

No. 817,151.

PATENTED APR. 10, 1906.

W. M. ALLEN.
ROLLER FEED MECHANISM.
APPLICATION FILED MAR. 2, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

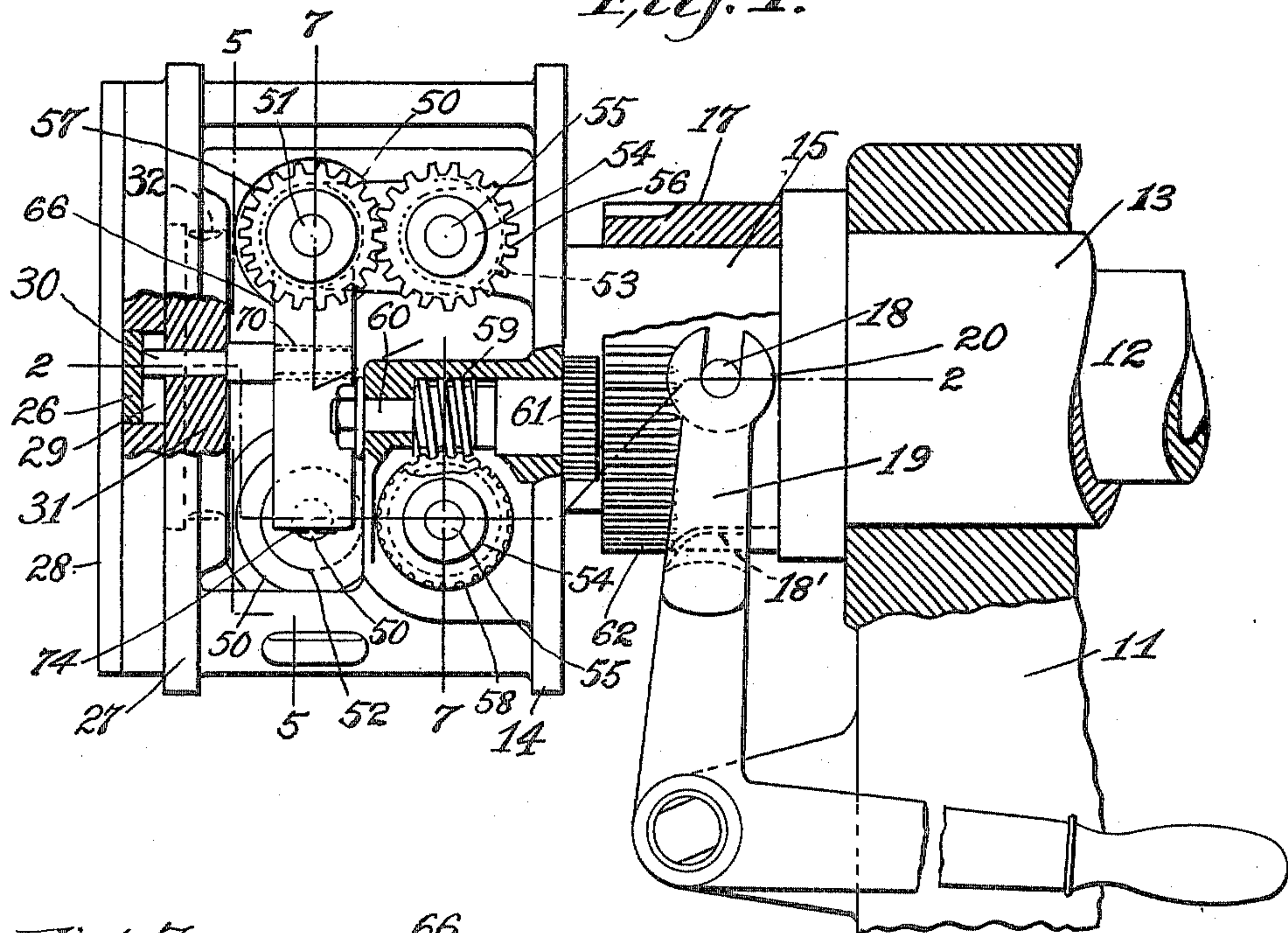


Fig. 7.

