

No. 864,843.

H. G. HILL.  
VIBRATOR.

PATENTED SEPT. 3, 1907.

APPLICATION FILED FEB. 5, 1906.

2 SHEETS—SHEET 1.

Fig. 1

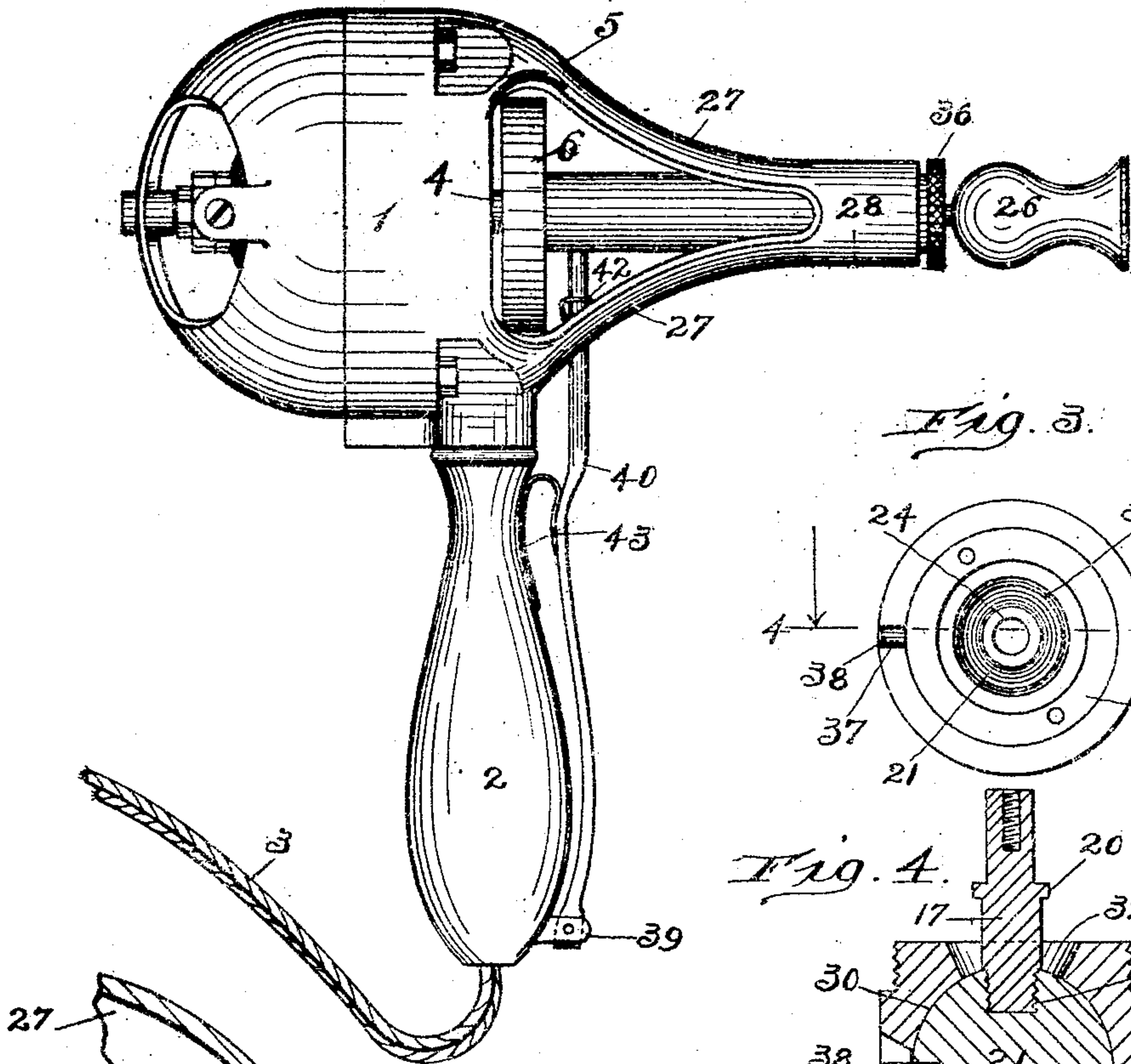


Fig. 3.

