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PATENTED DEC. 4, 1906.

J. W. HICKS & H. D. CHAPMAN.

SIGHT ADJUSTMENT.

APPLICATION FILED MAY 31, 1905.

2 SHEETS—SHEET 1.

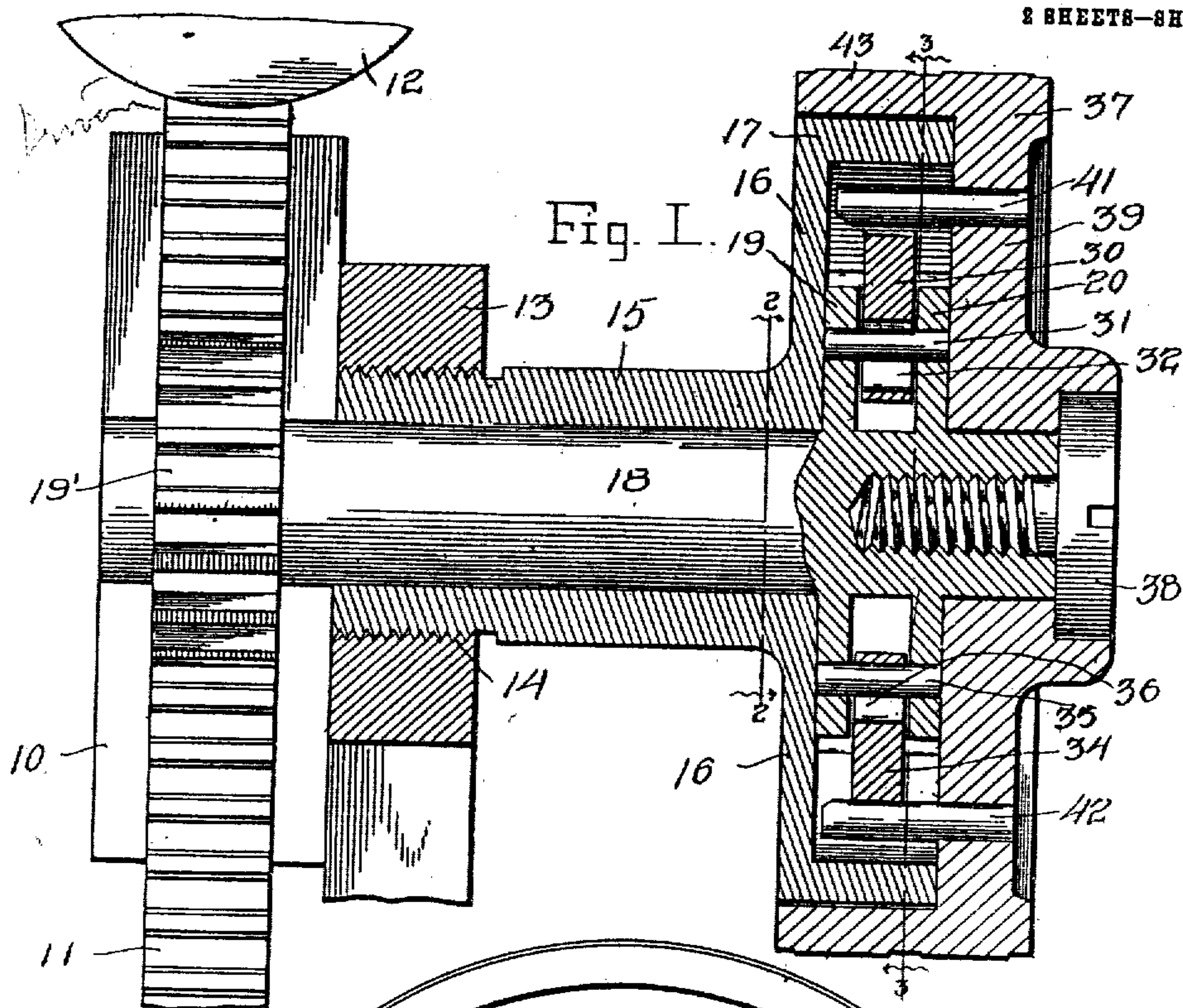
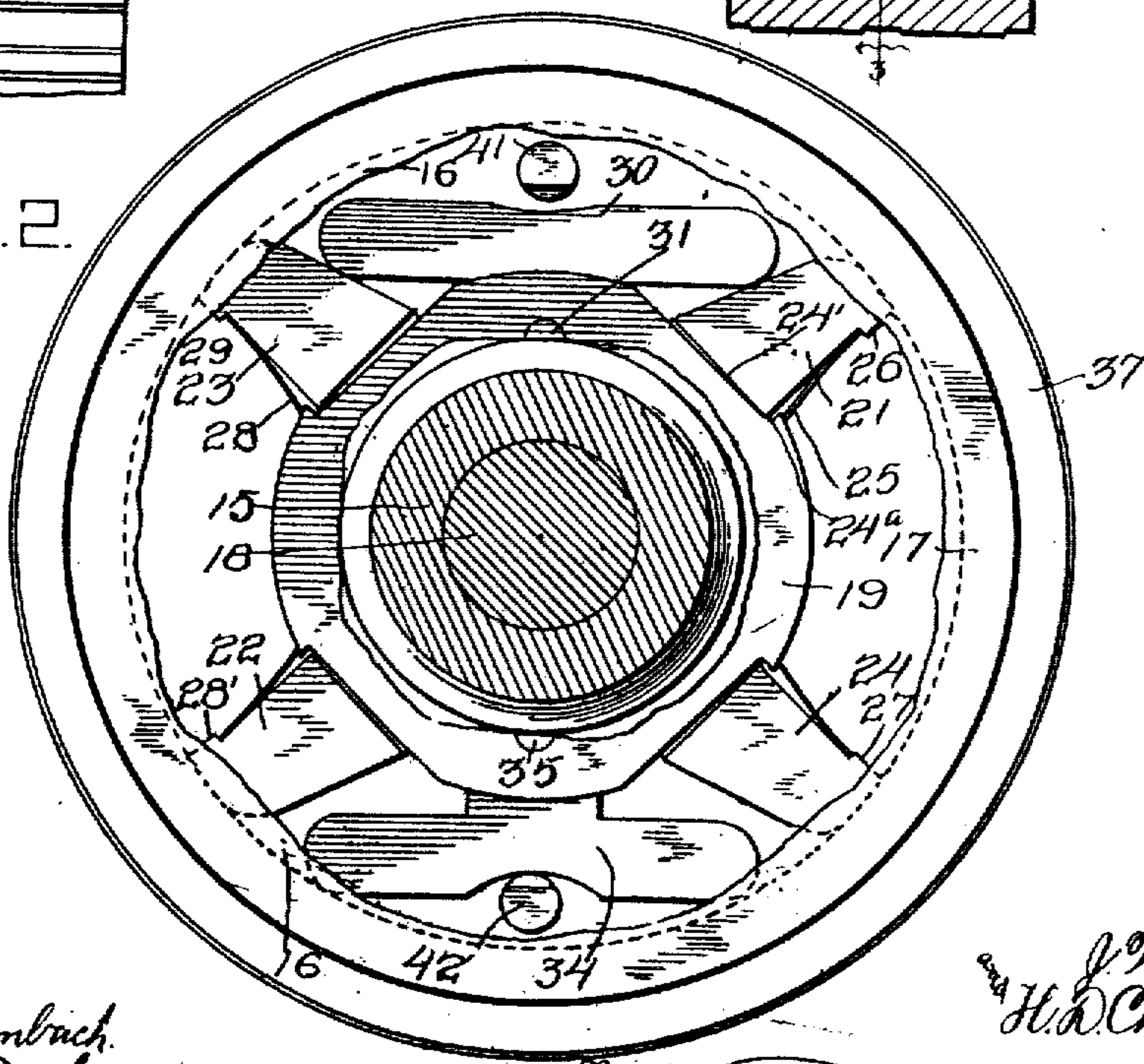