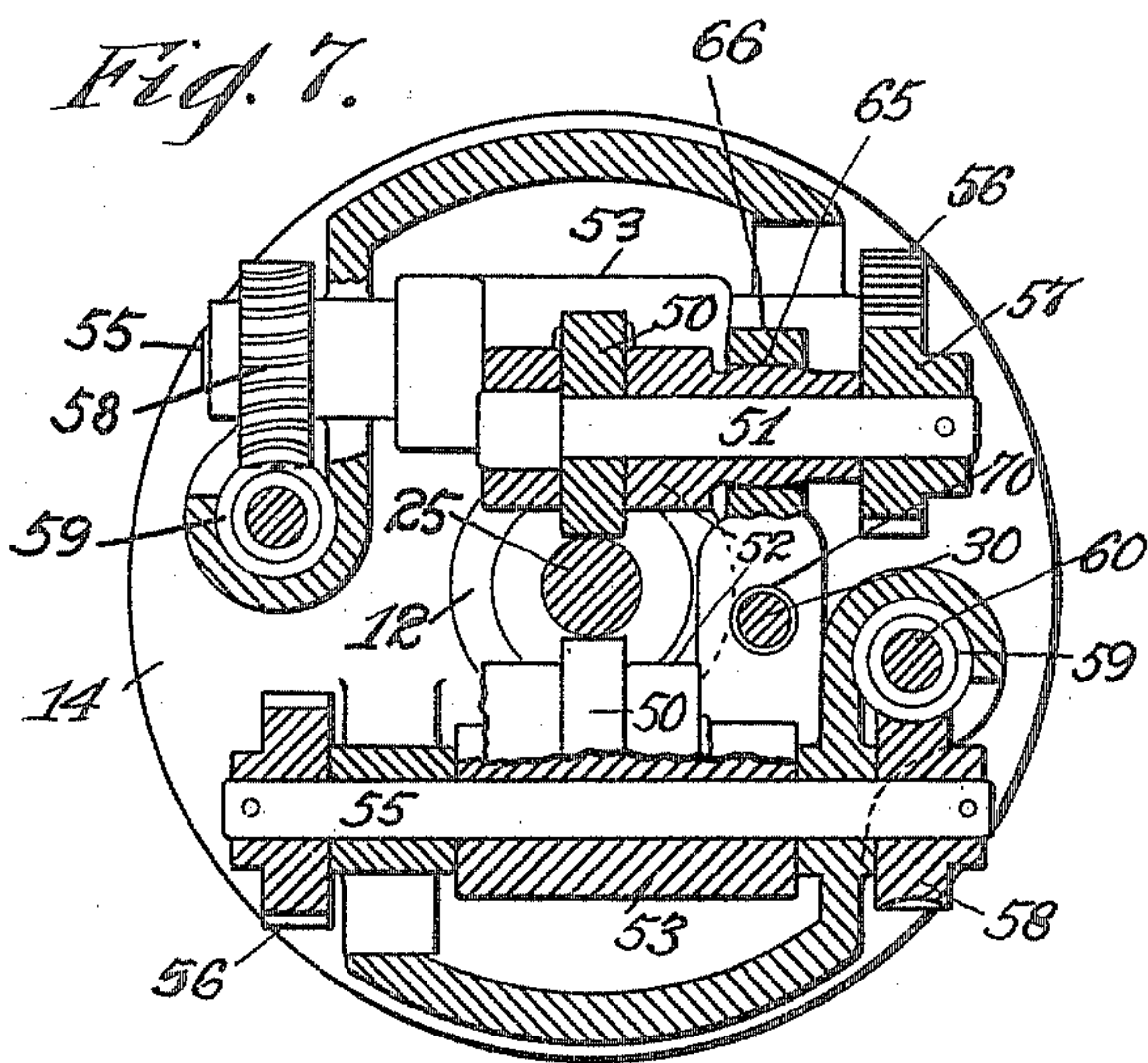
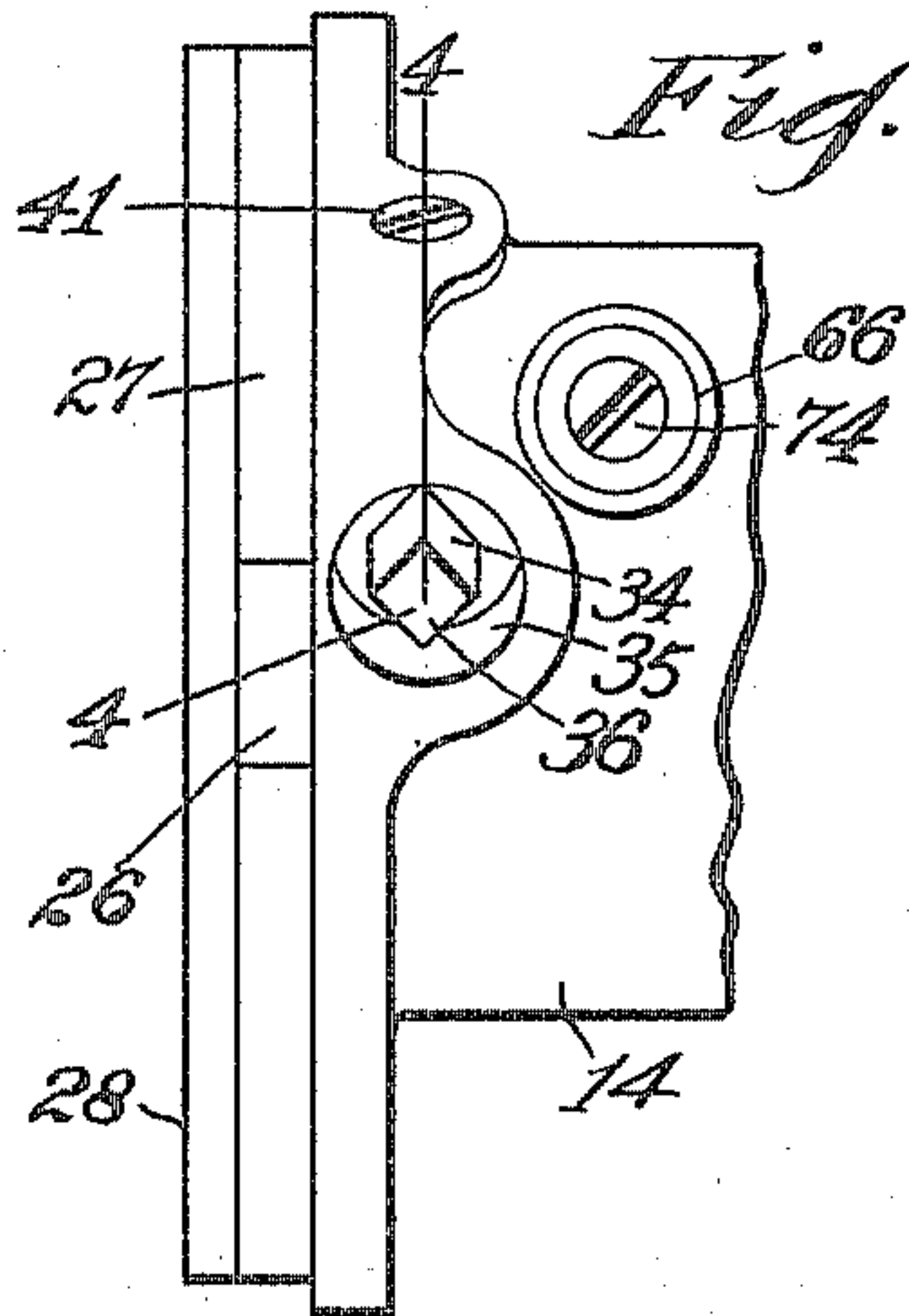


