

(No Model.)

5 Sheets—Sheet 1.

H. A. W. WOOD.
PRINTING MACHINE.

No. 516,386.

Patented Mar. 13, 1894.

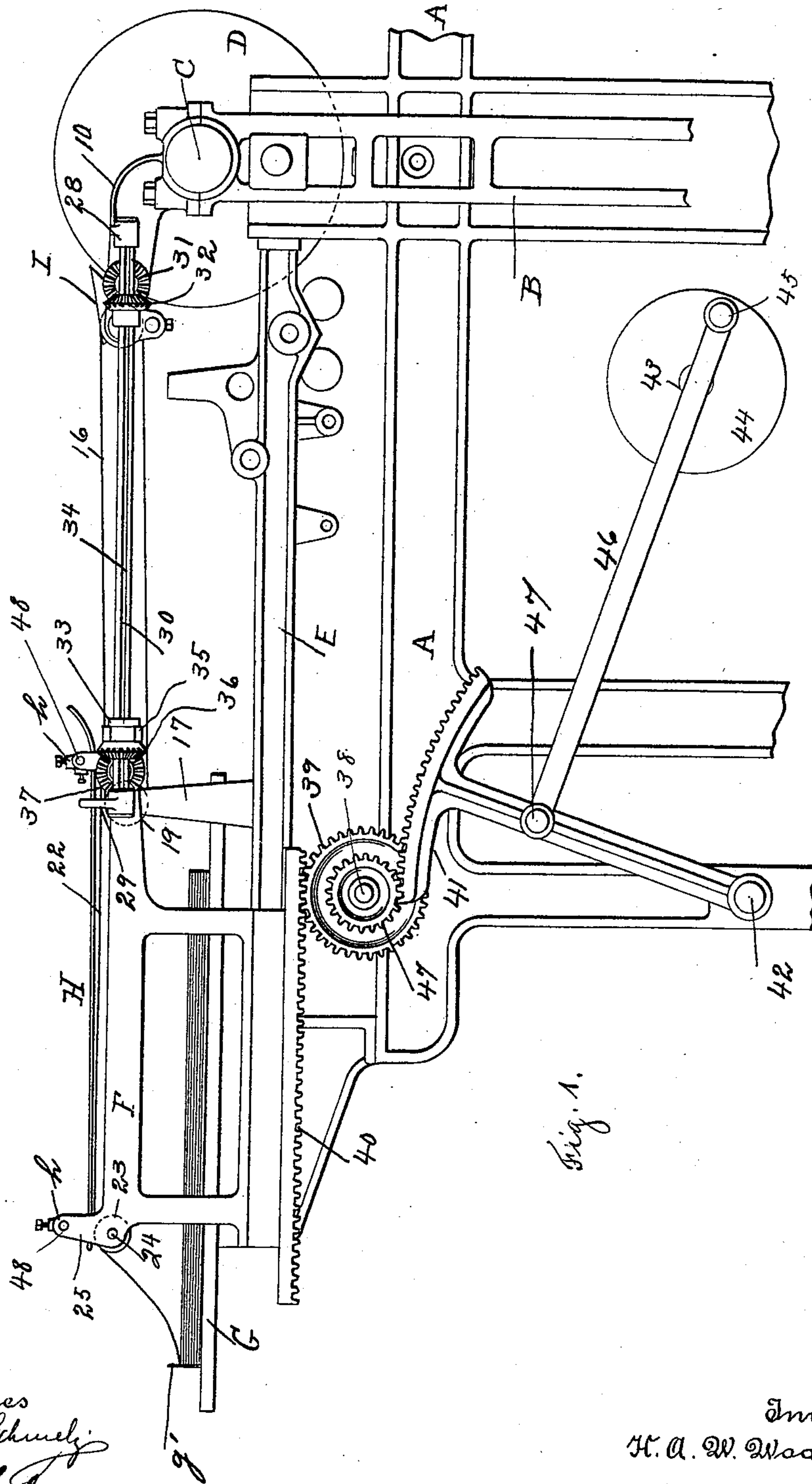


Fig. 1.

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By Attorney
Louis W. Southgate

(No Model.)

