

(No Model.)

5 Sheets—Sheet 1.

W. S. HUSON.

REGISTERING AND TRIPPING MECHANISM FOR PRINTING PRESSES.

No. 590,617.

Patented Sept. 28, 1897.

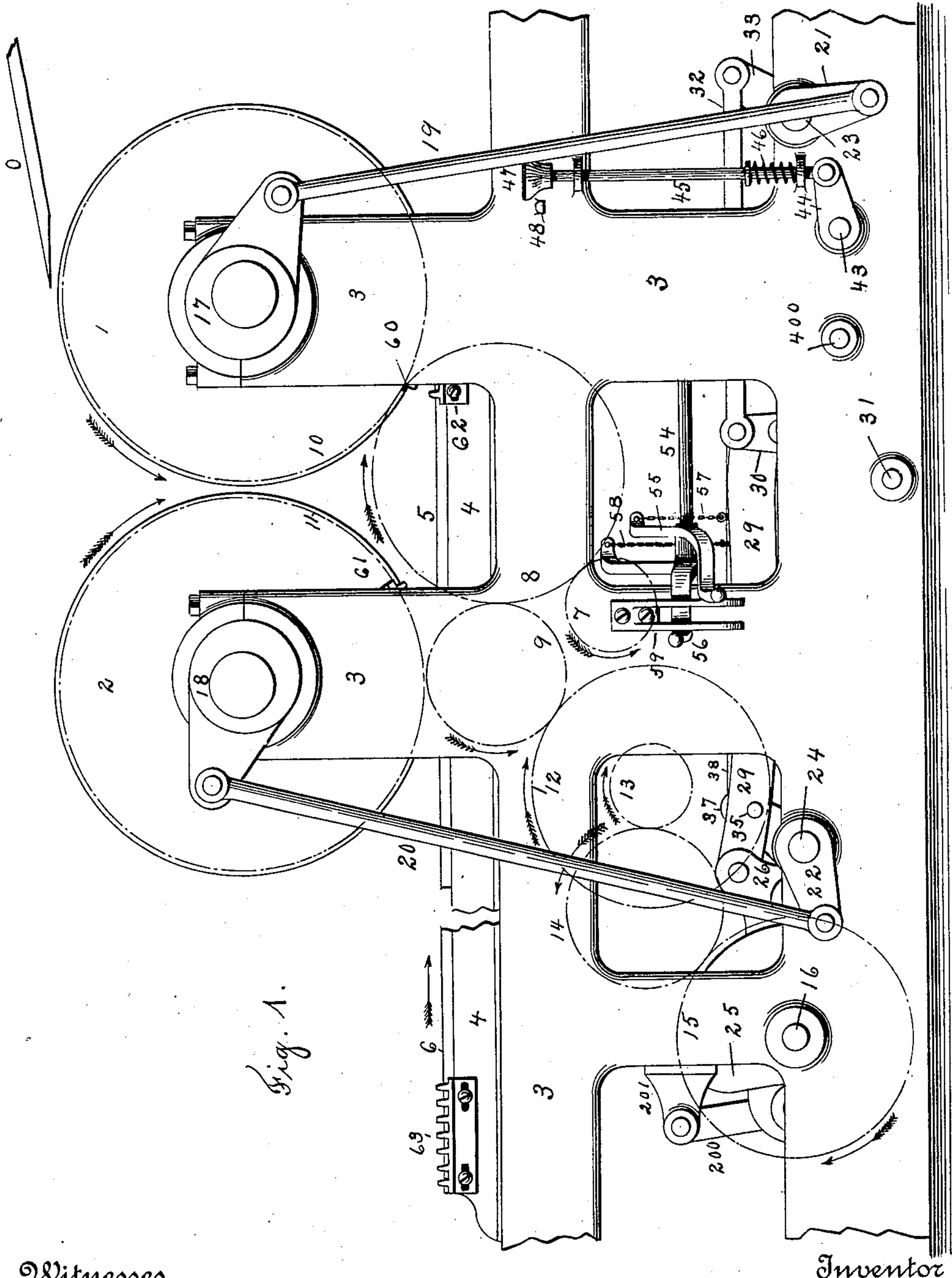


Fig. 1.

Witnesses.

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(No Model.)

5 Sheets—Sheet 2.

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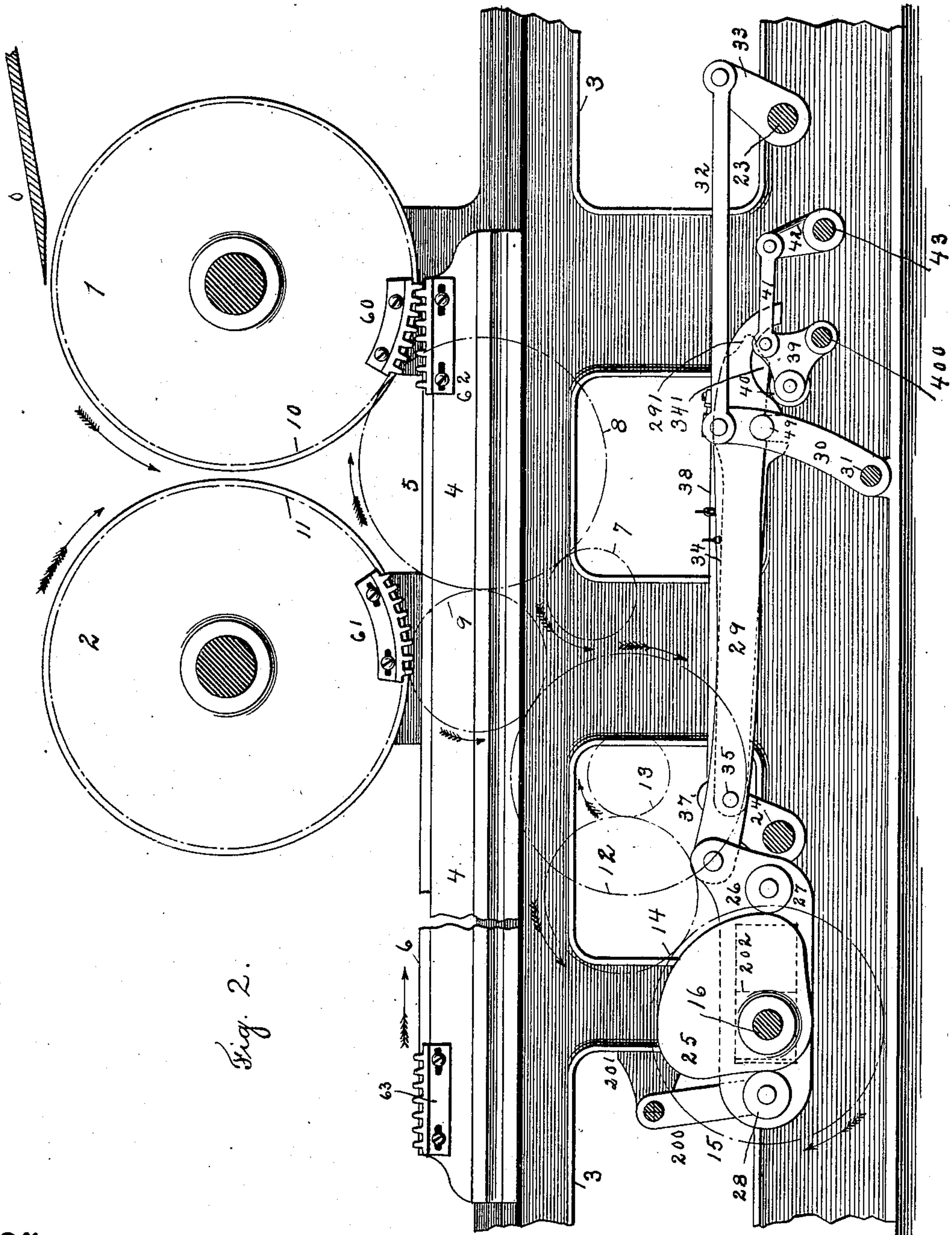


Fig. 2.