Fig. 6.



Witnesses:
W. M. Pittman
C. C. Fuss

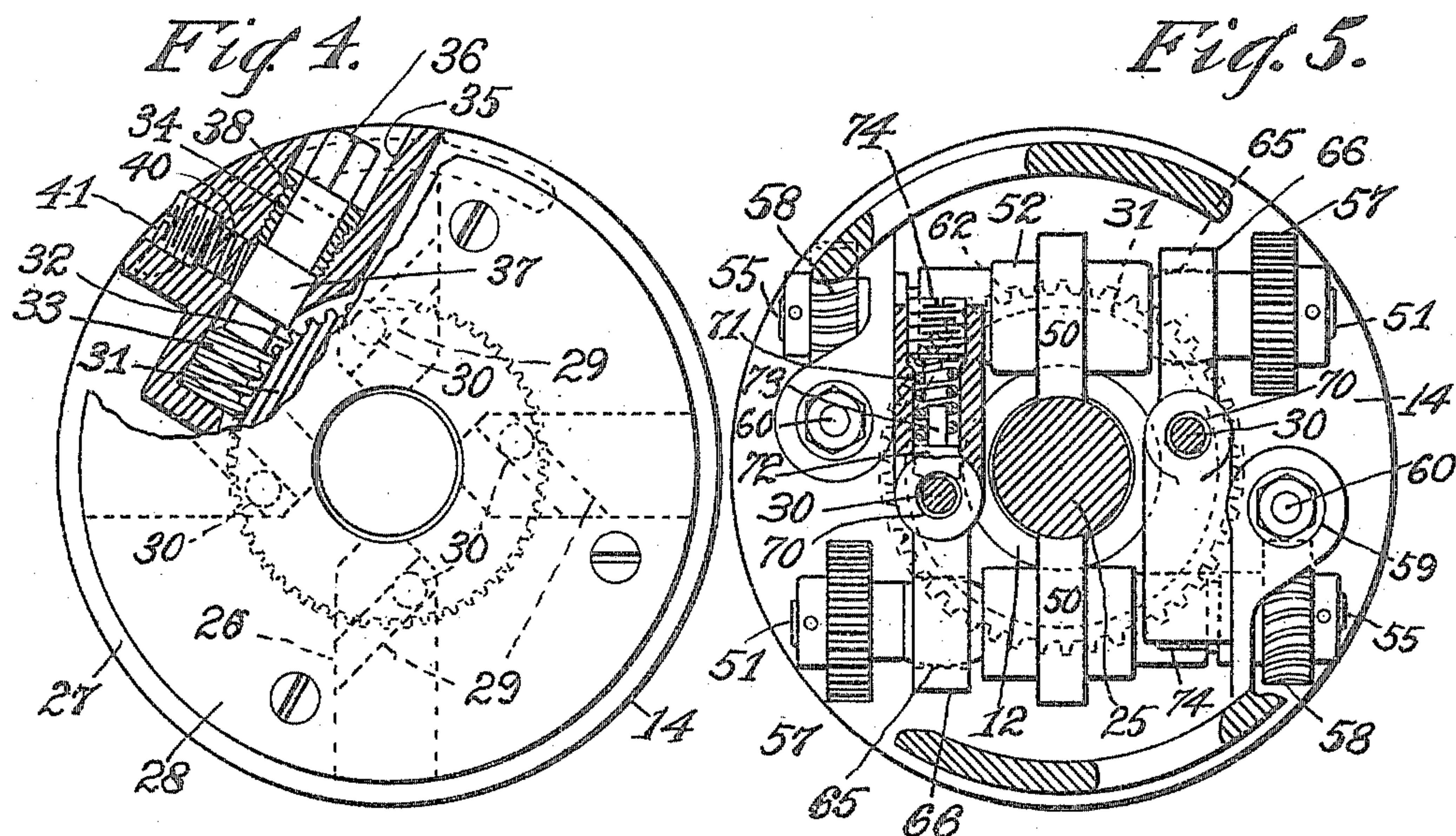
