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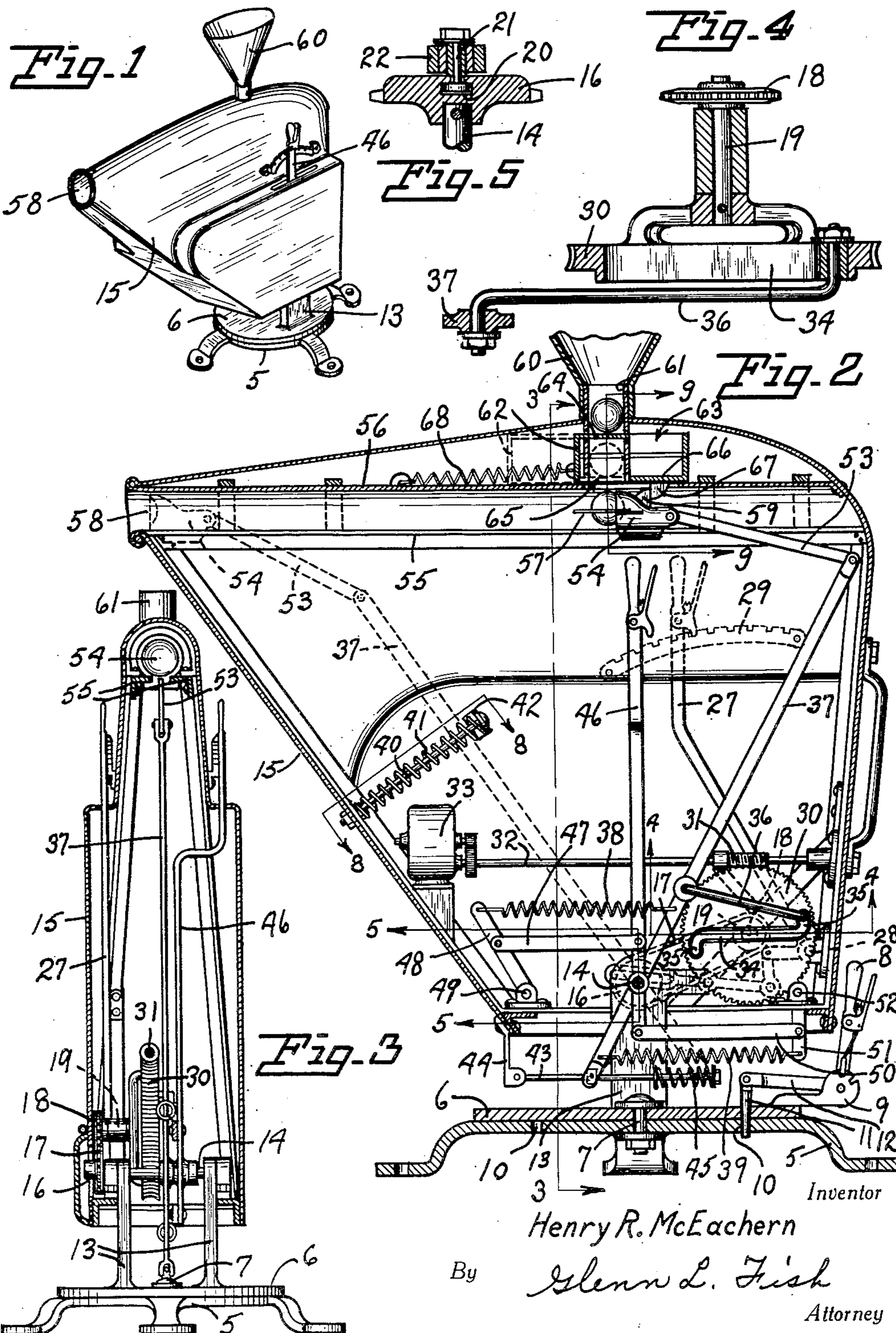
H. R. McEACHERN

