

No. 657,144.

Patented Sept. 4, 1900.

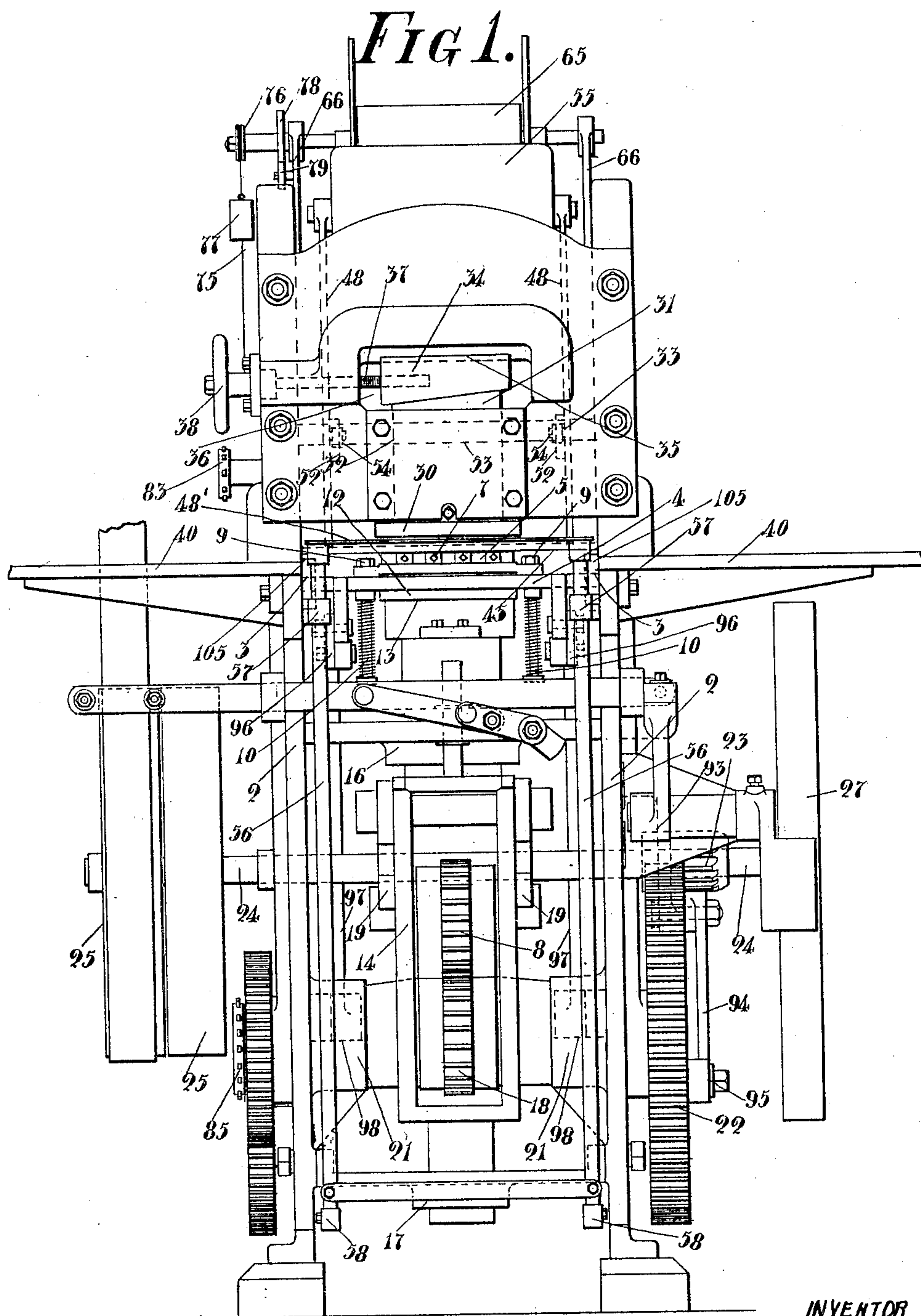
F. WAITE.

RELIEF STAMPING AND PRINTING MACHINE.

(Application filed Feb. 20, 1900.)

(No Model.)

