

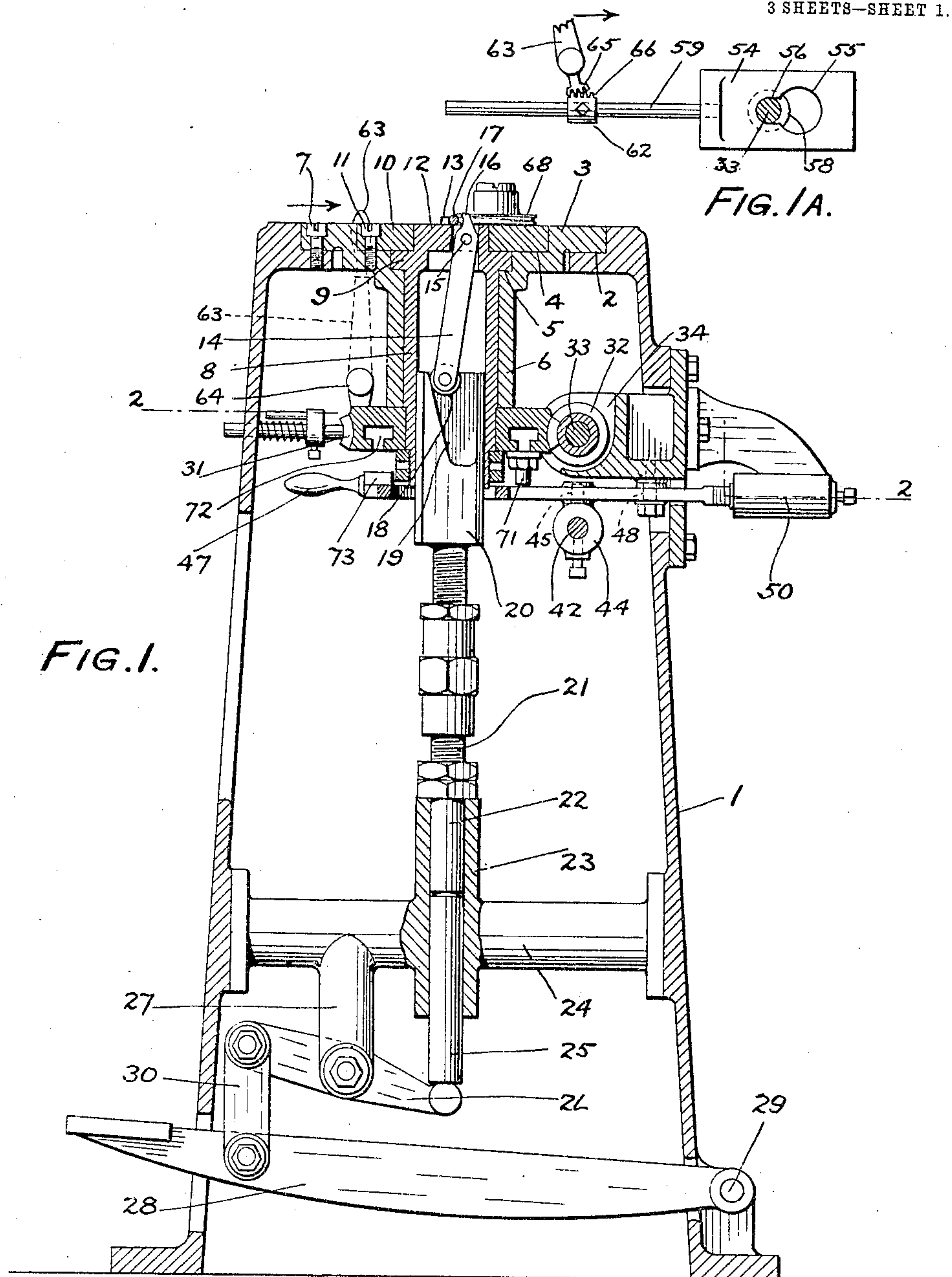
No. 871,784.

PATENTED NOV. 26, 1907.

Z. B. COES & R. F. SCOTT.
CHAIN MAKING MACHINE.

APPLICATION FILED OCT. 1, 1906.

3 SHEETS—SHEET 1.



WITNESSES:

Robert E. Eames
Jos. G. Denny, Jr.

INVENTORS

Z. B. Coes and
R. F. Scott
BY *Charles N. Butler*

ATTORNEY.

