

No. 749,537.

T. C. DEXTER.

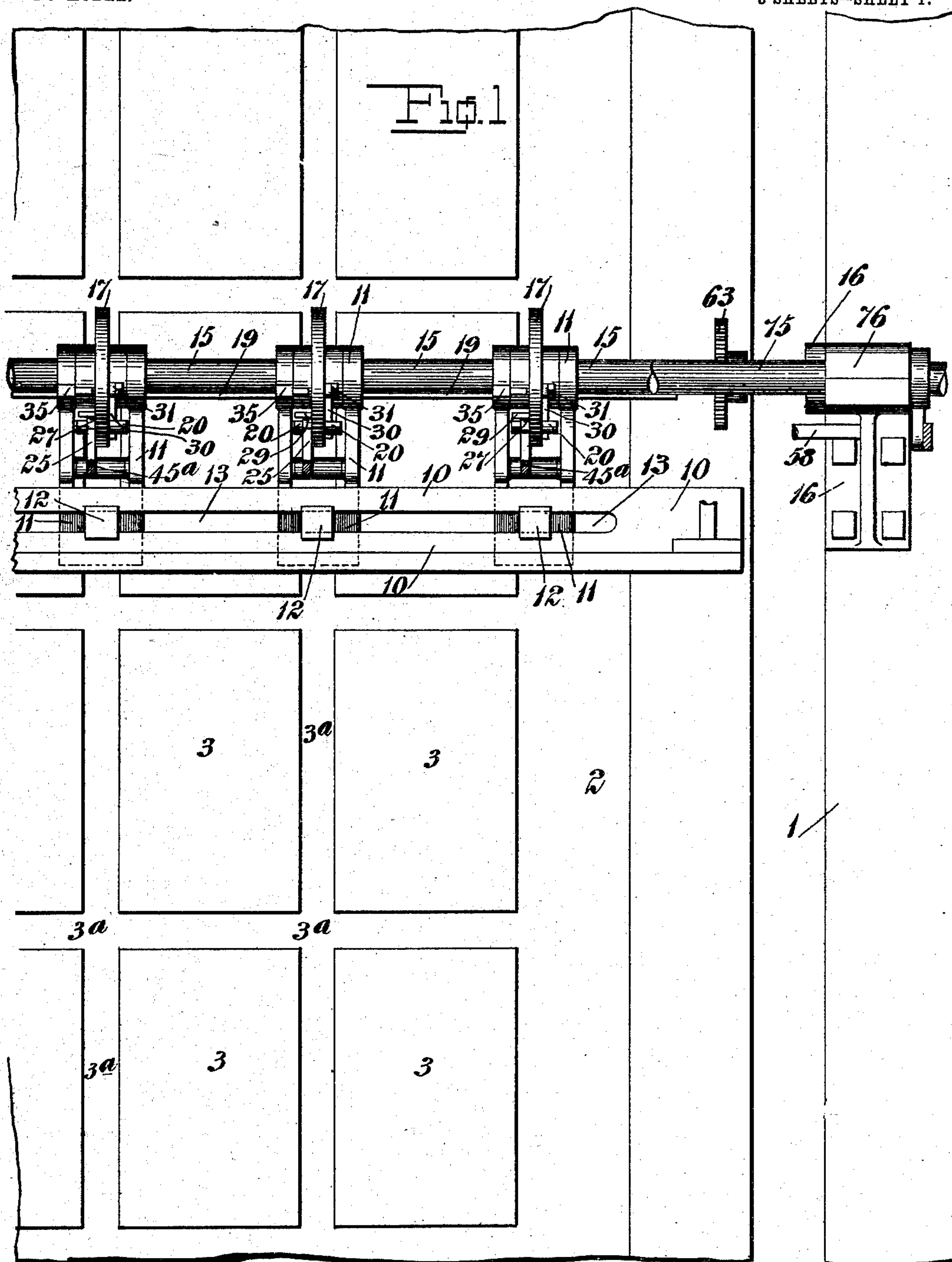
PATENTED JAN. 12, 1904.

AUTOMATIC CONTROLLING MECHANISM FOR PRINTING PRESSES OR OTHER
MACHINES DESIGNED TO OPERATE UPON SHEETS OF PAPER.

NO MODEL.

APPLICATION FILED OCT. 7, 1902.