6 Sheets—Sheet 1.



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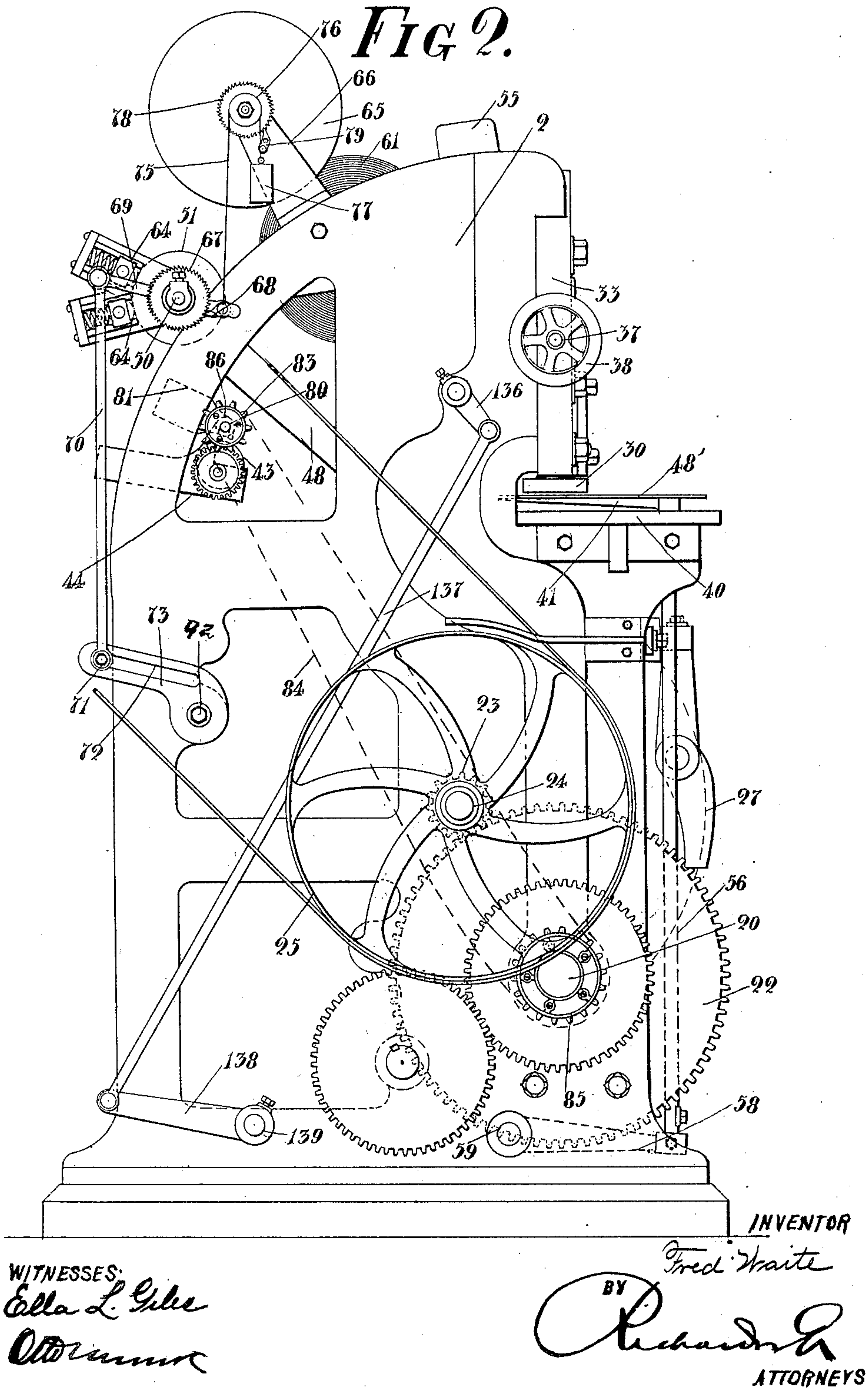
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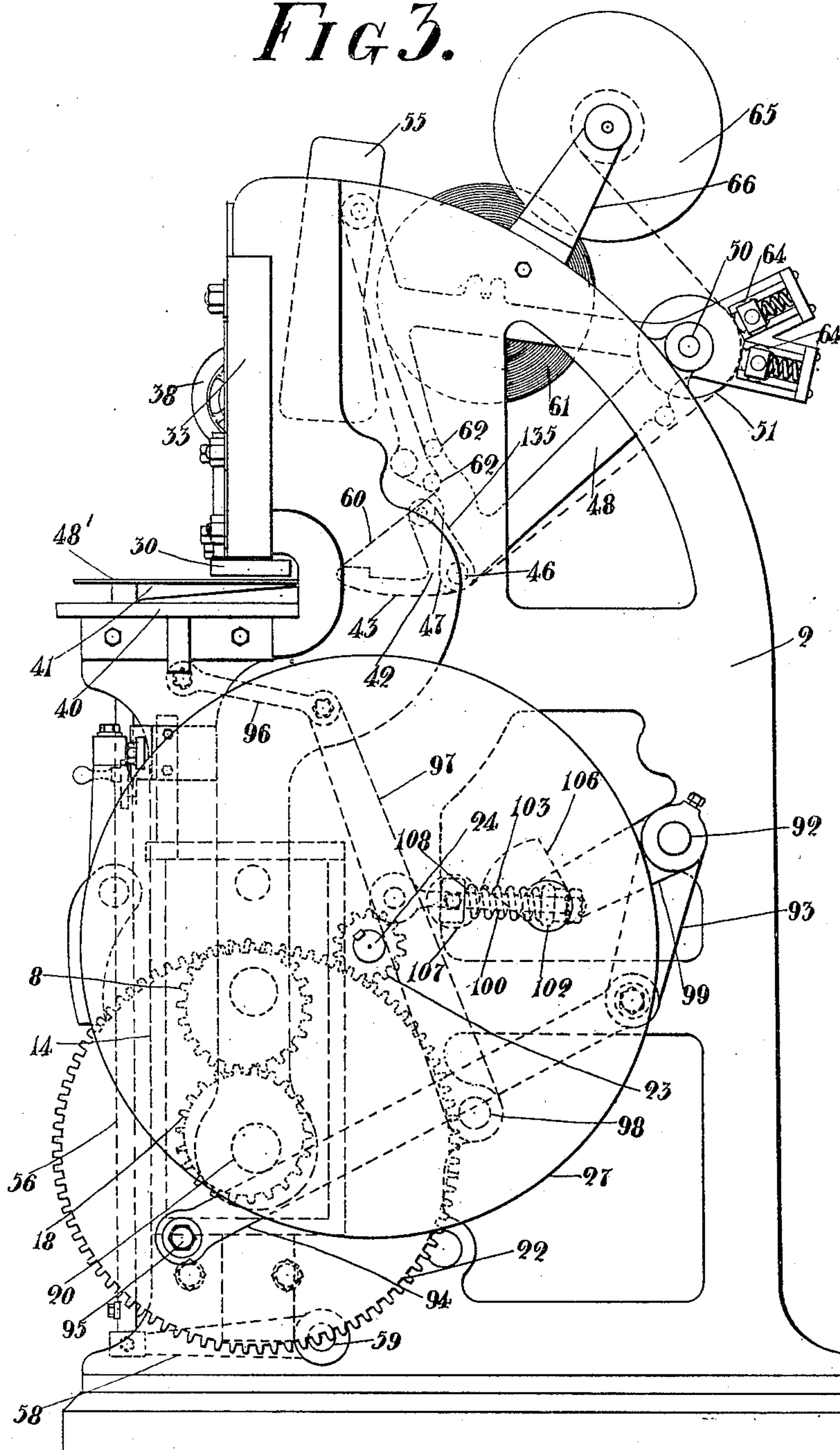
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6 Sheets—Sheet 3.

