

No. 756,432.

PATENTED APR. 5, 1904.

W. O. TODD.
PRINTING PRESS.

APPLICATION FILED OCT. 20, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

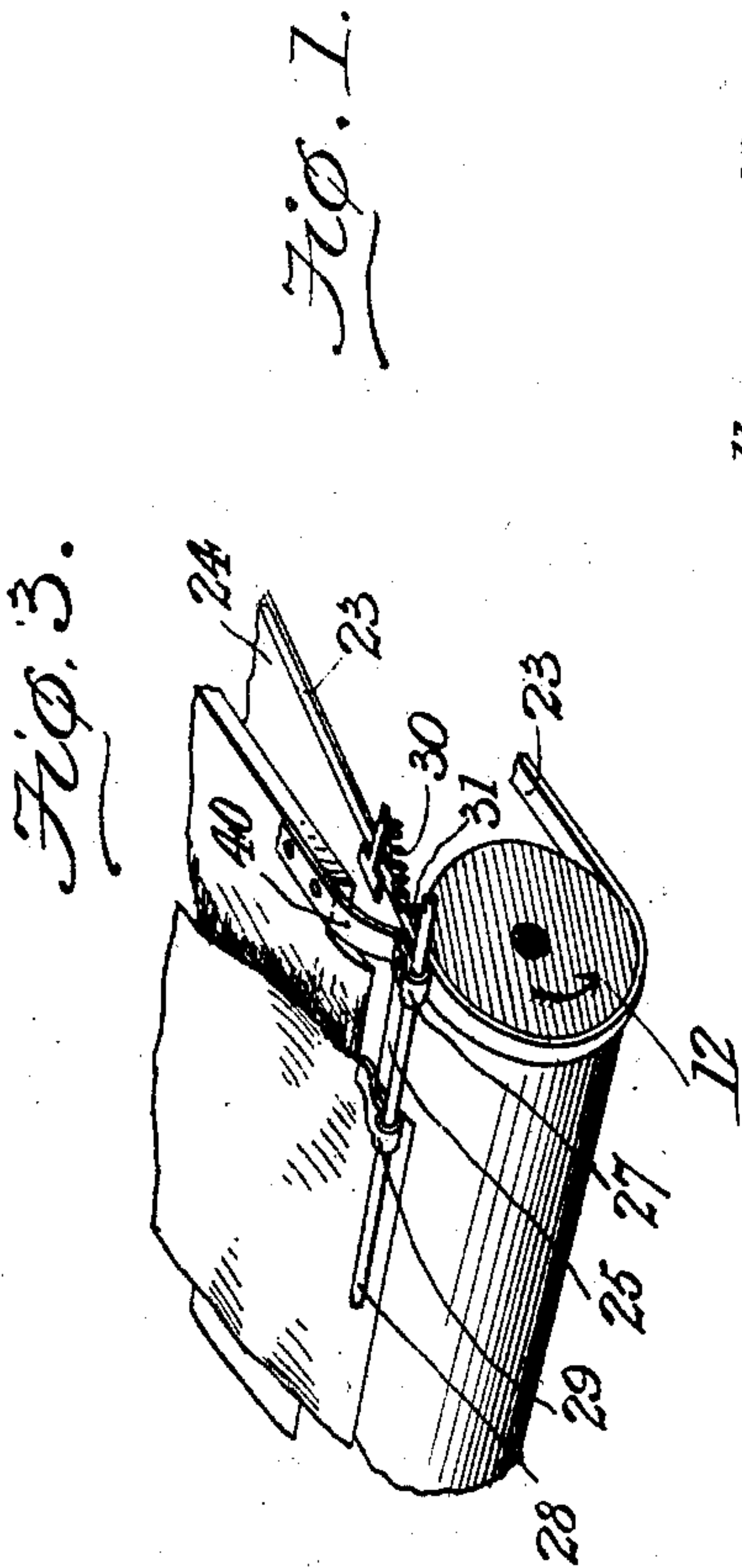
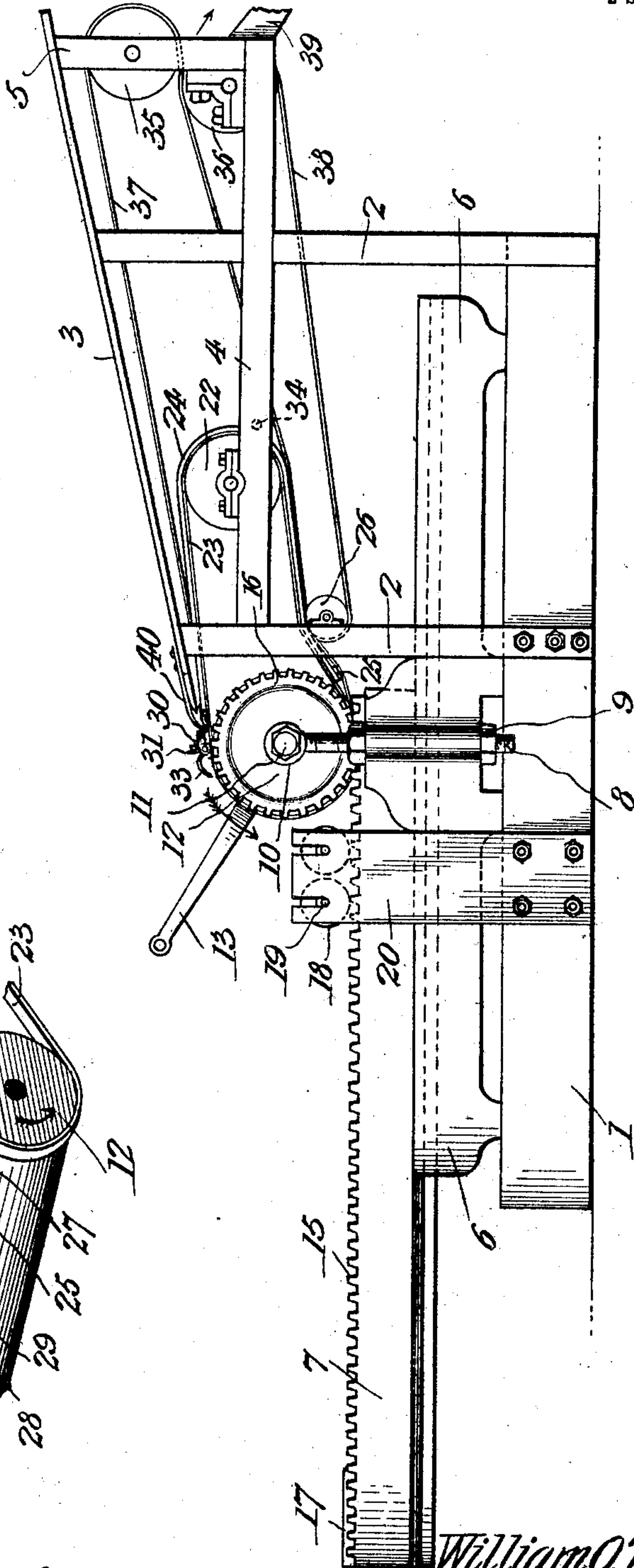