3 SHEETS—SHEET 1.



Witnesses
P. H. Smith
M. H. McCombe

Talbot C. Dexter
Inventor,

By his Attorneys *Smith & Prosser*

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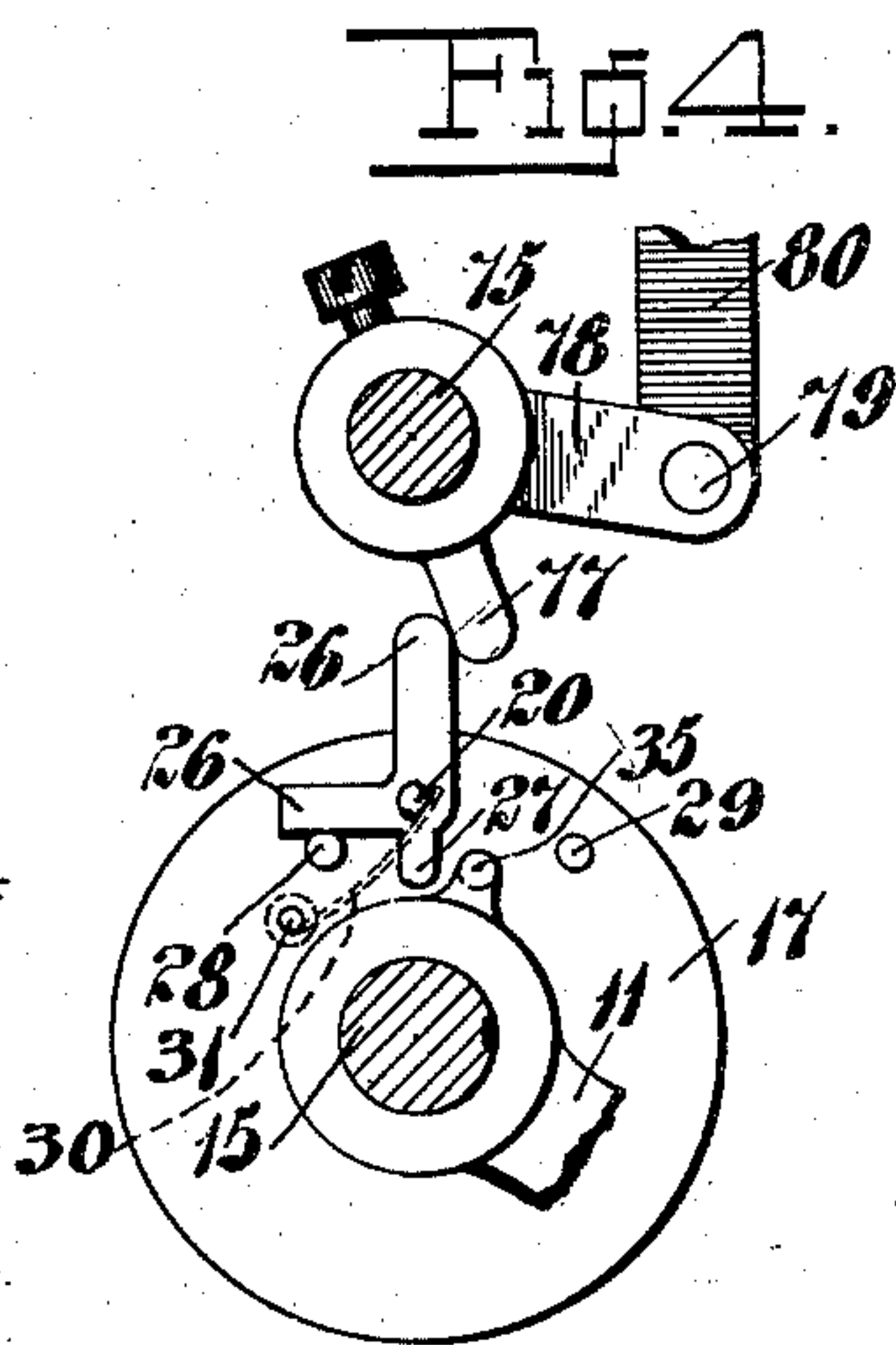