FIG 3.



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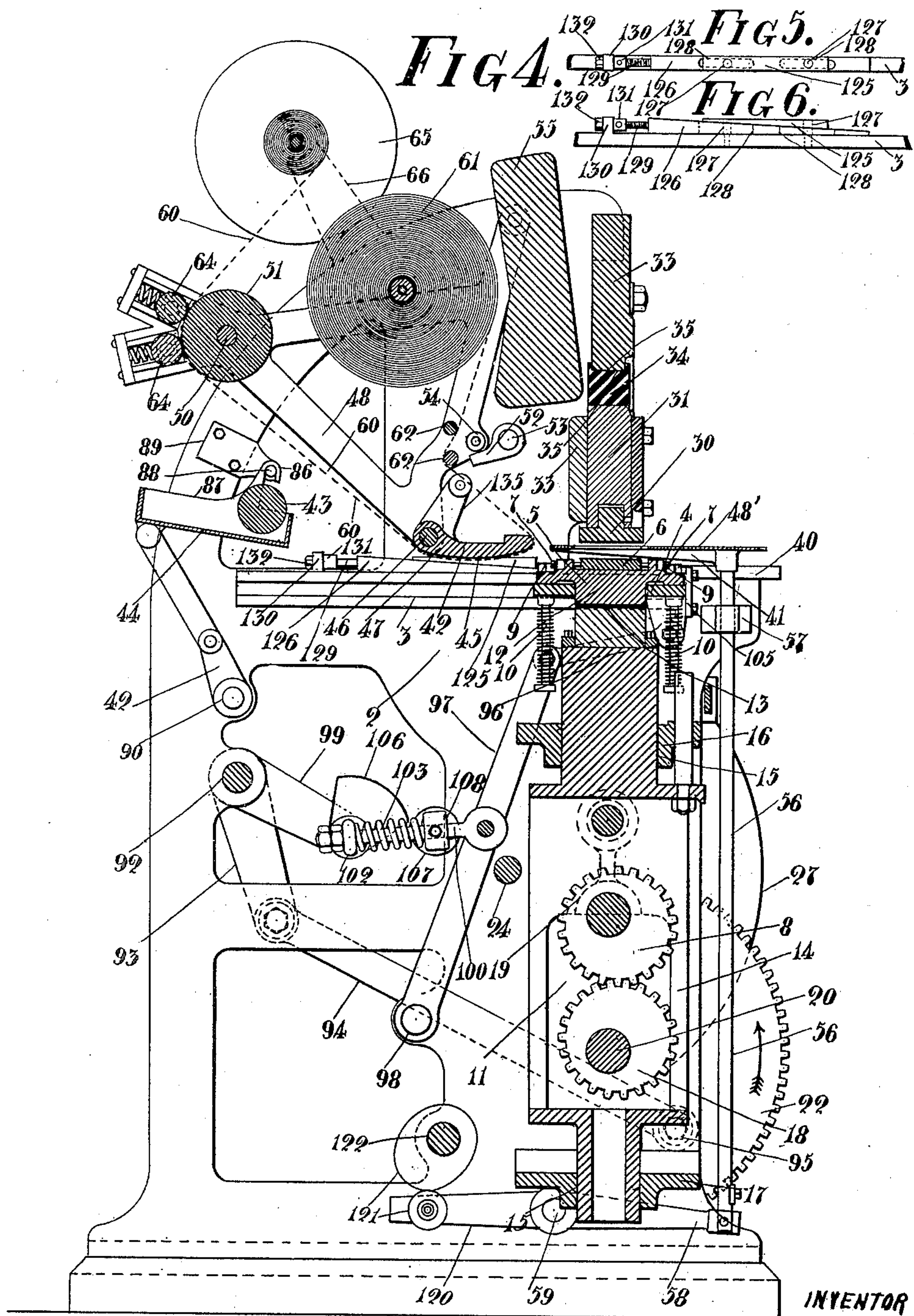
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(No Model.)