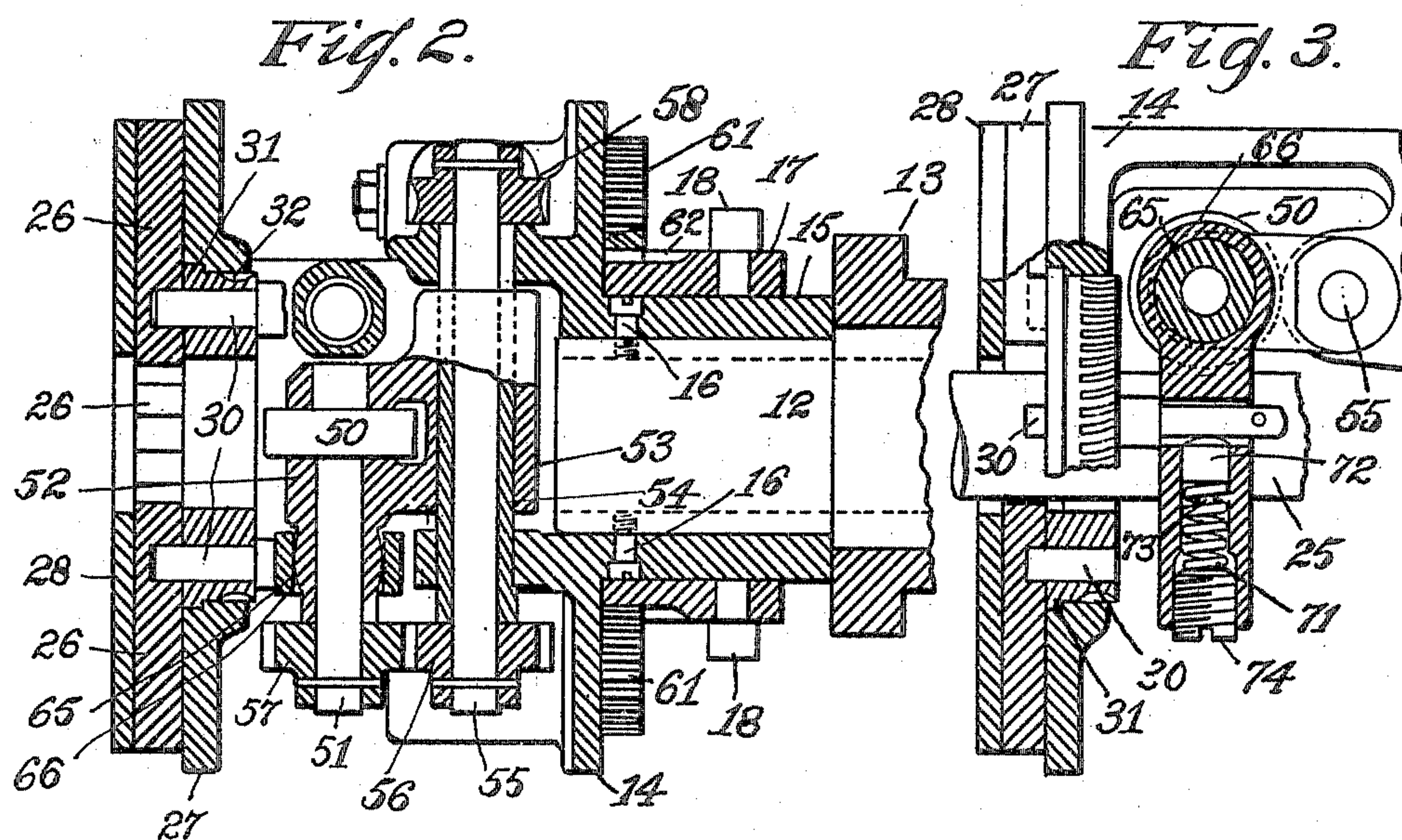
Inventor:
Walter M. Allen
By his attorney
F. H. Richards

