

H. SMITH.
PRINTING APPARATUS.
APPLICATION FILED JUNE 29, 1904.

2 SHEETS—SHEET 1.

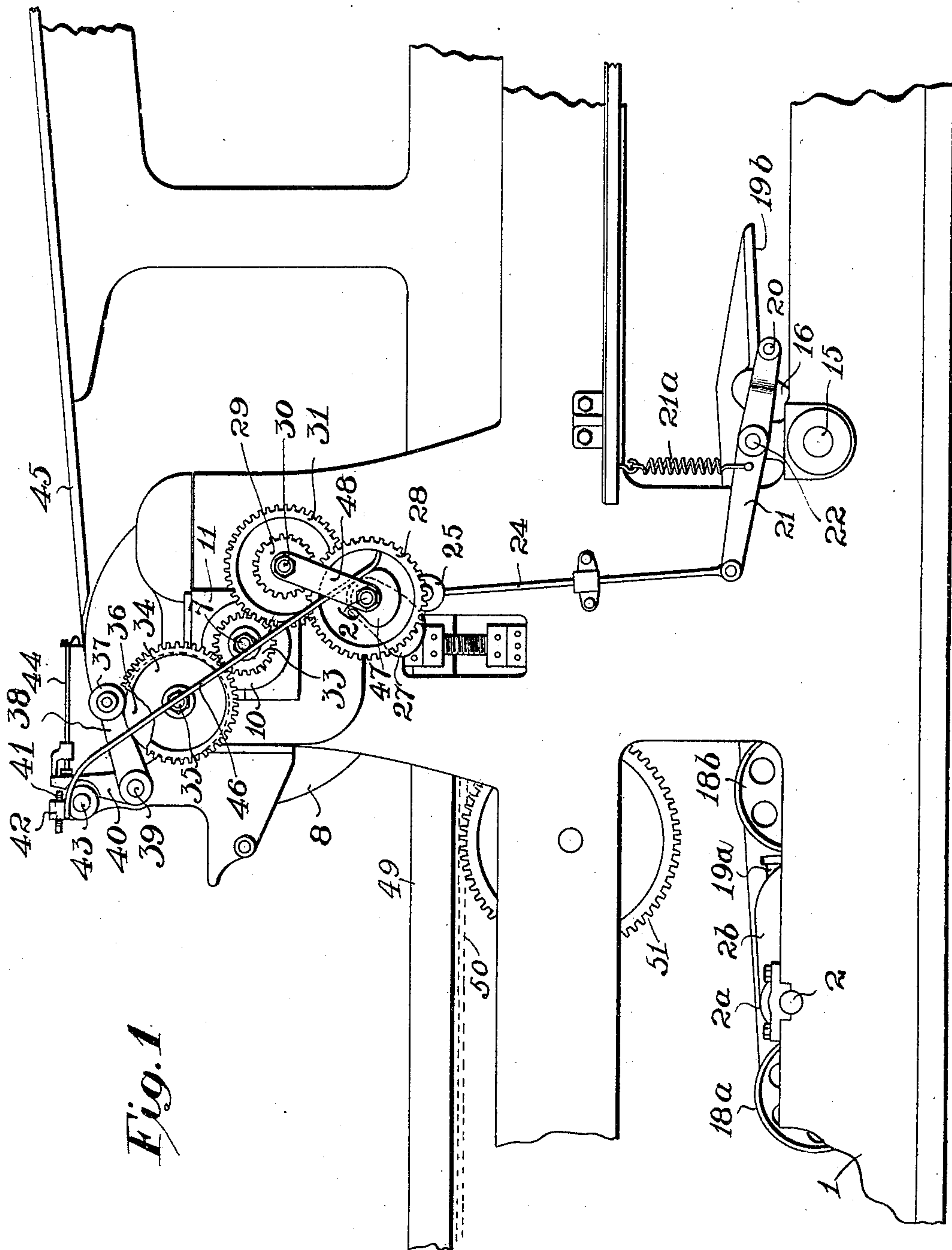


Fig. 1

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John F. Gerbey Jr.

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Harry Smith
BY
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ATTORNEY.