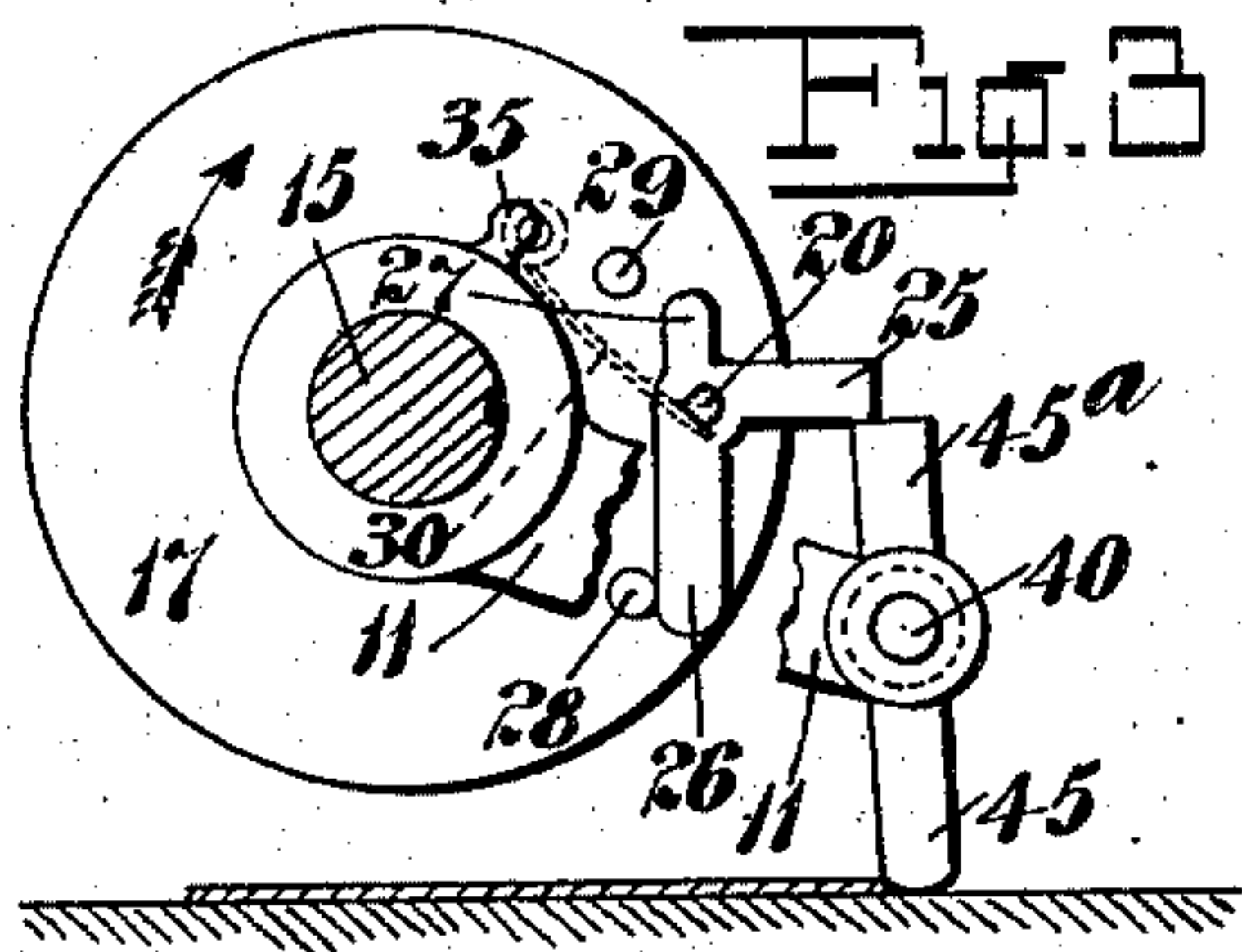
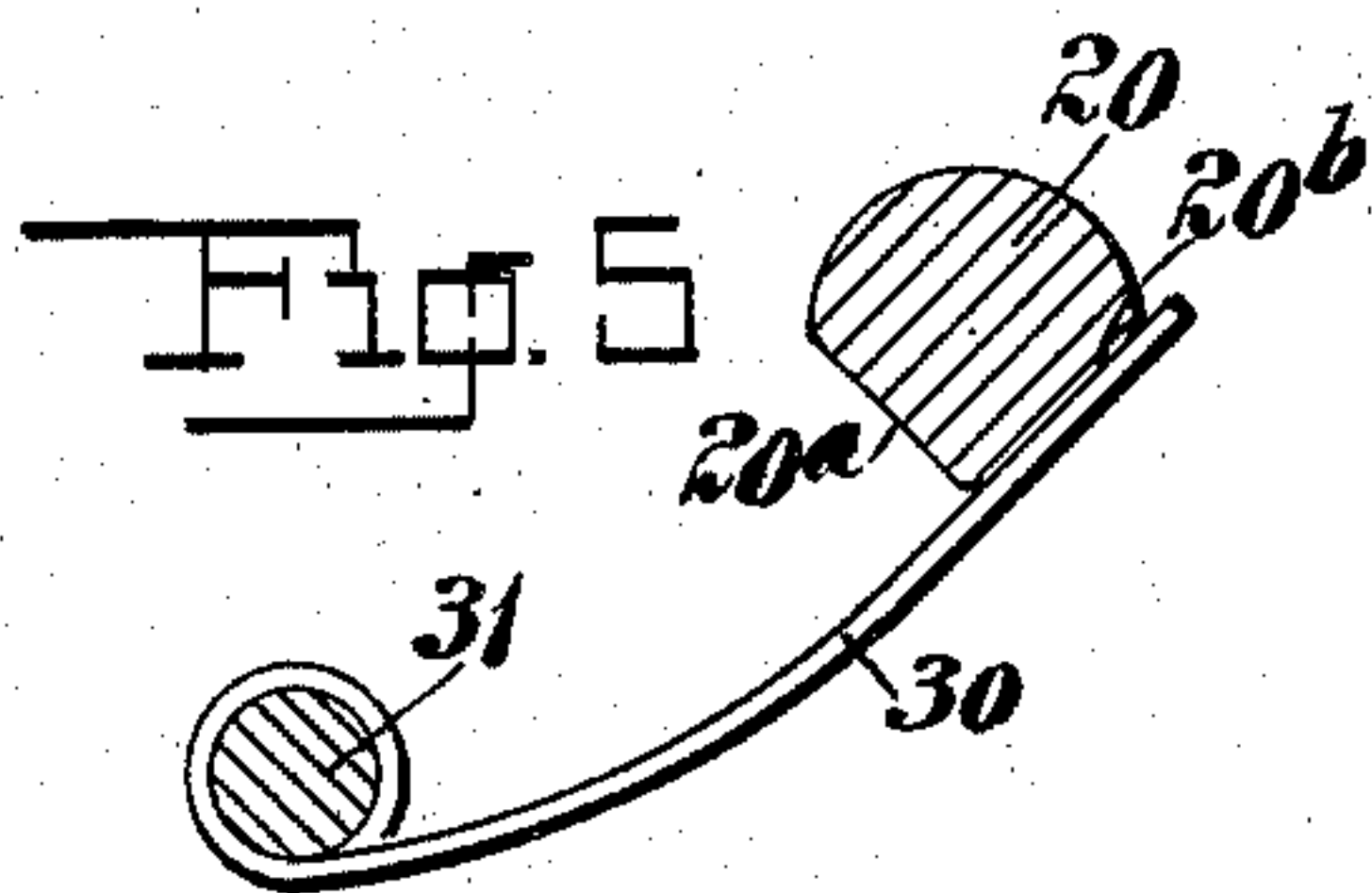
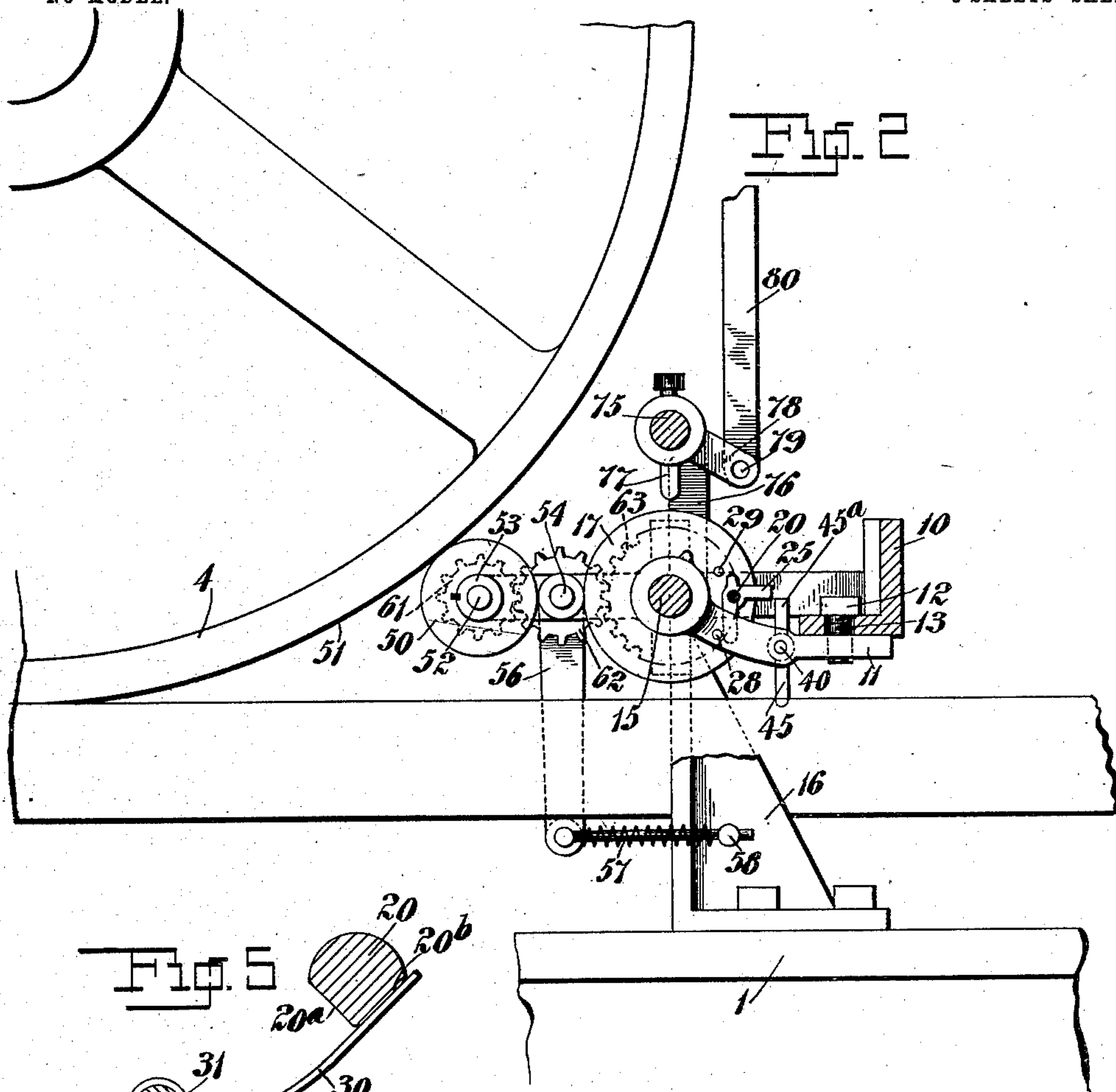
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3 SHEETS—SHEET 2.