Witnesses

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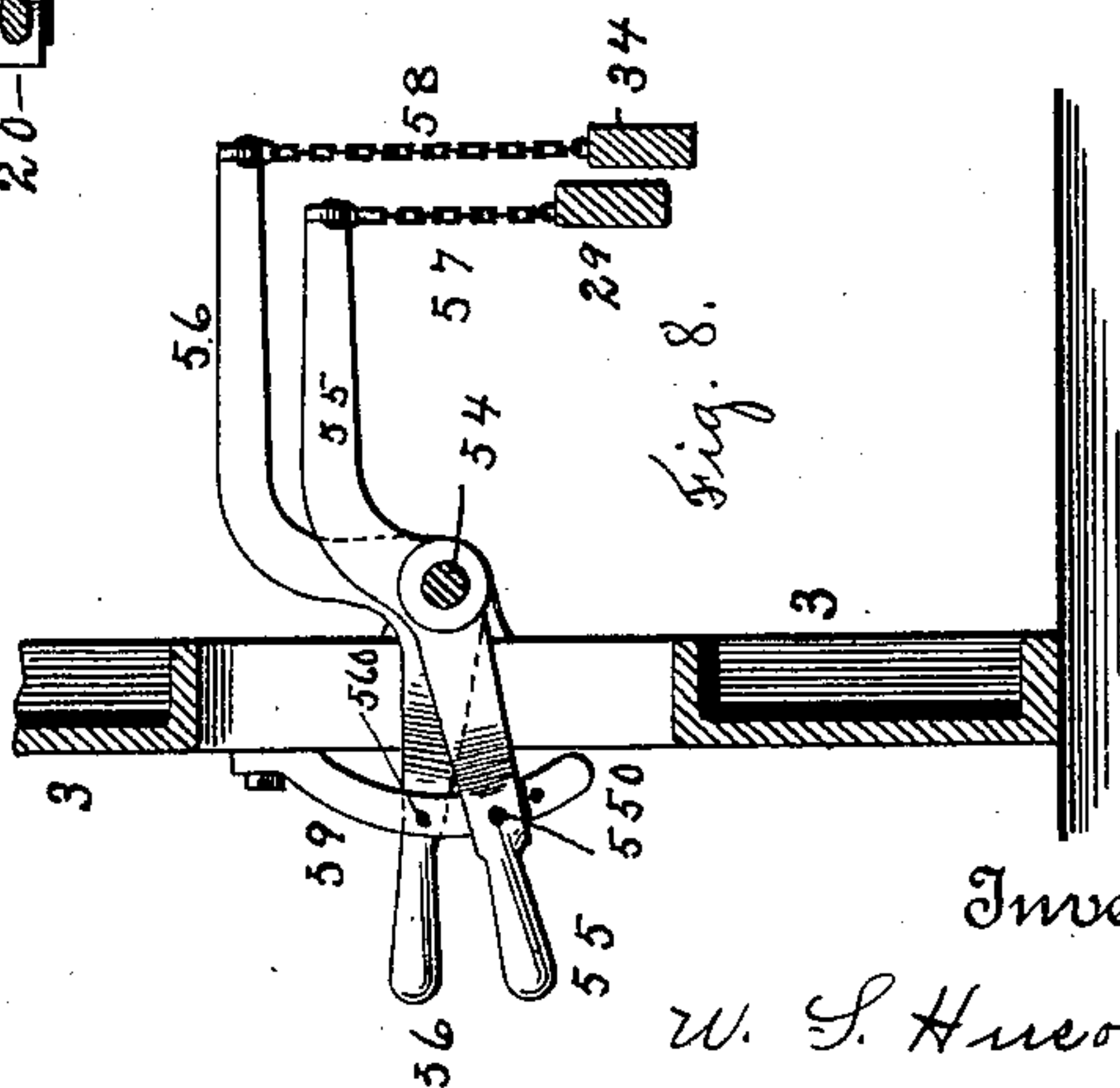
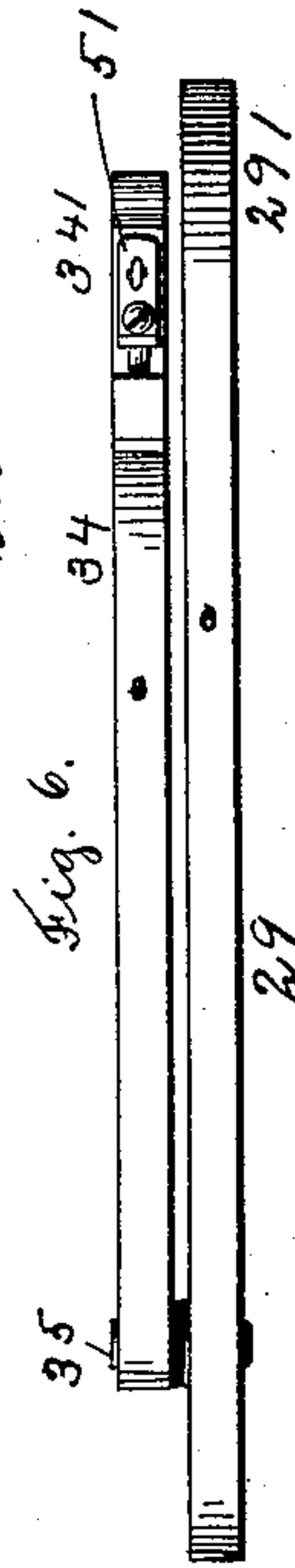
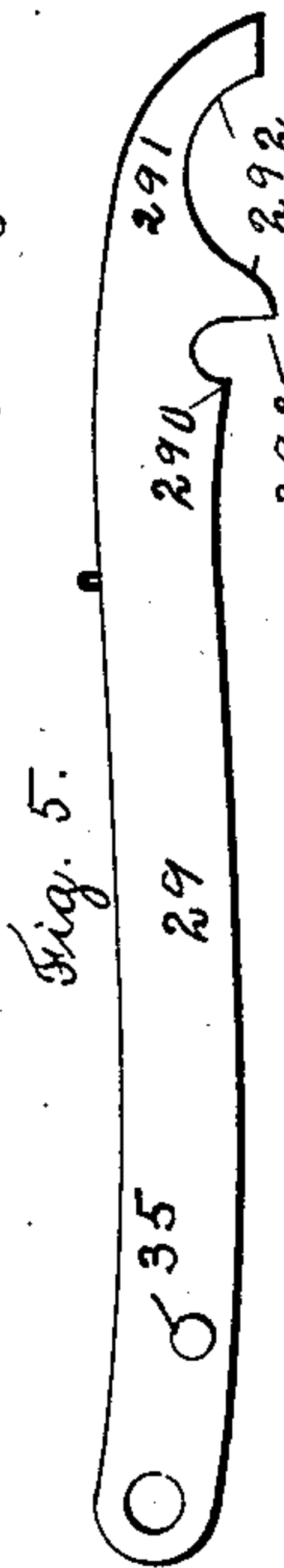