Fig. 1.



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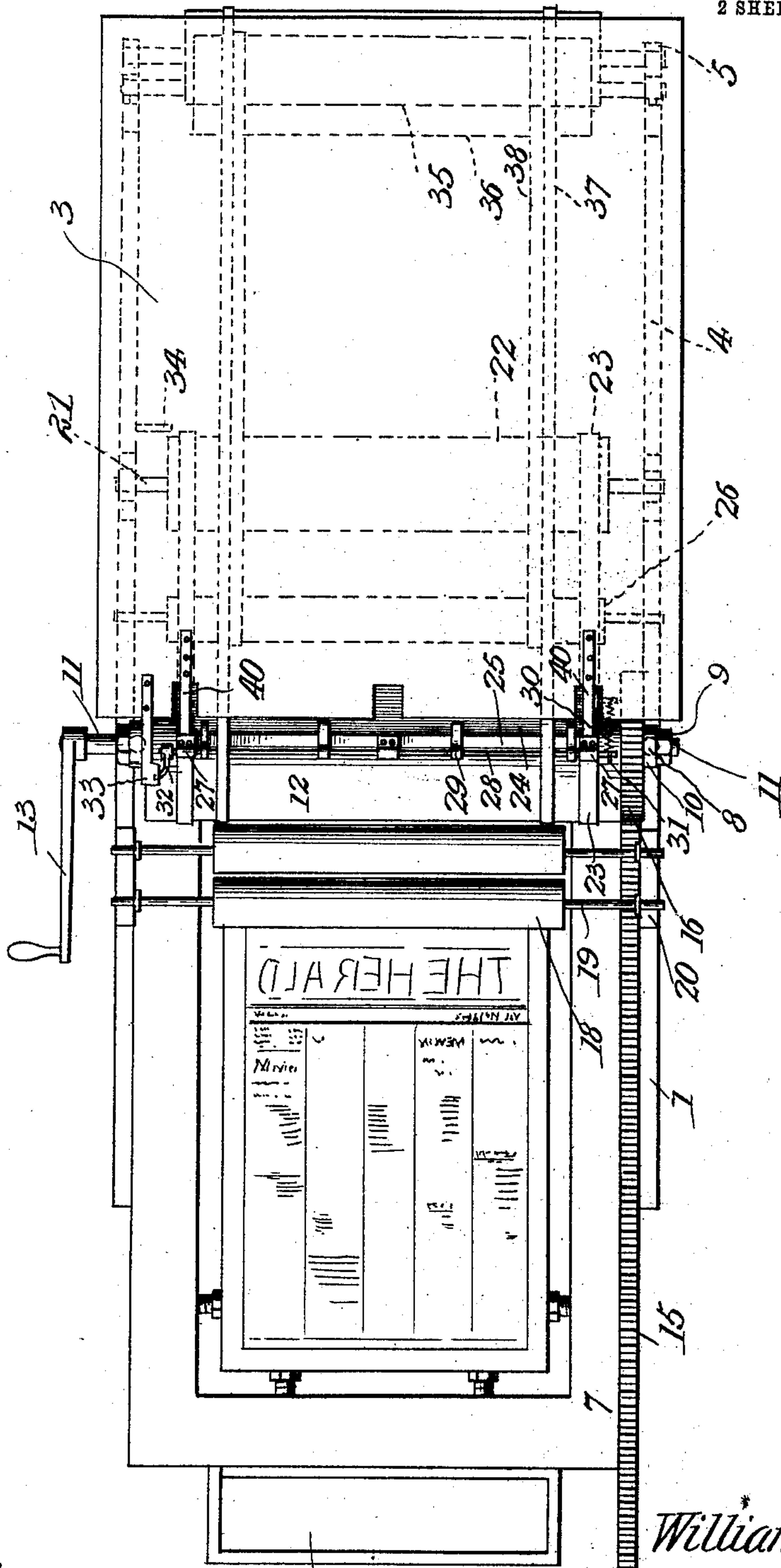
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PRINTING PRESS.

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2 SHEETS—SHEET 2.

Fig. 2.



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UNITED STATES PATENT OFFICE.

WILLIAM O. TODD, OF CRAB ORCHARD, NEBRASKA, ASSIGNOR OF ONE-HALF TO BION COLE, OF LINCOLN, NEBRASKA.

PRINTING-PRESS.

SPECIFICATION forming part of Letters Patent No. 756,432, dated April 5, 1904.

Application filed October 20, 1903. Serial No. 177,815. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM O. TODD, a citizen of the United States, residing at Crab Orchard, in the county of Johnson and State of Nebraska, have invented a new and useful Printing-Press, of which the following is a specification.

