

No. 695,490.

Patented Mar. 18, 1902.

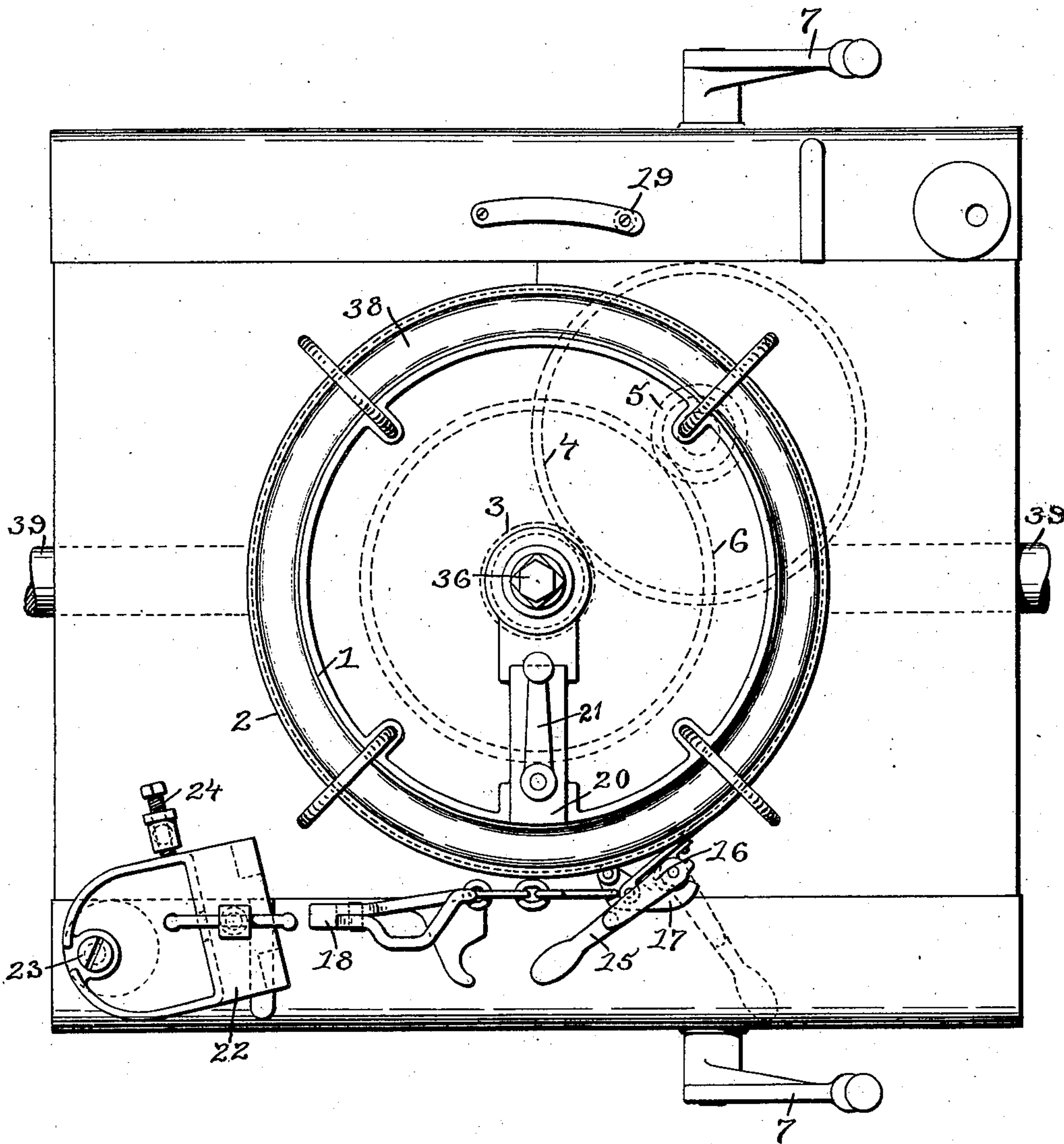
M. REID.
WIRE DRAWING MACHINE.

(Application filed June 27, 1901.)

(No Model.)

4 Sheets—Sheet 1.

Fig. 1.



WITNESSES:

Chas. H. Luther Jr.
Ada C. Hagerty.

INVENTOR:

Marcellus Reid
by Joseph A. Miller & Co

ATTORNEYS:

No. 695,490.

Patented Mar. 18, 1902.