6 Sheets—Sheet 4.



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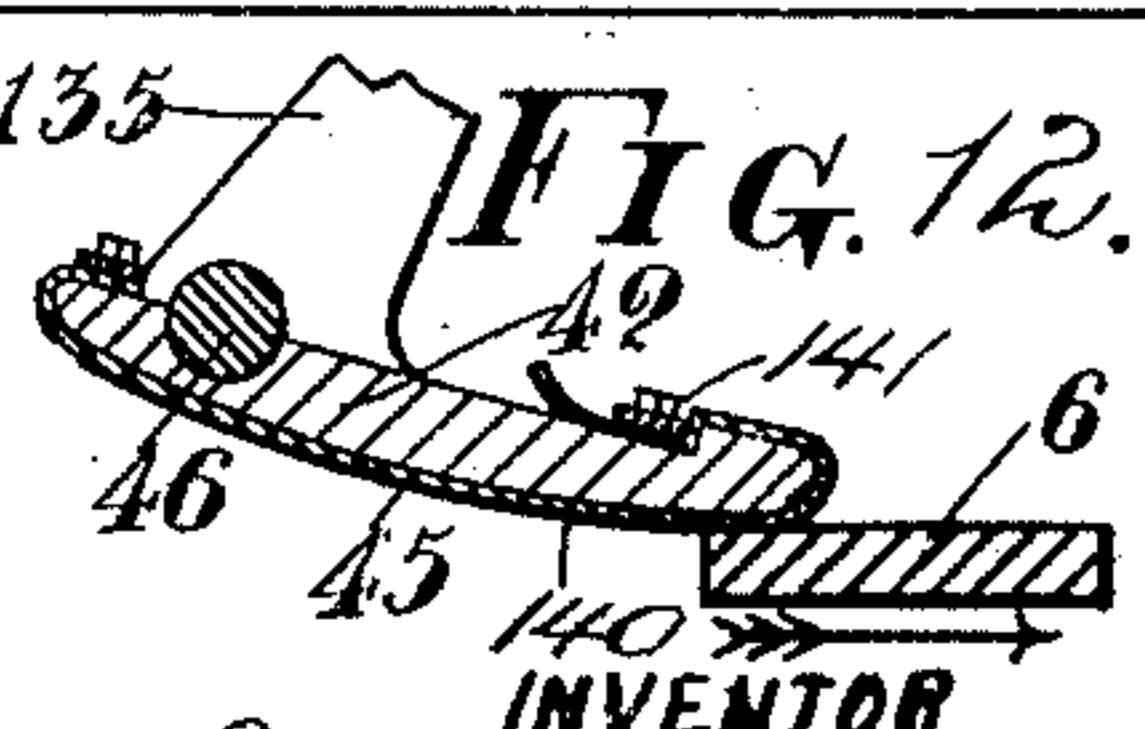