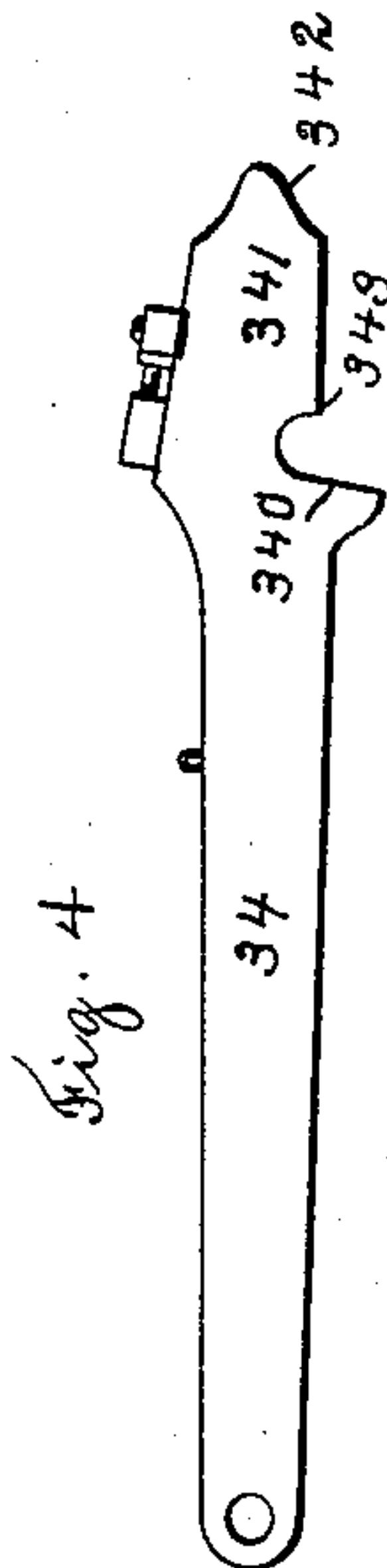
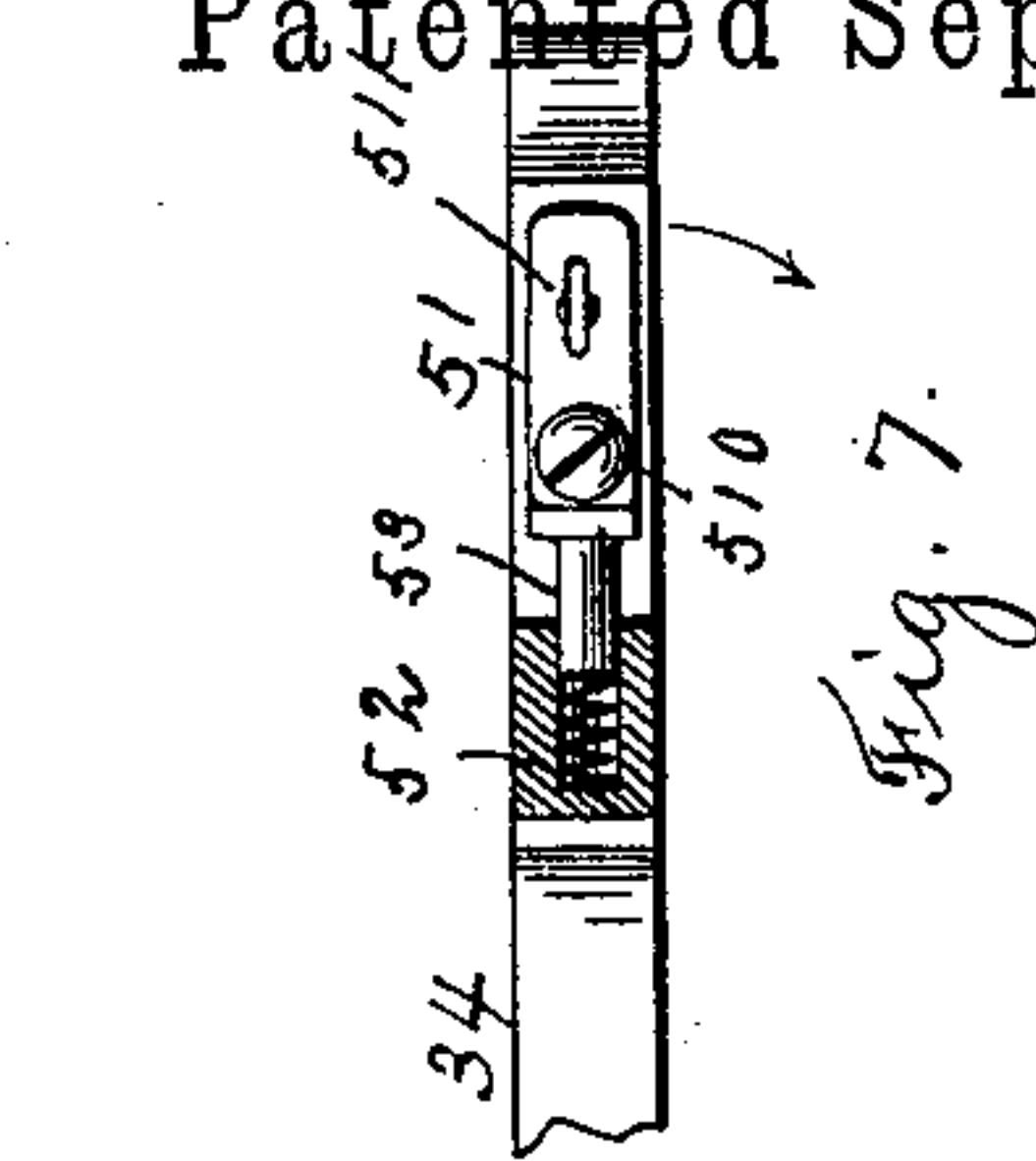
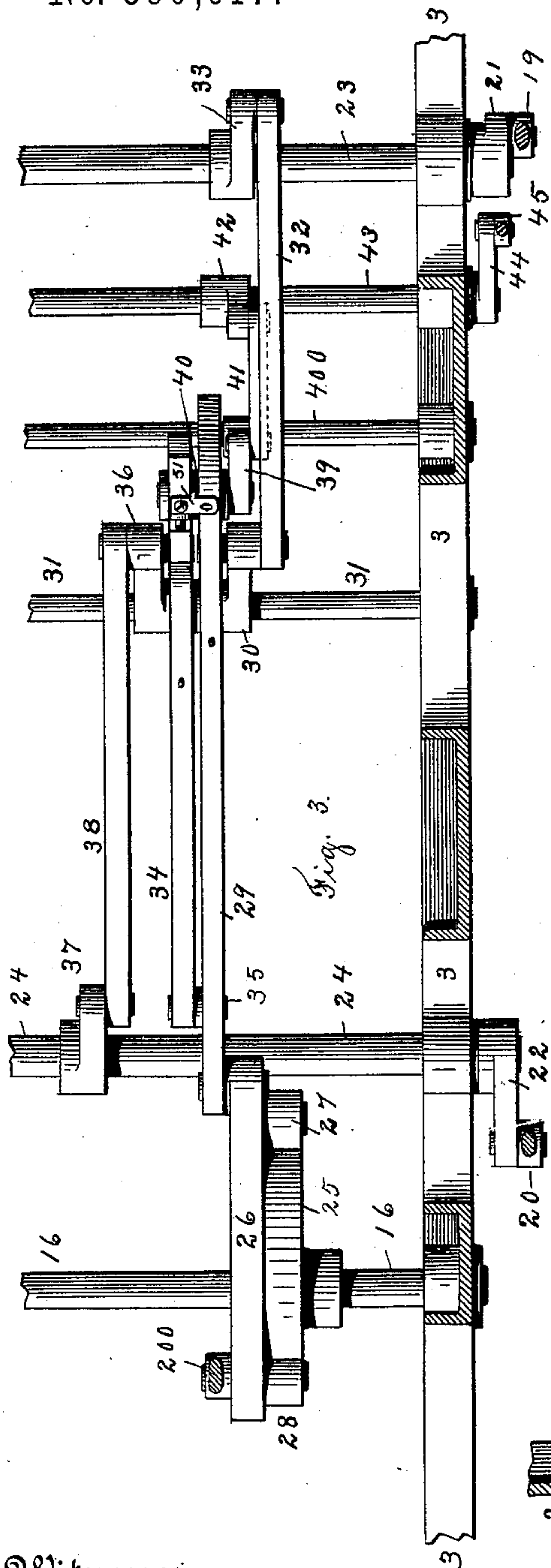
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(No Model.)