This invention relates to printing-presses, and more especially to printing-presses of the class in which there are a reciprocating type-bed and a rotating impression-cylinder so connected that the peripheral velocity of the impression-cylinder when in operation is the same as the speed of longitudinal movement of the type-bed.

The object of the invention is to provide an improved printing-press of the class specified in which greater rapidity of operation and more perfect impressions are obtained than in presses of this class as heretofore constructed.

The invention consists in certain details of construction and arrangement of the elements, which will be more fully explained as the invention is better understood.

In describing the invention reference will be had to the accompanying drawings, forming a part of this specification, in which corresponding parts are designated by the same characters of reference throughout the various views, it being understood that changes may be made in the form, proportions, and exact mode of assemblage of the elements therein exhibited without departing from the spirit of the invention or sacrificing any of the advantages thereof.

In the drawings, Figure 1 is a view in side elevation of an improved printing-press constructed in accordance with my invention. Fig. 2 is a plan view of the press. Fig. 3 is a detail view showing on a large scale in perspective the means for holding the gripper-fingers normally in engagement with a sheet of paper and the means for checking the backward movement of the rubber sheet.

Referring to the drawings, 1 designates the base of the press, having uprights 2 for supporting the feed-table 3.

4 is a horizontal frame member secured on the uprights 2 beneath the feed-table, and 5 is

an upright member secured to the outer end of the horizontal member 4 and extending upward to the under surface of the feed-table 3.

6 is a frame formed, preferably, of heavy metal resting upon the base 1 and having ways provided on the upper surface thereof for the reciprocation of the bed 7, upon which the type is carried. On either side of the frame 2 are provided adjustable screw-threaded rods 8, provided with adjusting-nuts 9 to hold them at any desired point of adjustment and having at the upper ends journals 10 for a shaft 11, upon which is rigidly mounted the impression-cylinder 12. Power is transmitted to the shaft 11 by means of a crank 13 at one end thereof or other suitable mechanism, as may be most convenient.

In order to impart movement to the bed 7, there is provided on the upper surface thereof and at one side a rack 15, which engages with a gear 16 of the same diameter as the impression-roll 12 and secured to the shaft 11 at one end of the impression-roll. At the outer end of the bed 7 there is provided an ink plate or fountain 17, from which ink is supplied to the ink-rolls 18, whose supporting-rods 19 are journaled in slots provided in the upper ends of standards 20, one of which is provided on either side of the press, as shown.

The structures thus far enumerated are well known in the printing art and form no part of my invention, which consists in the attachments now to be described.

Mounted on the shaft 21, which is journaled in bearings on the horizontal frame member 4 at a short distance from the impression-cylinder, is an idle roll or drum 22, and running over drum 22 and impression-cylinder 12 I provide two endless belts 23, which lie near the ends of the impression-cylinder and the drum 22. Secured to the belts 23 and extending throughout almost the entire length thereof is a rotary sheet or blanket 24, at each transverse edge of which is provided a batten 25, which serves to space the belts 23 apart and to prevent sagging of the edges of the rubber sheet 24. In order to keep the belts 23 taut, to lift the paper from the type after printing, and to carry delivery-