M. REID.

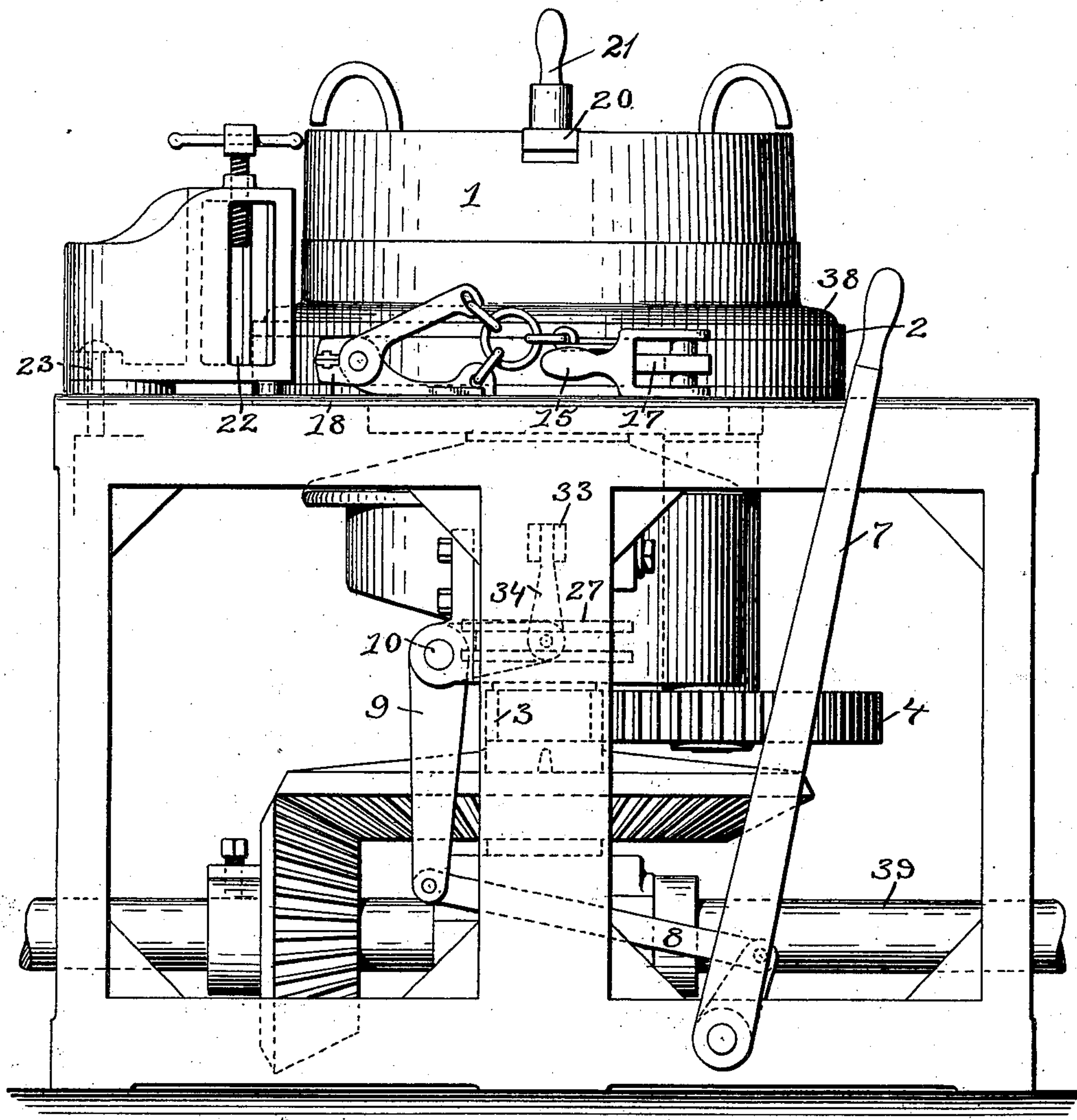
WIRE DRAWING MACHINE.

(Application filed June 27, 1901.)

(No Model.)

4 Sheets—Sheet 2.

Fig. 2.



WITNESSES:

Chas. H. Luther &
Ada E. Vagerty.

INVENTION:

Marcellus Reid
by Joseph A. Miller & Co.
ATTORNEYS:

No. 695,490.

Patented Mar. 18, 1902.