5 Sheets—Sheet 2.

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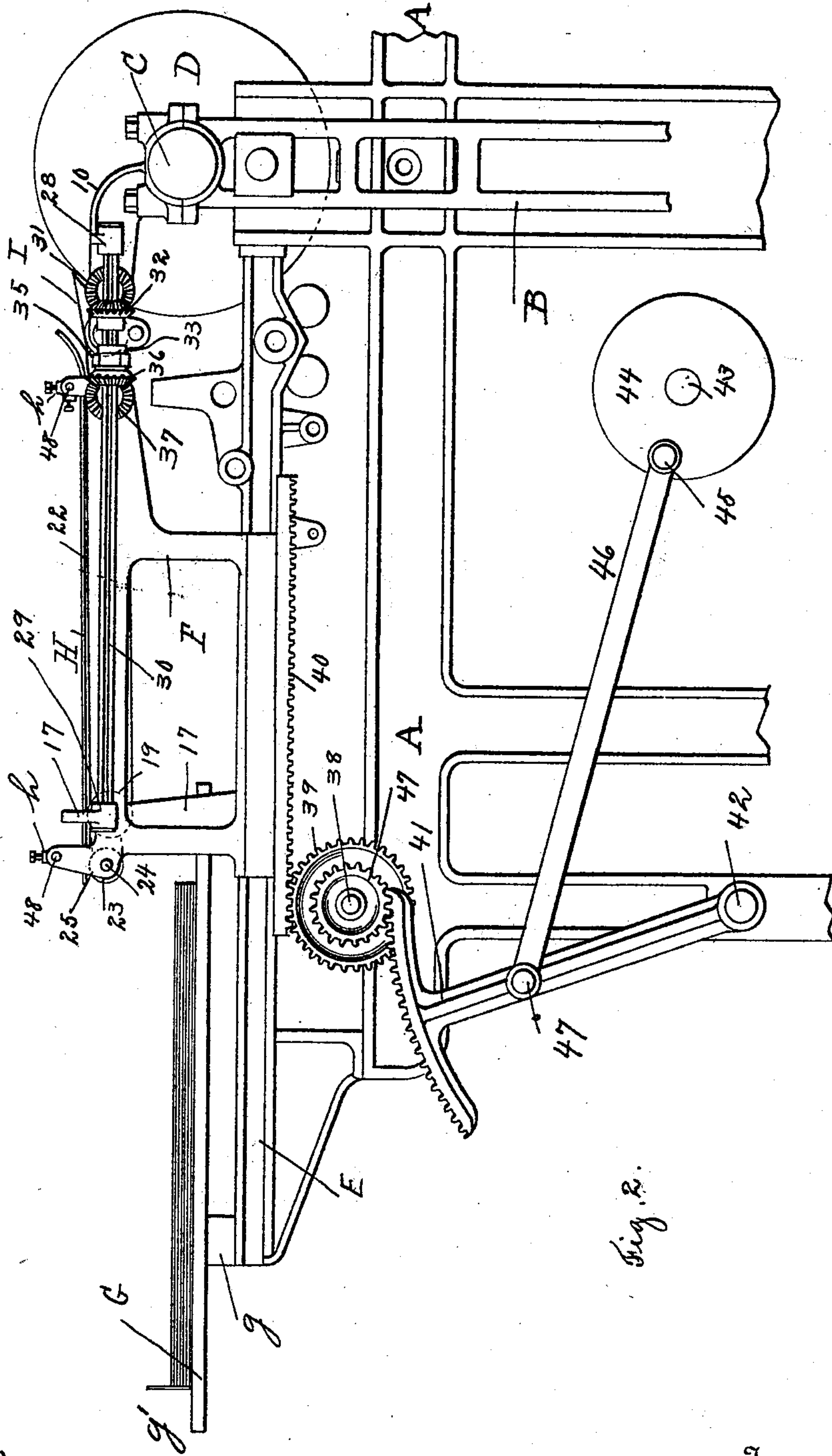


Fig. 2.