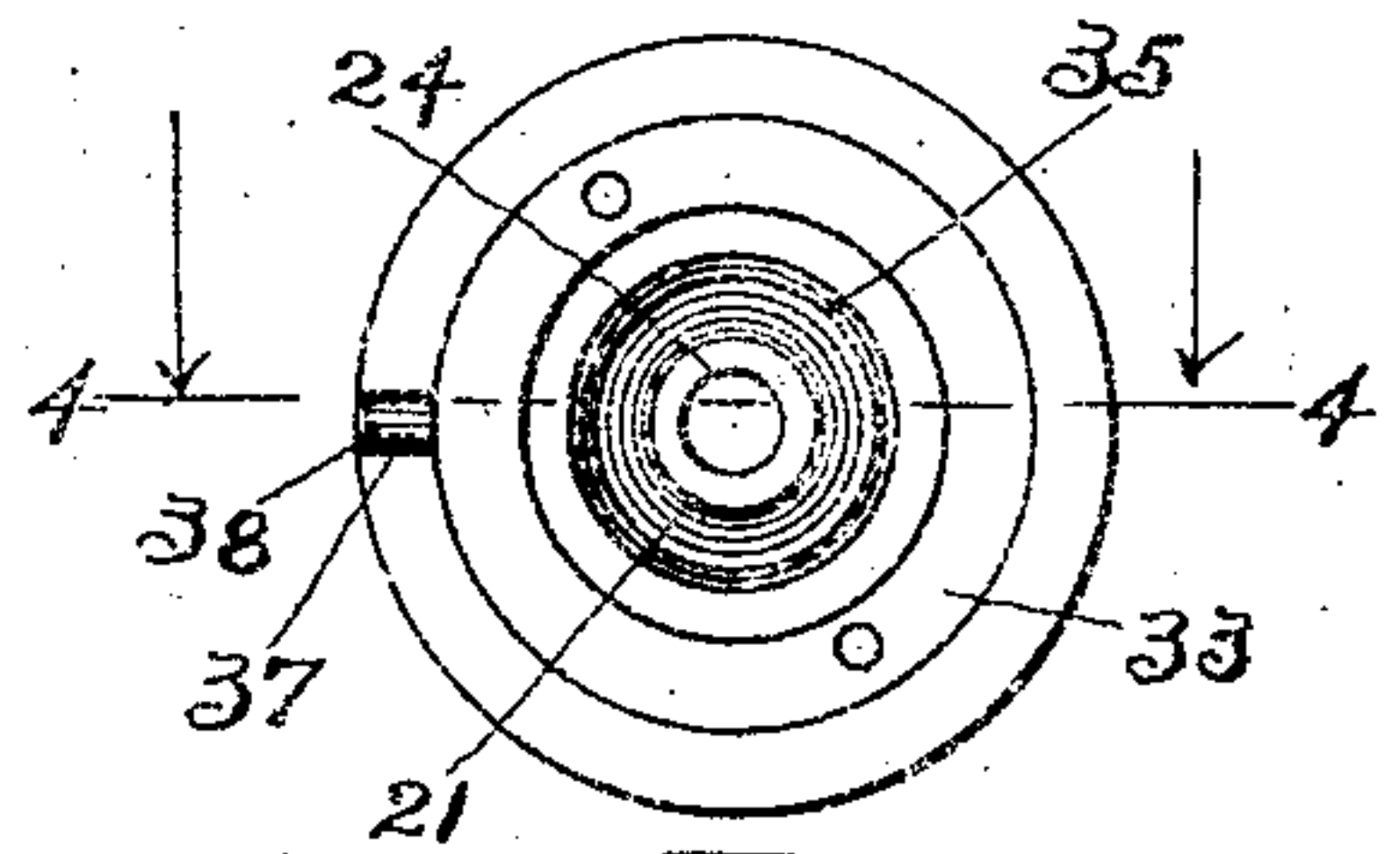


Fig. 4.