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

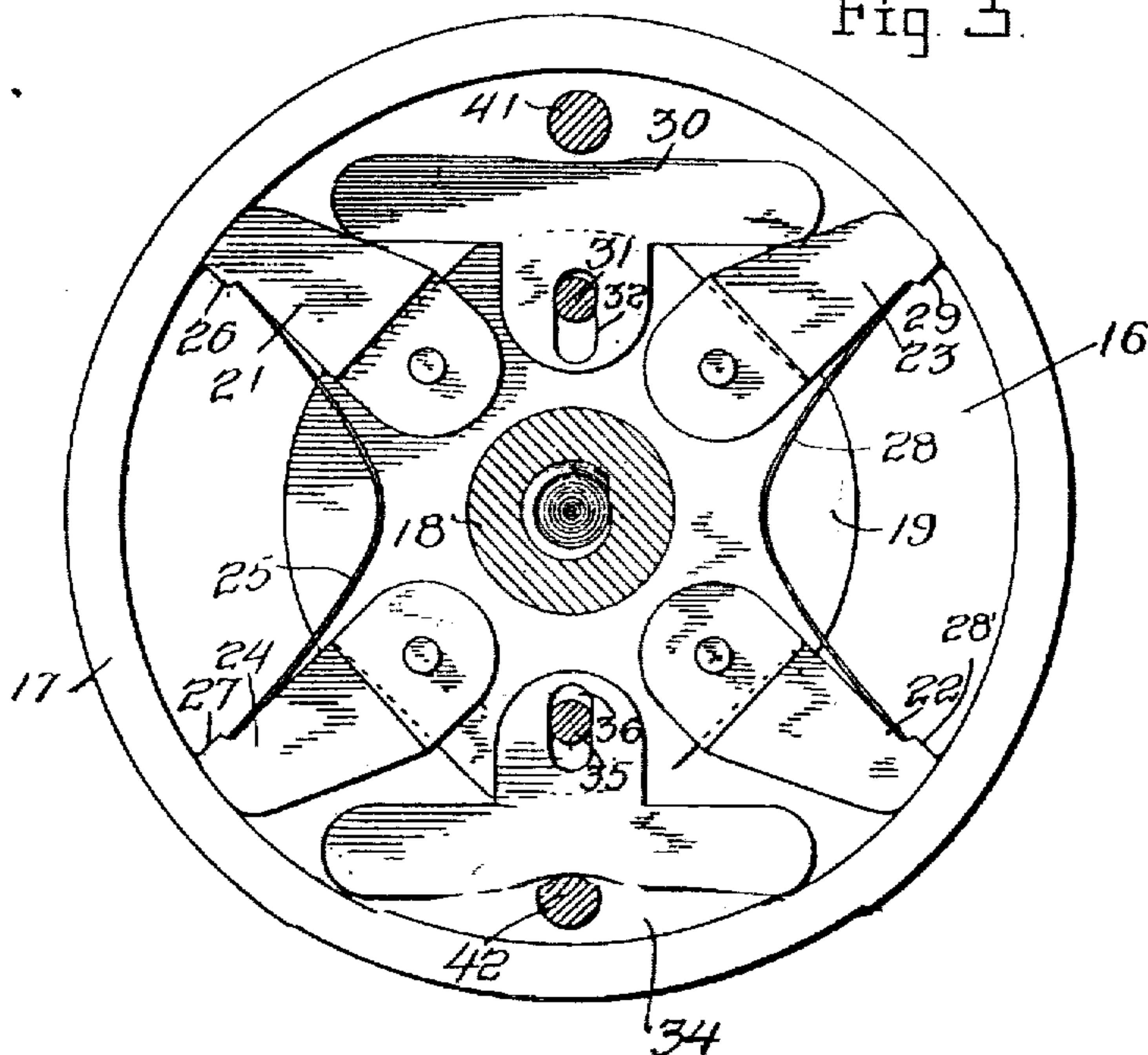


Fig. 4.