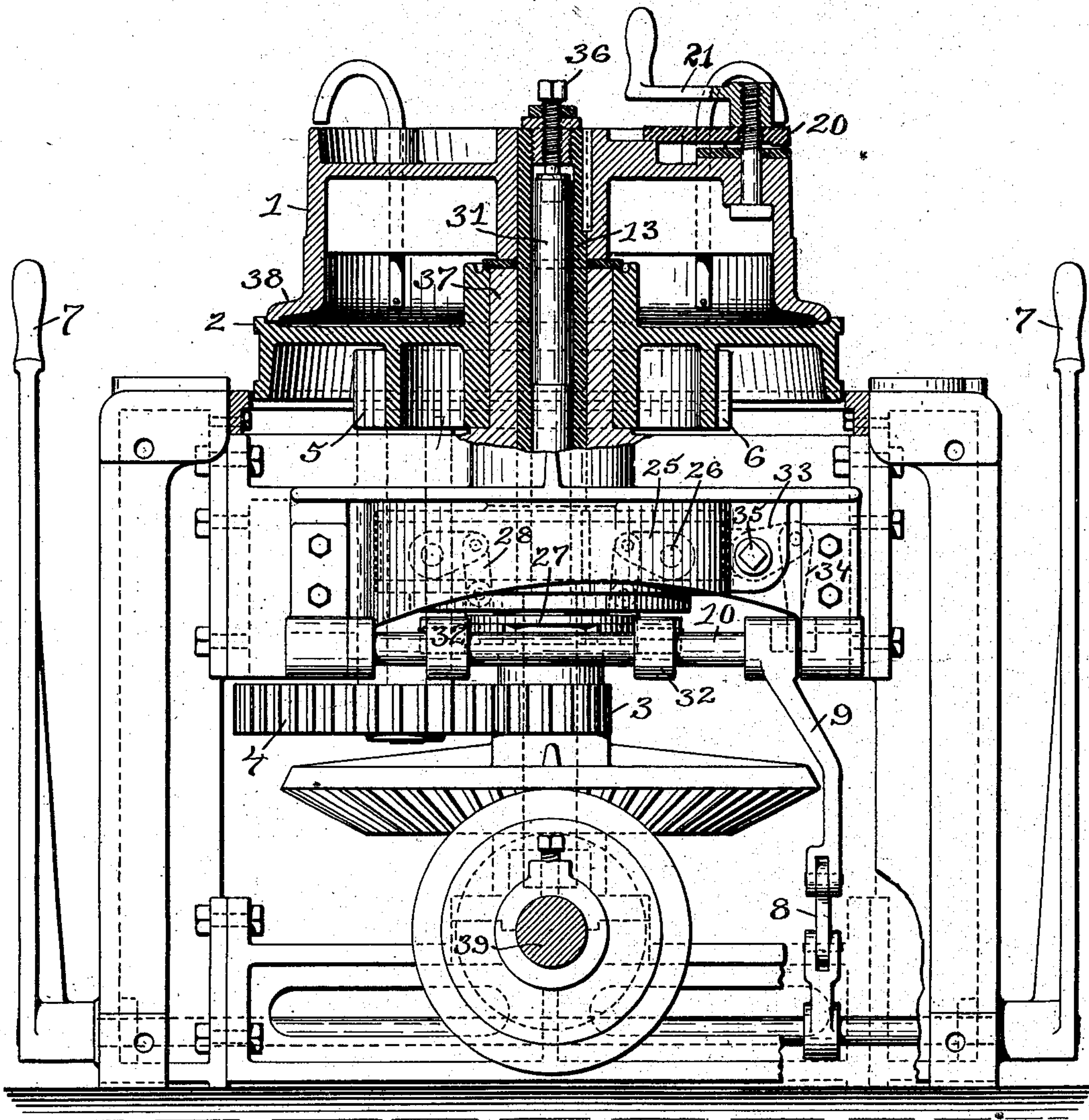
M. REID.
WIRE DRAWING MACHINE.

(Application filed June 27, 1901.)

(No Model.)

4 Sheets—Sheet 3.

Fig. 3.



WITNESSES:

Chas. H. Luttinger
Ada E. Hagerty

INVENTOR:

Marcellus Reid
By Joseph A. Miller & Co
ATTORNEYS:

No. 695,490.

Patented Mar. 18, 1902.

M. REID.

WIRE DRAWING MACHINE.

(Application filed June 27, 1901.)

(No Model.)

4 Sheets—Sheet 4.

Fig. 4.