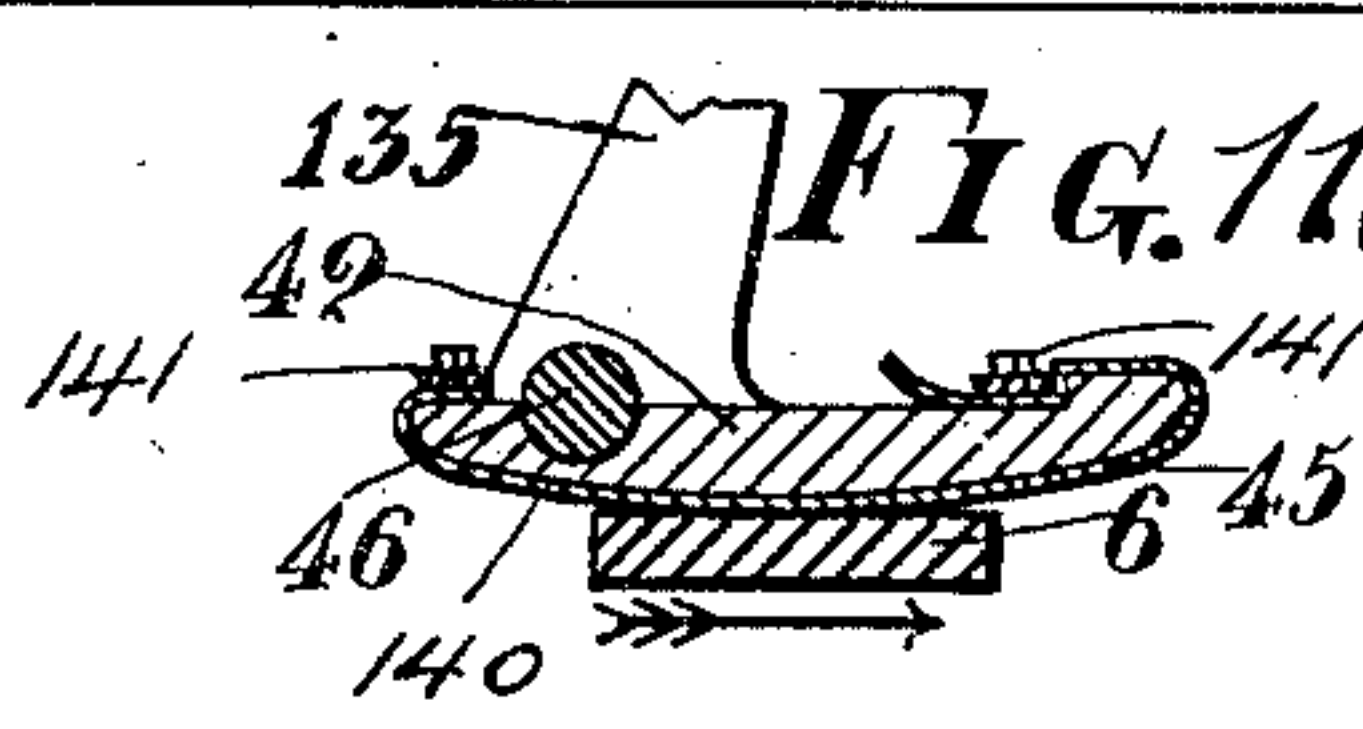
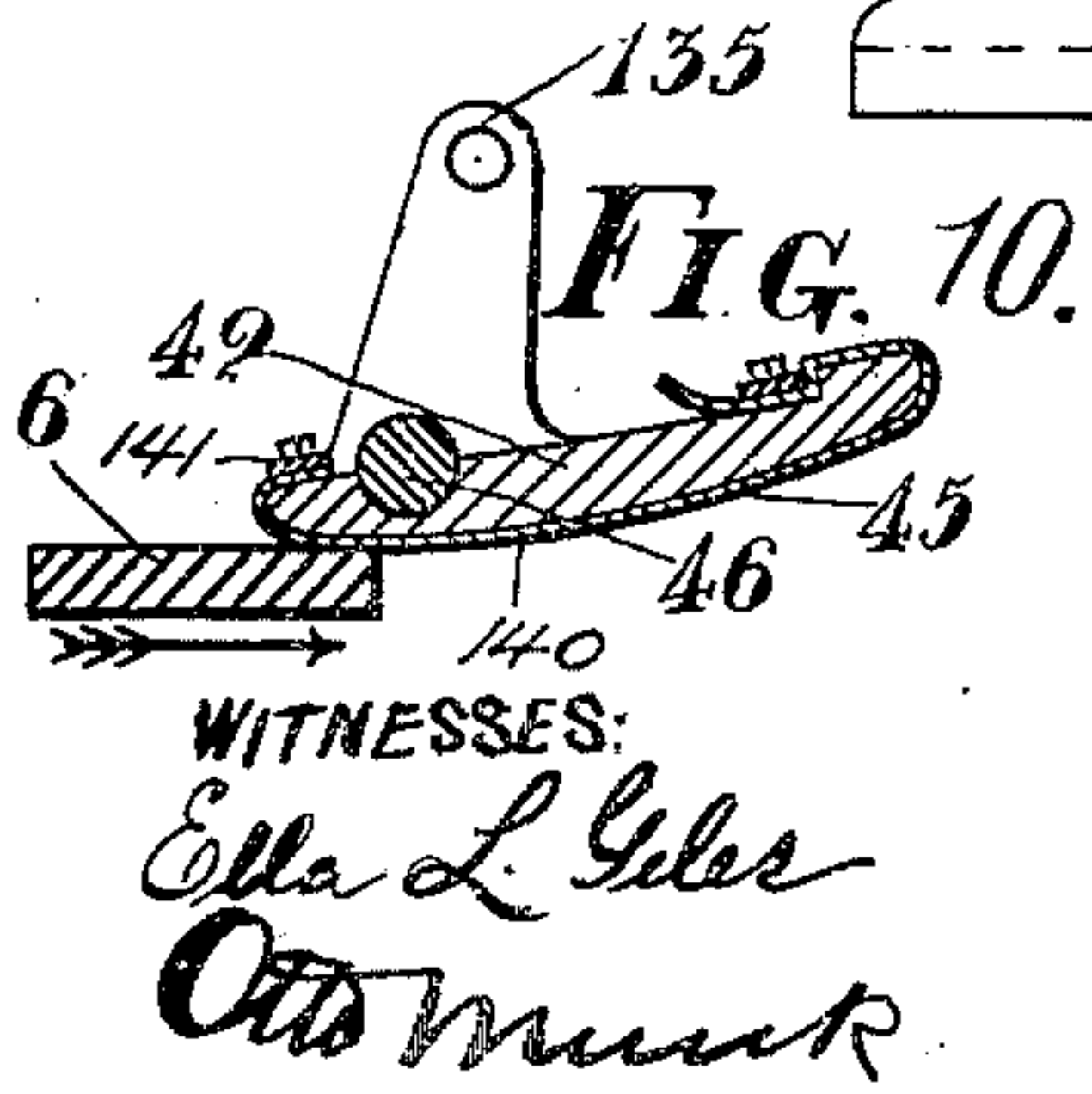
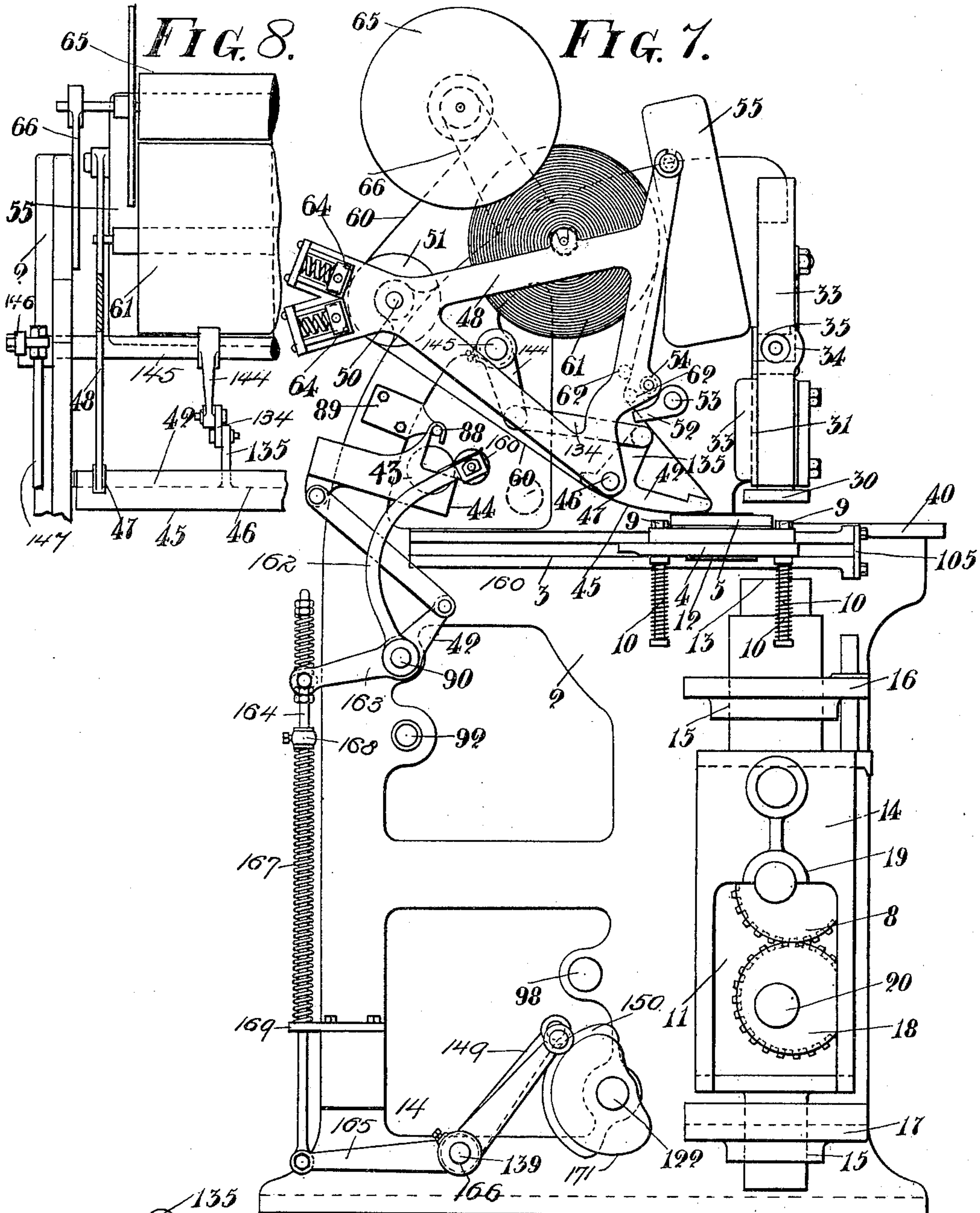
F. WAITE.