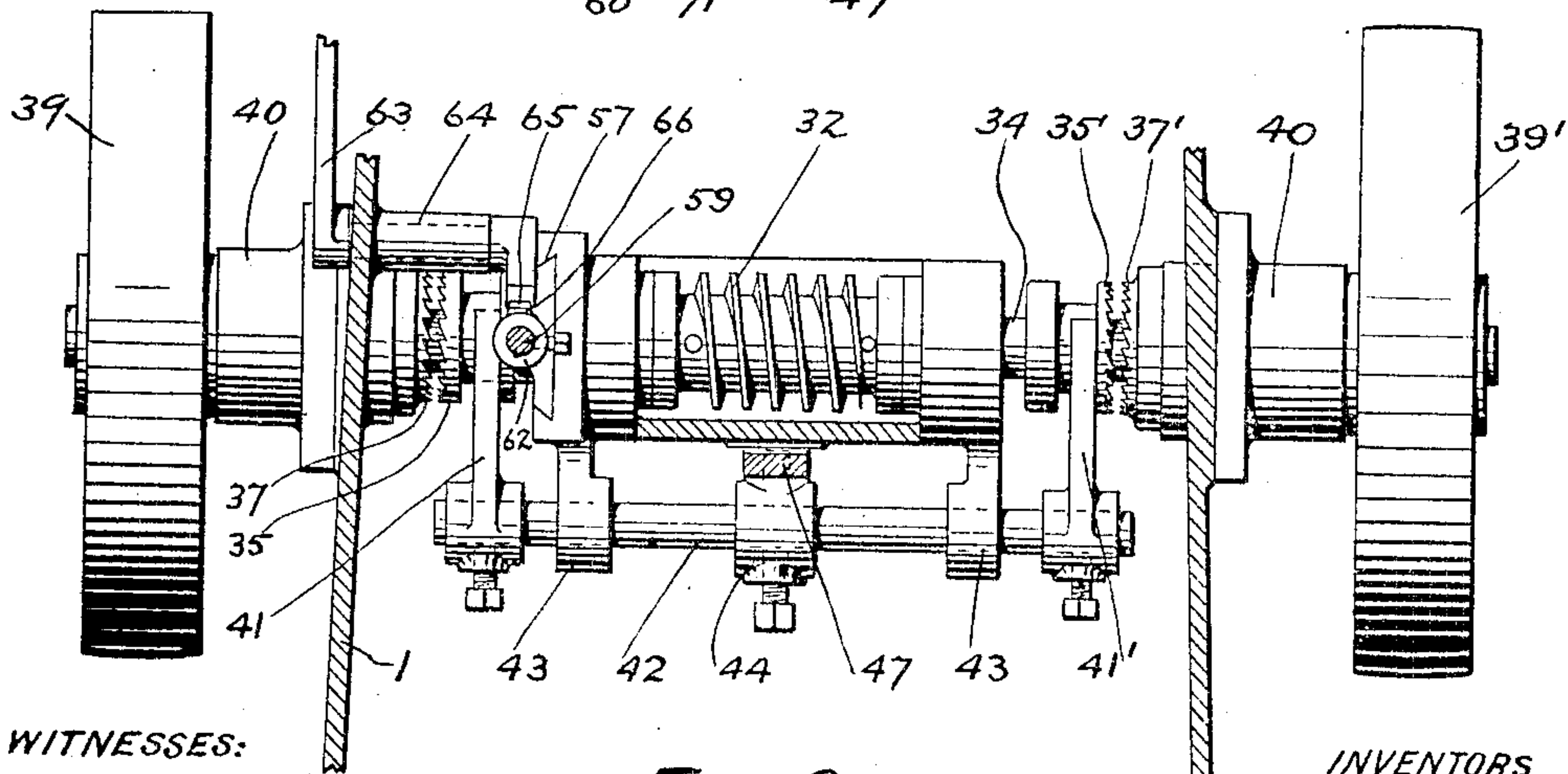
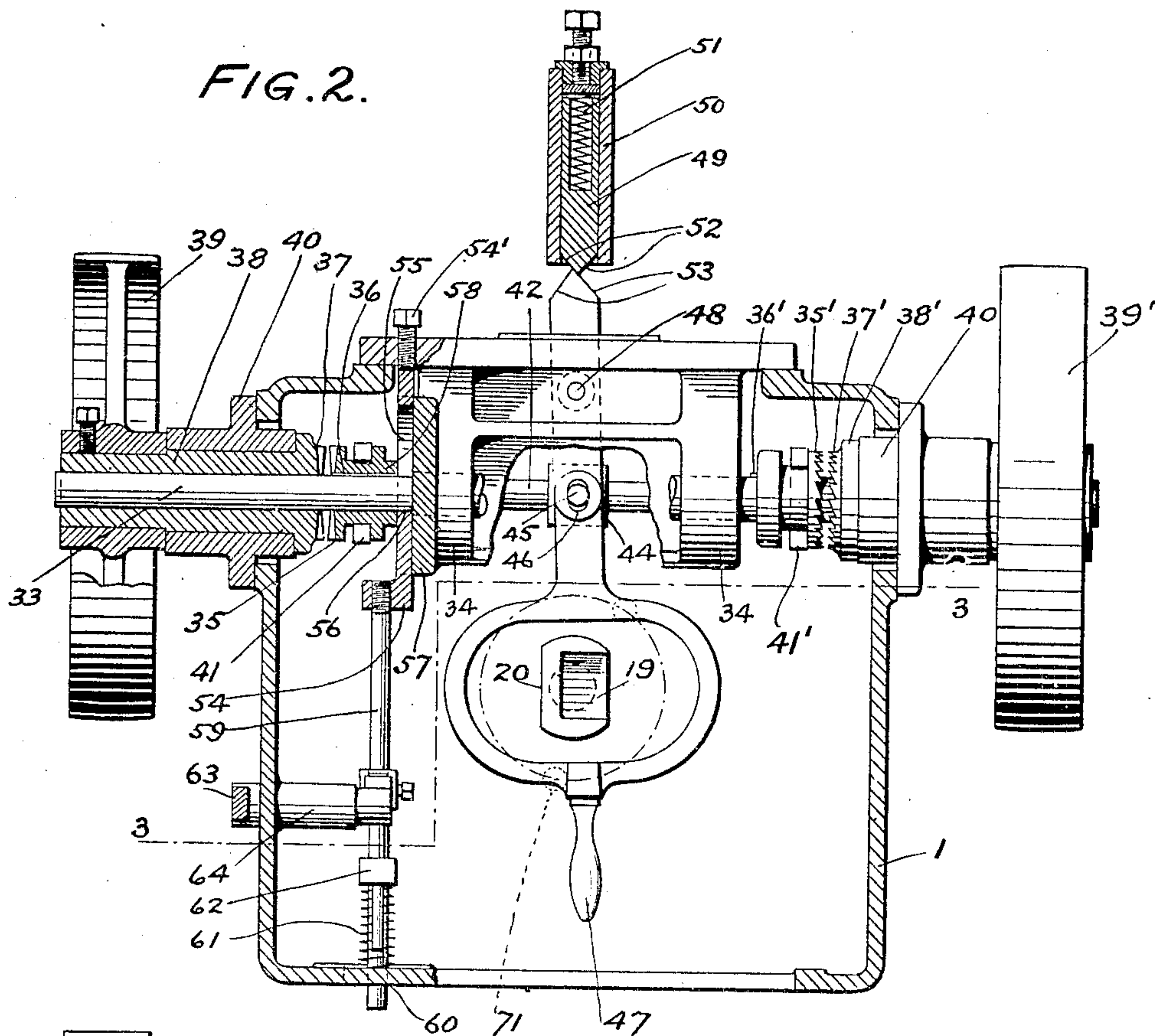
No. 871,784.