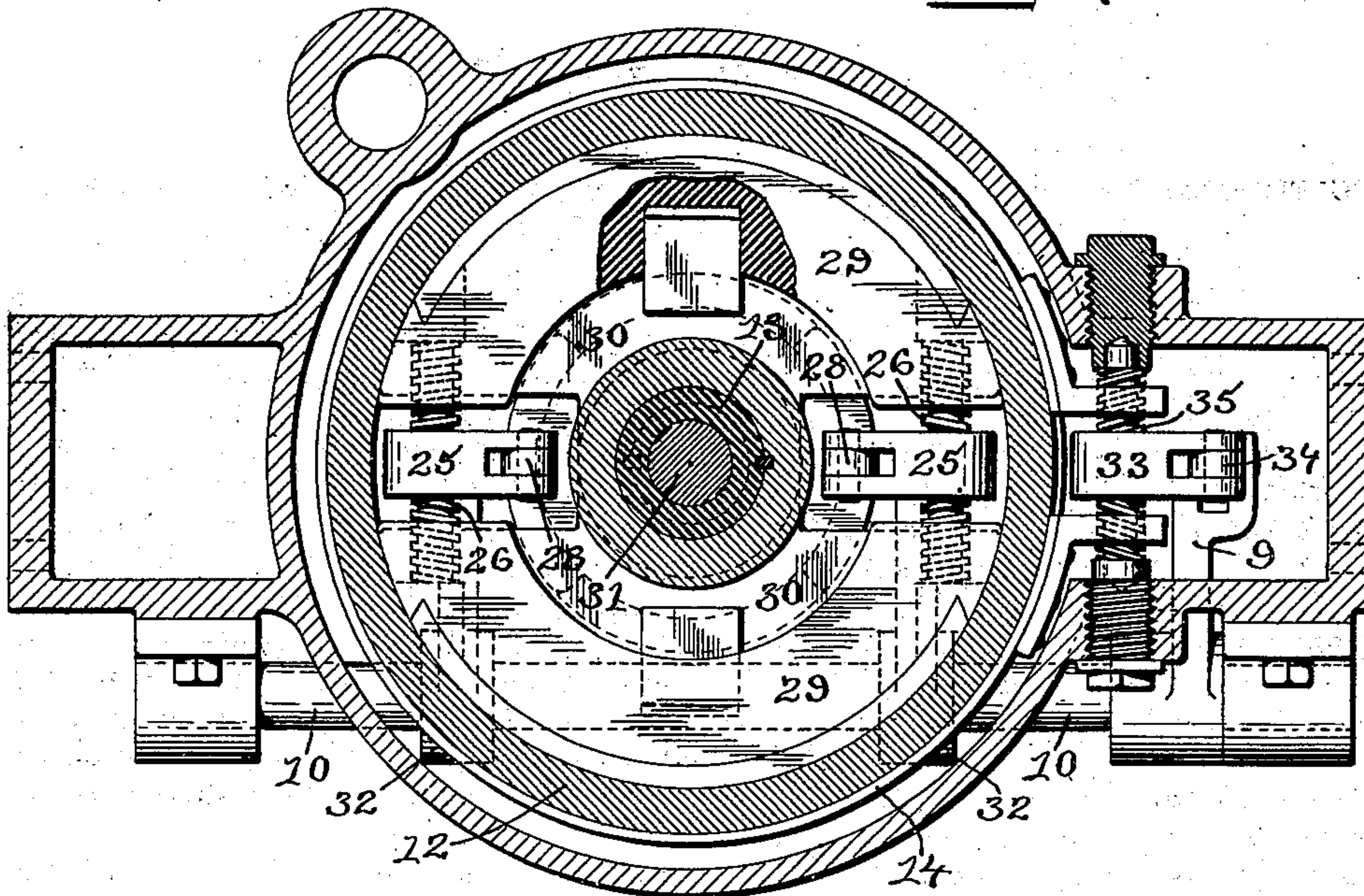
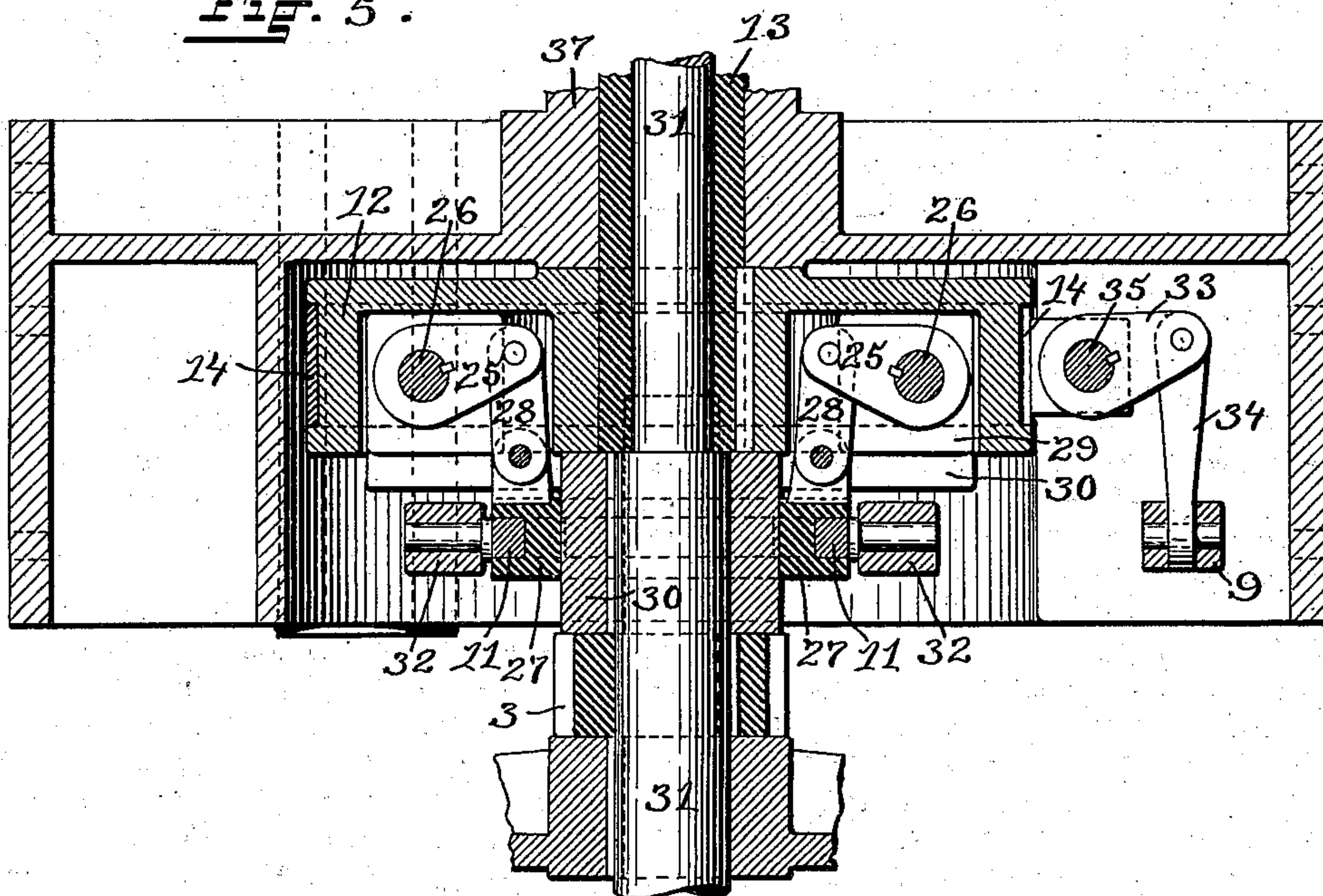