5 Sheets—Sheet 3.

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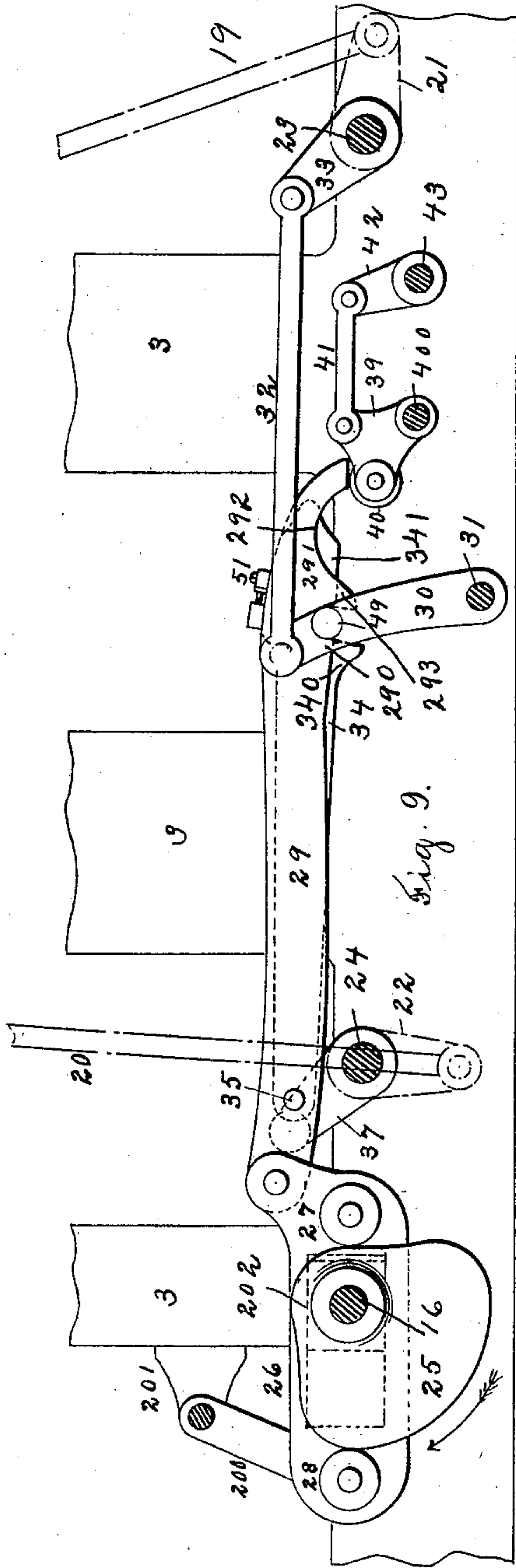
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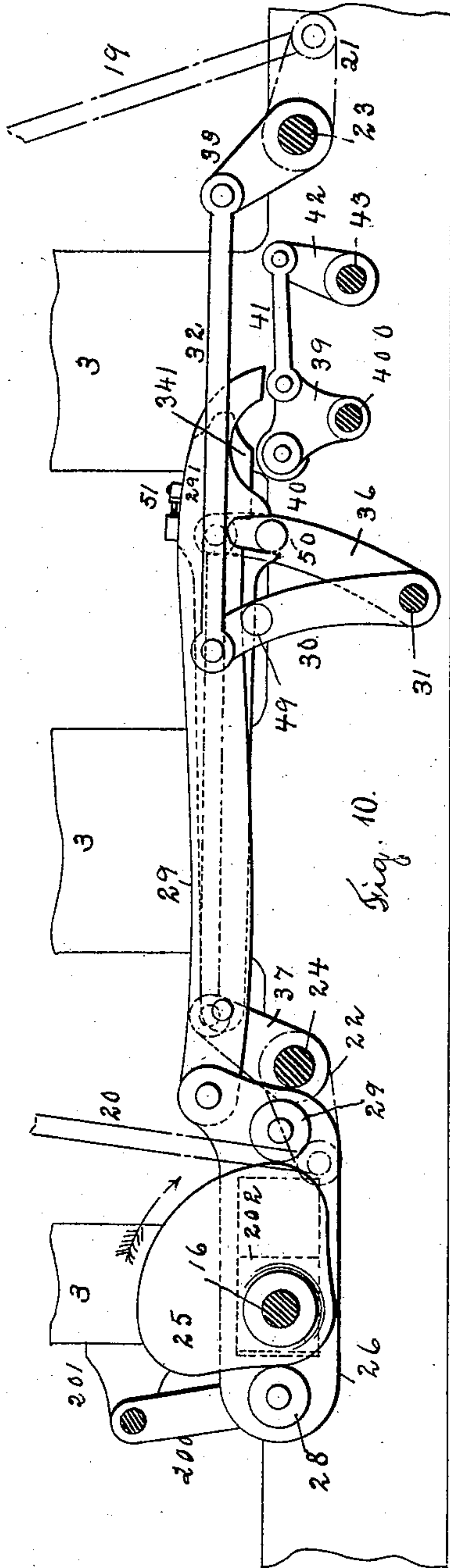
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W. S. HUSON.
REGISTERING AND TRIPPING MECHANISM FOR PRINTING PRESSES.
No. 590,617. Patented Sept. 28, 1897.



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(No Model.)