PATENTED NOV. 26, 1907.

Z. B. COES & R. F. SCOTT.
CHAIN MAKING MACHINE.

APPLICATION FILED OCT. 1, 1906.

3 SHEETS—SHEET 2.



WITNESSES:

Robert J. Carson
Jos. H. Derrmay, Jr.

INVENTORS

Z. B. Coes and
R. F. Scott
BY *Charles N. Butler*

No. 871,784.

PATENTED NOV. 26, 1907.

Z. B. COES & R. F. SCOTT.
CHAIN MAKING MACHINE.

APPLICATION FILED OCT. 1, 1906.

3 SHEETS—SHEET 3.

FIG. 4.

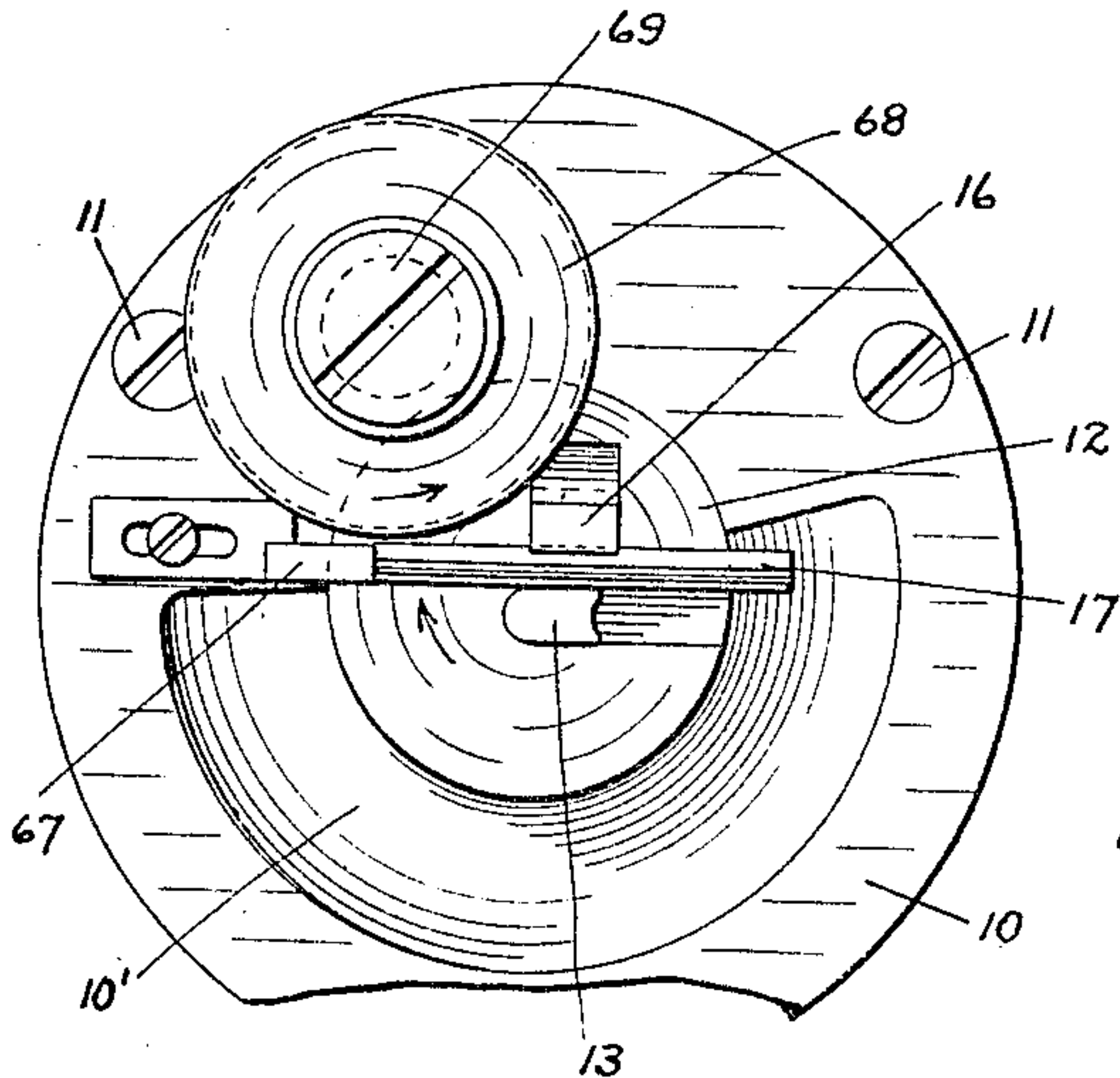


FIG. 5.