Fig. 5.



WITNESSES:

Chas. H. Luther Jr
Ada E. Fagerty.

INVENTORY:

Marcellus Reid
by Joseph A. Miller & Co
ATTORNEYS:

UNITED STATES PATENT OFFICE.

MARCELLUS REID, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO CHARLES DE HART BROWER, TRUSTEE, OF NEW YORK, N. Y.

WIRE-DRAWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 695,490, dated March 18, 1902.

Application filed June 27, 1901. Serial No. 66,202. (No model.)

To all whom it may concern:

Be it known that I, MARCELLUS REID, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented a new and useful Improvement in Wire-Drawing Machines, of which the following is a specification.

This invention has reference to an improvement in wire-drawing machines.

The invention consists in the peculiar and novel construction and in the combination of the parts whereby the machine is under the complete control of the operator and may be started gradually, as will be more fully set forth hereinafter.

Figure 1 is a plan view of my improved wire-drawing machine. Fig. 2 is a front view showing the machine in elevation. Fig. 3 is a side view, shown partly in section. Fig. 4 is a horizontal sectional view through the clutch and center frame. Fig. 5 is a transverse sectional view through the clutch and center frame.

Similar marks of reference indicate corresponding parts in all the figures.

In my improved machine by the arrangement of the driving-clutch shown in Figs. 4 and 5 the operator is enabled to start the wire-drawing drum 1 without shock. The draw-out drum 2 runs continuously and is driven through the gears 3, 4, 5, and 6, which form a part of the draw-out drum. The gear 3 is of less diameter than the gear 4 and the gear 5 of less diameter than the gear 6 on the draw-out drum. They act to rotate the draw-out drum at a slower speed than the wire-drawing drum. The starting of the wire through the die is thereby facilitated. In operation the hand-lever 7 acts through the link 8, the bell-crank 9, the rock-shaft 10, and the levers containing the clutch-shoes 29. By throwing the lever 7 in one direction the clutch will grip the drum 12, which is keyed to the sleeve 13. The wire-drawing drum 1 is also keyed to the upper end of the sleeve 13. In throwing the lever in the opposite direction this clutch is released and the brake-strap 14 is tightened on the outside of the drum 12, which stops the wire-drawing drum. Thus it will be seen that by throwing the starting-

lever in one direction the wire-drawing drum is started, by throwing it to a central position the clutch for driving said drum is released, and by throwing the lever farther over in the opposite direction a brake is applied to prevent the wire-drawing drum from turning.

Greater advantages are obtained by the starting and stopping of the wire-drawing drums, as by this arrangement the operator is enabled to start the drum without shock and instantly stop it from either side of the machine and put a brake on, which in case of accidents is a very valuable feature in this class of machinery.

The arrangement for drawing out the wire or starting it through the die in this machine has the same advantages as the mechanism to start the wire-drawing drum, which consists of a friction-band wrapped around the drawing-drum 2 and is operated by the lever 15, which has a cam 16, arranged so as to throw the lever 17 outward when the lever 15 is thrown in the position indicated by the dotted outline in Fig. 1.