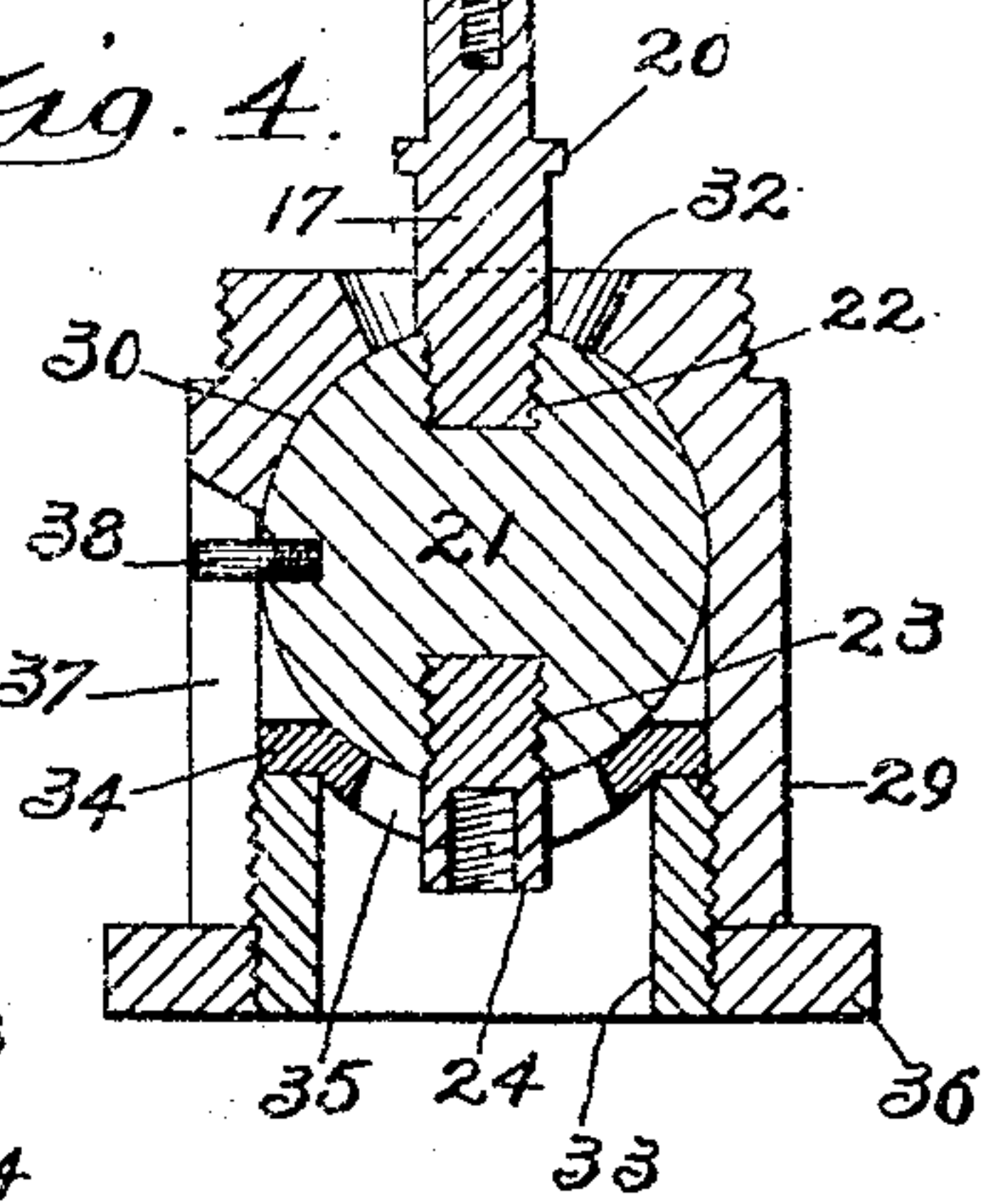
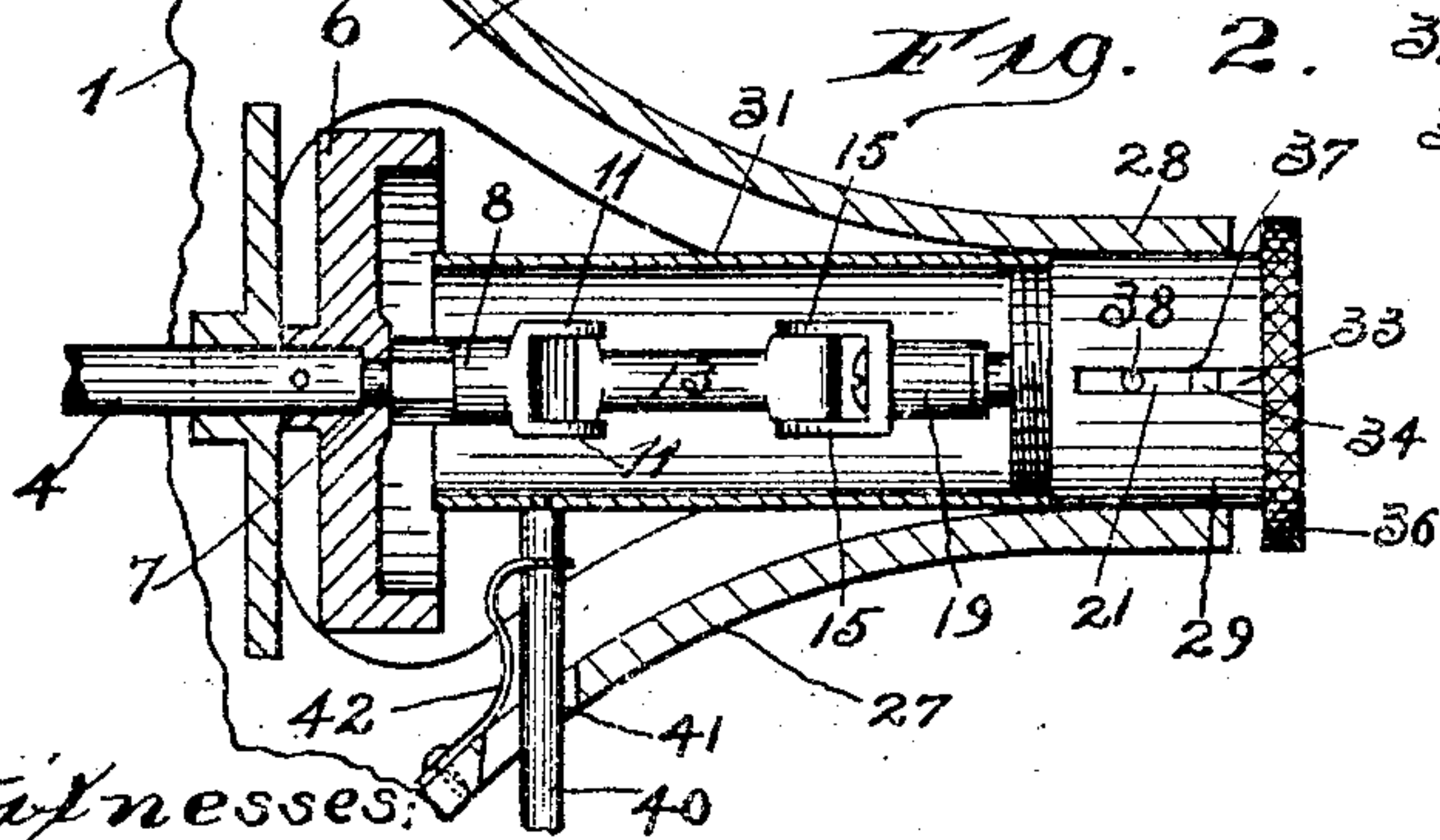