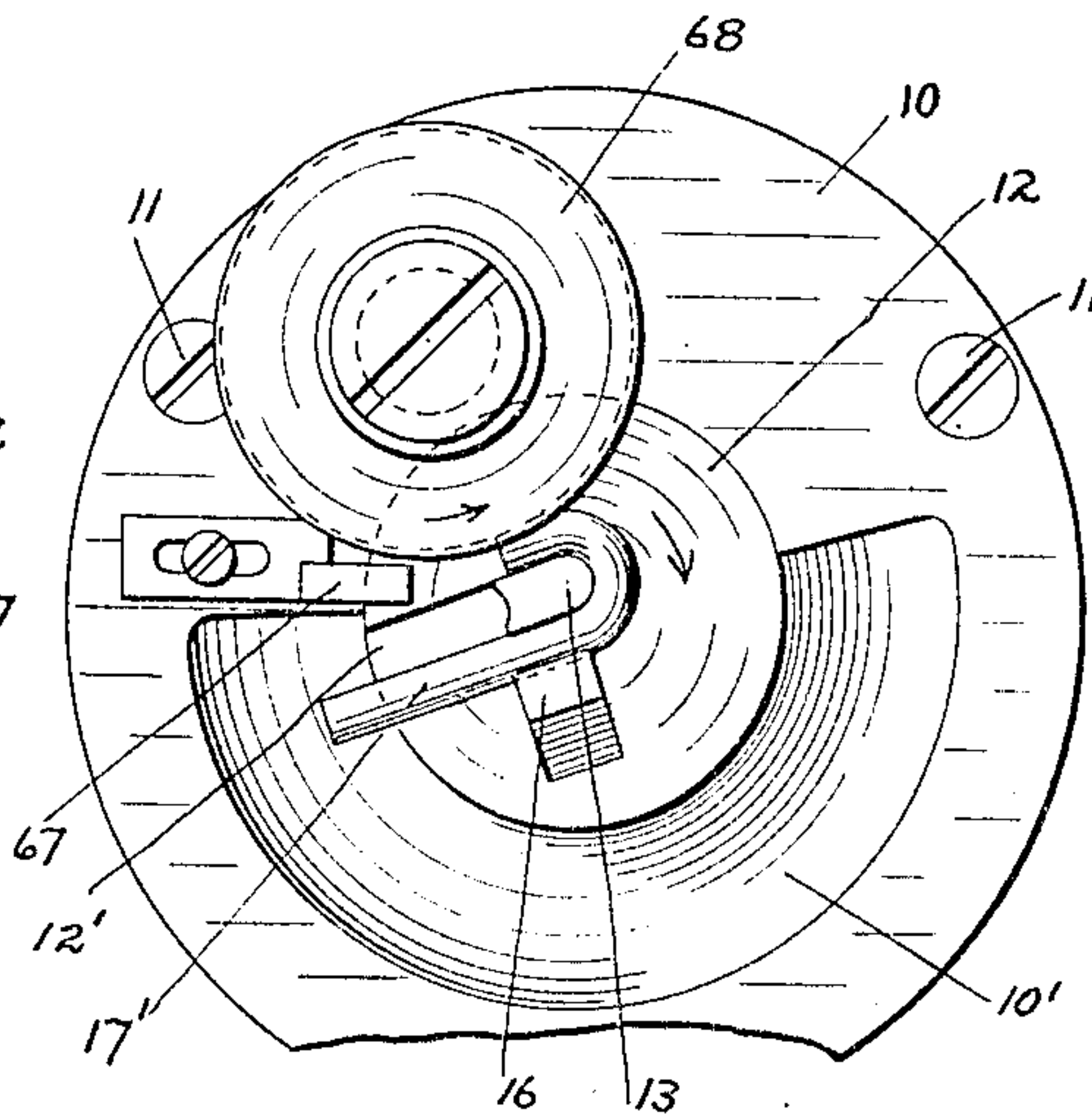


FIG. 6.