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2 SHEETS—SHEET 2.



Witnesses:

R. W. Pullman
C. C. Fess.

Inventor:
Walter M. Allen
By his Attorney,
F. H. Richards.

UNITED STATES PATENT OFFICE.

WALTER M. ALLEN, OF CLEVELAND, OHIO, ASSIGNOR TO THE WARNER & SWASEY COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

ROLLER-FEED MECHANISM.

No. 817,151.

Specification of Letters Patent.

Patented April 10, 1906.

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To all whom it may concern:

Be it known that I, WALTER M. ALLEN, a citizen of the United States, residing in Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Roller-Feed Mechanisms, of which the following is a specification.

This invention relates to stock-feeding mechanism of the class adapted for use on the hollow spindles of lathes, screw-machines, and similar metal-working tools.

The object of the invention is to provide a stock-feeding mechanism of that class in which the stock may be fed by a pair of rolls mounted and connected for adjustment to provide for feeding various sizes of stock and for intermittent operation in an effective and convenient manner for advancing the stock from time to time as required during the operation of the machine.

In the drawings accompanying and forming a part of this specification, Figure 1 is a side elevation of a stock-feeding mechanism made in accordance with my present improvements, some portions being shown broken away for more clearly illustrating the construction and arrangement of certain parts of the mechanism. Fig. 2 is in the nature of a sectional plan view taken in about the line 2 2 of Fig. 1 looking upwardly. Fig. 3 is a view of the left-hand portion of Figs. 1 and 2, but where broken away in longitudinal section the section-lines are on different planes from that seen in either Fig. 1 or Fig. 2. Fig. 4 is an end view of the device looking at it from the left-hand end and is in the section where broken away in the line 4 4 of Fig. 6. Fig. 5 is a cross-section in the line 5 5 of Fig. 1. Fig. 6 is a side view of the left-hand end of Fig. 1 as viewed from a different angular position; and Fig. 7 is a view somewhat similar to Fig. 5, but showing a slightly-modified arrangement of certain details and shows a smaller stock-rod engaged by the rolls and is taken in about the line 7 7 of Fig. 1.