Fig. 2.



Witnesses:  
Chas. E. Gorton.  
M. A. Nyman.

Inventor:  
Herbert G. Hill,  
By Chas. C. Sullivan  
Atty.

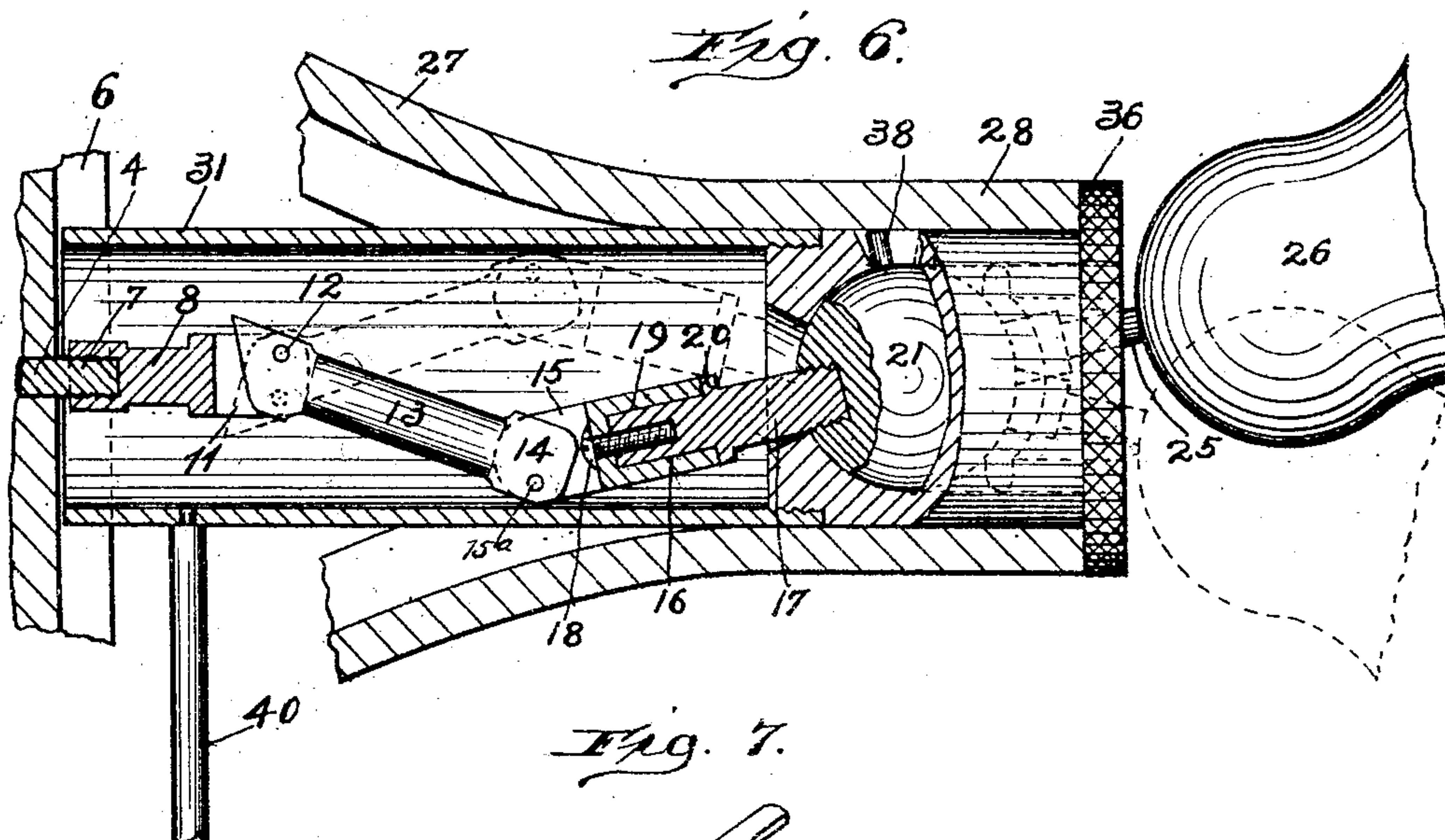
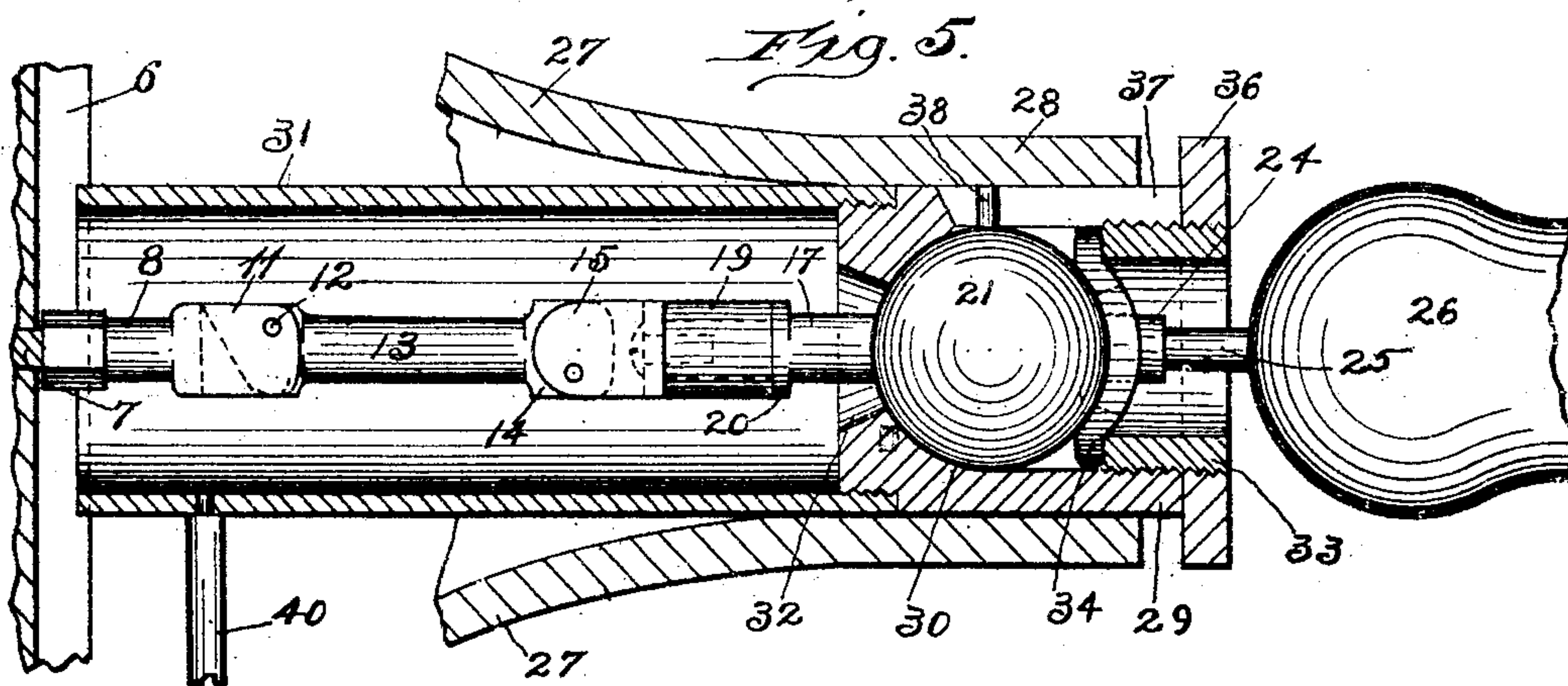