1,897,317

BALL THROWING APPARATUS

Filed March 15, 1930

2 Sheets-Sheet 1



Henry R. McEachern

By

Glenn L. Fish

Attorney

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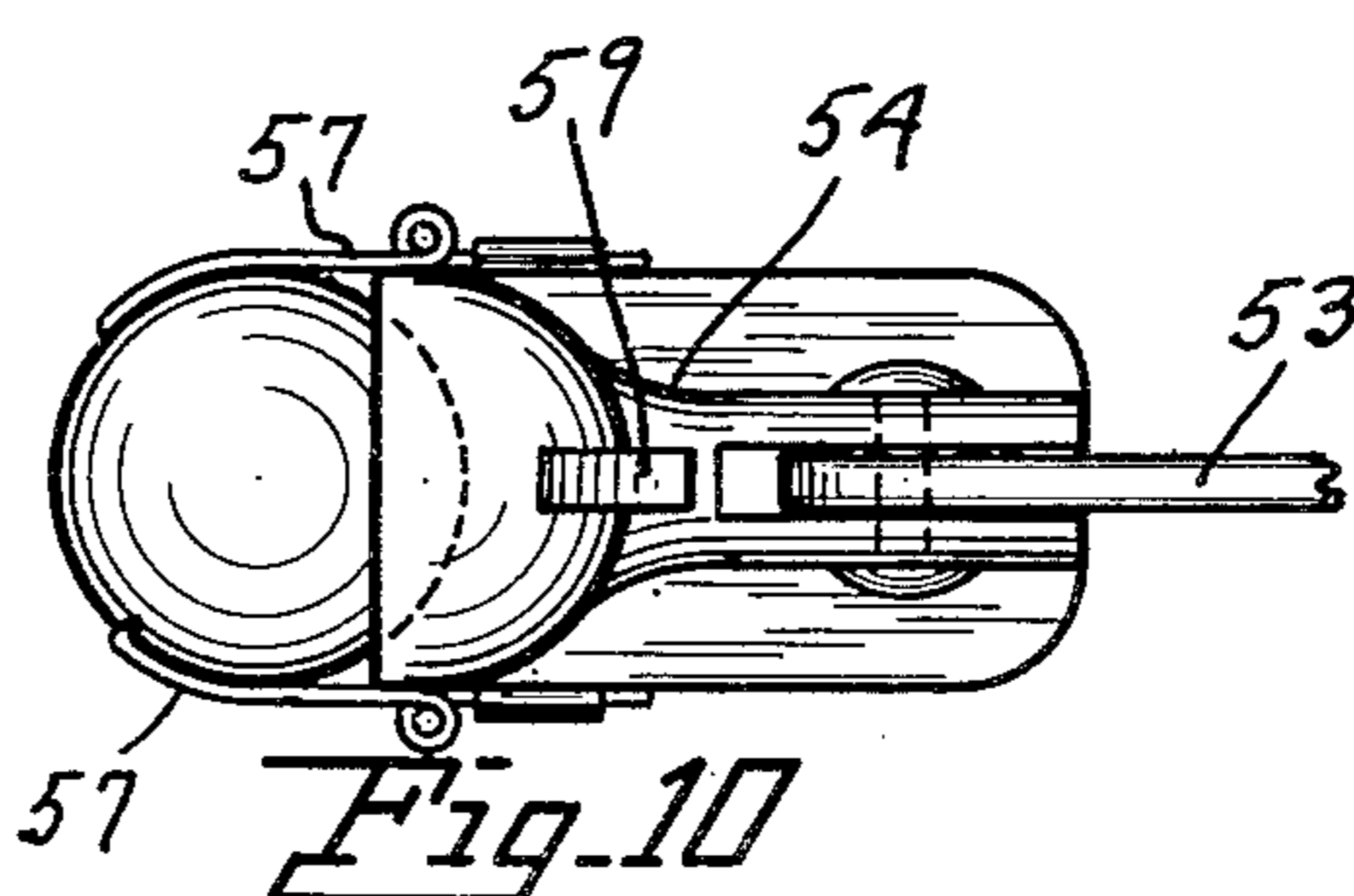