Throwing the lever 17 out draws the two ends of the friction-band together, thus tightening the band on the draw-out drum. The wire is first gripped by the tongs 18. The lever 15 is then thrown around, tightening the band on the drum, which carries the tongs around with it, thus drawing out the end of the wire. When the lever 15 has reached the opposite side of the drum and strikes the stud 19, the lever 15 is automatically thrown back, so as to release the grip of the band on the draw-out drum, releasing the tension on the wire and the grip of the tongs on the same. The operator then has sufficient wire through the die to fasten the end in the vise 20, which is tightened by the crank 21. Then the operator starts the wire-drawing drum by the lever 7. While a coil of wire is being drawn through by the wire-drawing drum 1 the operator starts another wire through another hole in the die by means of the draw-out mechanism just described. The die is placed in the die or soap box 22, which swings on the pivot 23 and is adjusted for alinement in relation to the wire-drawing drums by the adjusting-screw 24. For various lengths of wire to start with the stud 19 is placed at differ-

ent positions around the drum in the frame of the machine, as it is obvious that whenever the lever 15 strikes the stud 19 the friction-band will be released and the tongs will
5 let go of the wire.

Describing the clutch and brake in detail, the levers 25 are keyed to double screws 26, having a right-hand thread on one end and a left-hand thread on the opposite end. By
10 raising the sliding collar 27, which is connected by the links 28 to the lever 25, the clutch-shoes 29 are opened, thus gripping the clutch-drum 12. These clutches are provided with maple-wood linings, so as to give con-
15 siderable friction between the shoe and the inner surface of the clutch-drum. Lowering the collar 27 releases the pressure of the shoes, allowing the clutch-shoes and clutch-shoe carrier 30 to revolve with the vertical spindle 31,
20 to which the clutch-shoe carrier 30 is keyed. As the rock-shaft 10, through the levers 32, lifts the sliding collar 27 the bell-crank 9, attached to the lever 33 through the link 34, oscillates the screw 35 in the opposite direc-
25 tion from the screws 35 in the clutch. The double screw 26, fastened to the lever 33, is oscillated in the opposite direction from the double screws 26 in the clutch. By the proper arrangement of the threads on the os-
30 cillating screws oscillating the shaft 10 in one direction tightens the clutch and releases the brake. Oscillating the shaft 10 in the opposite direction releases the clutch and tightens the brake. Clutch-shoes 29 slide
35 back and forth on clutch-shoe carriers 30, being guided by pins projecting upward from said carriers. (Shown as square blocks in Fig. 4.) As the distance which these clutch-shoes must travel in order to clutch or re-
40 lease the clutch-drum is very slight, it is only necessary that there should be a slight clearance between said shoes and the guide-pins. Clutch-shoe carriers 30 comprise a sleeve keyed to the spindle 31, as shown in
45 Fig. 5, and a projecting annular flange at the upper end thereof, which flange carries the guide-pins before mentioned and are cut away at opposite points to allow the levers for actuating the screws 26 to pass there-
50 through, as shown in top plan in Fig. 4. In the periphery of the sliding collar 27 is provided an annular groove, (shown in section in Fig. 3 and in dotted lines in Fig. 2,) in which are located the coupling-pieces 11, car-
55 ried by pins at the ends of levers 32, which construction allows the collar 27 to rotate independently of the levers 32 while it is carried with said levers in their oscillating movement in a vertical direction.

60 The weight of the wire-drawing drum 1 and the wire carried by said drum is supported in operation at the upper end upon the vertical spindle 31 by the hardened screw 36, which bears upon the hardened plug in
65 the upper end of the spindle 31. By this means an adjustment for wear is provided. The lower draw-out drum 2 is supported upon

the projecting sleeve-bearing 37, which is a part of the center frame. Reference to the drawings, Fig. 3, will show that the upper
70 end of the sleeve 37 is above the point at which the wire is drawn on the drum 1, as the wire is drawn out at the lower part of the drum near the flange 38. By this means the load due to drawing wire is supported di-
75 rectly by the bearing 37 and there is no tendency to bend the spindle 31 or the sleeve 13, thus producing a very rigid and steady motion to the wire-drawing drum when in oper-
80 ation.

Another important object in a machine constructed as shown is that each wire-drawing block or wire-drawing machine is a complete unit by itself. Generally these machines are
85 put up in lots of four to twelve or more, all attached together and driven by the same horizontal line-shaft 39. Generally one starting or drawing-out attachment is used to draw the wire out for several drums or as
90 many as are contained in the line and driven by the main line-shaft.

By the arrangement herein shown and described one block or machine is a complete unit by itself and can be used alone or set
95 up as the other machines are in lines of six to twelve or more, as desired.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a wire-drawing machine, a wire-draw- 100 ing drum and a friction draw-out drum for starting the wire through the die, substantially as described.

2. In a wire-drawing machine, a friction wire-drawing drum, a friction-band encir- 105 cing the periphery of said friction-drum adapted to grip said drum and a lever and cam attached to the friction-band, substantially as described.