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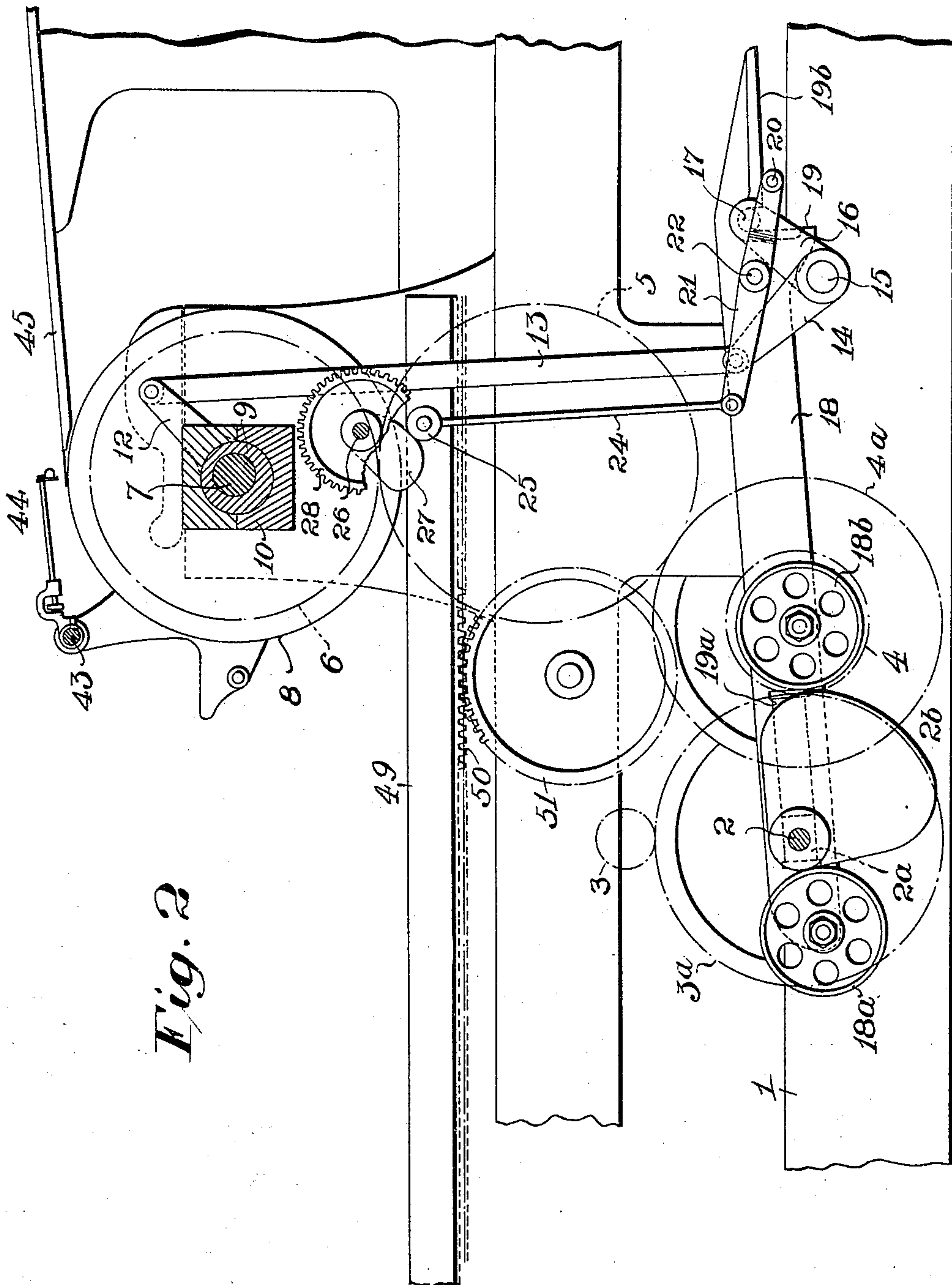


Fig. 2

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UNITED STATES PATENT OFFICE.

HARRY SMITH, OF PHILADELPHIA, PENNSYLVANIA.

PRINTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 784,235, dated March 7, 1905.

Application filed June 29, 1904. Serial No. 214,578.