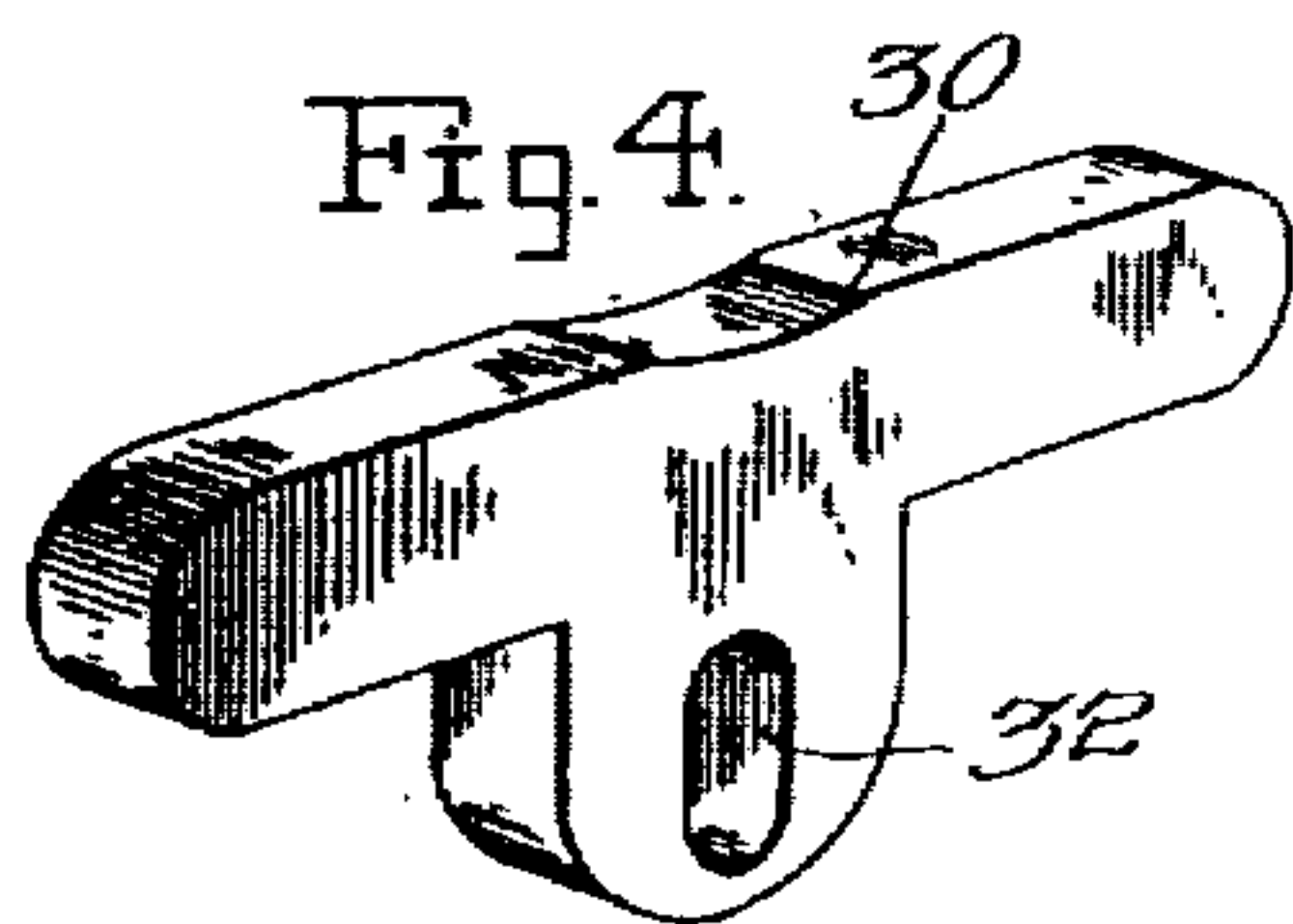
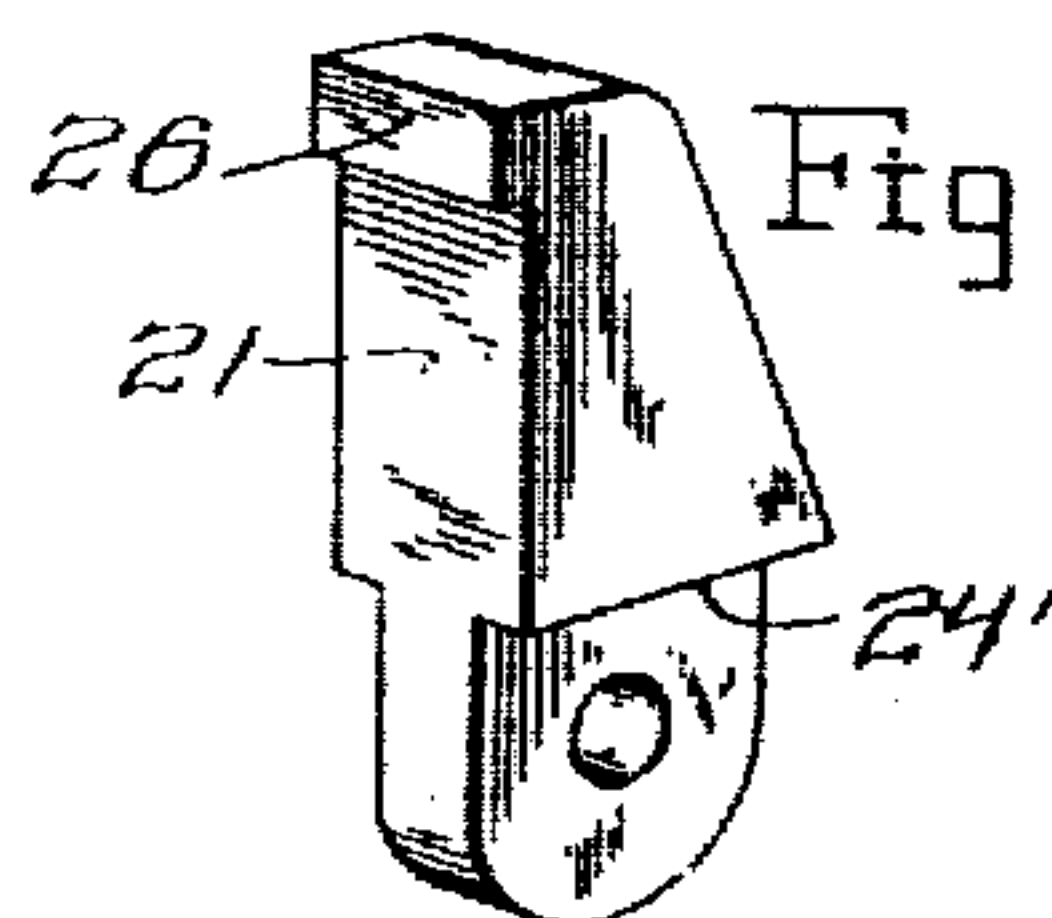