tapes presently to be described, I provide a roll 26, whose shaft is journaled in bearings provided therefor in uprights 2 adjacent to the impression-roll and which comes in contact with the lower ply of the belts 23, as shown in Fig. 1. Attached to belts 23 just in front of the batten 25 at the forward edge of rubber sheet 24 are small blocks 27, which afford bearings for the shaft 28, to which are rigidly attached the gripper-fingers 29, which are held firmly in contact with the batten 25, lying adjacent to the shaft 28, by means of a spring 30, connected to a short arm 31, attached to the end of shaft 28, and to one of the belts 23. At the end of shaft 28, opposite that to which the arm 31 is attached, there is an arm 32, which is adapted to contact with trip-lugs 33 and 34. Trip-lug 33 is mounted at the end of the feed-table 3 and is bent downward, so as to engage the arm 32 to cause the lifting of the gripper-fingers when the forward edge of the rubber sheet 24 lies just in advance of the end of feed-table 3, as shown in Fig. 2. Trip-lug 34 is mounted on one of the horizontal frame members 4 slightly to the rear of and adjacent to the idle roll 22 and serves to throw the gripper-fingers out of contact with batten 25 as the forward edge of the rubber sheet begins to pass upward at the rear of the idle roll. In the uprights 5 at the end of horizontal frame member 4 are mounted two rolls 35 and 36, carrying tapes 37 and 38, respectively. The tapes 37, running over roll 35, also pass over the impression-cylinder 12, and the tapes 38, running over roll 36, pass over roll 26, which, as previously mentioned, aids in keeping the rubber sheet 24 and belts 23 taut. The shafts upon which rolls 35 and 36 are mounted are not placed in the same vertical plane; but the upper one lies slightly to the rear of the lower, so that the under ply of tapes 37 and the upper ply of tapes 38 will always be held close together and be effective for conveying sheets of paper from the impression-roll to the rear of the press-roll when they are deposited upon a receiving-table 39 as they pass out from between the rolls 35 and 36.

When the impression-cylinder is caused to rotate in the direction indicated by the arrows, the type-bed will travel under the impression-cylinder, and a sheet of paper conveyed forward from the feed-table 3 will be gripped by gripper-fingers 29 and drawn over the impression-cylinder by the travel of belts 23, which are caused to move with the impression-cylinder by the frictional engagement of the belts with its periphery. As grippers 29 are located at the forward edge of rubber sheet 24, each sheet of paper carried forward by the gripper-fingers over the impression-cylinder will not lie in contact with the cylinder itself, but will be separated therefrom by the rubber sheet 24 and will be brought into proper printing contact with the type on the

bed 7 by the elasticity of the rubber sheet, which serves as a cushion between the sheet of paper and the surface of the impression-cylinder. When the gripper-fingers reach the lower surface of idle roll 21, they are released from engagement with the paper by the contact of arm 32 with trip-lug 34, and the sheet of paper released from the gripper-fingers will be carried toward the rear of the press by tapes 37 and 38 and discharged upon the receiving-table 39. When the motion of the impression-cylinder is reversed to return the bed 7 to its original position at the end of the press, the belts 23 will move backward over the impression-cylinder until the bearing-blocks 27, in which the shaft 28 is journaled, come into contact with pawls 40, provided one on each side of the feed-table at proper points to engage with said bearing-blocks to stop the rearward movement of the belts 23 when the forward edge of sheet 24 is in the position indicated in Fig. 2. If the bearing-blocks come in contact with pawls 40 before the bed 7 has reached its position at the rear of the press, the belts 23 will slip on the impression-cylinder during the remainder of the reverse movement of said cylinder.

It will be observed that the construction described in the preceding paragraphs will insure the presence between the impression-cylinder and each sheet of paper which passes through the press of a rubber cushion formed by the rubber sheet 24, so that proper printing contact of the paper sheets with the type on the bed 7 will always be insured no matter how fast the movement of the impression-cylinder and the type-bed. Without some such provision it is impossible to secure in a press of the type described above uniform impressions of the desired clearness when the press is operated at high speed, making it necessary to limit the speed of operation of the press to about one-fourth or one-fifth of that which may be readily attained by the provision of the rubber sheet and associated mechanism hereinbefore described.

It will be seen that the idle roll 21, belts 23, rubber sheet 24, the gripper-fingers, and means for operating them may be readily attached to a press of the ordinary reciprocating-bed and revolving-impression-cylinder type without changing the cylinder or modifying the supporting-frame of the press and that the attachment may be made at small cost, as there is no complicated mechanism employed and but little work is required to put the device in proper position upon the press.