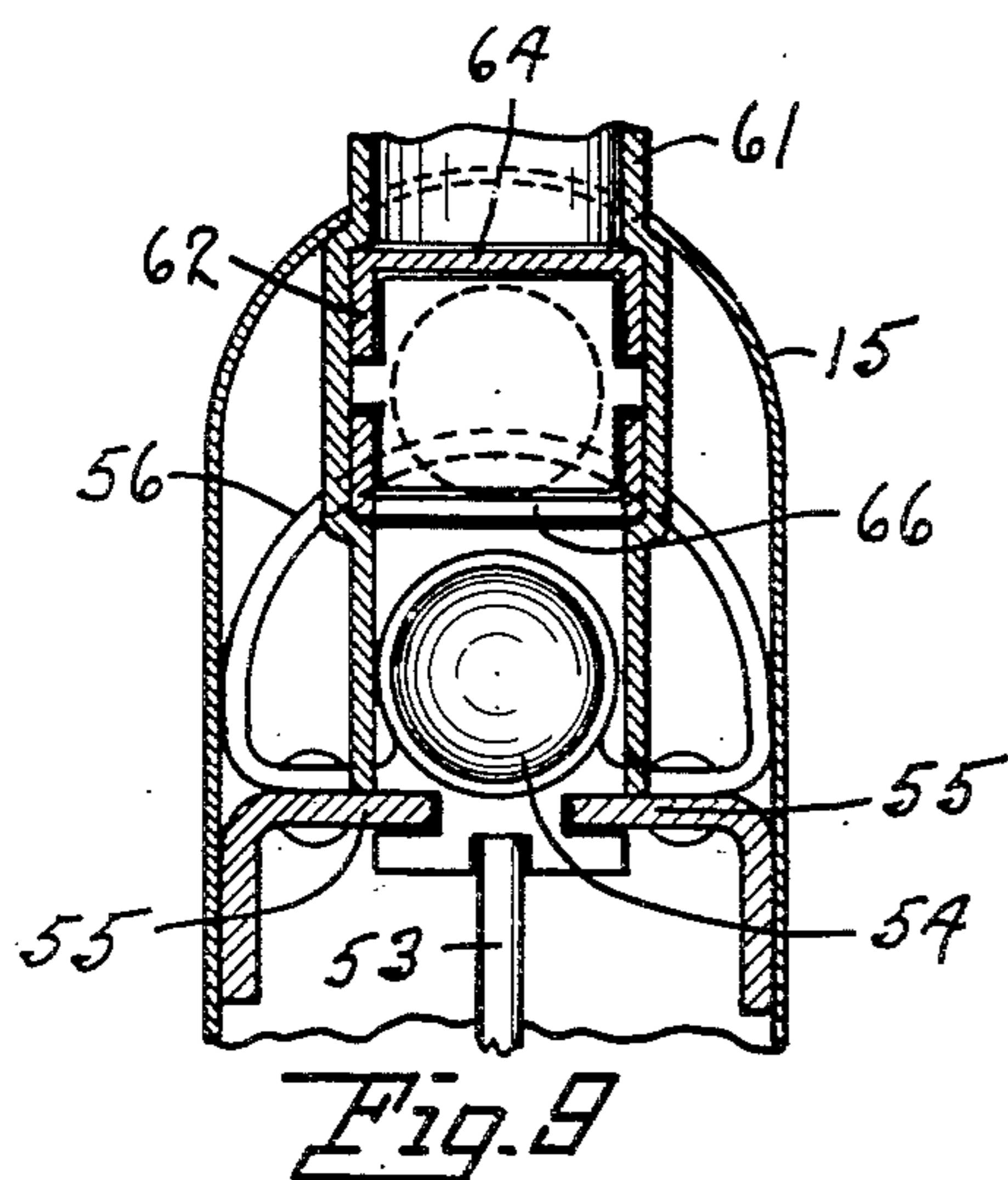
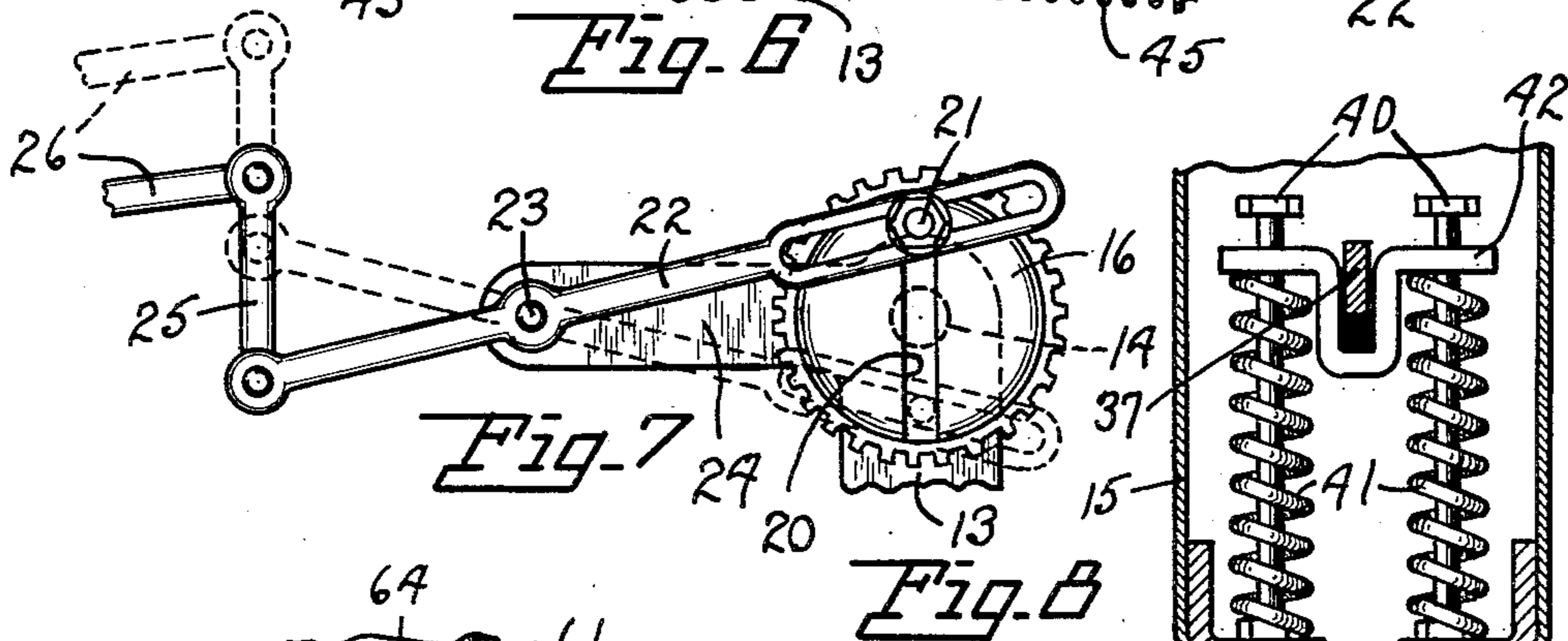