Fig. 5.



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# UNITED STATES PATENT OFFICE.

JAMES W. HICKS AND HOWARD D. CHAPMAN, OF WASHINGTON, DISTRICT OF COLUMBIA.

## SIGHT-ADJUSTMENT.

No. 837,835.

Specification of Letters Patent.

Patented Dec. 4, 1906.

Application filed May 31, 1905. Serial No. 263,099.

*To all whom it may concern:*

Be it known that we, JAMES W. HICKS and HOWARD D. CHAPMAN, citizens of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Sight-Adjustments; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to sight-adjusting mechanism wherein the sight at the breech of a gun is raised and lowered by manipulation of a hand-wheel.

As ordinarily constructed the sight is carried at the upper end of a rack-bar that operates in a suitable guide at the breech of a gun and is movable vertically through the medium of a pinion carried by a shaft on which the hand-wheel is mounted. It is found in practice that the recoil of the gun causes the sight to settle, so that readjustment of the sight is required from time to time, even when firing at the same target.

The object of the present invention is to provide a construction wherein the adjusting-shaft that carries the pinion will be held normally against rotation by action of a clutch having certain of its members carried by the shaft and adapted to cooperate with a fixed member carried by the gun, the hand-wheel having a degree of lost motion on the shaft, so that pins carried thereby may first engage and release certain members of the clutch and subsequently shift the shaft in a corresponding direction. Thus the rack will be held by the pinion against settling or movement in either direction, excepting under the direct influence of the hand-wheel.

In the drawings forming a portion of this specification, and in which like numerals of reference indicate similar parts in the several views, Figure 1 is a view showing the adjusting-rack, its guide, and the adjusting-pinion in rear elevation and the hand-wheel with the clutch mechanism for holding the adjusting-shaft at times stationary, partly in section and partly in elevation. Fig. 2 is a section on line 2-2 of Fig. 1 looking in the direction of the hand-wheel, the web of the clutch-drum being partly broken away to permit of better illustration of the parts

beyond them. Fig. 3 is a section on line 3-3 of Fig. 1. Fig. 4 is a detail perspective view of the releasing-rocker. Fig. 5 is a detail perspective view of one of the clutch-dogs.