Witnesses
O. F. Smith
W. H. McGowan

Albat C. Dexter
Inventor

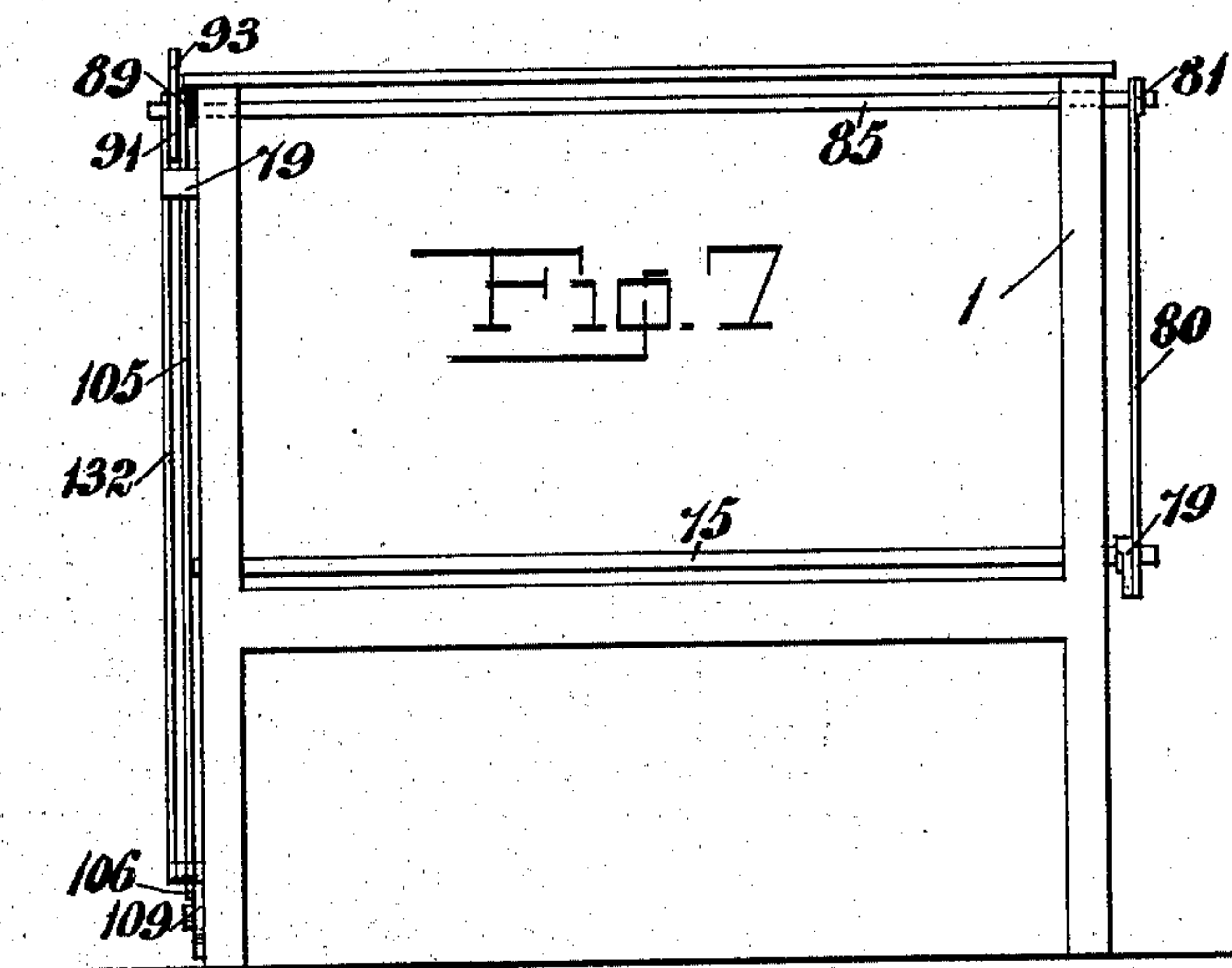
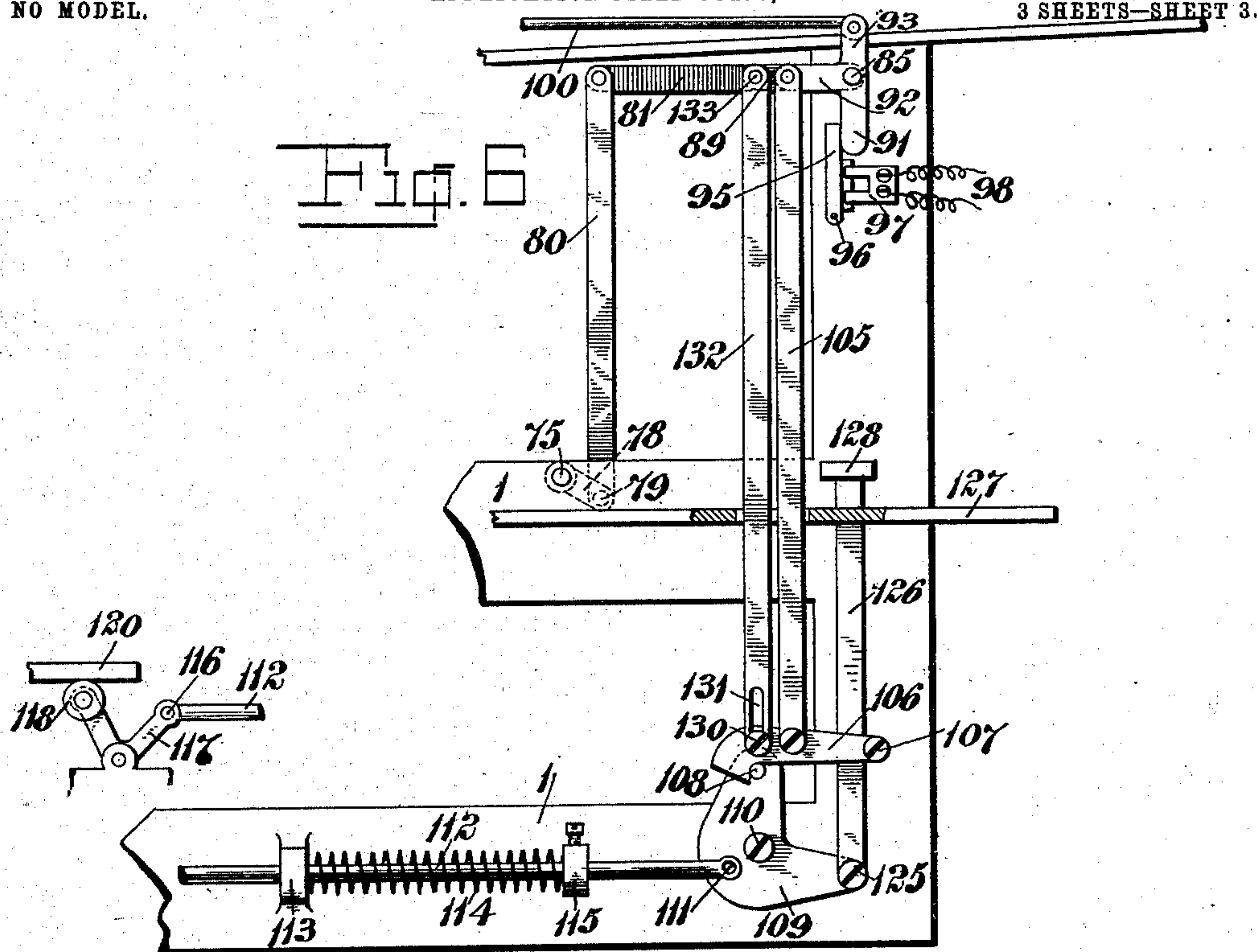
By his Attorney *Freight*