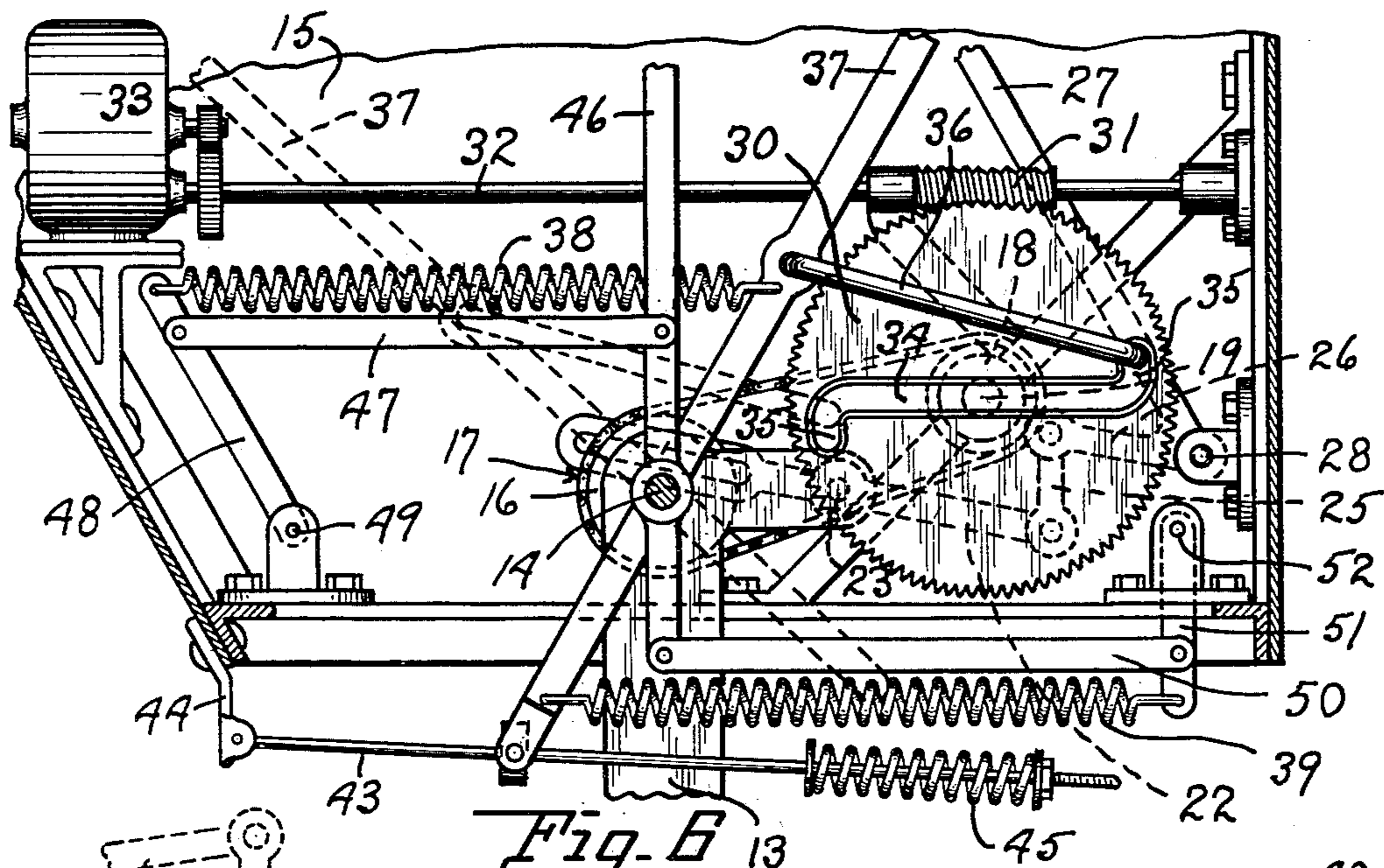
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2 Sheets-Sheet 2