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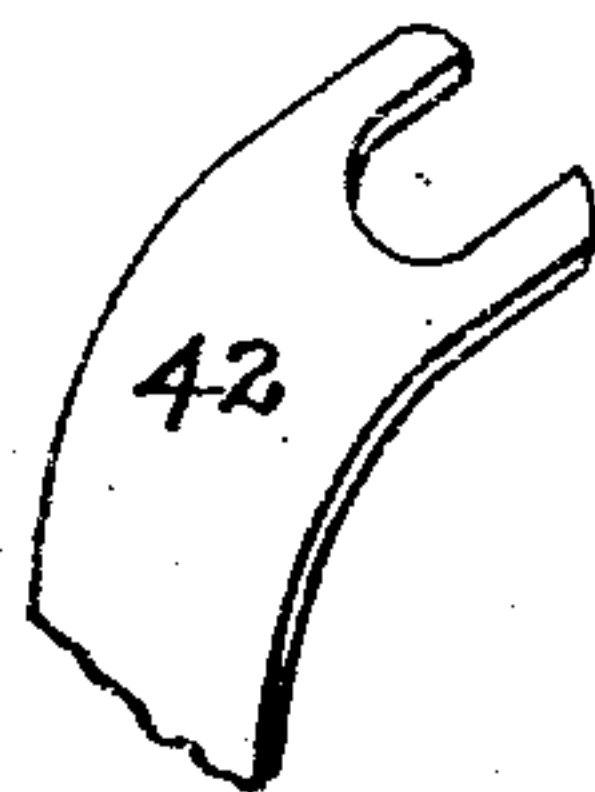
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2 SHEETS—SHEET 2.