5 Sheets—Sheet 5.

W. S. HUSON.
REGISTERING AND TRIPPING MECHANISM FOR PRINTING PRESSES.
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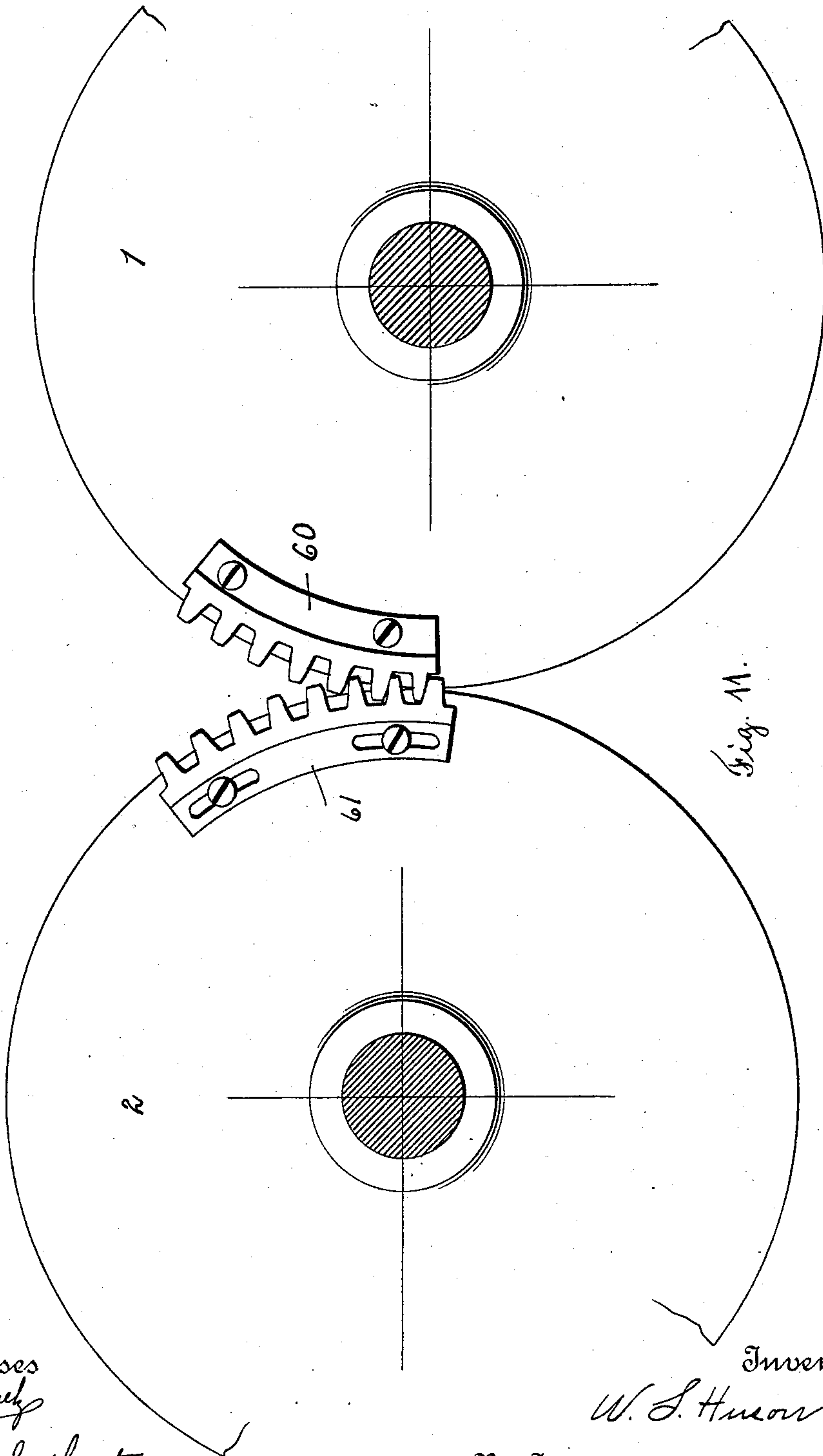


Fig. 11.

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UNITED STATES PATENT OFFICE.

WINFIELD S. HUSON, OF TAUNTON, MASSACHUSETTS, ASSIGNOR TO THE
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REGISTERING AND TRIPPING MECHANISM FOR PRINTING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 590,617, dated September 28, 1897.

Application filed April 28, 1892. Serial No. 431,024. (No model.)

To all whom it may concern:

Be it known that I, WINFIELD S. HUSON, a citizen of the United States, residing at Taunton, in the county of Bristol and State
5 of Massachusetts, have invented a new and useful Improvement in Registering and Tripping Mechanism for Printing-Presses, of which the following is a specification.

The aim of this invention is to improve
10 the construction of double-cylinder printing-presses in which two impression-cylinders are used in connection with a reciprocating bed.

The objects of my invention are to provide means whereby proper register of the sheet
15 to the forms may be insured at the time of printing, to provide means whereby there will be proper register between the two impression-cylinders at the time the sheet is transferred from one cylinder to the other, and to provide means whereby the impression
20 may be suspended or "tripped," as it is technically called, of either or both impression-cylinders and that without any risk of derangement or accident to any of the various
25 mechanisms.

To these ends the invention consists of the combinations described and claimed in this specification and illustrated in the accompanying five sheets of drawings, in which—

30 Figure 1 is a side elevation of a double-cylinder printing-press with my improvements applied thereto. Fig. 2 is a sectional elevation just inside the side frame. Fig. 3 is a plan of part of the connecting and operating
35 mechanism for the impression-cylinders. Fig. 4 is a side elevation of a part I term the "short" connecting-bar. Fig. 5 is a similar view of the part I term the "long" connecting-bar. Fig. 6 is a plan of the two connecting-
40 bars arranged in operative relation. Fig. 7 is a plan of the removable block on the short connecting-bar. Fig. 8 is an end elevation, partly in section, of the hand-operating mechanism for the connecting-bars. Fig. 9 is a
45 sectional elevation showing the connecting-bars in operation. Fig. 10 is a similar view showing the connecting-bars raised, or the impression tripped, and Fig. 11 illustrates a detail of the gearing hereinafter referred to at
50 length.

I will further describe my invention as applied to a double-cylinder two-revolution sheet-perfecting press, but with the understanding that the same may be applied and used in any double-cylinder printing-press. 55

Referring to the drawings and in detail, 1 represents an impression-cylinder provided with any of the usual gripper mechanisms to which the sheet to be printed may be fed from the feed-board O, and this cylinder as
60 arranged presents the sheet so that the same will be printed upon its first side.

2 represents a second impression-cylinder which is provided with suitable gripping mechanism and which may receive the sheet
65 from the cylinder 1 after it has been printed upon this first side, and its second cylinder is so arranged that the sheet may be presented thereby to be perfected, after which the sheet may be taken from the second impression-
70 cylinder by any convenient delivery mechanism.

4 represents the usual reciprocating bed mounted to cooperate with the impression-cylinders 1 and 2. These parts (before de-
75 scribed) are all mounted in the usual manner in the side frames 3 3.

The reciprocating bed 4 carries forms 5 and 6, which are arranged to cooperate with the impression-cylinders 1 and 2, respectively. 80

The bed may be reciprocated by any of the usual mechanisms for that purpose.

The two impression-cylinders are geared so as to turn continuously in opposite directions. This is effected by mounting upon the cylin-
85 der 1 a cylinder-gear 10 and upon cylinder 2 a cylinder-gear 11, as indicated in dotted lines in Fig. 2.

Meshing with the cylinder-gear 11 is a gear 9, and meshing with the cylinder-gear 10 and
90 gear 9 is a gear 8, which gear 8 may be driven from a power-shaft on which is arranged a pinion 7. By this means the two impression-cylinders will be driven positively in the proper directions, but their respective cylin-
95 der-gears will not intermesh, which is an important point, as hereinafter noted.

From the gear 9 a shaft 16 is driven by means of gear 12, pinion 13, intermediate 14, and gear 15 upon said shaft 16, and this gearing is so 100

proportioned and designed that the shaft 16 will turn once for each complete excursion of the bed, or once for each two turns of the impression-cylinders.