In this mechanism one of the leading features is the combination of two appliances, one especially adapted for centering and supporting the weight of the stock or bar which is being operated upon and the other adapted and operative for actuating the bar to feed the same forward, these two mechanisms being so assembled together and connected

that in adjusting the "chuck" or bar centering and supporting device to set the same for use with a given size of bar the bar-feed mechanism is at the same time, by means of the connections between the two devices or appliances, approximately set for bringing the feed-rolls to a corresponding position. This is especially indicated in Fig. 5, which shows a preferred mode of arranging the connections for effecting the concurrent adjustment here referred to. This adjustment, however, as regards the feed-rolls is closely approximate, but not exact, and, as indicated in Fig. 5, means are provided for permitting the feed-rolls to have a spring-actuated stroke of relatively small amount for producing the desired spring-pressure of the roll against the bar.

The supporting portion of the machine-frame may for convenience be designated in a general way by 11 and the hollow shaft by 12. Such hollow shaft is shown mounted in a bushing 13 and carrying the frame or head 14. The hub portion 15 of the said frame may be secured to the hollow shaft 12 by some suitable means, here shown as set-screws 16. A sleeve 17 is mounted upon the hub of frame 14 and has a pair of pins 18 for affording means of engagement for an actuator and having a key 18' engaging a keyway in sleeve 17 for preventing its rotation. The actuator is here shown as a bell-crank lever 19, having forked ends engaging the pins 18.

The stock (designated in a general way by 25) will be centered by means of a number of slides 26, four of which are illustrated in the present instance. The slides are adapted to move radially toward and from the center of the head, and thereby center the stock, their movement being controlled so that they act in unison. The slides are mounted in ways in a member 27 and are held in such ways by means of a removable plate 28. Each slide has a slanting slot 29 across it, and in each of which slots a pin 30 enters, which pins are carried by a plate adapted to be rotated. This plate in the present instance is designated by the reference character 31 and has gear-teeth 32 upon its perimeter. The wheel may be a worm-wheel and be engaged by a worm 33 for shifting it and moving the centering devices toward and from the stock. The worm shown is carried by a shaft 34, mounted in a recess 35 and having a squared

head 36 for the engagement of a key or wrench. The shaft may have an enlarged portion 37 engaged by the end of a screw-bushing 38, so that it may be properly bot-
 5 tomed in the channel. Friction may be applied to such portion of the shaft to prevent its independent movement by means of a spring 40, adjustable of tension by means of a set-screw 41. By turning the shaft 34, and
 10 thereby the worm 33, the worm-wheel will be rotated and will move the members 26 in unison toward and from their center, whereby the stock may be brought to center and held at such centered position. The head or
 15 framework portion will rotate with the shaft 12, and the centering instrumentalities will be rotated and cause the stock to rotate by the usual chuck at the point of spindle. (Not shown.) The stock at the same time that it
 20 is being rotated must be fed forward, and for which object there are shown a pair of feed-rolls 50, each of which is fast upon a shaft or spindle 51, which spindles are carried by sleeves 52, mounted, respectively, by means
 25 of a sleeve 53, upon a sleeve 54, mounted in the framework portion of the head, and which latter sleeve surrounds a shaft 55. In Fig. 7 the sleeve 54 is omitted and the sleeve portion 53 mounted directly upon the shaft 55.
 30 The shaft 55 has a gear-wheel 56 meshing with a gear-wheel 57 upon the shaft 51. The shaft 55 is driven by means of a worm-wheel 58, engaged by a worm 59 upon a shaft 60, having fast upon it a pinion 61, adapted to
 35 mesh with gear-teeth 62, cut upon the sleeve 17, and when such sleeve is moved into engagement with the pinions 61 by means of the actuator 19 or other convenient means, owing to the fact that the gear 62 and sleeve
 40 17 remain stationary while the head is rotating and the pinions 61 are revolving, the worms 59 will become active and cause the feed-rolls to rotate, thereby advancing the stock which is gripped between them. The
 45 rolls, however, to properly perform their function and to be adjustable toward and from the stock with the adjustment of the centering devices 26, are fast to such centering devices in suitable manner about to be
 50 described. It will be seen more particularly by referring to Fig. 2 that the sleeve portion 52 has ball-joint surfaces 65, which are embraced by a member 66, having a socket to receive one of the pins 30. This gives a con-
 55 nection which within the requirements of the present structure is a universal joint or connection. There are in the present instance shown four of the centering-slides 26 and two feed-rolls, so that each roll will be controlled
 60 by one of the pins for the centering devices.

