

No. 842,974

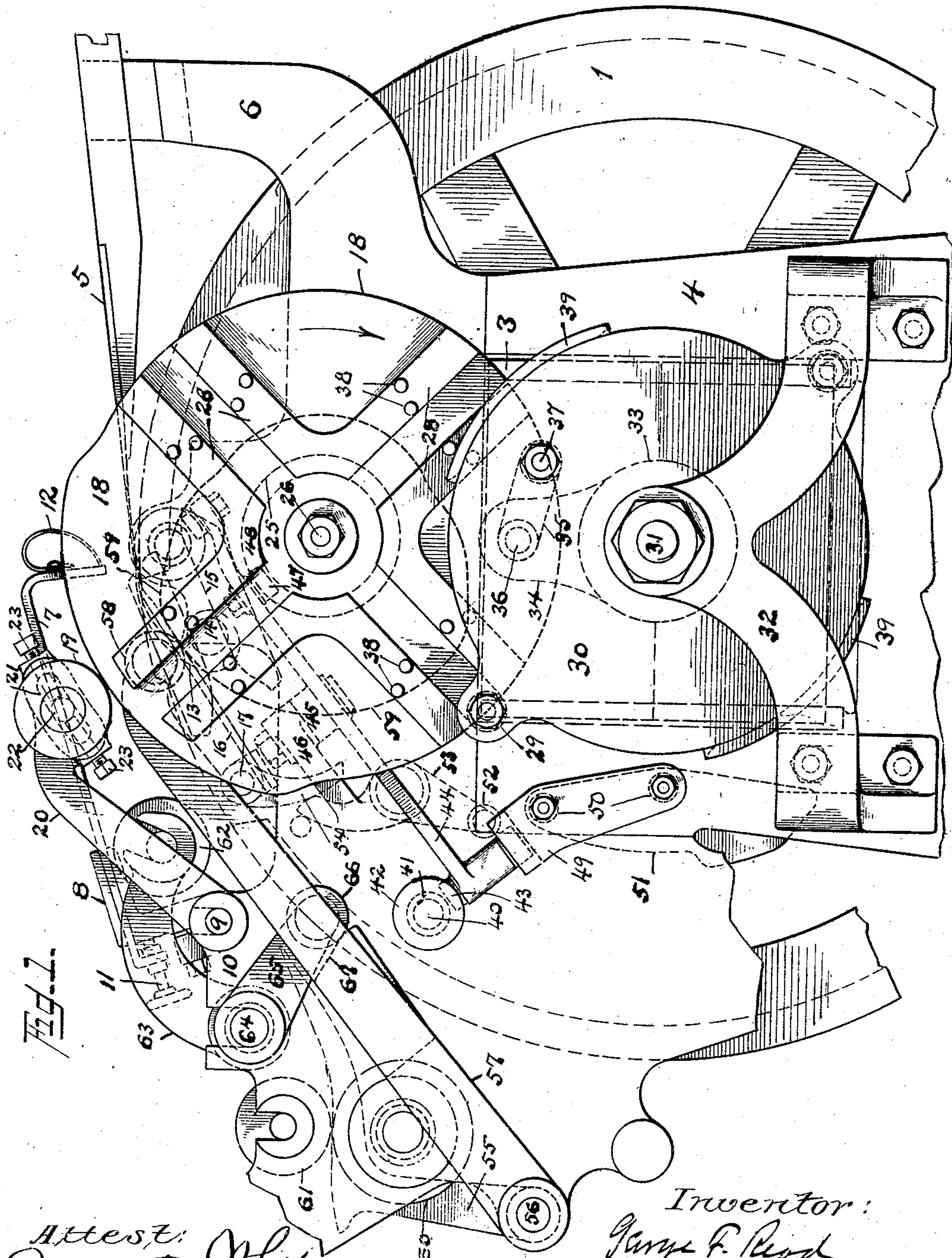
PATENTED FEB. 5, 1907.