5 In the type of machine under discussion it is necessary to alternately raise the impression-cylinders after each has made its impression, so as to clear the form on the non-printing stroke of the bed relatively to that impression-cylinder. To accomplish this, the
10 cylinders 1 and 2 are journaled in eccentric bushings 17 and 18, in which the cylinder-shafts are placed eccentrically to the bearing of the bushings in the side frames 3 3. To
15 operate or oscillate these bushings, rods 19 and 20 are used to connect the bushings with their respective rock-shaft arms 21 and 22, which are secured to the rock-shafts 23 and 24. Levers 21 and 22 and links 19 and 20 are
20 also arranged on the back ends of the shafts 23 and 24, so that the two bushings 17, carrying the shaft of the cylinder 1, and the two bushings 18, carrying the shaft of the cylinder 2, will be properly operated.

25 Movement is communicated to the rock-shaft 23 of the cylinder 1 by means of the cam 25 upon the shaft 16 and slotted yoke 26, having cam-rollers 27 and 28, which bear on the edge of the cam 25, and this yoke 26 may
30 be supported by link 200, connected to bracket 201, and upon the block 202, mounted on the shaft 16 and fulcrumed or connected to the yoke 26, is the long connecting-bar 29, having at its free end an open mouth or bearing to
35 engage stud 49 upon lever 30, which is loosely mounted or fulcrumed upon a rod 31, held in the main frame 3, and this lever 30 connects by rod or link 32 to lever 33, fast upon the rock-shaft 23. By these connections when
40 the cam 25 operates to move the yoke 26 to and fro the rock-shaft 23 will be oscillated, and also by the means before described the eccentric bushings 17 will be oscillated and the cylinder 1 will be raised and lowered.

45 The mechanism for operating the bushings 18 of the cylinder 2 is substantially the same as that of cylinder 1, except that the short connecting-bar 34 of this mechanism is fulcrumed to the connecting-bar 29 by stud 35.
50 The connecting-bar 34 has a mouth that normally engages pin 50 on lever 36, and thereby oscillates the same. Lever 36 is connected by rod 38 to lever 37, fast on shaft 24, and hence by means of lever 22 and connections
55 20, as the levers 36 are vibrated, the eccentric bushings 18 will be oscillated and the cylinder 2 raised and lowered.

The extremes of the throw of the cam 25 are indicated in Figs. 9 and 10. By the means
60 described the cylinders 1 and 2 will be alternately raised and lowered, so that the cylinder 2 will be raised to clear form 6 while cylinder 1 is printing from form 5 and cylinder 1 will be raised to clear form 5 while cylinder
65 2 is printing from form 6. Thus the cylinders will accurately work to perfect a sheet.

In cylinder-presses it is desirable and nec-

essary to provide a tripping mechanism. In double-cylinder presses a tripping mechanism must necessarily hold both cylinders in their
70 raised positions, so that the bed may be run forward and backward without the cylinders engaging the same, so that the rollers and forms may be inked up preparatory to printing, or so that in case a sheet is not properly
75 fed the impression will not be made upon the cylinders instead of upon the sheet.

To meet the above requirements, I provide a tripping mechanism consisting of the two-branched lever 39, fastened upon the shaft
80 400, journaled in the main frame, and means may be provided, if desired, to operate the shaft from either side of the press.

Upon one branch of the lever 39, under the free ends of the connecting-rods 29 and 34, is
85 arranged a roller 40, and to the other branch is connected a link, as 41, which is also connected with lever 42, secured upon the shaft 43, which is also mounted in the main frame. If desired, this shaft 43 can be used to oper-
90 ate the tripping mechanism from either or both sides of the press.

On the end of shaft 43, outside the main frame, is secured lever 44, to which is connected the upright rod 45, having a spring 46
95 upon it to keep the same in its raised position, and also mounted on the rod 45 at its free end is a foot-tread 47, which is mounted loosely, so that the same may be turned under the stop 48 in case it is desired to keep
100 the press tripped.

As shown in the drawings, the bars 29 and 34 are provided at their free ends with extensions 291 and 341, respectively, which run
105 over the roller 40 and just clear it when operating the cylinders in the usual manner, as in Fig. 9. The projection 291 is longer than the throw of the bar 29 and the under side of the same is cut away on a curve, as at 292, as shown, and the bar 29 is formed with a notch
110 that has a short lip 290 and a long lip 293. The bar 34 has a notch that has a long lip 340 and a short lip 343, and the under side of the extension 341 is made straight, as shown, but the end of the same is upwardly inclined to
115 form a cam-surface 342. It will be seen that the long and short lips of the two bars 29 and 34 are oppositely disposed. If now the tread 47 is depressed and held, as by stop 48, the roll 40 will be raised, so as to be in the path
120 of the projections 291 and 341 of the bars, and the shape of the bars is such that they will leave the impression-cylinders in their raised positions.

The object of the long lips 293 and 340 of
125 the bars is to bring the levers 30 and 36 to such position that their respective cylinders will be raised, and then as the bars continue to reciprocate, and being held up by roller 40, the short lips cannot engage studs 49 and 50,
130 and thus the impression will be suspended. This operation will take place, as in the normal operation of the parts, when the bar 29 is lifted, it raises the rod 34, as the rod 34 has

a block 51, which normally extends over the rod 29, as shown in Fig. 3. The block 51 is held to the rod 34 by the screw 510, and the same may be held in its adjusted position over the bar 29 by the spring head or clip 53, which is pushed outward by spring 52. The block 51 also has a pin 511, by which the block can be easily moved from the outside of the press. This operation is indicated in Figs. 9 and 10. In Fig. 9 the bars are shown at their extreme position to the left and cylinder 1 raised and cylinder 2 lowered. The block 51 in the normal operation is moved over so as to embrace both connecting-rods 34 and 29, as indicated in Fig. 3. The parts are shown as normally operating in Fig. 9. Now if the roller 40 should be raised by the tripping mechanism the connecting-rods will be raised and the short lip 290 of bar 29 will be lifted to clear the stud 40 of the lever 30. This will leave the lever 30 in the position shown in Fig. 9, so that cylinder 1 will remain in its raised position. Now as the connecting-bars reciprocate or move to the right the long lip 340 of the connecting-rod 34, bearing on stud 50, will move lever 36 to the right, as shown in Fig. 10, and as the connecting-bars move forward the lower part of connecting-rod 29 will rest on the stud 49, and thereby both connecting-rods will remain in their raised position. Now when the connecting-bars have moved their entire distance to the right cylinder 2 will be raised, and as the connecting-bars now move back to the left the short lip 343 of the bar 34 will clear the stud 50, and thus both cylinders will be left in their raised positions, and as the bars continue to reciprocate back and forth the roller 40 and stud 49 will keep them in their raised positions, so that they will not act to either raise or lower the impression-cylinders. Thus so long as the roller 40 is kept in the position shown in Fig. 10 the mechanism for raising and lowering the cylinders will have no effect on the cylinders.