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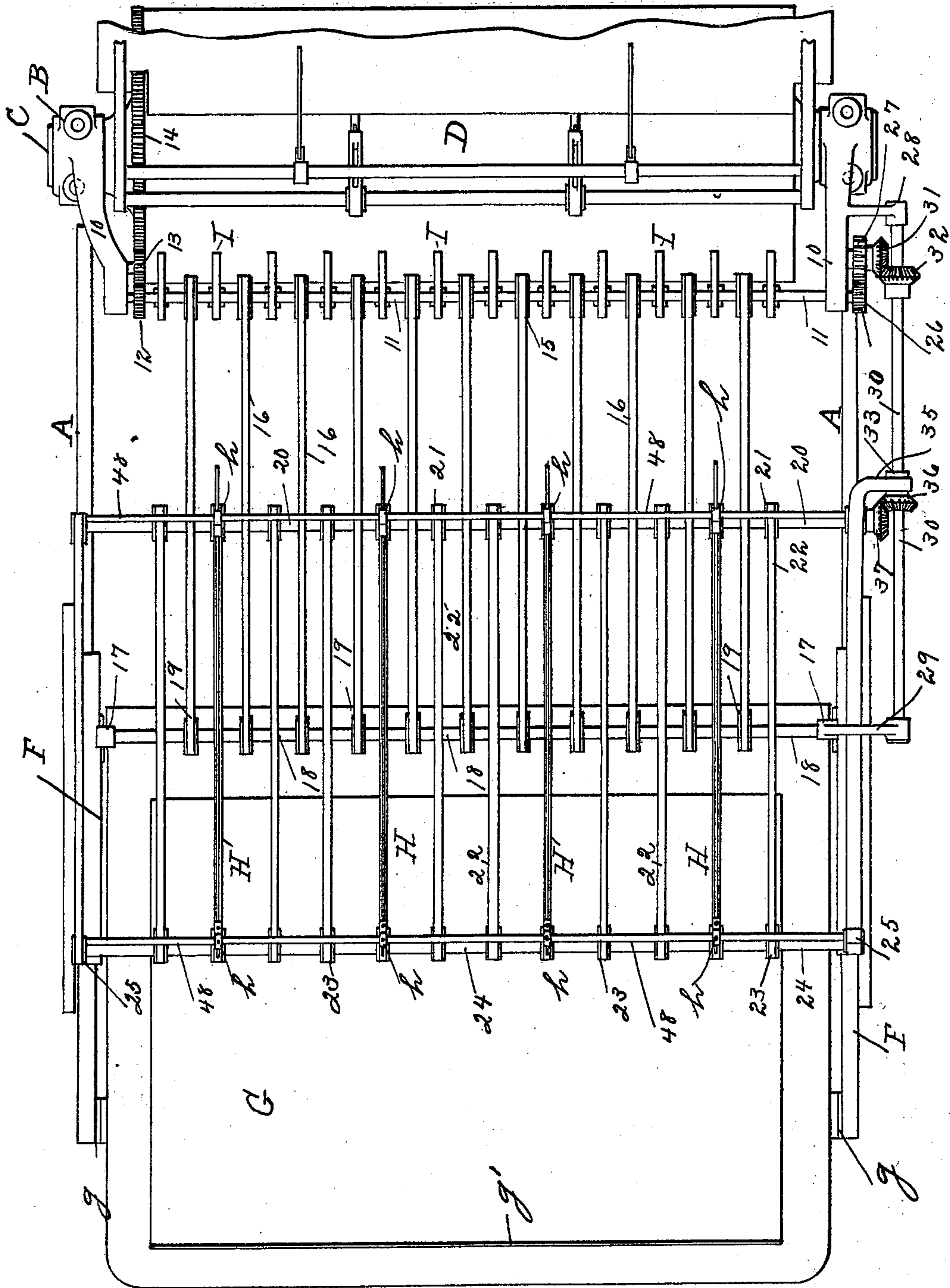
(No Model.)

5 Sheets—Sheet 3.

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Fig. 3

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(No Model.)