G. F. READ.

FRONT STOP OPERATING MECHANISM FOR PRINTING MACHINES.

APPLICATION FILED APR. 27, 1906.

2 SHEETS—SHEET 1.



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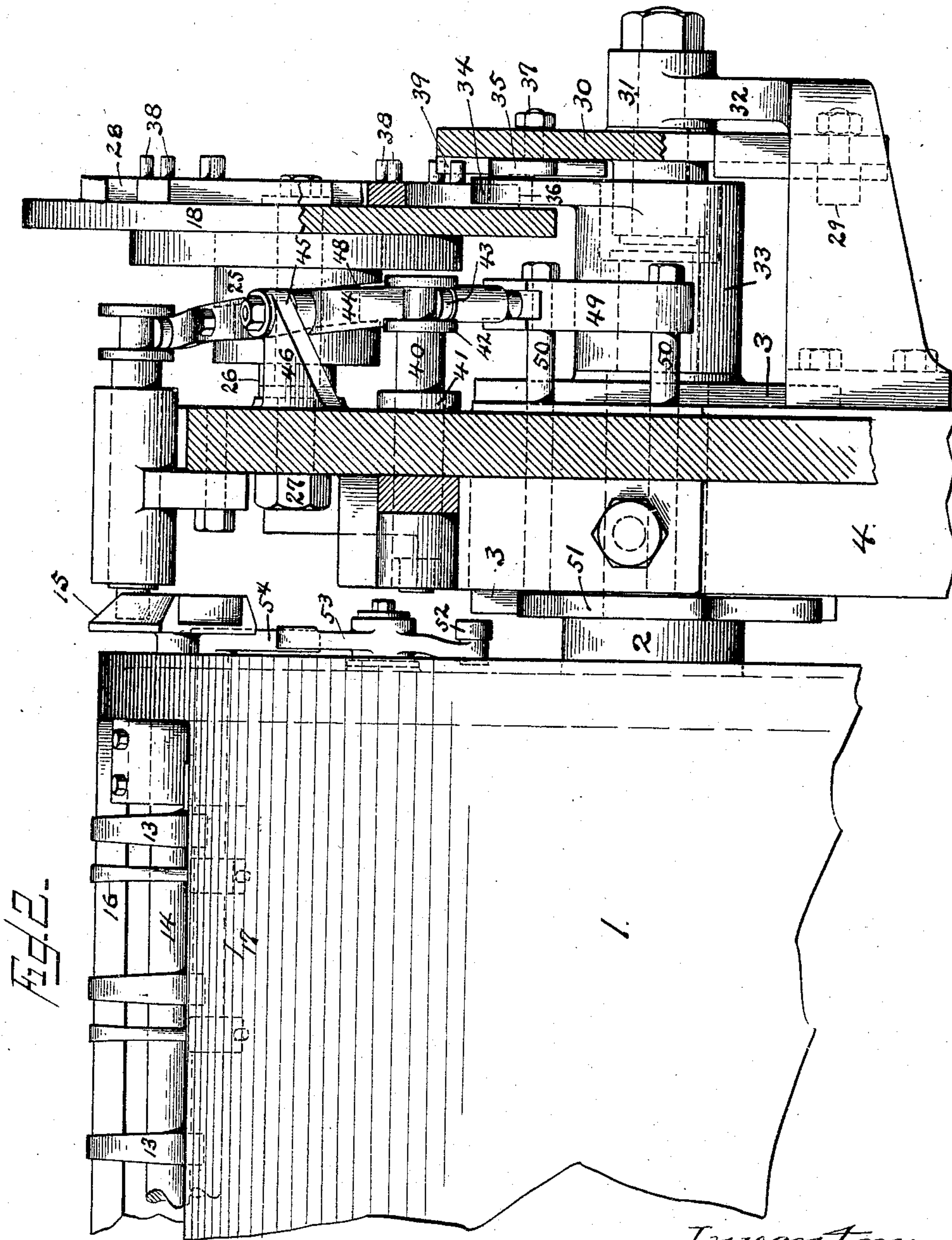


Fig. 2.