The tripping mechanism can be applied at any part of the operation of the machine, and if one of the cylinders is up at the time of tripping it will stay up, as the extensions on either of the bars 29 or 34 will be over the roller 40 when its respective cylinder is up, and the cylinder that is down will be brought up by the long lips of the bars. When it is desired to untrip the impression mechanism, it is also desirable to have the parts so arranged that the cylinder 1 shall be lowered first and then cylinder 2, because if the tripping mechanism is such that it would permit cylinder 2 to be lowered before cylinder 1 then it would either cause an impression to be taken on the surface of the cylinder 2 or else a sheet would have to be run through the machine without receiving an impression on its first side, and great care would have to be taken to untrip the mechanism only when it was right to move the cylinder 1 first. However, the block 51, before referred to, is

a means by which no care is necessary in either tripping or untripping and also a means by which the cylinders will be operated properly no matter in what part of the operation the untripping takes place.

It is evident that the bar 34 cannot engage with its lever 36 to operate the cylinder 2 unless bar 29 has first engaged with its lever 30, for if the roller 40 is released when the bar 34 could drop into position the bar 29 would still be held up by the stud 49, and thus the bar 34 would not engage stud 50. Thus, for example, in Fig. 10, suppose the roller 40 were depressed. This would have no effect on the bars, as the bars would still be held up by stud 49 until bar 29 has been moved to the left, so that the mouth of the same can engage stud 49 and thus move lever 30 to the right before the mouth of bar 34 can engage the stud 50. No matter in what position of the connecting-bars the roller 40 is depressed the mouth of connecting-bar 29 must first engage stud 49 to operate cylinder 1 before connecting-bar 34 can engage stud 50 to operate cylinder 2. By this mechanism and means for controlling the cylinders great advantage is derived in the operation of the press, as it calls for no attention on the part of the operator as to the time of tripping and untripping.

Sometimes it is desirable to print from one cylinder only and to keep the other cylinder in its raised position, and also in the process of making ready the printing-surfaces of the impression-cylinders it is desirable to suspend the raising and lowering of one while the other is being prepared and not to interfere with the impression of the cylinder under preparation. To accomplish this, I apply an auxiliary device for tripping or raising the bars 29 and 34 individually at will.

Referring to the drawings, it will be seen that a shaft 54 is secured to the inside of the main frame 3, and a pair of levers 55 and 56 are loosely fulcrumed on this shaft. The lever 56 connects by chain 58 to rod 34 and the lever 55 connects by chain 57 to rod 29. The ends of the levers bear on a suitable bracket 59, fastened to the side frame, and by means of pins 550 and holes 560 the levers may be held in any adjusted position, but the levers can never lift the bars so the long lips will be disengaged, but only the short lips. When the inside ends of the levers are depressed, the chains will have a sufficient slack, so that the bars may work to and fro without being caught or jerked up by the chains. Suppose now it is desired to use cylinder 1 to print on only one side of the sheets or to make the cylinder 1 ready and to keep cylinder 2 in its raised position and in all other respects the machine operated as usual—that is, sheets fed to cylinder 1 will be printed on cylinder 1, transferred to cylinder 2, and not printed on cylinder 2, and then carried off by the delivery. In this case the inner end of lever 55 will be lowered so that the bar 29 may work

in the usual manner and the inner end of lever 56 will be raised so that the bar 34 cannot engage stud 5.

With the levers in the position noted the cylinder 2 will be held in its raised position, but it is evident that the cylinder 1 will be raised and lowered in the usual manner and also that the tripping mechanism may be connected to trip or untrip the action of the cylinder 1, as desired. Thus if the roller 40 is raised by the tripping mechanism the end of the rod 29 will bear on the roller when the connecting-rods are at their extreme to the left, and thus will leave lever 30 moved to the left or to the position shown in Fig. 10, with impression-cylinder 1 raised. If the tripping mechanism is now actuated to lower roll 40, the connecting-rod 29 will engage the stud 49 at the proper time to properly operate the impression-cylinder 1; also, it will be seen that if the block 51 is turned so as not to connect the bars the tripping mechanism would also trip the impression-cylinder 2.

After the cylinder 1 is ready or when it is desired to use the press in the usual manner all that is necessary is to depress the inner end of lever 56 and to turn the block 51 back, so as to engage both bars, if the same has been previously turned to disconnect the bars. Again, suppose it is desired to print from cylinder 2 or to make cylinder 2 ready and to keep cylinder 1 in its raised position. The printing in this operation would be done by feeding a sheet to impression-cylinder 1, allowing the same to turn around or to be carried around by the cylinder 1 in its raised position, then transferred to cylinder 2 in the usual manner, and printed on cylinder 2 in the usual manner. For this operation the inner end of lever 55 would be raised to lift connecting-bar 29 off the stud 49, and thus to leave the impression-cylinder 1 in its raised position and the block 51 turned to the position shown in Fig. 7, so that the bars are disconnected. Evidently now, as the bar 34 moves forward and backward in the usual manner, impression-cylinder 2 will be raised and lowered in the usual manner.

If it should be desired to trip the cylinder 2 when the same is operating alone, it can be done by the tripping mechanism before described. Thus suppose the roll 40 should be raised as the bar 34 moves to the right the portion 342 of the same will run up on the roller and thus will lift the short lip 343 off the stud 50, or, in other words, will leave the lever 36 in its right-hand position, as shown in Fig. 10, or with cylinder 2 in its raised position, and so long as the machine continues to operate and so long as roller 40 is held in its raised position the mouth of the rod 34 will not engage the stud 50, as when the bar moves into position to engage the stud it will be held from such engagement by the roller 40 acting on the cam-surface 342.

When it is desired to untrip the cylinder 2, the roller 40 is lowered, and evidently the

mouth of the rod 34 will engage the roll 50 at the proper time and thus throw the cylinder 2 into operation.

Even if the operator should not throw the block 51 over onto block 29 and should operate the machine in the usual manner to print a sheet, the cylinders could be tripped by simply manipulating the trip mechanism, as the cam-surface 342 of the connecting-bar 34 would raise the rod at the proper time, so that the mouth of bar 34 would clear the stud 50 and the cam 29 would be lifted, as before described; but it is preferred to use the block in the ordinary operation because it lifts both rods out of engagement by one contact with roller 40 and insures the proper starting before described. Also it will be seen that when the block 51 is turned to connect both bars both cylinders may be tripped by manipulating lever 55 or that the cylinder 2 can be alone tripped by manipulating lever 56. Thus if it is desired simply to have a lever for tripping the cylinders the tripping mechanism could be dispensed with and both cylinders controlled from lever 55, as it in lifting bar 29 would also lift bar 34 by means of block 51. Also the handles shown on levers 55 and 56 could be replaced by foot-treads to be operated by the foot; but I prefer to supply the two means shown for tripping as being the best adapted to meet the conditions under which the machine operates. Thus an extremely efficient tripping mechanism is provided by which the cylinders may be controlled individually or together in any desired manner, and a mechanism that requires no care on the part of the operator, as no matter in what part of the operation the cylinders are tripped or untripped they will always start in operation again so that cylinder 1 will work first.

In Figs. 1 and 2 the cylinder 1 is shown as provided with a short segment 60 and cylinder 2 with a short segment 61. On the forward extremity of the bed is placed the rack 62, adapted to engage with segment 60 on cylinder 1, and on the other extreme of the bed is placed rack 63, adapted to engage with segment 61 on cylinder 2. These segments 60 and 61 will also mesh with each other as they pass on the cylinders, and thus the two cylinders will be kept in register while the sheet is being transferred from cylinder 1 to cylinder 2 after having been printed on one side preparatory to being printed or perfected by form 6 and cylinder 2. Segment 60 and rack 62 act as a starting mechanism to start the bed in proper register with cylinder 1 on its movement to the right, and segment 61 and rack 63 act as a starting mechanism to start the bed in proper register with cylinder 2 on its movement to the left, thus insuring the register of the bed in both directions.