3. In a wire-drawing machine, a friction 110 draw-out drum, a friction-band encircling said drum and a gripping device adapted to tighten the band upon the drum, of a pair of wire-starting tongs attached to said friction-band, substantially as described. 115

4. A wire-drawing machine, having the wire-drawing drum driven at a higher speed than the wire-starting friction draw-out drum, as described.

5. In a wire-drawing machine, a wire-draw- 120 ing drum, a wire-starting friction-drum concentric with and below the wire-drawing drum, driven independent of and at a slower speed than the wire-drawing drum, substan-
125 tially as described.

6. In a wire-drawing machine, the combination of the following instrumentalities: a vertical spindle, means for driving the spin-
130 dle, a sleeve surrounding the spindle, a wire-drawing drum connected with the sleeve, a clutch mechanism connecting the sleeve with the spindle, a brake mechanism controlling the wire-drawing drum, means for releasing the clutch mechanism and applying the brake

mechanism or vice versa simultaneously, a draw-out drum, mechanism connected with the spindle for rotating the draw-out drum, a friction-strap on the draw-out drum and means for connecting the wire to the friction-strap and the strap to the draw-out drum, as described.

7. In a wire-drawing machine, a wire-drawing drum, means for driving said drum, a friction-band encircling the periphery of said drum adapted to grip the said drum by means of a lever and cam attached to the friction-band, a wire-gripping device connected to such friction-band, and means for automatically releasing the grip of said band on said drum at a predetermined point in the revolution of said drum.

8. In a wire-drawing machine, in combination, a spindle, means for driving the spindle, a wire-drawing drum, a friction clutch mechanism connecting said drum with said spindle, a brake mechanism controlling the wire-drawing drum, and means for releasing the clutch mechanism and applying the brake mechanism, or vice versa, simultaneously.

9. In a wire-drawing machine, in combination, a draw-out drum and means for rotating it, a friction-strap on the draw-out drum, means for connecting the wire to the friction-strap and the strap to the draw-out drum.

10. In a wire-drawing machine, a continuously-driven drum, a friction-band encircling the periphery of said drum adapted to grip said drum by means of a lever and cam attached to the friction-band, and means whereby a wire can be attached to said band, substantially as described.

11. In a wire-drawing machine, a wire-drawing drum, and a draw-out drum concentric therewith but driven independently thereof.

12. In a wire-drawing machine, a wire-drawing drum, a draw-out drum concentric therewith, means for driving each of said drums, a friction-band encircling said draw-out drum, a device adapted to tighten the band upon the drum, and a wire-gripping device attached to said band.

13. In a wire-drawing machine, a driven spindle, a draw-out drum, and means for rotating said drum from the said spindle at a lower rate of speed than said spindle is driven, a wire-drawing drum, and means for driving said drum with said spindle.

14. In a wire-drawing machine, a driven spindle, a draw-out drum, and means for rotating said drum from the said spindle at a lower rate of speed than said spindle is driven, a wire-drawing drum, and means for driving said drum from said spindle including a friction-clutch interposed between said spindle and said drum.

15. In a wire-drawing machine, a wire-drawing drum, a die adjacent thereto, a draw-out drum concentric therewith and adapted to start the wire through the die through which it is drawn by the main wire-drawing drum,

means for driving the drawing-drum, and means for driving the draw-out drum.

16. In a wire-drawing machine, a wire-drawing drum, a die-box adjacent thereto, a draw-out drum concentric therewith and adapted to start the wire through the die through which it is drawn by the main wire-drawing drum, and means for driving said drums independently.

17. In a wire-drawing machine, a wire-drawing drum, a die adjacent thereto, a draw-out drum concentric therewith and adapted to start the wire through the die, means for driving the wire-drawing drum, and means for driving the draw-out drum independently and at a slower speed than the wire-drawing drum.

18. In a wire-drawing machine, a die-box containing a plurality of dies, a wire-drawing drum for drawing wire through said dies, a draw-out drum in connection with said wire-drawing drum adapted to draw out the wire through the same dies, and means for operating said drums independently of each other.

19. In a wire-drawing machine, a die-box containing a plurality of dies, a wire-drawing drum for drawing wire through said dies, a draw-out drum in connection with said wire-drawing drum adapted to draw out the wire through the same dies, and means for operating said drums independently of each other from the same source of power.

20. In a wire-drawing machine, a die-box containing a plurality of dies, a wire-drawing drum for drawing the wire through said dies, a draw-out drum concentric therewith adapted to draw out the wire through the same dies, and means for operating said drums independently of each other.

21. In a wire-drawing machine, a die-box containing a plurality of dies, a wire-drawing drum for drawing the wire through said dies, a draw-out drum concentric therewith adapted to draw out the wire through the same dies, and means for operating said drums independently of each other from the same source of power.