To all whom it may concern:

Be it known that I, HARRY SMITH, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain Improvements in Printing Apparatus, of which the following is a specification.

This invention relates to apparatus for automatically separating the cylinder from the type-bed during repetition of the latter's reciprocations for inking the type, and it is more particularly a tripping device for causing the cylinder to be held elevated during successive revolutions and while the bed is carried through successive reciprocations for more thoroughly inking the type.

In the accompanying drawings, Figure 1 represents a side elevation of part of a printing-press having my improvements applied thereto, and Fig. 2 represents a diagrammatic sectional view thereof.

As shown in the drawings, the frame 1 has journaled therein the driving-shaft 2, having fixed thereon the gear-wheel 3^a, driven by the pinion 3 and driving the train of gears 4, 4^a, 5, and 6, the latter being fixed on the journaled shaft 7, carrying the cylinder 8. The shaft 7 is eccentrically journaled in a sleeve 9, which is journaled in the bearing 10, the sleeve having an arm 12 fixed thereto for moving it in its bearing to elevate and lower the shaft 7 and the cylinder 8. A link 13 connects the arm 12 with an arm 14, which is fixed on a journaled shaft 15, oscillated by a crank-arm 16 thereon, the crank-arm having a pin 17, which is engaged by a lever 18, having the shoe 19 and toe 19^b. The lever 18 is also provided with the slot 19^a for engaging a block 2^a, journaled on the shaft 2 and, with the rollers 18^a and 18^b, engaged by the cam 2^b, fixed on the shaft by which the lever is reciprocated longitudinally. The toe 19^b engages a roller 20 on one end of a lever 21, having a fulcrum 22. The other end of the lever is supported by a spring 21^a and is connected with a reciprocating rod 24, carrying the roller 25.

A journaled shaft 26 has thereon a cam 27, which makes contact with the roller 25, and a spur-wheel 28, which is driven by a pinion 29, fixed on the journaled shaft 30, the pin-

ion having a circumference one-half that of the spur-wheel. Fixed on the shaft 30 is a spur-wheel 31, driven by a pinion 33, fixed on the cylinder-shaft 7, this pinion having a circumference one-half that of the spur-wheel engaging therewith. The pinion 33 also drives the spur-wheel 34, fixed on the journaled shaft 35, carrying the cam 36, this spur-wheel having twice the circumference of its driving-pinion. Riding on the cam 36 is a roller 37 on an arm 38, which is fixed on the journaled shaft 39, the shaft having fixed thereto the rocking arm 40. The arm 40 makes contact with the set-bolt 41, carried by a rocking arm 42, fixed on the journaled shaft 43, the shaft having the rocking fingers 44 fixed thereto for engaging paper delivered from the feeding-board 45. A rod 46 is connected with the shaft 43 and rides on a cam 47, carried by the shaft 26, a guard 48, carried by the shafts 26 and 30, keeping the rod in place.

The reciprocating type-bed 49, having thereon a rack 50, engaged by the spur-wheel 51 for reciprocating it, travels with the cylinder 8 as the latter carries the paper into printing contact therewith and reverses at the end of the printing operation while the cylinder is held out of contact therewith.

In the operation of the mechanism during a half-revolution of the shaft 2 the cam 2^b by its engagement with the roller 18^a moves the lever 18 in the direction opposite to the position shown, and by the engagement of the shoe 19 with the pin 17 the arms 16 and 14 are rocked to depress the link 13 and arm 12, carrying the eccentric sleeve 9 around to permit the cylinder 8 to make rolling contact with the bed 49, moving therewith, the cylinder being carried through a complete revolution during a half-revolution of the shaft 2. During the succeeding half of the revolution of the shaft 2 the cam 2^b is in engagement with the roller 18^b and the lever 18 is carried in the opposite direction, acting by the engagement of its shoe 19 with the pin 17 to rock the arms 16 and 14, elevating the link 13 and arm 12 and turning the eccentric sleeve 9, so that the cylinder 8 makes a complete revolution out of contact with the bed while the latter effects its return or first ink-