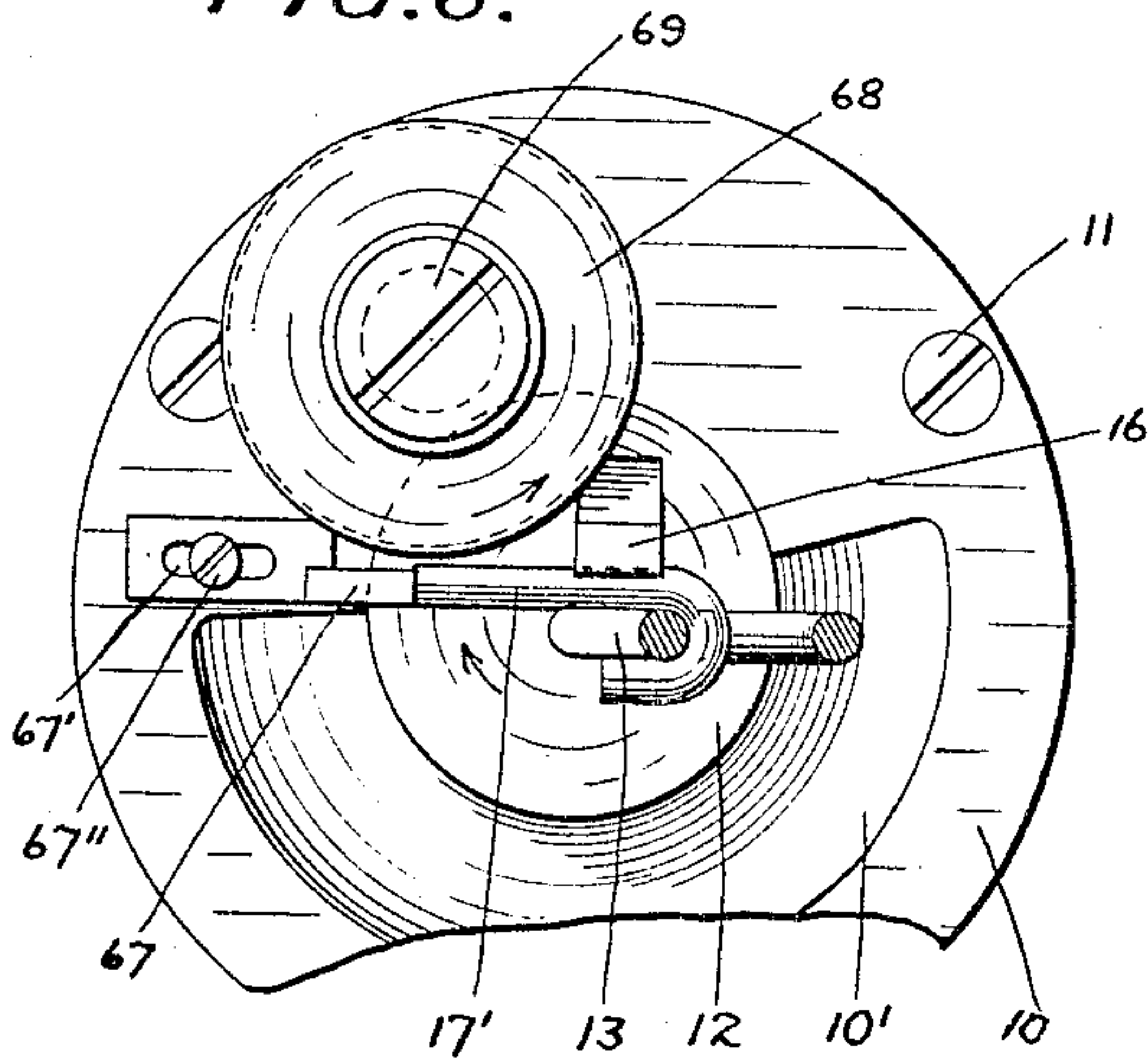


FIG. 7.