PATENTED JAN. 12, 1904.

APPLICATION FILED OCT. 7, 1902.

NO MODEL.

3 SHEETS—SHEET 3.



Inventor,

Witnesses
P. F. Sunk
J. H. McNamee

By his Attorneys Knight & Poo.

UNITED STATES PATENT OFFICE.

TALBOT C. DEXTER, OF PEARL RIVER, NEW YORK.

AUTOMATIC CONTROLLING MECHANISM FOR PRINTING-PRESSES OR OTHER MACHINES DESIGNED TO OPERATE UPON SHEETS OF PAPER.

SPECIFICATION forming part of Letters Patent No. 749,537, dated January 12, 1904.

Application filed October 7, 1902. Serial No. 126,323. (No model.)

To all whom it may concern:

Be it known that I, TALBOT C. DEXTER, a citizen of the United States, residing at Pearl River, in the county of Rockland and State of New York, have invented certain new and useful improvements in automatic controlling mechanism for printing-presses or other machines designed to operate upon sheets of paper, (Case E,) of which the following is a specification.

In an application filed by Henry Hallstream and myself, July 28, 1902, Serial No. 117,331, is disclosed a controlling mechanism for printing-presses and other machines designed particularly for arresting the operation of a press when a piece of a sheet of paper adheres to the printing-form after the impression is made. The mechanism of said application consists of a plurality of tripping-fingers arranged above the reciprocating form of a printing-press in position to engage and arrest a corresponding plurality of ratchet-wheels keyed to a constantly-rotating shaft, said shaft being driven through a clutch comprising two relatively movable members. When the ratchet-wheel shaft is stopped by the engagement of a tripping-finger, one of the clutch members throws into operation the throw-out mechanism of the press. In another application filed by me on the 24th day of September, 1902, Serial No. 124,605, I have covered an improvement upon the device disclosed in said application Serial No. 117,331, the improvement relating particularly to the means for controlling the press by the stopping of the ratchet-wheel shaft, a speed-governor being driven by the ratchet-wheel shaft and arranged to control a throw-out cam which is operatively connected with the throw-out mechanism of the press.

In my present invention the improvement relates to a novel form of sheet-actuated device for operating the throw-out mechanism and arresting the operation of the press. In place of the series of ratchet-wheels which are employed in both of the above-named applications I provide in my present case a constantly-driven shaft with a series of disks supported above the reciprocating bed of the printing-press, each disk carrying a bell-crank

tripping dog or finger which is normally supported in its inoperative position, a series of sheet-actuated fingers supported in position above the press-bed to be moved by a piece of paper adhering to the bed into the path of the bell-crank tripping-fingers for shifting them into operative position, and a rock-shaft extending across the machine and operatively connected with the press throw-out mechanism and carrying a series of tappets which are adapted to be engaged and operated by said bell-crank tripping-fingers.