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(Application filed Feb. 20, 1900.)

(No Model.)

6 Sheets—Sheet 5.



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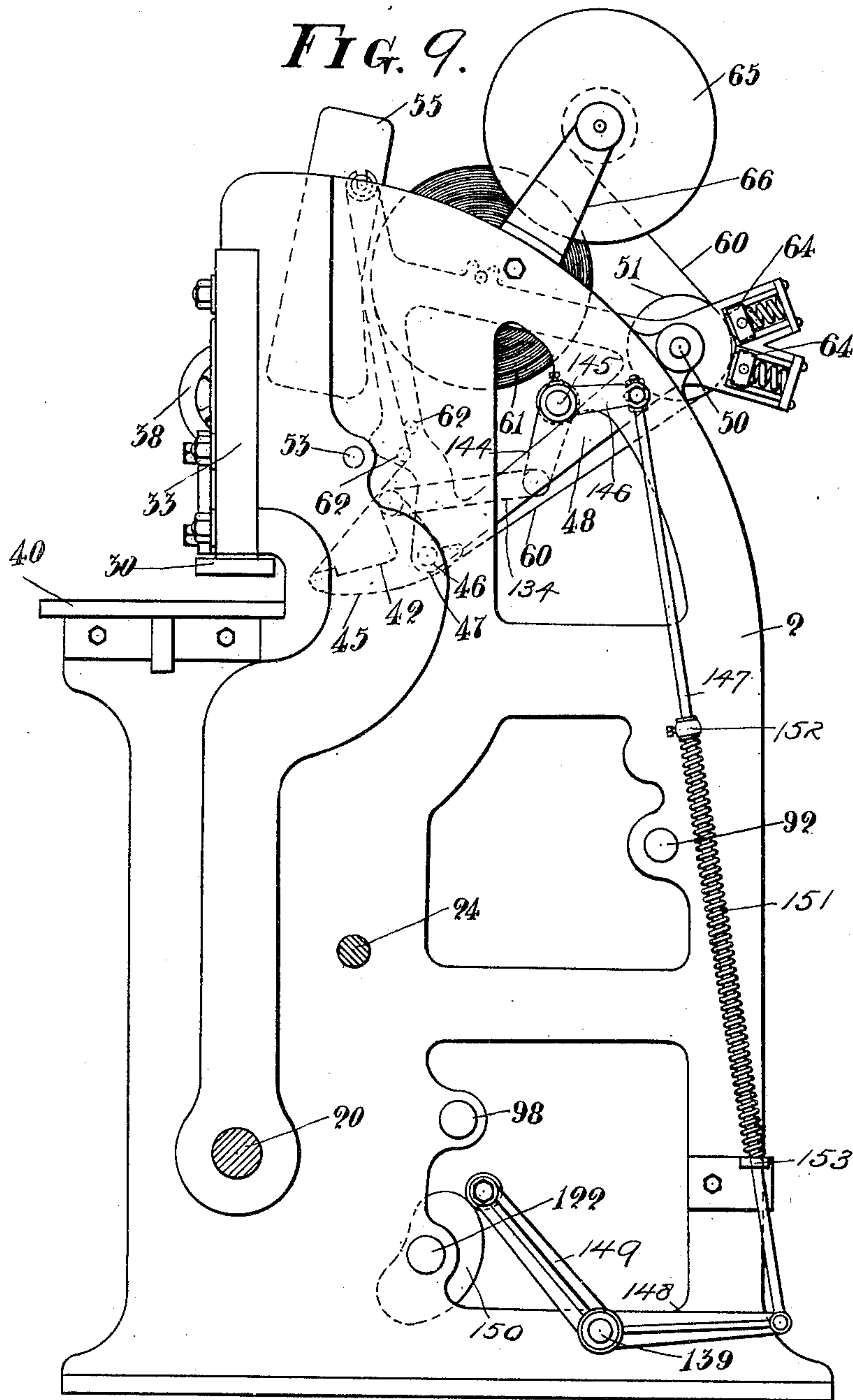
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(Application filed Feb. 20, 1900.)

(No Model.)

6 Sheets—Sheet 6.



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UNITED STATES PATENT OFFICE.

FRED WAITE, OF OTLEY, ENGLAND.

RELIEF STAMPING AND PRINTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 657,144, dated September 4, 1900.

Application filed February 20, 1900. Serial No. 5,949. (No model.)

To all whom it may concern:

Be it known that I, FRED WAITE, a subject of the Queen of England, residing at The Lindens, Burras Lane, Otley, England, have invented certain new and useful Improvements in Relief Stamping and Printing Machines, of which the following is a specification.

This invention relates to improvements in "paper-stamping" machines—that is to say, machines for printing paper and the like in relief from an engraved or similar die or plate.