*Fig. 7.*



Witnesses:  
Chas. E. Gorton.  
M. A. Nyman.

Inventor:  
Herbert G. Hill.  
By Chas. Tillman  
Att.



# UNITED STATES PATENT OFFICE.

HERBERT G. HILL, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO WILLIAM GENTRY SHELTON, OF CHICAGO, ILLINOIS.

## VIBRATOR.

No. 864,843.

Specification of Letter's Patent.

Patented Sept. 3, 1907.

Application filed February 5, 1906. Serial No. 299,564.

*To all whom it may concern:*

Be it known that I, HERBERT G. HILL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Vibrators, of which the following is a specification.

This invention relates to certain improvements in that class of apparatuses, commonly known as vibrators, which are particularly designed and adapted for use in massage and similar mechanico-therapeutic treatments for the stimulation of muscular and nervous action, and the object of the invention is to provide an apparatus, or vibrator, of this general character of a simple and inexpensive nature adapted for electrical actuation and of a light and compact structure so as to be capable of convenient and effective use and wherein is provided means of an improved and simplified character for regulating the depth or amplitude of the vibrations produced by the apparatus so as to accommodate the device for use in the treatment of disease and functional derangement in various situations and wherein such regulation is necessary for attaining the best results.

The invention consists in certain novel features of the construction and combinations and arrangements of the several parts of the improved vibrator, whereby certain important advantages are attained and the device is rendered simpler, cheaper and otherwise better adapted and more convenient for use, all as will be hereinafter fully set forth.

The novel features of the invention will be carefully defined in the claims.

In the accompanying drawings which serve to illustrate my invention—Figure 1 is a view in side elevation of a vibrator constructed according to my invention, fitted with a rubber bell applicator of well known kind. Fig. 2 is a partial section taken axially through the end of the apparatus at which the applicator is arranged, the parts being shown on an enlarged scale. Fig. 3 is an end view in elevation of that end of the apparatus which is adapted to receive the applicator, but showing it and a securing nut or collar omitted. Fig. 4 is a sectional view taken on line 4, 4 of Fig. 3 looking in the direction indicated by the arrows, but showing the securing nut in place. Fig. 5 is a sectional view taken axially through the end of the apparatus at which the applicator is arranged, showing the bearing for the applicator shaft of the vibrator in section and illustrating the parts in their normal positions. Fig. 6 is a view somewhat similar to Fig. 5, but showing the adjusting means adjusted to afford a wide degree of amplitude to the vibratory or applicator shaft of the vibrator;—and—Fig. 7 is a fragmental perspective view of a portion of one of the springs which actuates the gripping or adjusting lever.

Like numerals of reference, refer to corresponding parts throughout the different views of the drawings.

As shown in these views, the improved vibratory apparatus comprises a spherical or partly spherical motor-casing 1, having a suitable handle 2 so that the device may be held and guided by the operator in use, a tinsel cord 3, being preferably attached to said handle and having embedded in it the electrical conductors for supplying current to the motor incased in the casing, from a suitable source of power, as a lamp-socket for example. The casing may be of any desired construction and the motor within the same may be of any suitable or desired size and type, dependent on the requirements of each particular case.