The press throw-out mechanism operated by my improved devices may be of any suitable construction.

In order that my invention may be fully understood, I will first describe the same with reference to the accompanying drawings, and afterward point out the same more particularly in the annexed claims.

In said drawings, Figure 1 is a detail plan view of part of a flat-bed printing-press having my invention applied thereto, the impression-cylinder of the press being omitted. Fig. 2 is a detail vertical longitudinal sectional view of the same. Fig. 3 is a detail transverse sectional view of the sheet-actuated tripping device, representing the parts in the position assumed at the moment of being tripped by a piece of the sheet. Fig. 4 is a similar view showing parts of the tripping devices in another stage of their operation. Fig. 5 is a detail sectional view illustrating the spring for retaining the tripping-fingers in their operative or inoperative position. Fig. 6 is a detail elevation of part of the press, showing the throw-out-operating devices. Fig. 7 is a diagrammatic end view of the same, illustrating the relative position of the same parts.

1 is the frame of an ordinary flat-bed printing-press.

2 is the reciprocating bed, and 3 represents an ordinary printing-form mounted upon the bed 2 and having the channels or valleys 3^a, separating the printing-blocks or parts of the form.

4 represents the impression-cylinder of the printing-press.

Mounted transversely of the press upon the

press-frame 1 between the impression-cylinder 4 and the reciprocating bed 2 and beyond the line of impression is an angle-iron bracket 10, upon which are adjustably secured a series of yokes 11. The yokes 11 are secured to the bracket 10 in the desired adjusted position by means of screw-bolts 12, which pass through a slot 13 in bracket 10 and are threaded into openings formed in the yokes 11. A shaft 15, journaled in suitable bearings 16, extends parallel to the bracket 10 and passes freely through suitable openings formed in the arms or yokes 11. A plurality of disks 17 are mounted upon the shaft 15 between the arms or yokes 11, each disk being formed with a key-groove that engages the key 19, fixed on the shaft 15. A short rock-shaft 20 is freely journaled in each of the disks 17. Keyed to each rock-shaft 20 is a bell-crank tripping dog or finger formed with short arm 25 and longer arm 26. The tripping-fingers are confined in their movement by lugs 28 and 29, extending from the face of each disk 17, the short arm 25 of a tripping-finger being adapted to engage the lug 28 for confining the movement in one direction, while the long arm 26 is adapted to engage the lug 29 for confining the movement in the opposite direction. Each rock-shaft 20 is formed with flattened faces 20^a and 20^b, and leaf-springs 30, mounted upon studs 31 of the disks 17, are adapted to engage the flattened faces 20^a and 20^b for holding the rock-shafts 20 and the connected tripping-fingers 25 26 in either shifted position. (See Fig. 5.) A lug projects from one arm of one of each of the yokes 11 into the path of a lug 27, formed on the dogs or tripping-fingers 25 26 for automatically returning the tripping-fingers to their normal position after they have been shifted for throwing out the machine.

Freely journaled upon the pins 40, mounted in bracket-arms 11; are the sheet-actuated tripping-fingers 45, each one of which is formed with an upwardly-projecting arm 45^a. These tripping-fingers 45 hang by gravity from their journals and project slightly below the surface of the printing-form into the valleys or channels 3^a.

The constantly-rotating shaft 15 may be driven from any part of the press through any suitable mechanism.

50 is a frictional driving-wheel operating in peripheral engagement with the outer rim 51 of the impression-cylinder 4 of the printing-press. This driving-wheel 50 is keyed to a shaft 52, which is freely journaled in a lever 53, pivotally mounted at 54 upon a supporting-bracket. An arm 56 is rigidly connected with and projects downwardly from the lever 53, and a spring-actuated rod 57 is pivoted to arm 56 and passes through a swiveled guide 58 upon the press-frame and supports an expansion-spring 59, which is confined upon the rod 57. The shaft 52 of the driving-wheel 50 has

keyed to it a small gear 61, which is in mesh with a similar gear 62, journaled freely upon the pivot-shaft 54. This gear 62 meshes with a gear 63, which is mounted upon and drives the constantly-rotating shaft 15.

A rock-shaft 75 is suitably journaled in bearing-arms 76 and extends transversely across the printing-press. This rock-shaft 75 has depending tappets 77, which are located in the same vertical planes as the bell-crank tripping-fingers 25 26 to operate in the manner hereinafter to be explained. The rock-shaft 75 is provided with a rock-arm 78, which is pivoted at 79 to the lower end of the link 80, which extends vertically and is pivoted at its upper end to a rock-arm 81, extending from and loosely journaled upon a rock-shaft 85. The rock-shaft 85 is suitably journaled in the machine-frame and extends from side to side thereof. Loosely mounted on the end of the rock-shaft 85, upon the opposite side of the press from link 80 and rock-arm 81, is a double bell-crank or T-shaped lever formed of rock-arms 91, 92, and 93. The rock-arm 91 rests directly behind the switch-lever 95, which is pivoted to the machine-frame at 96 and controls the contacts (indicated at 97) which are included in the circuit 98, which supplies current to the motor which drives the printing-press or other machine to which the mechanism is applied. The rock-arm 93 is connected with a rod 100, which is intended to be connected with any suitable sheet-detecting throw-out mechanism—such, for instance, as the mechanism covered in my application, Serial No. 76,728, filed September 27, 1901. The third rock-arm 92 is connected with a downwardly-extending link or bar 105, which is pivoted at its lower end to a hook 106, journaled to the machine-frame at 107. This hook 106 normally engages a pin 108, projecting from the bell-crank throw-out lever 109, which is journaled at 110 upon the machine-frame. This lever 109 has pivotally connected to it at 111 a spring-actuated rod 112, which passes freely through a bearing 113 on the machine-frame and carries an expansion-spring 114, which is confined against the bearing 113 by means of an adjustable nut or collar 115. This spring-actuated rod 112 is preferably connected at 116 with a bell-crank lever 117, carrying in its free end an antifriction-roller 118, which rests normally beneath a reciprocating controlling arm or lever 120 of an automatic mechanism for raising and lowering the impression-cylinder from the reciprocating arm of the printing-press. This mechanism for raising and lowering the impression-cylinder may be of any suitable construction.