5 Sheets—Sheet 4.

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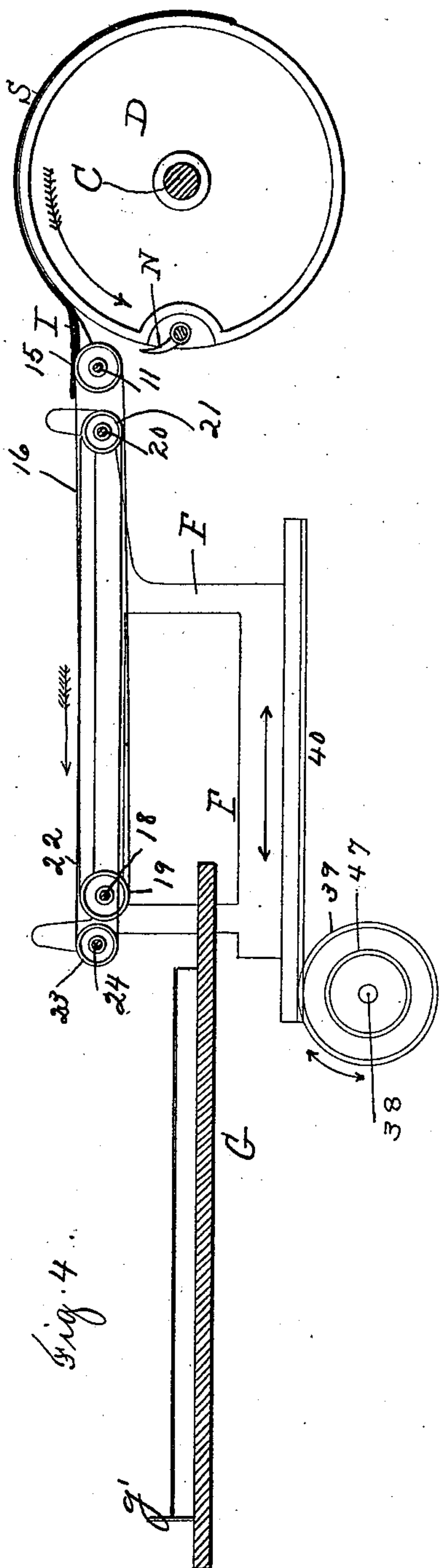


Fig. 4.

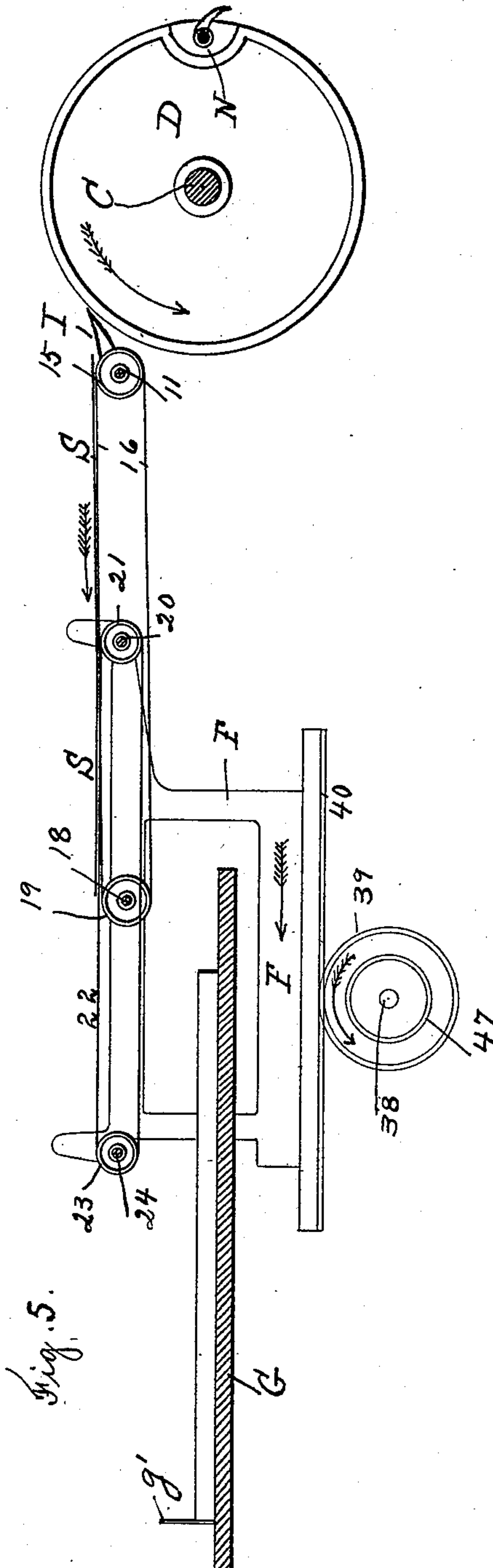


Fig. 5.