4 is the armature shaft held to turn in suitable bearings in the shell or casing 1, and 6 is a balance wheel rigidly held on said shaft and housed within a projecting portion 5 at one end or side of the shell or casing, the shaft 4 having a screw-threaded end portion 7 protruding through and beyond the outer surface of the balance wheel, as is clearly shown in Figs. 2, 5 and 6 of the drawings.

8 is a shaft section, having a threaded bore wherein the screw-threaded end portion 7 of the armature shaft is held. The shaft section 8 is adapted to be turned upon the screw-threaded shaft end 7, and thus rigidly secure it thereon and in alinement therewith, and said shaft section carries at its outer end oppositely arranged ears or lugs 11, which are perforated near their free ends and one of their edges, for the passage of a pin 12, wherein is held one end of a toggle-link or element 13, which is thereby connected to turn with the shaft section 8 on the end of the armature shaft, but is capable of pivotal movement on pin 12, in and out of axial alinement with the armature shaft and said shaft section, as will be readily understood. That end of the link 13 which is pivoted between the lugs 11 is beveled, as shown in Fig. 6, and has sufficient length between its pivot point and the extreme portion of said end to contact with the shaft section 8 between its lugs 11, when the link 13 is in alinement with the section 8 and armature shaft, thus permitting pivotal movement thereof in one direction, but preventing it in the other. The outer end of the link or element 13 is preferably flattened, as at 14, and located between two spaced apart forks 15 of another toggle-link or element, a pin 16, being passed through openings in the end 14 and forks 15, to pivotally connect the links or elements together for movement in and out of axial alinement with the armature shaft. By reference to Figs. 5 and 6 of the drawings it will be observed that the openings in the forks 15 and end portion 14, of the element 13, for the pin 16, are located near the ends and edges of said parts opposite that in which the pin 12, is located, thus arranging the pivot points of the element 13 out of axial



alinement so that it may have an easy movement in one direction only. The outer link or element of the toggle thus formed has a longitudinal bore or socket 16 in its outer end, to receive the cylindrical inner portion of a section 17 of the vibratory or applicator shaft of the apparatus, which section is swiveled in the socket 16 by means of a screw 18, located in the member 19 between its forks. The section 17 of the vibratory shaft is provided at about its middle with an annular shoulder 20, which abuts against the outer end of the link 19, as shown in Fig. 6 of the drawings. Since the toggle link or element 19 is free to turn on the cylindrical portion of the section 17 of the applicator shaft of the device, it will be evident that the rotative movement of the toggle will not be imparted to said applicator shaft.

21 is a sphere or ball, which forms a part of the vibratory or applicator shaft, and has diametrically disposed screw-threaded sockets 22 and 23, the former being adapted to engage the screw-threaded outer end of the section 17 and the latter to receive the screw-threaded inner end of the outer section 24 of the vibratory shaft, which outer section has an internally screw-threaded socket, in which is received the screw-threaded shaft 25 of the applicator 26, which is thus detachably held upon said outer end of the applicator shaft so that it may be conveniently removed therefrom whenever desired, and may be replaced by another applicator or other instrument of any desired kind.

Extending from the shell or casing 1 of the apparatus are spaced arms 27, which, at their inner portions, form the projecting portion or housing 5 for the balance wheel, and at their outer portions have or are formed into a collar 28, which is cylindrical in shape. Movably located in the collar 28 is a sleeve 29, which is provided with a partly spherical cavity 30 to form a bearing for the sphere or ball 21 which is located in said cavity. The inner portion of the sleeve 29 is reduced and externally screw-threaded to engage the outer end of a tubular casing 31, which is located around the members 8, 13 and 19 so as to shield them from entanglement with fabrics and the like, as well as from view. As is clearly shown in the drawings, this tubular casing 31 extends at its inner end to near the outer surface of the fly wheel, but not so close thereto as to prevent a certain amount of longitudinal movement of said casing, which is necessary in the operation of the device as will be presently explained. The inner end of the sleeve 29 is formed with a flaring opening 32, which communicates with the cavity 30, and is for the reception and operation of the section 17 of the applicator shaft. The outer portion of the sleeve 29 is internally screw-threaded to receive and engage an externally screw-threaded hollow plug 33, which is employed to hold in place, on the outer portion of the sphere 21, a washer 34, which may be made of flexible material and is provided with an opening 35, for the reception and operation of the section 23 of the vibratory applicator shaft. Secured on the outer portion of the plug 33 is a nut 36, which rests against the outer end of the sleeve 29 and is somewhat larger in circumference than said sleeve so as to rest against the outer end of the collar 28, when the sleeve 29 and tubular casing 31 is retracted, as shown in Fig. 6 of the drawings.