The parts 117, 118, and 120 of the mechanism shown in my present case are of the same construction as corresponding parts in the mechanism covered by my Patent No. 665,072, granted January 1, 1901.

Pivoted at 125 to the heel of the bell-crank

lever 109 is a vertically-extending bar 126, which passes up through a suitable opening in the platform 127 of the press and is provided at its upper end with a step or foot piece 128, by which the bar 126 can be depressed for resetting the mechanism, as hereinafter explained.

The hook 106 also carries a pin or screw 130, which operates in a slot 131, formed in the lower end of a link or bar 132, which is pivotally connected at its upper end 133 with a lever 89, which is rigidly mounted upon the rock-shaft 85 just inside of rock-arm 92.

The operation of my improved controlling mechanism may be briefly described as follows: When a press is operating, the shaft 15 is constantly rotating through the mechanism described, the series of bell-crank tripping-fingers 25 26 rotating with the disk 17 in the position shown in Fig. 2 of the drawings. If a portion of a sheet of paper adheres to the printing-form, it will engage one of the tripping-fingers 45 to move the same on its pivot instantly to bring the upwardly-projecting arm 45^a into the path of the short arm 25 of the bell-crank fingers, as indicated in Fig. 3 of the drawings. The disks carrying the bell-crank tripping-fingers moving in the direction indicated by the arrow will force the engaged tripping-finger and the rock-shaft 20, upon which it is mounted, from its normal position into the position indicated in Fig. 4 of the drawings, the movement being arrested by the engagement of short arm 25 with lug 28. The bell-crank tripping-finger being shifted into this position will have its long arm 26 projected sufficiently beyond the periphery of the disk 17 to enable it to engage the tappet 77 of rock-shaft 75, which will rock the shaft 75 sufficiently to force the link 80 and rock-arm 81 upwardly, which will raise the rock-arm 89 and link 132 and lift the hook 106 out of engagement with pin 108, carried by the bell-crank throw-out lever 109. The instant the bell-crank lever 109 is released from its controlling-hook the spring-actuated rod 102 will force lever 109 around on its pivot and at the same time actuate the impression-cylinder throw-out mechanism, so as to insure the impression-cylinder remaining in thrown-out position. At the same time that this operation takes place it will be observed that the lifting of the controlling-hook 106 also forces up the rod or bar 105, thereby moving to the left of Fig. 6 the rock-arm 91 for breaking the electric connection at the switch 97. By this means the electric circuit including the motor of the press is broken, and the press will accordingly immediately stop. To insure the immediate stopping of the press, a suitable braking mechanism is usually employed in addition to the devices already referred to. This braking mechanism may be operated by the rod 112, connected to the bell-crank lever

109, or by any other suitable part of the controlling mechanism. If the throw-out mechanism is actuated by the sheet-detecting devices connected with rod 100, it will be observed that rock-arm 91 and 92 will be moved to throw out the switch and to raise rod 105 and hook 106 for releasing throw-out lever 109 to effect the operations above described. In the operation of the mechanism from rod 100 it will be observed that pin 130 of hook 106 will move in slot 131 of rod 132 and rod 132, arm 89, shaft 85, arm 81, rod 80, and the automatic mechanism which actuates them will not be shifted. Immediately after the actuation of the throw-out mechanism as described it will be observed that the lug 27 of the tripped bell-crank finger 25 26 will engage the lug 35 of the bearing of the yoke 11 to shift the tripping-finger 25 26 back into its normal position in readiness for operation in the manner already explained. To start up the press after it has been automatically stopped, it is only necessary to close the main controlling-switch and return the throw-out-operating devices to their normal position by the operation of the foot-bar 126.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. In a machine designed to operate upon sheets of paper, the combination of suitable throw-out mechanism, with a tripping-finger adapted to be directly engaged and actuated by a sheet or part of a sheet, a rotary shaft carrying a disk, and a dog mounted upon said disk and adapted to directly engage the tripping-finger when the latter is tripped and be thereby shifted into position to directly engage and actuate the throw-out mechanism.

2. In a machine designed to operate upon sheets of paper, the combination of suitable throw-out mechanism, with a rotary shaft carrying a disk, a normally inactive dog mounted upon said disk, a sheet-actuated tripping-finger adapted to engage said dog and move it into active position upon the disk, and means operated by said dog for actuating the throw-out mechanism, substantially as set forth.

3. In a machine designed to operate upon sheets of paper, the combination of suitable throw-out mechanism, with a rotary shaft, a normally inactive dog eccentrically mounted upon said shaft, a sheet-actuated tripping-finger adapted to engage said dog and move it into active position, and means operated by said dog for actuating the throw-out mechanism, substantially as set forth.

4. In a machine designed to operate upon sheets of paper, the combination of suitable throw-out mechanism, with a rotary shaft, a normally inactive bell-crank tripping-dog eccentrically mounted upon said shaft, a sheet-actuated tripping-finger adapted to engage said dog and shift it into active position, and

means adapted to be operated by said dog for actuating the throw-out mechanism, substantially as set forth.

5. In a machine designed to operate upon
5 sheets of paper, the combination of suitable throw-out mechanism, with a rotary shaft carrying a disk, a bell-crank tripping-dog eccentrically mounted upon said disk, a sheet-actuated tripping-finger adapted to engage said
10 dog and shift its position upon the disk, and means adapted to be operated by said dog for actuating the throw-out mechanism, substantially as set forth.