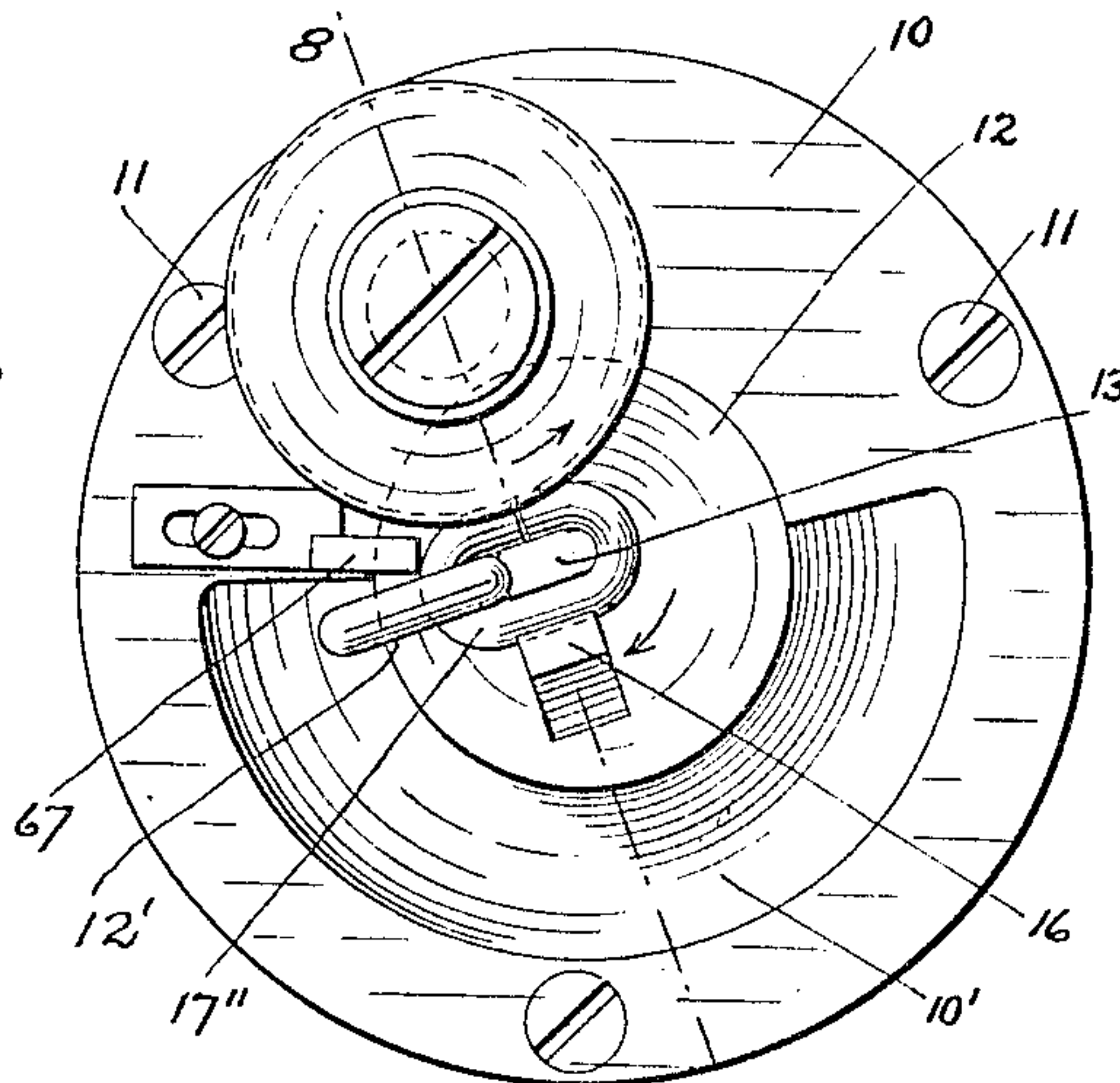
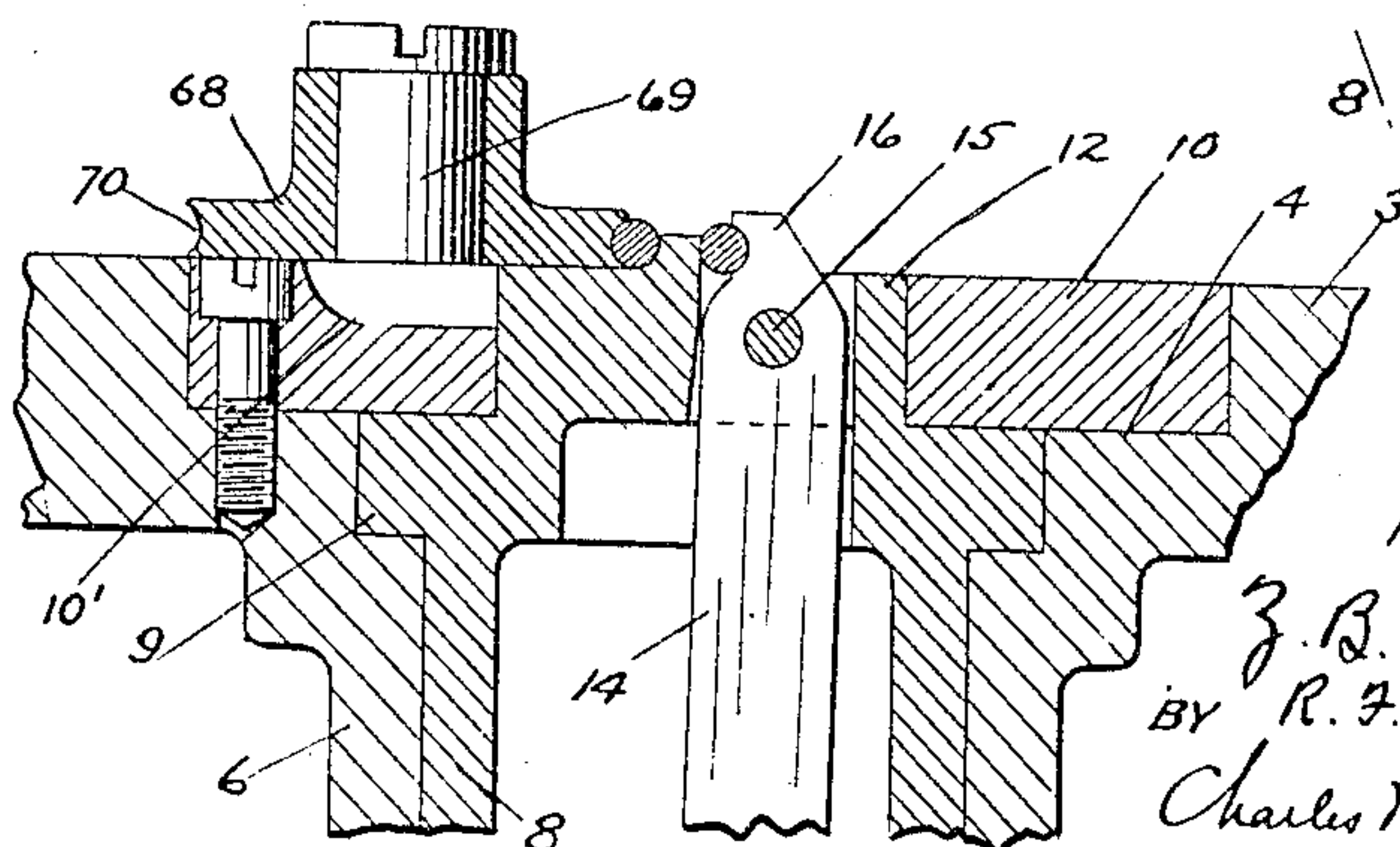


FIG. 8.