Having thus described the construction and operation of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination in a printing-press, of a type-bed, a rotary impression-cylinder, a sheet of material arranged for movement with said impression-cylinder over the type-bed and between said cylinder and said type-bed, and

paper-gripping members at the forward margin of said sheet.

2. The combination in a printing-press, of a traveling type-bed, a rotary impression-cylinder, a sheet of material arranged for travel between said cylinder and said type-bed with said cylinder, and paper-gripping devices at the forward margin of said sheet.

3. The combination in a printing-press, of a reciprocating type-bed, a rotary impression-cylinder disposed adjacent to the path of said type-bed, a sheet of material arranged for travel between said cylinder and said type-bed with said cylinder, and automatic paper-gripping devices at the forward margin of said sheet.

4. The combination in a printing-press, of a type-bed, a rotary impression-cylinder, a sheet of elastic material arranged for travel between said cylinder and said bed with said cylinder, and paper-gripping devices at the forward margin of said sheet.

5. The combination in a printing-press, of a type-bed, a rotary impression-cylinder, a sheet of elastic material arranged for travel between said cylinder and said type-bed with said cylinder, a batten at the forward margin of said sheet, and a plurality of paper-grippers arranged at the forward margin of said sheet for cooperation with said batten.

6. The combination in a printing-press of a reciprocating bed, a rotary impression-cylinder, an idle roll, endless belts traveling over said impression-cylinder and said idle roll, a sheet of elastic material attached to said belts throughout the greater portion of their length, gripper-fingers provided at the forward edge of said sheet of elastic material, and means for rotating said impression-cylinder.

7. The combination in a printing-press of a reciprocating bed, a rotary impression-cylinder, an idle roll, endless belts traveling over said impression-cylinder and said idle roll, a sheet of elastic material attached to said belts throughout the greater portion of their length, a batten at the forward edge of said sheet, a gripper-shaft attached to said belts in advance of said batten, gripper-fingers on said shaft, means for normally holding said gripper-fingers in engagement with said batten, means for lifting said gripper-fingers out of engagement with said batten, and means for rotating said impression-cylinder.

8. The combination in a printing-press of a reciprocating bed, a rotary impression-cylinder, an idle roll, endless belts traveling over said idle roll and said impression-cylinder, a batten attached to said belts and arranged transversely thereof, a gripper-shaft mounted on said belts in advance of said batten, gripper-fingers on said shaft, means for holding said fingers normally in contact with said batten, an arm attached to said shaft, and stationary members in the path of said arm adapted to contact therewith to rock said gripper-shaft and lift said gripper-fingers out of contact with said batten.

9. The combination in a printing-press of a reciprocating bed, a rotary impression-cylinder, an idle roll, endless belts traveling over said impression-cylinder and said idle roll, a batten attached to said belts and arranged transversely thereof, a pawl supported over each of said belts and adapted to engage said batten and limit its movement in backward direction when the direction of rotation of said impression-cylinder is reversed.

10. The combination in a printing-press of a rotary impression-cylinder, an idle roll, endless belts traveling over said idle roll and said impression-cylinder, a sheet of elastic material attached to said belts throughout a greater portion of their length, tape-carrying rolls, two sets of tapes, one set traveling over one of said tape-carrying rolls and said impression-cylinder and the other set traveling over the tape-carrying rolls and lying beneath and adjacent to the first set of tapes.

11. The combination in a printing-press of a reciprocating bed, a rotary impression-cylinder, an idle roll, endless belts traveling over said idle roll and said impression-cylinder, a tape-carrying roll, tapes traveling over said tape-carrying roll and said impression-cylinder and lying outside of said idle roll, a pair of tape-carrying rolls beneath said set of tapes, and a second set of tapes traveling over said tape-carrying rolls and adjacent to the first-mentioned set of tapes.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

WILLIAM O. TODD.

Witnesses:

U. G. VAN OSDOL,
R. D. PICKRELL.