By reference to Figs. 2 and 4 it will be seen that the sleeve 29 has a longitudinal slot 37, in which extends

a pin 38 secured to the sphere or ball 21, which pin and slot will permit of the vibratory movement of the applicator shaft, which consists of the section 17, ball 21, and section or element 23, yet will prevent rotary movement thereof.

The outer end of the handle 2 is provided with a bracket 39, to which is pivotally secured one end of a gripping or regulating lever 40, which is extended through an opening 41 in one of the arms 27, and engages at its inner end the tubular casing 31 near its inner end. This lever is normally pressed from the handle by means of springs 42 and 43, the former being secured on the inner surface of the arm 27, through which the lever 40 passes, and the latter to the handle.

It will be evident that the vibratory applicator shaft, although not rotating with the outer toggle link or element 19, still partakes of the pivotal movement by means of which said link or element is thrown in or out of alinement with the armature shaft 4, a continuous vibratory or gyratory movement being thereby imparted to the applicator shaft so that when the applicator 26 thereon is applied to the part to be treated, an extremely rapid kneading or rubbing action is exerted thereon by the applicator, the speed being, of course, governed by the motor from which the applicator shaft is driven and the amplitude of the movement of said shaft being controlled and regulated by means of the regulating lever 40, tubular casing 31 and sleeve 29, which sleeve, as well as the outer portion of the casing 31, is adapted to move longitudinally in the collar 28, when the lever 40 is pressed towards the handle 2 by the hand of the operator or outwardly by means of the actuating springs 42 and 43 therefor. It is further apparent that the degree of variation of the links from alinement with the armature shaft and, consequently, the degree of amplitude of the movement of the applicator shaft, will be governed by the extent to which the lever, casing 31 and sleeve 29 are moved towards the handle and motor shell or casing, and that this may be regulated at will by the operator by simply applying sufficient pressure to the gripping or regulating lever. Thus but one hand of the operator is employed in supporting, guiding and regulating the amplitude of vibration of the machine leaving the other entirely free at all times for other employment and the regulation of such vibration may be as accurately and quickly accomplished by releasing or tightening the grip of the hand on the handle as with other arrangements where both hands are necessarily employed.

From the above description it will be apparent that, the vibrator embodying my improvements is of an extremely simple and inexpensive nature, and is very desirable for use since it affords means for quickly and conveniently adjusting the amplitude of vibration or gyratory movement of the applicator so that the treatment may be rendered as gentle or as energetic as desired according to the nature of each particular case, and it will also be obvious from the above description that the device is capable of considerable modification without material departure from the principles and spirit of the invention, and for this reason I do not desire to be understood as limiting myself to the precise formation and arrangement of the several parts of the vibrator herein set forth in carrying out my invention.



Having thus described my invention, what I claim and desire to secure by Letters-Patent is—

1. The combination of an applicator, means for operating the same, a handle for said applicator, a controller for regulating said contact device and yielding means holding said controller away from said handle.
2. The combination of an applicator, means for operating the same, a handle for said applicator, a regulating lever for said applicator and pivoted at its outer end to said handle, and a spring between said handle and lever and holding said lever away from said handle.
3. The combination of a casing, of a rotary member in said casing, an applicator carried by said casing, adjustable operating mechanism connecting said rotary member and contact device, a handle rigidly carried by said casing, a lever pivotally mounted adjacent to said handle and connected with said operating mechanism, and yielding means for holding said member away from said handle.
4. An apparatus of the character described comprising a frame having a collar, a sleeve provided with a spherical bearing and a slot communicating with said bearing at one side and movably located in said collar, a driven shaft mounted to turn on the frame, an applicator shaft adapted to receive and carry an applicator and having a spherical enlargement engaged in the spherical bearing of the sleeve

and a pin on said enlargement located in the slot at the side of the sleeve, pivotally connected links, one of which has pivotal connection with the driven shaft and the other loose connection with the applicator shaft, and means for moving the sleeve and thereby throwing the applicator shaft in and out of alinement with the driven shaft.

5. In an apparatus of the character described, the combination of a frame having a collar and a handle, of a sleeve provided with a spherical bearing and movably located in the collar, a driven shaft mounted to turn on the frame, an applicator shaft adapted to engage and carry an applicator and having a spherical enlargement engaged in the spherical bearing of the sleeve, pivotally connected links one of which has pivotal connection with the driven shaft and the other loose connection with the applicator shaft, a casing surrounding said links and connected at one of its ends to the said sleeve, a spring pressed lever pivoted at one end on the handle of the frame and connected at its other end to the said casing, substantially as described.

HERBERT G. HILL.

Witnesses:

CHAS. C. TILLMAN,  
M. A. NYMAN.