ing reciprocation. To permit the bed to repeat its inking reciprocation by again moving forward and back without printing, the cylinder is held elevated while it makes two succeeding revolutions. To this end, at the completion of the first revolution of the cylinder in its elevated position as the cam 2^b approaches the roller 18^a to draw the lever 18 back the cam 27 strikes the roller 25, whereby the rod 24 is pushed down to rock the lever 21 and elevate the lever 18, causing the shoe 19 to be disengaged from the pin 17 and permitting the lever 18 to be drawn back without lowering the cylinder, the lever-nose 19^b riding on the roller 20. The cylinder completes its third revolution in its elevated position as the lever 18 completes its forward stroke and its shoe 19 drops into engagement with the pin 17, so that the cylinder will be lowered for the next revolution by the return of the lever 18.

While the cylinder makes two revolutions the cam 36 makes a single revolution, elevating and lowering the arms 38 and fingers 44, the latter when down serving to square the paper prior to its engagement with the cylinder and when up serving as an indicator to notify the pressman as to when to hold the paper out of engagement with the cylinder. To hold the fingers elevated while the cylinder is making its second revolution in the elevated position, when otherwise they would drop upon the completion of the first elevated revolution while the fingers are up, the cam 47 engages the rod 46, which holds the fingers up during the second elevated revolution while the lower part of the cam 36 is passing under the roller 37. At the completion of the second elevated revolution the higher part of the cam 36 again comes in contact with the roller 37, and the fingers are kept up until the end of the third revolution, when they are permitted to drop. It will now be understood that the cylinder rolls upon the printing-bed, advancing therewith to effect the printing operation, upon the completion of which the fingers and cylinder are held elevated while the latter makes three successive revolutions and the bed is retracted, advanced, and again retracted to repeat the inking operation.

Having described my invention, I claim—

1. A printing mechanism having a revolving cylinder, an eccentric support therefor, in combination with automatic means for rocking said support and thereby holding said cylinder out of printing contact during successive revolutions and in printing contact during a single revolution alternating with said successive revolutions, substantially as specified.

2. A printing mechanism having a revolving cylinder, an eccentric support therefor, and a reciprocating indicating device, in combination with automatic means for rocking and thereby holding said cylinder out of printing

contact during successive revolutions, and means for throwing said indicating device and holding it during successive revolutions of said cylinder, substantially as specified.

3. A printing mechanism having a revolving cylinder, a gear-train for revolving said cylinder, automatic means comprising a cam revolving synchronously with said gear-train and a reciprocating rod operated by said cam for throwing and holding said cylinder out of printing contact during successive revolutions and in printing contact during a single revolution, in combination with an indicating device, and means for throwing said indicating device and holding it during successive revolutions of said cylinder, substantially as specified.

4. A printing mechanism having a revolving cylinder, automatic means for elevating and lowering said cylinder, said means comprising a cam and tripping devices operated thereby, an indicating device, and cam mechanism for throwing and holding said indicating device during successive revolutions of said cylinder, said indicating device occupying a second position during revolutions of said cylinder alternating with said successive revolutions, substantially as specified.

5. A printing mechanism having a revolving cylinder, a reciprocating type-bed, automatic means for throwing said cylinder into and out of contact with said type-bed, said means comprising a cam and tripping devices operated thereby, a revolving cam connected with said cylinder, an indicating device, and a rod connected with and operating said indicating device, said rod being operated by said cam, substantially as specified.

6. A printing mechanism having a revolving cylinder, an eccentric bearing for said cylinder, mechanism for revolving said bearing, a revolving cam connected in operative relation to said cylinder, and mechanism operated by said cam for disconnecting the mechanism for revolving said bearing, substantially as specified.

7. A printing mechanism having a revolving cylinder, means for revolving said cylinder, an eccentric bearing for said cylinder, mechanism for revolving said bearing, a cam operated by the means for revolving said cylinder, a reciprocating rod operated by said cam, and a lever operated by said rod to disengage the mechanism for revolving said bearing whereby said cylinder passes through successive revolutions without change in said bearing, substantially as specified.

In testimony whereof I have hereunto set my hand, this 28th day of June, 1904, in the presence of the subscribing witnesses.

HARRY SMITH.

Witnesses:

JOHN THIEL,
UTLEY E. CRANE, Jr.