Inventor

Henry R. McEachern

By

Glenn L. Fish

Attorney

UNITED STATES PATENT OFFICE

HENRY R. McEACHERN, OF SPOKANE, WASHINGTON

BALL THROWING APPARATUS

Application filed March 15, 1930. Serial No. 436,029.

My invention relates to ball throwing apparatus and is particularly adapted for pitching baseballs to ball players in practice.

5 Certain objects of the invention are to provide a portable apparatus for projecting balls having a housing that is arranged to be moved both horizontally and vertically, means for automatically feeding balls to the projector elements, automatic means where-
10 by the projector elements are intermittently and continuously retracted and released, adjustments for the springs that supply the ejecting force, shock absorbing devices for the projector elements, and other novel fea-
15 tures of construction and arrangement.

With the above and other objects in view which will appear as the description proceeds the invention consists of the novel construction, adaptation, combination and arrange-
20 ment of parts hereinafter described and claimed. These objects are accomplished by devices illustrated in the accompanying drawings; wherein:—

25 Figure 1 is a general exterior view in perspective of the apparatus;

Fig. 2 is a view in central longitudinal vertical section of the same;

30 Fig. 3 is a view in transverse vertical section taken substantially on a broken line 3, 3 of Fig. 2;

Fig. 4 is a detail view in horizontal section taken on a broken line 4, 4 of Fig. 2 and showing the projector gear wheel and associ-
35 ated elements;

Fig. 5 is a detail view in vertical section taken on a broken line 5, 5 of Fig. 2 and showing the means for pivotally raising and lowering the apparatus;

40 Fig. 6 is an enlarged fragmentary view in vertical section and showing the projector elements and associated parts in elevation;

Fig. 7 is an enlarged detail view in elevation showing the means for pivotally raising and lowering the device;

Fig. 8 is a detail view in section taken on a broken line 8, 8 of Fig. 2 and showing a shock absorber member;

50 Fig. 9 is an enlarged detail view in vertical section taken on a broken line 9, 9 of Fig. 2

and showing the ball release, projector cup and associated parts; and

Fig. 10 is a detail plan view of the projector cup.

Referring to the drawings throughout 55 which like reference numerals indicate like parts, the numeral 5 designates the base of the apparatus on which a disc plate 6 is pivotally mounted by means of a bolt 7. Said plate may be manually revolved by 60 means of a lever 8 pivotally mounted on a bracket 9 secured to the plate. The base is provided with a plurality of holes 10 adapted to be brought into registration with a hole through the disc plate and a pin 11, pivotally 65 suspended from an extension arm 12 of the lever, may be lowered into the registered holes to retain the plate in stationary position as shown in Fig. 2.

A pair of standards 13 on the disc plate 70 6 provided bearings for a shaft 14. The housing of the apparatus, as designated as a whole by the numeral 15, is pivotally supported by bearings on the outer ends of said shaft and one end of said shaft has a sprocket 16 se- 75 cured thereto with a chain 17 leading to another sprocket 18 connected to a stub-shaft 19 whose bearing is connected to the apparatus housing.

Referring particularly to Figs. 5 and 7 80 of the drawings, the means for pivotally raising and lowering the housing 15 comprises a diametrical groove 20 provided in the sprocket 16 which slidably retains a pin 21 having a rocker arm 22 pivotally and slidably connected thereto. The central portion of said rocker arm is pivoted at 23 to a fixed arm 24 extending from one of the standards 13, and its remote end is pivotally connected to one end of a link 25. The other end of said link is pivoted to an extension 26 of a hand lever 27 which is pivotally connected at 28 to the housing 15. Said hand lever is provided at its grip end with the usual toothed segment 29 and pawl whereby the lever may be held stationary in any desired position. 85 90 95

From the foregoing it will be obvious that the pin 21 may be shifted from or toward the center of the sprocket 16 by moving the hand lever 27 backward or forward as 100

desired thus giving a greater or a less pivotal movement to the rocker arm 22 when said sprocket is rotated. It will also be apparent that the rotation of said sprocket will cause
 5 the rocker arm to alternatively move the lever extension 26 up and down, as indicated in dotted lines in Fig. 7, and carrying the housing 15 therewith by reason of its pivotal connection thus causing said housing to be piv-
 10 otally raised and lowered on its pivotal supports.