Figure 1 represents a front view of a stamping-machine made in accordance with my improvements. Fig. 2 is a view of one side of the machine, and Fig. 3 is a view of the other side. Fig. 4 is a cross-section of the machine, showing certain of the parts. Fig. 5 is a detail plan view, and Fig. 6 is a detail side elevation, of adjustable guides. Fig. 7 represents a side view of the machine with the near side frame omitted. In this figure the frame carrying the wiping mechanism is shown in full and the wiped die is just leaving the wiper. Fig. 8 is the back view of the upper portion of the side 2, shown in Fig. 7 with one side of the wiper-frame and certain of the parts supported thereby in position. The paper-feed and pressure rollers are omitted in this figure to avoid confusing the parts behind. Fig. 9 is an additional side view looking from the opposite side to Fig. 7. In this figure several of the parts shown in Fig. 3 are omitted, so as to clearly show the mechanism for rocking the wiper. Figs. 10, 11, and 12 are three separate side views, on a larger scale, of the wiper and die, the arrows showing the direction in which the latter moves while being wiped. In Fig. 10 the wiping is just commencing, in Fig. 11 the die is half wiped, and in Fig. 12 the die is just leaving the wiper.

The side frames 2, rigidly connected together, are each made with a horizontal guide 3 inside, in which the reciprocating carriage 4 slides. The carriage 4 carries the die-holder 5, in which the die 6 is fixed by the clamping-screws 7. Four studs 9 on the die-holder project through the carriage 4 and are fitted with spiral springs 10, each of which tends to draw the holder 5 down upon its seat on the carriage. The holder 5 has a central projection 12 extending down through an opening in the

carriage toward the top 13 of the plunger-frame 14, working in guide-holes 15 in the top cross-stay 16 and the bottom cross-stay 17. The frame 14 is raised to give the impression by the two eccentrically-journaled toothed rollers 8 and 18. The upper roller 8 is mounted in bearings 19 in the frame 14, the lower roller being fixed on the main shaft 20, and slots 11 are made in the sides of the frame 14 for the shaft to pass through into its bearings 21 in the side frames 2. The shaft 20 is driven by its spur-wheel 22 engaging the pinion 23 on the driving-shaft 24, fitted with driving-pulleys 25 at one end and a fly-wheel 27 at the other end.

The impression-plate 30, to which the "force" is fixed face downward, is formed on or secured to the bottom of the vertical slide 31, tightly fitting guides 32 in the cross-piece 33, rigidly secured to the frames 2. The top of the slide 31 is inclined and bears against the wedge 34, the upper side of which rests against the top 35 of the slot 36, formed in the cross-piece 33. The screw 37, engaging the wedge, is confined longitudinally in a bearing in the cross-piece 33 and is provided with a hand-wheel 38, by which it can be turned to move the wedge longitudinally to regulate the force of the impression. A table-bracket 40 is fixed on each side, one of which is intended to hold the pile of paper to be printed, and the sheets can be placed on the other after printing. The feed-table 48', made of sheet metal, is supported on each side upon arms 41, projecting from slide-rods 56, sliding at the top in eyes 57 and connected at the bottom to the ends of levers 58, projecting from the rocking shaft 59. The shaft 59 is rocked by its arm 120 engaging the cam 121 on the shaft 122, and the motion of said shaft is so timed and arranged that immediately before the die reaches the under side of the paper to be printed the table is lifted, so as to raise the paper against or almost against the force before the die reaches it. After the impression is made the table is lowered sufficiently to leave ample room for a new sheet to be fed onto it after the printed one has been removed. By letting the table remain up for a slightly-longer period than the die the table pulls the paper away from the die

as the latter descends. After each impression is made the reciprocating carriage moves the die under the wiper 42, which is lifted sufficiently to allow the die to pass, and backward and forward under the inking-roller, fed from the roller 43 in the ink-duct 44. On the return stroke of the die the wiper is lowered to engage it and wipe the superfluous ink off the die. The face 45 of the wiper is curved convexly from front to back, as clearly shown in Fig. 4. To continuously present a fresh wiping-surface to the die, as well as remove the surface out of contact with the die as it becomes soiled, I impart a rocking motion to the wiper, so that the edge nearer to the advancing die is first brought into contact with it, and as this part moves or rocks out of contact with the die a fresh portion of the curved wiper is brought to bear upon it. To permit of this movement of the wiper it is fixed on the rocking shaft 46, mounted in bearings 47 in the swing-frames 48 48, and such shaft is rocked by its arm 135 in any convenient way at the required time. The frames 48 are pivoted at the rear upon the shaft 50 of the paper-feed roller 51, and they are supported at the front by the adjustable side guides 125, Fig. 4, provided at each side, upon which the ends of the wiper bear and rock. Fig. 5 represents a plan view of one of these adjustable guides, and Fig. 6 is a side view of the same. The guide 125 rests upon the wedge 126, supported upon the top of the carriage-guide 3, and is confined longitudinally by studs 127, passing down through slots 128 in the wedge 126 and screwed into the top of the guide 3. A screw 129, fitting a female screw-thread formed in a hole in the end of the wedge, has its other end passed through a hole in the lug 130 on the guide 3, and a collar 131 at one side and a nut 132 at the other side of the said lug confine the said wedge longitudinally. Therefore by turning the screw the wedge can be moved along, thus raising or lowering the guide 125, and thereby regulating the pressure of the wiper upon the die. The wiper is padded beneath the wiping-paper, as usual, with india-rubber sheeting or the like. The convexly-curved face of the wiper is covered with india-rubber sheet 140, omitted in the smaller-scale views. The india-rubber sheet may be secured in position by the clamping-bars 141, screwed down to the back of the pad upon the turned-over edges of the sheet. To rock the wiper, its arm 135 is connected by the rod 134 to the arm 144 on the rocking shaft 145, and this shaft is rocked by its arm 146, coupled by the rod 147 to the arm 148 upon the rocking shaft 139. The latter shaft is rocked by its arm 149 engaging the cam 150 upon the cam-shaft 122. A spring 151 on the rod 147, compressed between the collar 152 on the rod and the fixed bracket 153, through which the rod works, is provided to cause the arm 149 to follow the cam. When the die passes from beneath the wiper, the

latter is supported at each end upon the guides 125 and remains supported thereby until lifted by the arms 52 on the rocking shaft 53 to allow the die to pass to be inked.