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UNITED STATES PATENT OFFICE.

GEORGE F. READ, OF NEW YORK, N. Y., ASSIGNOR TO ROBERT HOE, OF NEW YORK, N. Y.

FRONT-STOP-OPERATING MECHANISM FOR PRINTING-MACHINES.

No. 842,974.

Specification of Letters Patent.

Patented Feb. 5, 1907.

Application filed April 27, 1906. Serial No. 313,928.

To all whom it may concern:

Be it known that I, GEORGE F. READ, a citizen of the United States, residing at New York, county of Kings, and State of New York, have invented certain new and useful Improvements in Front-Stop-Operating Mechanisms for Printing-Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to certain improvements in printing-machines.

In printing-machines employing sheet-carriers, and more particularly in that class of machines in which the sheets are fed to the sheet-taking devices of the carrier, the movement and position of the sheets being controlled by a front stop, it is desirable that the stop remain in operative position as long as possible, so as to give as much time as possible for these operations, and then to quickly raise the front stop out of the way, so as to permit the grippers to take the sheet. In certain classes of such machines—as, for instance, in two-revolution printing-machines—the front stop has been operated from a cam driven by gearing which gave the cam a regular rotary movement. With this construction it has been difficult to arrange the mechanism in such a way as to allow the stop to remain in position for the desired length of time and then to raise it quickly.

The present invention has for its object to produce an improved mechanism for operating the front stop and, if desired, the other connected devices of a rotating sheet-carrier, said mechanism being of such a character as to permit the stop to remain in operative position for as long a time as possible and then to move it quickly out of the way.

With these and other objects in view the invention consists in certain constructions and in certain parts, improvements, and combinations, as will be hereinafter fully described and then specifically pointed out.

Referring to the accompanying drawings, Figure 1 represents in side elevation so much of a printing-machine as is necessary to an understanding of the invention. Fig. 2 is a front elevation, partly in section, of the construction illustrated in Fig. 1.

The machine selected to illustrate the invention is a printing-machine of the two-revolution type. The printing-cylinder is indi-

cated at 1, this cylinder being mounted on a shaft 2, supported in sliding boxes 3, which are carried in the side frames 4. As is well known, in two-revolution machines the cylinder is in printing contact with the bed on one revolution and is raised to make its delivery revolution while the bed is returning. Various mechanisms are known in the art for producing this movement of the cylinder; but no mechanism of that character is here illustrated, as it would in no way conduce to a better understanding of the invention.

The sheets may be fed to the cylinder in any desired way—as, for instance, over a feed-board 5, supported on suitable brackets 6, rising from the frame.

The construction of the sheet-stop or, as it is sometimes termed, “front guide” employed may be of any suitable description. In the construction illustrated the stop comprises a plurality of angular finger-bars 7, these bars being mounted in a bracket 8, supported on a shaft 9, suitably supported in bearings in brackets 10, rising from the frame. A hand-wheel adjustment 11 (indicated in dotted lines in Fig. 1) may be employed for the bars, if desired, and the front end of the bars are or may be provided with the usual sheet-controlling springs 12.

The sheet-taking devices of the cylinder may be of any suitable description. As illustrated, gripper-fingers 13, working in the usual gap in the cylinder, are employed, these fingers being mounted on a shaft 14, journaled in the cylinder-heads and provided with a grooved tumbler-block 15. Shoo-fly fingers 16 may be employed, if desired, these fingers being mounted on a shaft 17. (Indicated in dotted lines in Fig. 2.)