The stub-shaft 19 has a relatively large worm gear 30 fixed thereto and which is driven by a worm 31 on a shaft 32 from a
 15 motor 33. Said worm gear is provided with a diametrical slot 34 having oppositely deflected end portions 35. A bar 36 has one of its deflected ends slidably disposed within said slot and its other end pivotally connect-
 20 ed to a relatively long lever 37. Said long lever is pivotally mounted on the shaft 14, and is provided with a coil spring 38 connected thereto above said shaft and a correspond-
 25 ing spring 39 connected adjacent its lower end and below said shaft.

The bent ends 35 of the slot 34 serve as shoulders to hold the deflected end of the bar 36, and assuming that the worm gear 30 is revolving in a clockwise direction, said bar
 30 will pivotally draw the long lever 37 to the position shown in full lines in Figs. 2 and 6 thus creating great tension in the springs 38 and 39 as will be understood. When the worm gear reaches a certain point in its rotary
 35 movement its bar will slip from its hold on the deflected end of the slot thus releasing the long lever which will be pivotally projected by the springs to the dotted positions with considerable force. The opposite de-
 40 flected slot end will then catch and carry the bar around and the projecting function of the device will thus be repeated as long as the worm gear continues to revolve.

A shock absorber device shown in detail
 45 in Fig. 8, comprising a pair of spaced apart rods 40 secured to the forward slanting wall of the housing 15 each having a coiled spring 41 mounted thereon with a saddle member 42 slidably mounted on said rods and resting
 50 on the tops of said springs, is disposed in the path of the long lever 37. The central depressed portion of the saddle may have a rubber pad or other cushion therein to aid in absorbing the shocks caused by impact of
 55 said lever. A second shock absorber disposed at the lower end of said long lever comprises a rod 43 pivotally connected to a bracket 44 secured to the apparatus housing. The lower end of said long lever slidably traverses
 60 said rod and a coiled spring 45 mounted on the free end of the rod takes up the shock of the lower end portion of the long lever upon impact therewith.

A hand lever 46, pivotally mounted on the
 65 shaft 14, has an arm 47 pivotally connected

therewith and extending forward to a pivotal connection with a short upstanding lever 48. Said short lever is pivotally connected at 49 to a bottom flange of the housing 15 and the
 spring 38 is connected to the upper end of
 70 the short lever. The lower end of the hand lever 46 has an arm 50 pivoted thereto, in the opposite direction of the arm 47 from said lever, and extending to a pivotal connection with a short depending lever 51 that is piv-
 75 otally connected at 52 to the apparatus housing. The outer end of the spring 39 is secured to the lower end of said short depending lever. It will be obvious that by moving the hand lever backward the tension of both the
 80 springs 38 and 39 will be increased through means of the aforesaid lever connections, and by moving said hand lever forward the tension of said springs will both be decreased. A toothed segment and pawl may be provided
 85 for said hand lever thus completing the means for adjusting the tension of the two projector springs.

The upper end of the long lever 37 has a projector arm 53 pivoted thereto whose other
 90 end is pivoted to a projector cup 54. Referring especially to Fig. 9, said projector cup travels on a pair of oppositely disposed angle iron members 55 secured to the housing 15 and which fit into grooves in the bottom por-
 95 tion of the cup. Said angle iron guides together with an arched upper wall 56 provide a tube or barrel for the projector cup in its functional movements. Said cup is provided with a pair of spring fingers 57 which yield-
 100 ingly hold the ball until it is released at the discharge end 58 of the tube or barrel. An upstanding flange shoulder 59 is provided on top of the projector cup for reasons presently set forth.
 105

The balls are fed into the apparatus through a hopper 60 and pass downwardly through a chute 61 into the projector cup 54. Means for automatically feeding the balls
 110 one at a time to said cup are provided by means of a feed box 62 disposed between the top of the housing 15 and the upper arched wall 56 of the tube or barrel. Said feed box is arranged to slidably move back and forth
 115 through said chute by suitable slot and guide means. As shown in Fig. 9, the sides of the feed box fit snugly against and within the sides of the chute and said box is of a length that is more than twice the width of said chute.
 120