WITNESSES:
James E. Gault
Jos. S. Denny

INVENTORS
Z. B. Coes and
R. F. Scott
Charles N. Butler
ATTORNEY.

UNITED STATES PATENT OFFICE.

ZORESTER B. COES AND ROBERT F. SCOTT, OF PHILADELPHIA, PENNSYLVANIA, ASSIGN-
ORS TO EDWIN HARRINGTON, SON & CO., INC., OF PHILADELPHIA, PENNSYLVANIA.

CHAIN-MAKING MACHINE.

No. 871,784.

Specification of Letters Patent.

Patented Nov. 26, 1907.

Application filed October 1, 1906. Serial No. 336,836.

To all whom it may concern:

Be it known that we, ZORESTER B. COES and ROBERT F. SCOTT, citizens of the United States, and residents of Philadelphia, in the
5 county of Philadelphia and State of Pennsylvania, have jointly invented certain Improvements in Chain-Making Machines, of which the following is a specification.

This invention is designed to provide simplicity of construction with efficiency in operation in a machine for bending metal and particularly for bending rod sections into the form of links and connecting them in a chain.

15 In the accompanying drawings, Figure 1 represents a vertical sectional view of the machine; Fig. 1A represents a sectional elevation of mechanism for holding the clutching devices; Fig. 2 represents a sectional view
20 taken on the line 2—2 of Fig. 1; Fig. 3 represents a sectional view taken on the line 3—3 of Fig. 2; Fig. 4 represents a top plan view of parts of the machine in the position occupied initially in forming a link; Fig. 5 represents
25 a plan view of the same parts in the position occupied upon bending an end of the rod section entering into the link; Fig. 6 represents a plan view of the same in position for bending the second end of the rod section; Fig. 7
30 represents a plan view of the same parts in the position occupied upon finally closing the link, and Fig. 8 is a sectional view taken on the line 8—8 of Fig. 7.

As shown in the drawings, the machine
35 comprises the frame or housing 1 having in the top thereof the seat or step bearing 2. In this seat is set the circular plate 3 having the step bearing 4, the step bearing 5, and the sleeve bearing 6 depending therefrom,
40 the plate being fixed in position by screws 7.

A revoluble cylinder 8, disposed in the sleeve bearing 6, has thereon a flange 9, which is engaged by the bearing 5 and by a plate 10 secured in the seat 4 by the screws
45 11, the closed top or head 12 of the cylinder extending through the plate and having its face or surface disposed in the plane thereof. Projecting upwardly from the cylinder head 12 is the hub or anvil 13, eccentrically placed
50 with reference to the axis of revolution of the cylinder, and disposed within the cylinder is the lever 14, fulcrumed on the bearing 15, with the finger 16 projecting above the head so as to coact with the hub 13 in gripping the
55 rod section 17 which enters into the link. A

roller 18 on the lower end of the lever makes contact with and is rocked by the inclined or cam surface 19 of a slide 20 which reciprocates in the cylinder and revolves therewith. The slide is elevated by a rod 21 having on
60 the lower end thereof a spindle 22 which is journaled in a bearing 23 carried by the stationary piece 24 of the frame. A short shaft 25 in the bearing 23 is elevated, to elevate the rod 21, by a lever 26 which is fulcrumed
65 on the hanger 27 depending from the part 24 and rocked by a foot lever 28, the latter being fulcrumed on the stationary bearing 29 and connected by the link 30 with the lever 26.
70

A worm wheel 31 is fixed on the lower end of the cylinder 8 and engaged to revolve the cylinder by a worm 32 fixed on the shaft 33, the latter being journaled in the bearings 34
75 carried by the housing.

The shaft 33 is driven in opposite directions alternately by the clutching members 35 and 35' (longitudinally movable on the shaft and connected by the respective splines 36 and 36' to revolve therewith), which en-
80 gage alternately with the clutching members 37 and 37' on the respective sleeves 38 and 38' having pulleys 39 and 39' fixed thereto, the sleeves revolving on the shaft and in the journals 40 carried by the housing. The
85 clutch members 35 and 35' are engaged and shifted by the respective forks 41 and 41' fixed on opposite ends of the shaft 42 which is adapted to reciprocate in the stationary bearings 43. The shaft has fixed thereon a
90 collar 44 provided with a boss 45, the latter engaging a slot 46 in a lever 47 which is fulcrumed on the stationary bearing 48.

A bolt 49, pressed outwardly, in the fixed race 50 on the frame, by a coiled spring 51,
95 has a wedge shaped outer end formed by the inclined surfaces 52 adapted to engage the correspondingly formed surfaces 53 of the lever 47, the bolt acting to hold the lever and the clutching mechanism in the position to
100 which they are thrown.

A slide 54, having therein the curved opening 55 and the intersecting smaller curved opening 56, reciprocates in the way 57 and serves to control the movements of the
105 clutching member 35, the latter having thereon the hub 58 of smaller diameter than the curve 55 and larger diameter than the curve 56. When the center of the opening 55 is in registration with the axis of the hub
110

58 the latter can enter the opening and the clutch members 35 and 35' can be shifted to the right so that the member 35' will engage the member 37', but when the center of the opening 56 is in registration with the hub axis the slide engages the hub. In this latter position both clutch members are held out of engagement, as the bolt 49 acts upon the lever 47 and the depending mechanism to shift the clutch members 35 and 35' to the right, while the slide will not permit sufficient movement to effect an engagement.