Referring now to the drawings, there is shown at 10 the guide-block such as is carried by the breech of a gun and in which is mounted a vertically-movable rack-bar 11, carrying at its upper end any type of sight 12. At one side of the guide-block 10 is a rearward extension 13, having a threaded opening 14, in which is screwed one end of a sleeve 15, upon the opposite end of which is formed a web 16, that supports a clutch-drum 17, the sleeve forming, in fact, an elongated hub for the clutch-drum. The web 16 is at one edge of the clutch-drum and the major portion of the drum projects beyond the end face of the hub at that end carrying the web.

Mounted in the sleeve or hub 15 is a shaft 18, at one end of which is fixed a pinion 19, that meshes with the rack-bar 11, so that when the shaft is rotated in one direction or the other the rack-bar, and therewith the sight, will be correspondingly shifted vertically. The shaft 18 extends through and beyond the clutch-drum 17 and is provided with spaced radiating flanges 19 and 20, between which are pivoted the inner ends of two pairs of clutch-dogs. The dogs of one pair are shown at 21 and 22 and the dogs of the other pair are shown at 23 and 24. That portion of the dog which lies between the flanges 19 and 20 is of less width than the remainder of the dog, thus forming shoulders 24', which overlie the edges of said flanges, and the said flanges are shouldered, as at 24<sup>A</sup>, to limit the movement of the dogs against the tension of the springs 25 and 28, it being understood, however, that the dogs normally lie in slightly-spaced relation to the said shoulders 24<sup>A</sup>, one abutting the same when moved out of engagement with the clutch-drum, in a manner to be hereinafter described. Each dog is so pivoted and proportioned that a line drawn from the axis of its pivot to its distant point is greater than a line drawn from its axis to the inner face of the clutch-drum radially of the drum. In consequence, as each dog is moved pivotally in one direction it impinges against the inner face of the drum, and when moved in the op-



posite direction it releases the drum. The pair of dogs 21 and 22 engage the clutch-drum when moved pivotally in one direction rotatably of the drum or around the drum, while the dogs 23 and 24 engage the drum when moved pivotally in the opposite direction around the drum. It will be noted that the dogs of one cooperating pair alternate with those of the other cooperating pair, or, in other words, the dogs of each pair are diametrically opposite. A spring-plate 25 is sprung into position between the dogs 21 and 24, with its ends engaged beneath the lugs 26 and 27, respectively, on the mutually adjacent faces of the dogs, the springs serving to hold the dogs yieldably in contact with the inner face of the clutch-drum. Similarly, a spring-plate 28 is sprung into position between the dogs 22 and 23, with its ends beneath lugs 28' and 29 on the mutually adjacent faces of the dogs, and serves to hold them yieldably against the inner face of the clutch-drum.

With the construction thus far described it will be seen that if it be attempted to rotate the shaft 18 in one direction the dogs 21 and 22 will engage the clutch-drum to prevent such rotation, while the dogs 23 and 24 will engage the clutch-drum to prevent rotation in the opposite direction.

Between the pair of dogs 21 and 23 is disposed a T-shaped rocker 30, the stem of which is disposed between the flanges 19 and 20 and held in such position by means of a pin 31, passed through the flanges and through the slot 32, formed through the stem of the rocker and extending longitudinally thereof. The ends of the rocker are rounded as illustrated and rest against the slanting adjacent faces of the dogs 21 and 23, so that when the rocker is shifted in one direction it swings the dog 21 from engagement with the clutch-drum and when shifted in the opposite direction it swings the dog 23 from engagement with the clutch-drum. A second rocker 34 of T shape has its stem disposed between the flanges 19 and 20, diametrically opposite to the rocker 30, in which position it is held pivotally and slidably by a pin 35, passed through the flanges and through the longitudinal slot 36 in the stem of the rocker. The ends of the head of the rocker 34 are disposed against the slanting adjacent faces of the dogs 22 and 24, so that when the rocker is shifted in one direction the dog 22 is moved from engagement with the clutch-drum, and when shifted in the opposite direction the dog 24 is shifted from engagement with the clutch-drum.