In the ordinary operation the two segments 60 and 61 will mesh with each other just as each cylinder is being raised or lowered by the impression mechanism, the cam 25 being

properly proportioned to get this effect no matter which cylinder is being raised or lowered.

When the cylinders are both tripped, the relation of one to the other is the same; but if one cylinder is tripped and the other cylinder is in operation the conditions are slightly changed, as the segments may not then pass while the cylinders are in exact horizontal line; but I have found by use and experiment that by easing the first meeting spaces and teeth, but still leaving the middle teeth of proper dimension, the backlash inherent to the raising of the cylinders from their operating-gears will allow sufficient variation, so that with the segments arranged as before described the cylinders can be brought into register without jar or shock, and, further, as the cylinders are not geared to each other the smooth action of one cylinder will not be affected by the movement of the other. I am thus enabled to operate the raising and lowering, the tripping, and the registering mechanisms of the cylinders in any desired position without any risk of injury to the parts.

The peculiar arrangement of the segments is shown in Fig. 11, and, as shown, the segment 60 of cylinder 1 has seven teeth and the segment 61 of cylinder 2 seven spaces.

In the order in which they engage I make the first tooth comparatively narrow and the first space comparatively wide, the next space wider than normal, and the next tooth narrower than normal, but the middle teeth I make of normal shape. This easing off is especially shown in the figure before referred to. It may be also desirable sometimes to slightly ease the last teeth that engage in the segments.

Another feature of my invention is the method of applying the registering segments and racks.

Segment 60 is rigidly secured to cylinder 1, and rack 62 is provided with slotted bolt-holes, so that it may be set to engage with segment 60, and the rack 63 has slotted holes to permit of adjustment to its segment, and the segment 61 is adjustably mounted on the cylinder 2, whereby the proper register between the cylinders may be obtained. Thus by having one segment fixed there is less opportunity for the disarrangement of the segments and racks than if all were adjustable. Furthermore, it will be noticed that I employ separate racks for each segment, thereby avoiding any alteration in the meeting of one if the other is moved, which would be the case if the machine were arranged with the segments meshing with each other and only one rack on the bed.

My mechanism is not limited to use with any particular means for raising and lowering the impression-cylinders, and it is conceived that if the rock-shafts 23 and 24 were placed directly under the cylinders and made to operate the side arms carrying the cylin-

ders by eccentric ends or toggles it is evident that the principles of my improvements in the impression mechanism would not be departed from. Therefore I do not limit myself to the exact construction shown, as my improvements are adapted to any general form of machine upon which such mechanisms could be applied.

The details and arrangements of parts here shown and described may be greatly varied by a skilled mechanic without departing from the scope of my invention as expressed in the claims.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a cylinder printing-press, the combination of the two independently-driven coacting impression-cylinders, the gears of which do not mesh, each cylinder having a segment, which segments are adapted to mesh with each other, the meeting teeth of the segments being eased off, as described, the reciprocating form-bed carrying racks adapted to coact with the segments of the cylinders to form starting mechanisms, and means for suspending the vertical movement of either or both of the cylinders without affecting the mesh of the segments, substantially as described.

2. In a cylinder printing-press, the combination of two coacting impression-cylinders having intermeshing registering segments thereon, means for raising and lowering the impression-cylinders, means whereby one cylinder may be suspended from printing or tripped, and held in this position, and means for tripping or untripping the vertical operation of the other cylinder, the segments being eased off, as described, whereby the segments may properly mesh in the various positions of the cylinders, substantially as described.

3. In a cylinder printing-press, the combination of two impression-cylinders, mechanism for raising and lowering said impression-cylinders, means for suspending or tripping the action of the raising and lowering mechanism, and means whereby when the raising and lowering mechanism is again set into operation, the same cylinder will always act first no matter at what period of operation the raising and lowering mechanism is thrown into operation, substantially as described.

4. In a cylinder printing-press, the combination of the first and the second impression-cylinders, means for alternately raising and lowering said cylinders, means for suspending or tripping the action of the raising and lowering mechanism of both cylinders, and means whereby when the raising and lowering mechanism is again thrown into operation, the same cylinder will always act first, substantially as described.

5. In a cylinder printing-press, the combination of the two coacting impression-cylinders, means for raising and lowering the same,

operating mechanism for the same, consisting of a reciprocating bar for actuating the raising and lowering mechanism of one cylinder, a bar pivoted to said reciprocating bar
 5 for actuating the raising and lowering mechanism of the other impression-cylinder, a tripping mechanism arranged to act on said bars, and a connection as block 51 between the bars, arranged so that when the reciprocating bar
 10 is lifted, the bar pivoted thereto will also be lifted, substantially as described.

6. In a cylinder printing-press, the combination of the two coacting impression-cylinders, means for raising and lowering said
 15 cylinders, means for suspending the vertical movement of one cylinder without affecting the action of the other, and means whereby the same cylinder will always act first when both cylinders are again brought into opera-
 20 tion, substantially as described.

7. In a perfecting double-cylinder printing-press, the combination of the two impression-cylinders 1 and 2, means for raising and lowering said impression-cylinders to give the
 25 impressions, a tripping mechanism adapted to suspend the action of either or both of said impression-cylinders, and connections whereby when the machine is started again in its operation, the first impression-cylinder to
 30 which sheets are fed will be first started in operation before the second impression-cylinder, substantially as described.

8. In a double-cylinder printing-machine, the combination of the two coacting impression-cylinders 1 and 2, means for raising and
 35 lowering the same, the connecting-bar 29, means for reciprocating the same, the connecting-bar 34 pivoted to the bar 29, connections from these bars to raise and lower the impression-cylinders, means for throwing
 40 either of the connecting-bars 29 or 34 out of operation, and a member as 40 arranged so that the same can be thrown into the path of the connecting-bars, so that the same will dis-

connect either or both bars, as they happen
 45 to be in operation, substantially as described.

9. In a double-cylinder printing-machine, the combination of the two coacting impression-cylinders 1 and 2, means for raising and
 50 lowering the same, the connecting-bars 29 and 34, means for reciprocating said bars, connections from said bars to the means for raising and lowering the impression-cylinders, and means, as block 51, for connecting
 55 and disconnecting said connecting-rods, so that they may act together or independently, substantially as described.

10. In a double-cylinder printing-machine, the combination of the two coacting impression-cylinders, means for raising and lower-
 60 ing the same, the two reciprocating connecting-bars, detachable connections between said bars, and the means for raising and lowering the impression-cylinders, and a member as
 40 adapted to be interposed in the path of
 65 said bars to detach the same, said bars having a connection as block 51 arranged between the same, substantially as described.

11. In a double-cylinder printing-machine, the combination of the two coacting impres-
 70 sion-cylinders, means for raising and lowering the same, the two connecting-bars 29 and 34, and detachable connections from the same to the means for raising and lowering the impression-cylinders, a block as 51 for connect-
 75 ing said connecting-bars, and a lever for raising one of said bars, and through the block 51 both of said bars, whereby both of said bars may be disconnected from the means to
 80 raise and lower the impression-cylinders, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

WINFIELD S. HUSON.

Witnesses:

LOUIS W. SOUTHGATE,
 H. A. WISE WOOD.