6. In a machine designed to operate upon
15 sheets of paper, the combination of suitable throw-out mechanism, with a rotary shaft, a disk mounted upon said shaft, a bell-crank tripping dog or finger pivoted upon said disk, pins limiting the movement of said tripping
20 dog or finger, a sheet-actuated tripping-finger adapted to shift the dog upon the disk, and means operated by said dog for actuating the throw-out mechanism, substantially as set forth.

7. In a machine designed to operate upon
25 sheets of paper, the combination of suitable throw-out mechanism, with a rotary shaft, a disk mounted upon said shaft, a bell-crank tripping-dog pivoted upon said disk, pins limiting the movement of said tripping-dog, one
30 arm of said tripping-dog being longer than the other, a sheet-actuated tripping-finger adapted to engage the short arm of said tripping-dog for moving the same upon its pivot to cause the longer arm to project beyond the
35 periphery of the disk, a rock-shaft suitably connected with the throw-out mechanism, and a tappet mounted upon said rock-shaft and adapted to be engaged by the long arm of said
40 tripping-dog, substantially as set forth.

8. In a machine designed to operate upon
sheets of paper, the combination of suitable throw-out mechanism, a rock-shaft suitably connected with the throw-out mechanism, a
45 tappet upon said rock-shaft, a rotary tripping-shaft carrying a disk, a bell-crank tripping-dog pivoted upon said disk and having one arm longer than the other, lugs upon the disk adapted to be engaged by the arms of said tripping-
50 dog for limiting its movement, said dog being normally presented with its short arm projecting beyond the periphery of the disk, and a sheet-actuated tripping-finger adapted to engage said short arm of the tripping-dog for
55 shifting its position and causing its longer arm to project beyond the periphery of the disk in readiness to engage and operate said tappet, substantially as set forth.

9. In a machine designed to operate upon
60 sheets of paper, the combination of suitable throw-out mechanism, a rotary shaft carrying a disk, a bell-crank tripping-dog pivoted upon said disk and adapted to actuate the throw-out mechanism, a spring holding said tripping-dog
65 in either of its shifted positions, and sheet-

actuated means for shifting the position of said tripping-dog, substantially as set forth.

10. In a machine designed to operate upon sheets of paper, the combination of suitable throw-out mechanism, a rock-shaft suitably
70 connected with the throw-out mechanism, a tappet upon said rock-shaft, a rotary shaft carrying a disk, a bell-crank tripping-dog pivoted upon said disk and adapted to engage said tappet, a spring adapted to hold said tripping-dog
75 in either of its shifted positions, and sheet-actuated means for shifting the position of said tripping-dog, substantially as set forth.

11. In a machine designed to operate upon sheets of paper, the combination of suitable
80 throw-out mechanism, a rotary shaft carrying a disk, a rock-shaft journaled in said disk and formed with flattened faces, a bell-crank tripping-dog mounted upon said rock-shaft, a spring adapted to engage the flattened faces
85 of said rock-shaft for holding said tripping-finger in either of its shifted positions, and sheet-actuated means for shifting the position of said tripping-dog, substantially as set forth.

12. In a machine designed to operate upon
90 sheets of paper, the combination of suitable throw-out mechanism, with a rotary shaft carrying a plurality of disks, rock-shafts journaled in said disks and extending parallel with the rotary shaft, bell-crank tripping-dogs
95 mounted upon said rock-shafts, sheet-actuated tripping-fingers adapted to engage said dogs and shift their positions, and means adapted to be operated by said dogs for actuating the throw-out mechanism, substantially as set
100 forth.

13. In a machine designed to operate upon sheets of paper, the combination of suitable throw-out mechanism, a tappet-shaft suitably
105 connected with the throw-out mechanism, a plurality of tappets mounted upon said tappet-shaft, a rotary shaft carrying a plurality of disks, a plurality of tripping-dogs pivotally mounted upon said disks in operative relation
110 to said tappets, and sheet-actuated means for shifting the position of said tripping-dogs, substantially as set forth.

14. In a machine designed to operate upon sheets of paper, the combination of suitable
115 throw-out mechanism, with a rotary shaft carrying a plurality of disks, rock-shafts journaled in said disks and extending parallel with the rotary shaft, flattened faces formed upon said rock-shafts, a leaf-spring adapted to engage said flattened faces to hold the rock-shafts
120 in either of their shifted positions, bell-crank tripping-dogs mounted upon said rock-shafts, sheet-actuated tripping-fingers adapted to engage said dogs and shift their positions, and means adapted to be operated by said dogs for
125 actuating the throw-out mechanism, substantially as set forth.

15. In a machine designed to operate upon sheets of paper, the combination of suitable
130 throw-out mechanism, a rock-shaft suitably

connected with the throw-out mechanism, a tappet upon said rock-shaft, a rotary shaft carrying a disk, a bell-crank tripping-dog upon said disk, a spring holding said tripping-dog in either of its shifted positions, lugs projecting from the face of said disk adapted to engage the arms of said tripping-dog for limiting its movement, and sheet-actuated means for shifting the position of said tripping-dog, substantially as set forth.

16. In a machine designed to operate upon sheets of paper, the combination of suitable throw-out mechanism, a tappet-shaft suitably connected with the throw-out mechanism, a plurality of tappets upon said tappet-shaft, a rotary shaft carrying a plurality of disks, a bell-crank tripping-dog pivoted upon each disk, a spring holding said tripping-dogs in either of their shifted positions, lugs projecting from the face of each disk adapted to engage the arms of the tripping-dog for limiting its movement, and sheet-actuated means

for shifting the position of said tripping-dogs, substantially as set forth.

17. In a machine designed to operate upon sheets of paper, the combination of suitable throw-out mechanism, a rock-shaft connected with said throw-out mechanism, a tappet upon said rock-shaft, a rotary shaft carrying a disk, a tripping-dog pivoted upon said disk and adapted when shifted to engage said tappet and actuate said rock-shaft, sheet-actuated means for shifting the position of said tripping-dog, a lug on said tripping-dog, and a lug on a stationary part of the machine adapted to engage said dog-lug for returning the shifted dog or finger to its normal position after it has been shifted, substantially as set forth.

TALBOT C. DEXTER.

Witnesses:

J. GREEN,

WM. E. KNIGHT.