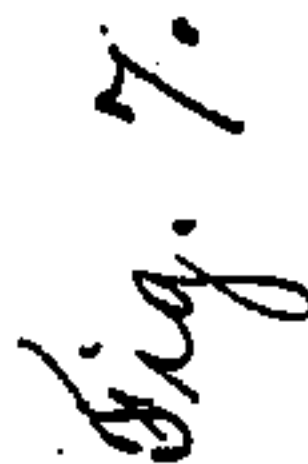
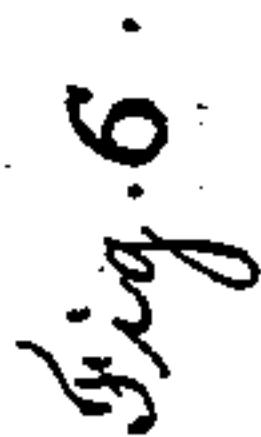
Witnesses
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5 Sheets—Sheet 5.

No. 516,386.

Patented Mar. 13, 1894.



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UNITED STATES PATENT OFFICE.

HENRY A. WISE WOOD, OF NEW YORK, N. Y., ASSIGNOR TO THE CAMPBELL
PRINTING PRESS AND MANUFACTURING COMPANY, OF SAME PLACE.

PRINTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 516,386, dated March 13, 1894.

Application filed May 23, 1893. Serial No. 475,287. (No model.)

To all whom it may concern:

Be it known that I, HENRY A. WISE WOOD, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented new and useful Improvement in Printing-Machines, of which the following is a specification.

The aim of this invention is to produce a new and improved delivery mechanism for cylinder printing presses, and especially one which shall deliver the printed sheets printed side uppermost, always in full sight, without contact of the printed surface with any part, and without the use of grippers.

To this end, the invention consists of the device described and claimed in this specification, and illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a printing press illustrating my invention. Fig. 2 is a view similar to Fig. 1, the traveling carriage being in its opposite position. Fig. 3 is a plan of my improved delivery mechanism, and Figs. 4 to 7 inclusive are diagrammatic views illustrating the different positions of the delivery mechanism while manipulating a sheet.

My invention, broadly speaking, consists of two sets of intermeshing tapes, one set of which is bodily stationary, and the other set of which is bodily moved so as to carry the sheet forward and deliver the same upon the delivery table or delivery device; and the set of bodily movable tapes is preferably run at a lower speed than the speed of the stationary tapes, for a purpose hereinafter described.

Referring to the drawings, and in detail, A represent the usual side frames of the press, in which the parts are mounted in any of the usual manners.

B B represent the usual frames, which carry the shaft C of the impression cylinder D, which frames B B are so operated that the impression cylinder will be in contact with the bed on the printing movement of the same, and out of contact with the bed on the non-printing movement.

Formed above the side frames A A are guide-ways E, as shown, and moving on these guide-ways E is a suitable carriage F, which carries the set of bodily movable tapes.

Arranged at the end of the press is the delivery table, or box G, which is held by suitable supports *g* on the frames E, as shown, and at the end of this delivery table, I preferably arrange stops *g'*, of any of the usual characters.

Arranged on the top of the traveling carriage F are a set of guides or shields H which are held in place by any suitable adjusting means, as *h* to shafts 48 secured between the frames of the carriage, as shown.

A set of the usual stripper-fingers I is arranged to operate in connection with the impression cylinder D, as shown, and the impression cylinder D is arranged to carry the usual set of gripper-fingers N, which manipulate the sheet on the cylinder.