The operating means for the front stop or front guide will be such as to give the guide a quick movement to raise it out of the way of the sheet-taking devices when they are to come into operation. The particular construction of these operating devices may be widely varied; but they will comprise means by which the operating devices are given an intermittent rotary movement. In the best constructions and as illustrated the operating devices will include a rotary actuator, which may include a rotary cam 18, this cam coöperating with a roll 19, mounted on an arm 20, which is fast on the shaft 9. If desired, the roll may be made adjustable on the

arm, a convenient mode of adjustment being that illustrated. As shown, the arm is provided with a slot (indicated by dotted lines at 21 in Fig. 1) in which a stud 22, on which the roll is mounted, is located, the position of the stud in the slot being determined by set-screws 23. By shifting the position of the roll a very exact adjustment of the time of operation of the stop may be effected.

When the actuator comprises a rotary cam-it should be given intermittent movements. The constructions by which these intermittent movements may be effected may be varied within wide limits. As shown, the cam is secured to a hub 25, mounted on a stud 26, which is attached to the frame 6, a convenient mode of attachment being to thread the end of the stud and provide it with a nut 27. The face of the cam is provided with grooved arms 28, which may be either formed integral with the cam or secured thereto in any suitable manner, these grooved arms being successively engaged by studs 29, mounted on a driver, this driver, as shown, consisting of a disk 30, mounted on a stud 31, this stud being supported in a bracket 32, secured to the frame. The driver referred to may be operated in any suitable manner. As shown, the shaft of the cylinder is provided with a hub 33, on which is mounted a crank-arm 34. When the driver is operated from a crank-arm on the cylinder and the invention is employed in connection with two-revolution printing-machines, the connection between the crank-arm and the driver should be such as to compensate for the vertical movement of the cylinder. A simple form of this compensating connection is that shown—viz., a link 35, pivoted to the crank-arm at 36 and to the driver at 37.

The movement of the cam should be positively stopped. In the construction illustrated this is effected by providing the grooved arms 28 with a series of pairs of pins 38, which as each movement of the cam is completed are engaged by one of a pair of ribs 39, carried on the circumference of the driving-disk 30. This form of driving mechanism is such that the cam is given intermittent movements which are very rapid and the length of which is positively determined. The movements, furthermore, start easily, but because of peculiar character of the driving mechanism by which the movements are effected increase in rapidity. The parts can be operated, therefore, without shock, and, further, the operation of the stop may be timed so as to occur at the time when the cam is being given its rapid movement, so that the stop will be quickly operated.

The construction described also lends itself readily to the operation of the sheet-taking devices. While the connection by which the operation of the sheet-taking devices is effected may be of any suitable char-

acter, as shown the tumbler-block 15, before referred to, is operated, as is usual, by a pair of sliding pins 40, these pins being supported in bosses 41 in the frame. The ends of these pins are provided with collars 42, which are engaged by studs 43 on the ends of a double lever 44, pivoted at 45 to a bracket 46, supported on the frame. This lever is provided with an operating-stud 47, which runs in a cam-groove 48, formed in the hub 25, before referred to. As the actuator-cam is rotated by the means before described, the cam-groove will cause the two-armed lever to bring one or the other of the pins into position so as to operate the tumbler-block to open and close the grippers, as may be desired. If desired, the two-armed lever, when it is employed, may be used to operate the shoo-fly fingers. In the construction illustrated the lower end of the lower stud 43 takes into a grooved cross-head 49, this cross-head being connected by bars 50 to a sliding cam 51, located inside the frame. This sliding cam is, by means of the connections referred to, shifted into the path of a roller 52, mounted on a rock-lever 53, pivoted on a stud fast to the cylinder-head. One of the arms of this rock-lever is in the path of and strikes, when the lever is operated, an arm 54, fast on the shoo-fly shaft 17.