Although the rolls are adjustable with the centering devices, yet it is desirable, owing to variations in the thickness of the stock and for other reasons, to have the rolls elastically
 65 pressed toward and against the stock, and

the present improvement provides means for supplying such elastic pressure at an almost constant tension. The pins 30, which are to control the rolls, enter openings 70 in the members 66, and such members are continued
 70 in a sleeve-like structure or socket in which a spring 71 is mounted, and a friction-shoe 72 having direct engagement with the pin and having a guide portion 73 to enter the interior of the convolutions of the spring, the
 75 spring's tension may be adjusted by means of a set-screw 74. It will thus be seen that each roller carries its tensioning device and that the tension remains substantially constant. The plate 31 holds the rolls in their
 80 general working position, and the spring elastically holds it in its specific working position. Having thus described my invention, I claim—

1. The combination with a rotary head, of
 85 a pair of feed-rolls each having a shaft, means for carrying said shaft comprising a bearing therefor and a sleeve, a shaft upon which the sleeve is mounted, and gearing between the roll-shafts and said latter shaft for
 90 rotating the rolls.

2. The combination with a frame having bearings, of a sleeve mounted in such bearings, a shaft in said sleeve, means for rotating
 95 said shaft, a feed-roll, a shaft on which the same is fast, a sleeve supporting said shaft and having a sleeve fast therewith and mounted upon said former sleeve, a train of gear between said shafts, and means for pressing
 100 said feed-roll to its work.

3. The combination with a rotary head of a shaft fast therewith for rotating the same, a feed-roll for feeding stock through said head, a train of gear embodying a pinion and
 105 connected with said roll, said pinion being revoluble with said head, an axially-shiftable gear-wheel held from rotation, and means for holding said gear-wheel from rotation and for axially shifting the same into and out of
 110 mesh with said pinion for intermittently rotating said pinion and said feed-roll.

4. The combination with a rotatable member having a plurality of radial slideways, of a series of work-centering slides located
 115 therein, each of said slides having a diagonal channel across it, a rotatable plate mounted upon said member and having pins engaging said channels, and means for rotating the plate for adjusting the slides.

5. In a roller-feed, the combination with a
 120 frame pivoted on an axis disposed transversely to the line of feed movement, a roller carried by the frame, a yoke having a universal connection with the frame, a spring-plunger carried by the yoke, and a pin for moving
 125 the frame and in engagement with the plunger.

6. In a roller-feed, the combination with a head, of a driving-shaft mounted therein, a frame embodying a pair of parallel sleeves,
 130

one of these being mounted on the driving-shaft, a feed-roller shaft mounted in the other of said sleeves, gears connecting said shafts, a feed-roller on said shaft, said frame
5 having a spherical bearing portion, a yoke having a bearing mounted on said spherical bearing, said yoke having an opening, a plunger carried by the yoke means for spring-pressing the plunger toward said opening, a
10 pin entering said opening and engaging said plunger, and means for shifting said pin for controlling said feed-roller.

7. In a roller-feed, the combination with a head, of a driving-shaft mounted therein, a
15 feed-roller shaft carried thereby and disposed parallel to and oscillatory about the axis of the driving-shaft, gearing connecting said shafts, a plate carried by the head and oscillatory about an axis transverse to the driv-
20 ing-shaft, a pin carried by said plate, a yoke connecting the roller-shaft with said pin, said yoke having a ball-joint connection with one and a spring connection with the other of these.

25 8. In a device of the character specified,

the combination with a plate having a worm-gear upon its perimeter, a worm in mesh therewith, a shaft carrying the worm, said shaft having a shoulder upon it, a member having a socket for receiving said worm and
30 shaft and screw-threaded upon its interior, a screw-bushing entering therein and engaging said shoulder, and an adjustable spring-brake bearing upon said shaft.

9. In a roller-feed, the combination with a
35 feed-roller, of a shaft carrying the same and oscillatory about an axis parallel with its axis, means for rotating the roller-shaft, means for oscillating said shaft and comprising a pin and means for oscillating the same
40 about an axis transverse to the axis of oscillation of the roller-shaft, a yoke connecting the roller-shaft with said pin, said yoke having a ball-joint connection with one and a spring connection with the other of these.

WALTER M. ALLEN.

Witnesses:

R. G. BUYER,
EDW. D. FRANTZ.