Extending from the frames B are arms or hangers 10, in which hangers 10 is journaled the shaft 11, as shown. This shaft 11 may be positively driven from the impression cylinder by means of a gear 14 secured to the back end of the impression cylinder, as shown in Fig. 3, by means of a suitable intermediate 13, and a gear 12 secured upon the shaft 11. Arranged on this shaft 11 are suitable tape-pulleys 15, as shown, around which run tapes 16. On the frames A of the press, are also arranged hangers 17, in which is journaled a shaft 18, which carries tape-pulleys 19 opposite the tape-pulleys 15, and around which the tapes 16 pass. It will be seen that this set of tapes 16 is thus bodily stationary, and that the same is preferably so arranged that the tapes will travel at the same speed as the peripheral speed of the impression cylinder D; and by means of the usual stripper-fingers I, which may be actuated in any of the usual manners, the sheet will run off the impression cylinder D on to these tapes.

Journaled in the frames of the carriage F is a shaft 20, which carries tape-pulleys 21, and running around which tape-pulleys 21 are the tapes 22. These tapes 22 pass to tape pulleys 23 mounted on a shaft 24, which is journaled in extensions 25 from the carriage frames F. It will be seen that the tapes 16 and 22 are intermeshed so that the tapes 22 can be moved forward and backward without interfering with the tapes 16. Also it will be seen that the tapes 16 are set

on a slight incline, and that the tapes 22 are arranged in a horizontal position, whereby, when the bodily movable tapes 22 are moved up close to the impression cylinder, the head
 5 of the bodily movable tapes that is nearest to the impression cylinder will be below the tapes 16, as shown in Fig. 4. These bodily movable tapes are preferably positively driven, but at a slower speed than the tapes
 10 16, and one convenient way to drive these tapes is by means of a gear 26 fastened on the front end of the shaft 11, which meshes with and drives a gear 27 mounted on a stud secured in the front bearing 10.

15 Journaled in a suitable hanger 28 projecting from the front bracket 10, and in a hanger 29 projecting from the front bracket 17 is a shaft 30. This shaft 30 is driven from the gear 27 by means of the bevel gears 31 and
 20 32, as shown. The shaft 30 is keyed or slotted, as at 34, as shown, and fitting on this shaft, so as to nicely slide on the same, is the bevel gear 36, which has a collar 33, as shown, and fitting between the gear and the collar is a
 25 projecting yoke 35, extending out from the carriage F, as shown. The bevel gear 36 meshes with and drives a bevel gear 37 secured on the shaft 20, as shown. By this means, it will be seen that as the carriage
 30 moves back and forth, the bevel gear 36 will be slid back and forth on the shaft 30; but that by this means, the shaft 20 will be always positively turned at the same speed with the shaft 11, or slightly less, depending
 35 upon the reduction in the gearing, before described. The pulleys 21 and 23 are made smaller than the pulleys 15 and 19; and the whole is so arranged that the speed of the tapes 22 will be approximately about one-
 40 half the speed of the tapes 16. A shaft 38 is mounted in bearings carried by the frames A, and carries two gears 39, which mesh into racks 40 secured to the under side of the carriage frames, as shown. Also secured on this
 45 shaft 38, on the front side thereof, is a pinion 47 into which pinion 47, the segment 41 meshes. This segment 41 is pivoted as at 42.

43 represents a shaft, which is mounted in the framing of the machine in any desired
 50 manner, and is preferably driven by any suitable gearing, not necessary here to describe, so as to turn once for each two revolutions of the impression cylinder D, if my invention is applied to the ordinary two revolution cyl-
 55 nder printing press. This shaft 43 carries a disk 44, which disk 44 has a crank-pin 45, which connects by pitmen 46 to a crank-pin 47, carried by the segment 41. By this means, the carriage F will be reciprocated forward
 60 and backward.

The operation of my improved device can be followed from the diagrammatic figures.

In Fig. 4, the sheet S is shown as just being stripped off of the impression cylinder,
 65 and as running out on to the tapes 16. In

this position of the parts, the carriage F is arranged so as to be approximately at its right-hand position.

