis of the associated resonator being desirably parallel. The resonator is desirably tubular and is chamfered or cut away at its upper portion to afford an opening *n*, through which the sound-waves from the bell pass into the resonator. The resonators are desirably disposed beneath the sound-bows of the bells, the cut-away or chamfered portions of the resonators permitting this association. The openings in the resonators are preferably directly opposite the portions of the sound-bows where the hard strikers hit the bell-barrel. To secure the best results, the margins about the openings in the resonators are parallel with the bell-barrels and the sound-bows thereof. While I have shown an even number of bells and have spoken of the symmetrical arrangement of the strikers, it is obvious that the number of bells may be changed and that an exact symmetrical arrangement of the strikers is not essential.

It is obvious that changes may be made in the embodiment of the invention herein shown and described without departing from its spirit. I do not, therefore, wish to be limited to the precise form of the invention illustrated; but,

Having thus described my invention, I claim as new, and desire to secure by Letters Patent, the following:

1. In a musical instrument, the combination with four bells arranged at the corners of a quadrilateral, the said bells being divided into two pairs, each pair comprising two diagonally opposite bells, each bell of each pair having a clapper-rod carrying a hard and a soft striker, the hard strikers of the bells of each pair being symmetrically arranged and the soft strikers of each pair being symmetrically arranged, substantially as described.

2. In a musical instrument, the combination with four bells arranged at the corners of a quadrilateral, the said bells being divided into two pairs each pair comprising two diagonally opposite bells, each bell of each pair having a pair of mechanically-united strikers,



one a soft and one a hard striker, the hard strikers of each pair being symmetrically arranged and the soft strikers of each pair being symmetrically arranged, substantially as described.

3. In a bell, the combination with the bell-barrel thereof, of a clapper-rod mounted to swing in said bell-barrel, a hard striker provided upon said rod, a soft striker also provided upon said rod, said strikers being transversely arranged with respect to the clapper-rod on opposite sides thereof, substantially as described.

4. In a bell, the combination with the bell-barrel thereof, of a clapper-rod mounted to swing in said bell-barrel, a hard striker provided upon said rod, and a soft striker also provided upon said rod said strikers being opposite, substantially as described.

5. In a bell, the combination with the bell-barrel thereof, of a clapper-rod mounted to swing in said bell-barrel, a hard striker pro-

vided upon said rod, and a soft striker provided upon said rod, substantially as described.

6. In a musical instrument, the combination with a pair of bells each having a pair of mechanically-united strikers one a soft striker and the other a hard striker, the hard strikers being symmetrically arranged and the soft strikers being symmetrically arranged, substantially as described.

7. In a musical instrument, the combination with a pair of bells, each having a clapper-rod carrying a hard and a soft striker, the hard strikers being symmetrically arranged and the soft strikers being symmetrically arranged, substantially as described.

In witness whereof I hereunto subscribe my name this 28th day of July, A. D. 1903.

JOHN CALHOUN DEAGAN.

Witnesses:

GEORGE L. CRAGG,  
CARL H. CRAWFORD.