The slide 54 is operated through a rod 59 fixed thereto and reciprocating in the bearing 60. The rod is pressed forward by a coiled spring 61, disposed between the frame and the collar 62 set on the rod, and is drawn back by a lever 63, the latter being fulcrumed in the frame bearing 64 and having thereon the segmental rack 65 which engages a rack 66 fixed on the collar.

To hold the slide out of operation, a screw 54' set in the frame may be run in to hold the slide back so that the opening 55 is held in registration with the hub 58.

The rod section or link blank 17, placed between the hub 13 and the finger 16, has its end thrust against the stationary stop 67 adjacent to a disk 68, the latter being journaled on a stub spindle 69 and having a concave periphery 70. The lever 28, being depressed and acting through the intermediate mechanism, causes the slide 20 to operate the lever 14 and the finger 16 to grip the blank. The lever 63 being now thrown in the direction of the arrow to draw back the slide 54 and the lever 47 operated to throw the clutch member 35' into engagement with the member 37' (being held by the bolt 49), the pulley 39' revolves the shaft 33 and, through the intermediate mechanism, the cylinder head 12 revolves in the direction of the arrow thereon, from the position shown in Fig. 4 to that shown in Fig. 5, the bent blank 17' being formed by the revolving parts 13, 16 and 68. At this point a T-headed stud 71 clamped in a circular T-slot 72 of the worm wheel 31 strikes a projection 73 on the lever 47 and throws the latter so that the clutch member 35 engages the member 37, where it is held by the bolt 49. The pulley 39, acting through the intermediate mechanism, now revolves the head 12 backward, in the direction opposite to that of the arrow, until the stud 71 strikes the projection 73 again to throw the lever 47 back, when the slide 54, which has been thrown by the spring 61, engages the hub 58 and the clutches are held out of engagement, until reengaged as described, or otherwise if the slide 54 has been set and held back by the screw 54' there will have been effected an automatic reengagement of the parts 35' and 37' and repetition of the movement of the head 12 in the direction of the arrow. The bent blank 17' is

placed in the position shown in Fig. 6 during the reverse movement or the period of rest and is brought by the second forward movement to the form of the link 17'' engaging a second similar link as shown in Fig. 7.

Links of various lengths may be formed from blanks of suitable length through adjusting the position of the stop 67, by means of the slot 67' therein and the set screw 67'' passing therethrough into the plate 10.

The table, comprising the top of the housing, the plate 3 and the plate 10, is provided with the circular channel 10', formed in the plate 10, by which the link in process of formation may lie flat upon the head, while the link to which it is joined stands vertically in the channel and a recess 12' in the head.

Having described my invention, I claim:—

1. In a machine of the class described, a revoluble device having means for holding a blank, means coacting with said device for bending said blank in revolving it in one direction, and automatic mechanism whereby said device is revolved alternately in opposite directions.

2. In a machine of the class described, a revoluble device having means for holding a blank, means coacting with said device for bending said blank in revolving it in one direction, mechanism for revolving said device alternately in opposite directions, and means for automatically reversing the movements of said device.

3. In a machine of the character described, a stationary table, a blank holding device revoluble therein, a revoluble shaft, mechanism whereby said shaft revolves said device, means including clutching devices for driving said shaft in opposite directions, and means for automatically engaging and disengaging the respective clutching devices alternately to revolve said holding device in alternate directions.

4. In a machine of the character described, a revoluble blank holding mechanism, a revoluble shaft, gearing whereby said shaft is engaged with and revolves said mechanism, devices normally loose on said shaft for revolving it in opposite directions, clutching mechanisms for alternately engaging the respective devices to said shaft, and means for engaging said clutching mechanisms alternately.

5. In a machine of the class described, a revoluble blank holding device, a worm wheel fixed thereto, a shaft, a worm on said shaft engaging said worm wheel, devices for revolving said shaft in opposite directions, clutches for alternately engaging and disengaging the respective devices with relation to said shaft, mechanism connecting the clutches so that each is disengaged by the engagement of the other, and mechanism operated by said worm wheel for shifting the clutch operating mechanism.

6. In a machine of the class described, a
revoluble blank holding device, a revoluble
shaft, mechanism whereby said shaft revolves
said device, clutches for alternately engaging
5 said shaft and revolving it in opposite direc-
tions, mechanism for throwing said clutches
so that one is engaged and the other is disen-
gaged, mechanism for locking each of said
clutches in its engaging relation, and mech-
10 anism for locking both of said clutches out of
engagement.

7. In a machine of the class described, a
revoluble head having means for holding a
blank and a recess for the reception of a link,

a stationary plate in which said head re- 15
volves, said plate having a depression for the
reception of a link, and a revoluble device
against which said blank is bent by the move-
ment of said head.

In testimony whereof we have hereunto 20
set our names this 27th day of September,
1906, in the presence of the subscribing wit-
nesses.

ZORESTER B. COES.
ROBT. F. SCOTT.

Witnesses:

ROBERT JAMES EARLEY,
ROBT. R. KITCHEL.