22. In a wire-drawing machine, a die-box containing a plurality of dies, a wire-drawing drum for drawing wire through said dies, a draw-out drum concentric therewith adapted to draw out the wire through the same dies, and means for operating said draw-out drum from the same source of power as the wire-drawing drum but at a slower speed.

23. In a wire-drawing machine, in combination die-box 22, a wire-drawing drum 1, a vertical spindle 31 for driving said wire-drawing drum, a draw-out drum concentric with said vertical spindle for starting the wires through said die-box, and a chain of speed-reducing gears for driving the said draw-out drum from spindle 31.

24. In a wire-drawing machine, in combination, a wire-drawing drum, means for driving said drum, a continuously-driven draw-out drum, a friction-strap encircling said

draw-out drum, means for binding said friction-strap upon said draw-out drum, a wire-gripping device in connection with said friction-strap, and a die-box located in operative relation to said drums, whereby a wire may be started through one die and attached to the wire-drawing drum, and other wires as desired started through the die-box while the wire or wires first started are being drawn on the main drum, substantially as and for the purposes set forth.

25. In a wire-drawing machine, in combination a wire-drawing drum, a continuously-driven draw-out drum in connection therewith, a friction-strap encircling said draw-out drum, means for binding said strap upon said draw-out drum, a wire-gripping device in connection with said strap, a die-box containing a plurality of dies in operative relation to said drums whereby the starting of the wire through the dies may be carried on simultaneously with the main drawing operation.

26. In a wire-drawing block, a wire-drawing drum, a friction-clutch by which said drum is adapted to be driven from a suitable source of power, a brake for said drum, and a controlling-lever by the movement of which in one direction the drum may be unclutched, by a further movement in the same direction the brake applied, and upon the reverse movement the brake released and the clutch thrown in.

27. In a wire-drawing block, a wire-drawing drum and a friction-clutch whereby said drum is adapted to be driven from a suitable source of power, a brake for said drum, and a controlling-lever having an oscillating movement, the construction and arrangement being such that in one extreme position of the lever the drum is clutched to the source of power, in the central position it is unclutched, and in the opposite extreme position the brake is applied to stop the rotation of the drum.

28. In a wire-drawing machine, a wire-drawing drum, a clutch-drum in connection therewith, friction clutch-shoes on the inner face thereof, a braking-strap on the outer face thereof, and means for actuating said clutch and strap whereby the one is applied as the other is released.

29. In a wire-drawing machine, a wire-drawing drum, a cylindrical clutch-surface in connection therewith, friction clutch-shoes on the inner face thereof, a braking-strap on the outer face thereof, a threaded operating-rod in connection with such shoes, a threaded rod controlling the ends of such strap, and means for actuating each of said rods simultaneously in opposite directions.

30. In a wire-drawing machine, in combination the drawing-drum 1, clutch-drum 12 rotating therewith, clutch-shoes 29 and brake-strap 14 in connection therewith, double screws 26 and 35 for actuating the clutch-shoes and strap respectively, and means for oscillating said screws simultaneously in opposite directions.

31. In a wire-drawing machine, in combination a drawing-drum 1, clutch-drum 12 rotating therewith, clutch-shoes 29 and brake-strap 14 in connection with said clutch-drum, double screws 26 and 35 for actuating the clutch-shoes and strap respectively, levers 25, links 28, sliding collars 27, and levers 32 for actuating said screws 26 from rock-shaft 10, lever 33, link 34, and link 9 for oscillating said screw 35 from shaft 10, means for rocking said shaft, and a continuously-driven spindle with which said clutch-shoes are driven.

32. In a wire-drawing machine, in combination, a vertical spindle, means for driving said spindle, suitable framework, an elongated sleeve in connection with said framework surrounding said spindle below its upper end, a wire-drawing drum having a central sleeve surrounding the upper part of said spindle and driven therefrom, the construction and arrangement being such that the upper end of said first-mentioned sleeve is above the point at which wire is normally drawn on said wire-drawing drum, substantially as described and for the purposes set forth.

33. In a wire-drawing machine, in combination, a driven spindle 31, a wire-drawing drum 1 having a central sleeve surrounding the upper end of said spindle and keyed to rotate therewith, a sleeve 37 in connection with the framework surrounding said spindle, the upper end of said sleeve being above the plane of the lower end of the outer flange of drum 1, substantially as described and for the purposes set forth.

34. In a wire-drawing machine, in combination, a driven spindle 31, sleeve 13, drum 1 keyed to said sleeve, sleeve 37 supported on the framework, said spindle and sleeves being concentric and sleeve 37 extending above the point at which wire is usually drawn on drum 1, whereby the strain of drawing the wire is absorbed by said sleeve in connection with the framework, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MARCELLUS REID.

Witnesses:

B. M. SIMMS,

JOSEPH A. MILLER.