Referring to Fig. 2, the top of the feed box 62 is provided with a rear opening 63 leaving a forward top wall portion 64, and its bottom is provided with a forward opening 65 leav-
 125 ing a rear bottom wall or floor portion 66. A depending flange shoulder 67 is provided on said floor portion that is adapted to be engaged by the corresponding shoulder 59 on the projector cup 54. A spring 68 secured to the forward end of said feed box and to
 130

the arched upper tube wall 56 provides means for forward movement of the box. When the projector cup is drawn back its shoulder 59 catches on the shoulder 67 of the box carrying said box to the retracted position shown in full lines in Fig. 2.

In this position the ball which had been resting on the floor 66 of the feed box 62 will drop down through the bottom feed box opening 65 into the projector cup 54 and at the same time the upper wall portion 64 will prevent other balls from entering said box. Immediately upon release of the box the spring 68 will move same to the dotted position shown in Fig. 2 and the ball resting on its top wall portion will drop into the box through the opening 63 and rest on the floor portion 66 in readiness for a repetition of the foregoing process.

It will thus be seen that the ball feeding means is actuated by the hereinbefore projector means. Each time the bar 36 releases the long lever 37 the springs 38 and 39 will coact in causing a violent movement of said lever to the dotted position shown in Fig. 2 whereby the projector cup 54 is moved close to the discharge end 58 of the tube or barrel. Upon the sudden stop of said cup caused by impact of the long lever with the previously described shock absorber devices the ball will release itself from the spring fingers 57 and be projected into space.

It will now be apparent that I have provided a portable and comparatively simple ball projecting apparatus that is adapted to automatically throw balls one after another with considerable force, together with means for adjusting and regulating the force, automatic means for pivotally raising and lowering the apparatus with adjusting means for the same, means for manually moving the apparatus in a horizontal plane, and means for absorbing the shock caused by impact of the projecting elements.

Having thus described my invention, it being understood that minor changes may be resorted to in its construction and arrangement without departing from the scope and spirit of the invention, what I claim and desire to secure by Letters Patent of the United States is:—

1. A ball throwing apparatus having in combination a housing mounted for vertical and horizontal pivotal movement, a tubular barrel carried by the housing, an ejector cup slidably disposed within the barrel, a lever ejector pivotally mounted within the housing and connected to the ejector cup, springs adapted to violently move said ejector lever on its pivot when released from a retracted position whereby a ball is forcibly ejected from the housing, by the ejector cup means for adjusting the springs, shock absorbers for the lever ejector, means whereby the lever ejector is intermittently and continuously re-

tracted and released, and hopper means whereby balls are fed by gravity to said ejector at each retractile movement thereof.

2. In a ball throwing apparatus the combination with a housing, a tubular barrel having an aperture in its upper side, an ejector cup slidably mounted within the barrel, and means for causing violent projectile and diminished retractile movements of the ejector cup, of means for automatically feeding balls to said ejector cup, said means comprising a hopper and chute communicating with the aperture in the barrel, a feed box arranged for slidable movement through the lower end of the chute, and means for causing reciprocative movement of the feed box whereby balls are fed one at a time to the ejector cup.

3. In a ball throwing apparatus the combination with a housing, a tubular barrel having an aperture in its upper side, an ejector cup slidably mounted within the barrel, and means for causing violent projectile and diminished retractile movements of the ejector cup, of means for automatically feeding balls to said ejector cup, said means comprising a hopper and chute communicating with the aperture in the barrel, a feed box arranged for slidable movement through the lower end of the chute, said feed box having a rear top opening and a forward top wall portion and a forward bottom opening and a rear floor portion, and means for causing reciprocative movement of the feed box whereby balls are fed one at a time from the chute through the feed box to the ejector cup.

In testimony whereof I affix my signature.

HENRY R. McEACHERN.