Suitable devices may be employed, if desired, to control the feeding and delivery of the sheet after it has been released by the grippers. In the construction shown there is provided a plurality of switches, one of which is illustrated at 55 in Fig. 1, these switches being mounted on a shaft 56, to which is connected an operating-arm 57, which is provided with a roll 58, (see dotted lines in Fig. 1,) which runs on the surface of the cam 59, secured to the hub 25, which carries the cam 18. At the proper time, therefore, the sheet is directed by the switches over a delivery-roll 60, which may be, as is usual, a tape-roll, and may have a roll 61 cooperating therewith.

In order to insure that the sheet is forwarded by the cylinder after being released by the grippers, there may be provided a propelling-roll 62, this roll being mounted in bearings in an arm 63, pivoted on a shaft 64. This shaft, as illustrated, has an operating-arm 65 extending therefrom, which carries a roll 66, this roll bearing against a cam-block 67, secured to the operating-arm 57 of the switch. As the switch drops, therefore, the propelling-roll will drop, the shaft 54 being rocked downward by the weight of the roll.

The construction by which the invention is carried into effect may be varied widely. The invention is not, therefore, to be limited to the specific construction herein shown and described.

What is claimed is—

1. The combination with a sheet-carrier

having sheet-taking devices, of means whereby sheets may be presented thereto, a front stop, rotating operating means for the stop, and means for giving said operating means an intermittent movement.

2. The combination with a sheet-carrier having sheet-taking devices, of means whereby sheets may be presented thereto, a front stop, a rotating actuator, means whereby the actuator operates the stop, connections whereby the actuator operates the sheet-taking devices, and means for giving the actuator an intermittent movement.

3. The combination with a sheet-carrier having sheet-taking devices, of means whereby sheets may be presented thereto, a front stop, a rotating cam for operating the stop, and means for giving the cam an intermittent movement.

4. The combination with a sheet-carrier having grippers, of means whereby sheets may be presented thereto, a front stop, an actuator including a cam, means for giving the actuator intermittent rotary movements, connections whereby the actuator-cam operates the stop, gripper-operating devices, and connections from the actuator to the gripper-operating devices.

5. In a two-revolution printing-machine, the combination with a cylinder, of a shaft therefor, a front stop, an actuator, a driver therefor, connections whereby the driver gives the actuator intermittent rotary movements, a crank on the cylinder-shaft, compensating connections between the crank and the driver, and means whereby the actuator operates the front stop.

6. In a two-revolution printing-machine, the combination with a cylinder, of a shaft on which the cylinder is mounted, grippers mounted on the cylinder, an actuator, a driver therefor, connections whereby the driver gives the actuator intermittent rotary movements, a crank on the cylinder-shaft, compensating connections between the crank and the driver, and connections whereby the actuator operates the front stop and grippers.

7. The combination with a carrier having sheet-taking devices, of a front stop, an actuator including a cam, connections whereby the actuator operates the sheet-taking devices and stop, a driver for the actuator, and means for effecting an intermittent engagement between the driver and the actuator.

8. The combination with a carrier having sheet-taking devices, of a front stop, an actuator including a cam, connections whereby the actuator operates the sheet-taking devices and stop, a driver for the actuator, means for effecting an intermittent engagement between the driver and the actuator, means for positively stopping the movement of the actuator.

9. In a two-revolution printing-machine, the combination with a cylinder, of a shaft on which the cylinder is mounted, sheet-taking grippers, a front stop, an actuator including a cam, a rotary driver, connections whereby the actuator operates the grippers and stop, means for effecting intermittent engagement between the driver and the actuator, a crank on the cylinder-shaft, and a link connection between the crank and the driver.

10. In a two-revolution printing-machine, the combination with a cylinder, of a shaft on which the cylinder is mounted, sheet-taking grippers, a front stop, an actuator including a cam, a rotary driver, connections whereby the actuator operates the grippers and stop, means for effecting intermittent engagement between the driver and the actuator, a crank on the cylinder-shaft, a link connection between the crank and the driver, and means for positively stopping the movement of the actuator.

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

GEORGE F. READ.

Witnesses:

F. W. H. CRANE,
L. ROEHM.