To release the proper dogs and subsequently rotate the shaft 18 in the corresponding direction to raise or lower the sight, a hand-wheel 37 is provided and is rotatably mounted upon the outer end of the shaft, in which position it is held by a retaining-screw 38, the head of which lies in a countersink in

the end of the hub of the wheel, as illustrated. Through the web 39 of the hand-wheel are engaged two pins 41 and 42, which lie, respectively, between the rockers 30 and 34 and the inner face of the clutch-drums. The rim of the hand-wheel extends rearwardly, as shown at 43, to entirely inclose or cover the outer face of the clutch-drum.

To lower the rack-bar 11 and therewith the sight 12, the hand-wheel is grasped and moved to the right, at which time the pins 41 and 42 are correspondingly shifted, so that the pin 41 passes to the left, in Fig. 2, and pin 42 passes to the right, so that the rockers are correspondingly shifted or swung to press the dogs 23 and 24, respectively, from engagement with the clutch-drum, after which continued movement of the hand-wheel serves to rotate the shaft 18 by reason of the fact that the hand-wheel is operatively connected with the shaft through the medium of the pins, the rockers, the dogs 23 and 24, and the flanges 19 and 20 and pins 31 and 35. Continued movement of the hand-wheel serves to lower the rack-bar and therewith the sight.

When the rack-bar is to be raised, the hand-wheel is rotated in the opposite direction and the rockers are oppositely shifted to move the dogs 21 and 22 from engagement with the clutch-drum, and when the dogs have moved to their limit continued movement of the hand-wheel serves to rotate the shaft 18, and therewith the pinion 19, to raise the rack-bar and therewith the sight.

It will be of course understood that when the hand-wheel is shifted in either direction the pair of dogs that are not released by action of the pins 41 and 42 drag over the inner face of the clutch-drum. It will of course be understood that the hand-wheel may be of any desired size and that any suitable materials and proportions may be used for the various parts, and, furthermore, that the invention may be embodied in a mechanism for raising and lowering under any specific conditions and in connection with any specific apparatus to which it is applicable.

What is claimed is—

1. In an apparatus of the class described, the combination with an adjusting-shaft having a flange formed thereon, of a fixed clutch-drum, clutch-dogs pivoted to the flange and arranged for engagement with the drum to hold the shaft against rotation in either direction respectively, rocker elements carried by the flange and arranged to engage certain of said clutch-dogs, a hand-wheel carried by the shaft, and means carried by the hand-wheel and arranged for engagement with the said rocker elements when the hand-wheel is moved in either direction and to subsequently rotate the shaft in a corresponding direction.

2. In an apparatus of the class described,



the combination with an adjustable shaft having a flange formed thereon, a fixed clutch-drum, clutch-dogs pivoted to the flange and arranged for engagement with the drum to hold the shaft against rotation in either direction respectively, and a hand-wheel carried by the shaft, means carried by the flange and located between pairs of said clutched dogs for actuation by said hand-wheel to engage the dogs and rotate the shaft in a corresponding direction.

3. In an apparatus of the class described, the combination with an adjusting-shaft, of a fixed clutch member, clutch members carried by the shaft and adapted to engage the fixed member and hold the shaft against rotation in either direction respectively, a rocker carried by the shaft and movable to shift either shaft-clutch member from engagement with the fixed clutch member when rocked in the corresponding direction, a hand-wheel movable upon the shaft, and a pin carried by the hand-wheel and movable therewith to engage and shift the rocker in the corresponding direction when the hand-wheel is oscillated, the rocker being adapted to lie in the path of the pin when either shaft-clutch is disengaged, whereby the shaft will be

rotated by continued movement of the hand-wheel.

4. In an apparatus of the class described, the combination with an adjusting-shaft, of a fixed clutch-drum encircling the shaft, pairs of clutch-dogs pivotally connected with the shaft and movable into and out of engagement with the clutch-drum, said pairs of dogs being adapted to hold the shaft against rotation in opposite directions when engaged with the clutch-drum, means for holding the dogs yieldably in engaging positions, a rocker pivotally connected with the shaft between each pair of oppositely-operable dogs and adapted to disengage them alternately when rocked, a hand-wheel movable upon the shaft, and pins carried by the hand-wheel and disposed to engage and shift the rockers to disengage either of like dogs and subsequently rotate the shaft when the hand-wheel is moved in either direction.

In testimony whereof we affix our signatures in presence of two witnesses.

JAMES W. HICKS.

HOWARD D. CHAPMAN.

Witnesses:

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WILLIAM L. HARVEY.