In Fig. 5, the impression cylinder is supposed to have made half a revolution, and
 70 the sheet S to be now entirely upon the tapes 16; and it will be noted that the tapes 22 have been moved forward so that the front end of the sheet will rest partially upon these tapes 22, as shown. 75

In Fig. 6, the impression cylinder is supposed to have made another half revolution, and to have taken a second sheet S' down on the same, as shown, the first sheet S in the
 80 meantime having been carried forward on the tapes 22, which tapes 22 are also moving in a direction to force the sheet forward. This will cause the sheet S to run off of the tapes 22 around the tape pulleys 23 down on
 85 to the table G, as shown. Now, during the next half revolution of the impression cylinder, the carriage F will move backward, and the tapes 22 will be gradually peeled away from under the sheet S, and the sheet S will
 90 be allowed to drop on the delivery table, as shown. I preferably drive the carriage F by a crank, as before described, and this crank gives a very nice and appropriate action to
 95 the carriage, in that the same will start up gradually while the sheet first runs on to the tapes 22, and in that the same will start back gradually when the tapes commence to peel
 100 from under the sheet. This will keep the sheet S firmly against the stop g', and will nicely and correctly deliver the sheet printed side
 105 uppermost on the table G. Of course, any other suitable mechanism, as a cam could be used; if desired, to actuate the carriage F. The guard or shield H placed above the tapes 22, will prevent the sheet from being dis-
 110 placed, or from curling up during its forward motion.

By my improved device, the sheet will be delivered from the ordinary printing press,
 110 printed side up, without the use of grippers, and without the contact of the printing surface with any of the parts.

My invention, of course, is applicable to any form of cylinder printing press, whether the
 115 same is a single or multi-revolution press, or whether the same has one or more cylinders, or whether the cylinder oscillates.

The details of the invention herein shown and described, may be greatly varied by a
 120 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
 125 Patent, is—

1. The combination in a delivery mechanism of two sets of tapes, on to one set of which
 130 the sheet first passes, the second set intermeshing with the first set, and taking the sheet from the first set, and delivering the same, the

second set of tapes being bodily moved forward and backward to accomplish the delivery of the sheet, substantially as described.

2. The combination in a delivery mechanism of the impression cylinder, the set of tapes on to which the sheet passes from the impression cylinder, the set of intermeshing tapes on to which the sheet passes from the first set of tapes, means for bodily moving the second set of tapes, and means for driving this second set of tapes, so that as the same moves backward toward the impression cylinder, the sheet will be delivered, substantially as described.

3. The combination in a delivery mechanism of the impression cylinder, a set of tapes, means for driving these tapes, a second set of tapes which intermesh with the first set, means for bodily moving this second set of tapes forward and backward, and means for driving this second set of tapes at a speed slower than that at which the first set of tapes are driven, substantially as described.

4. The combination in a delivery mechanism of the impression cylinder, the shafts as 18 and 11 mounted in the framing of the machine, and carrying tape-pulleys around which a set of tapes are passed, means for driving this set of tapes, of the carriage F carrying the shafts as 20 and 24, these shafts having tape pulleys around which a second set of tapes is passed, the second set of tapes being arranged to intermesh with the first set, means for driving this second set of tapes, and means for reciprocating said carriage, substantially as described.

5. The combination in a delivery mechanism of the impression cylinder, a set of tapes arranged so that the sheet can be delivered on to the same from the impression cylinder, a second set of tapes intermeshing with the

first set of tapes, on to which second set of tapes the sheet passes from the first set of tapes, means for driving the two sets of tapes, means for reciprocating the second set of tapes bodily backward and forward, and suitable guards or shields arranged above the second set of tapes, the second set of tapes being arranged to intermesh with the first set, substantially as described.

6. The combination in a delivery mechanism of the impression cylinder, the first set of tapes on to which the sheet passes from the impression cylinder, a second set of tapes intermeshed with the first set of tapes, means for bodily reciprocating the second set of tapes to deliver the sheet, means for driving the first set of tapes, and means for driving the second set of tapes, consisting of a positively driven shaft arranged parallel to the movement of the second set of tapes, a bevel gear moving with the second set of tapes on this shaft, and meshing with a bevel gear arranged to drive the second set of tapes, substantially as described.

7. The combination in a delivery mechanism of the impression cylinder, a set of tapes which are adapted to receive the sheet from the impression cylinder, gearing for driving this set of tapes, a second set of tapes mounted in a reciprocating carriage and intermeshing with the first set and a crank mechanism adapted to reciprocate said carriage, substantially as described.

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

H. A. WISE WOOD.

Witnesses:

LOUIS W. SOUTHGATE,
E. M. HEALY.