As the frame is pivoted at 50, the wiper is able to lift it to the extent required to allow the rocking movement.

The inking-roller 160, Fig. 7, is mounted on two arms 162 on the rocking shaft 90. The shaft 90 is actuated in such a way that the roller 160 is carried from the position shown in contact with the ink-feeding roller 43 to the position shown by the broken circle and held there while the die passes to and fro in contact with it. The shaft 90 is rocked by its arm 163, connected by the connecting rod 164 to the arm 165 of the lever 166, loosely mounted on the rocking-shaft 139. The spring 167 on the rod 164, compressed between the collar 168 on such rod and the fixed bracket 169, through which such rod works, is provided to cause the other arm 170 of the lever 166 to follow its operating-cam 171 on the shaft 122.

A weight 55 is carried between the frames 48 to press the wiper down upon the die.

To lift the frames 48 to raise the wiper and allow the carriage 4 to pass to the inking device, the arms 52 are provided on the rocking shaft 53, projecting under the antifriction-rollers 54 on the frames 48. The rocking shaft 53 is actuated by its arm 136, connected by the rod 137 to the arm 138 on the rocking shaft 139 or other convenient part.

The web of wiping-paper (represented by the broken lines 60) passes from the reel 61, mounted in bearings in the frames 48, down past the guide-rods 62, beneath and against the face 45 of the wiper, up between the fixed roller 51 and the pressure-rollers 64, and is rewound onto the reel 65, carried in standards 66, secured to the frames 2. By this arrangement the paper is maintained at a uniform tension against the wiper, notwithstanding the movement of the frame 48 upon the shaft 50.

The roller 51 is intermittently operated by its ratchet-wheel 67, engaged by the pawl 68 on the front end of the lever 69, loosely mounted on the shaft 50. The rear end of the lever 69 is connected by the rod 70 to the stud 71, adjustably fixed in the slot 72 in the arm 73 on the end of the rocking shaft 92.

The reel 65 is driven by the band 75, connected by one end to one end of the lever 69, passed over the pulley 76 on the reel-spindle, and the other end is connected to the weight 77. The ratchet-wheel 78, secured to the reel-spindle, is provided to engage the pawl 79, mounted on the standard 66, and prevent the reel unwinding when the weight 77 draws the band down.

The ductor-roller 43 in the ink-duct is driven from the short shaft 80, mounted in the bracket 81 on the side frame 2, Fig. 2, and the short shaft is driven by its sprocket-wheel 83, connected by the chain 84 to the sprocket-wheel

85 on the shaft 20. One of the hooks 86 on the sides of the ink-duct 87 is hooked over the inner end of the shaft 80, and the other hook 86 is hooked over the stud 88, Fig. 4, secured to the bracket 89 on the side frame 2. To keep the ink limpid, the ink-duct 87 is rocked on the hooks 86 by the rod connecting the bottom of the ink-duct with the arm 82 on the rocking shaft 90.

To reciprocate the carriage 4, the rocking shaft 92 is employed. This shaft is rocked by its arm 93, connected by the rod 94 on the stud 95 in the face of the wheel 22. The carriage is connected by the rod 96 to the arm 97, pivoted at 98, and the shaft 92 is connected to the arm 97 to vibrate it by the toggle-levers 99 and 100. The lever 99 is connected to the collar 102 on the lever 100, and excepting for the pressure of the spring 103 against it this collar is free to slide on the lever 100. The parts are so arranged that when the carriage reaches the end of its stroke the toggle-levers are about to pass the dead-center—that is to say, approximately the position shown in the drawings—and the stud 95 is also passing its dead-center. This causes a dwell at each end of the stroke of the carriage, and at the printing end this is augmented by the carriage being brought against a fixed stop 105, and the further movement of the levers simply compresses the spring 103.

To prevent the pressure of the wiper upon the die from so retarding the movement of the carriage as to cause the spring 103 to be then compressed, the sector 106 is fixed on the lever 99, adapted to engage the anti-friction-roller 107, mounted on a stud in the collar 108 on the lever 100, and thus prevent the

spring being further compressed at that part of the stroke.

By mounting the feed-roller for the paper on the pivot of the frame carrying the wiper and other parts said frame can have movement without affecting the paper-feed.

I claim—

1. In combination, the impression-plate, a die movable toward and from the same, inking means for the die and a wiper having a convexly-curved face, means for operating the die and means for giving the wiping device, a rocking movement to present different surfaces to the die substantially as described.

2. In combination, a platen, a die, means for bringing said parts together and separating them, means for inking the die, a wiping-pad, a pivoted frame carrying the same, said frame having bearings for a paper-supply roll, the paper from which is directed about the wiper, and paper-feeding means comprising a roller journaled on the pivot of the said frame, substantially as described.

3. In a relief-printing press the combination of a liftable die, a rising and falling feed-table made with an opening large enough for the die to pass through, an impression-plate, said feed-table being adapted to receive the sheets as fed and support them independently of the die and impression-plate, substantially as herein shown and described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

FRED WAITE.

Witnesses:

DAVID NOWELL,
SAMUEL A. DRACUP.