M. A. DROITCOUR.

MECHANICAL MOVEMENT.

APPLICATION FILED JUNE 15, 1911.

1,077,815.

Patented Nov. 4, 1913.

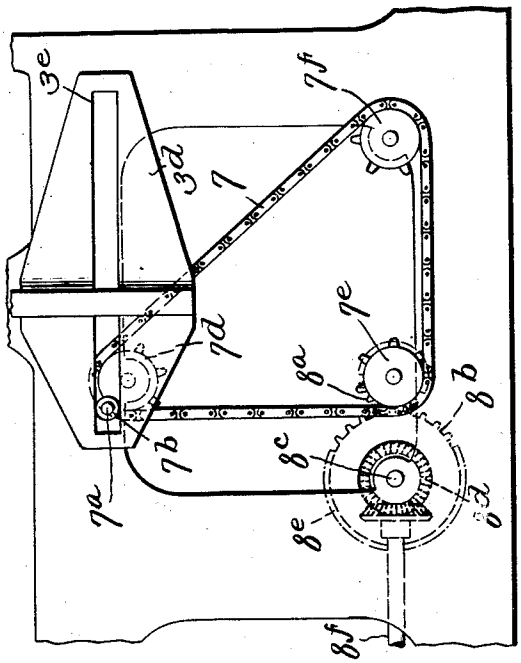


Fig. 2.

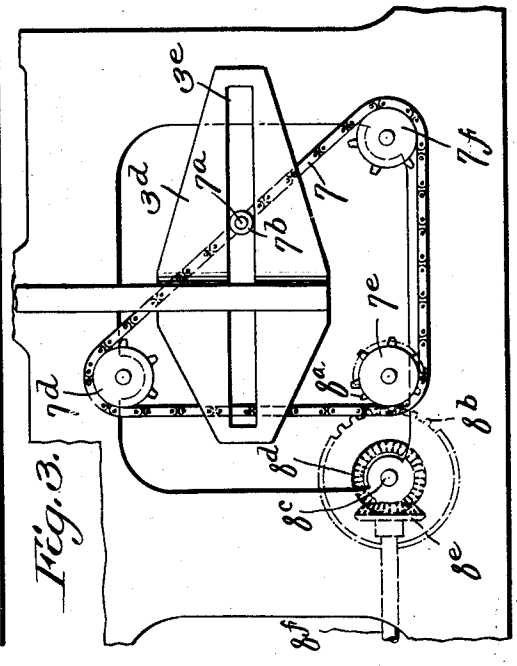


Fig. 3.

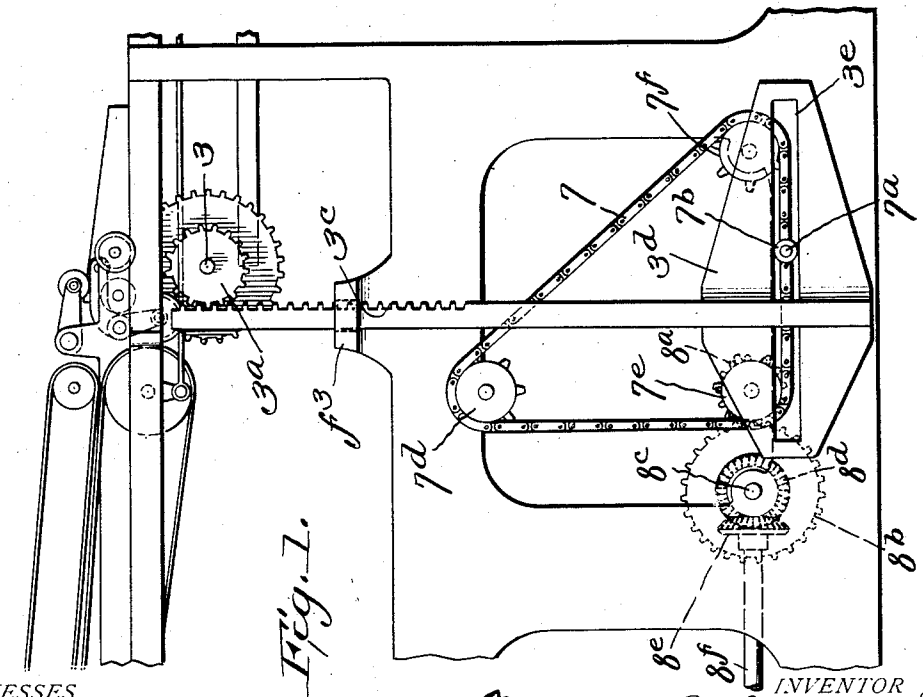


Fig. 1.

WITNESSES

Allen M. Holmes

James B. Mansfield

INVENTOR

By Michael A. Droitcour

Alexander & Fowler

Attorneys

UNITED STATES PATENT OFFICE.

MICHAEL ANDREW DROITCOUR, OF OAK PARK, ILLINOIS, ASSIGNOR TO MIEHLE PRINTING PRESS AND MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

MECHANICAL MOVEMENT.

1,077,815. Specification of Letters Patent. Patented Nov. 4, 1913.

Original application filed February 24, 1911, Serial No. 610,543. Divided and this application filed June 15, 1911. Serial No. 633,431.

To all whom it may concern:

Be it known that I, MICHAEL A. DROITCOUR, of Oak Park, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Mechanical Movements; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

The present application is a division of an application for patent on sheet delivery mechanism filed by me February 24th 1911, Serial No. 610,543.

This invention is a novel mechanical movement which while originally designed for use in operating delivery mechanism of sheet printing presses, is also adaptable to many other purposes in mechanical arts, particularly where it is desired to impart irregular reciprocatory movements to parts.

The object of the present invention is to enable one member of the movement to be reciprocated for any desired length of stroke, and if desired with different speeds on its strokes; and with dwells between the strokes; and to be reversed at the ends of its strokes with an easy and practically true crank motion.

The invention is such that movements of this character may be effected by very simple means accurately and smoothly.

In the accompanying drawings I have shown one form of mechanical movement embodying the invention, and which in connection with the following description will enable any one to understand, construct and operate same; but the invention,—as will appear when its mode of operation and general construction is understood,—is capable of embodiment in a variety of mechanical forms to produce a variety of reciprocating movements or motions, and therefore I refer to the claims for summaries of the essential features and combinations of parts of the invention for which protection is desired.

In said drawings—Figure 1 is a detail side elevation of part of my novel mechanical movement applied to the delivery mechanism of a printing press. Fig. 2 is an elevation of the mechanical movement shown in Fig. 1 with the parts in different position. Fig. 3 is a similar view showing the parts in another position.

In said drawings 3 designates a shaft from which the sheet delivery carriage of a printing press may be actuated; such sheet delivery mechanism forms no part of the present application and therefore is not described herein; but is fully disclosed in my aforesaid application. This shaft 3 is oscillated, so as to move the delivery carriage back and forth as explained in said application, by the novel mechanical movement forming the subject-matter of the present application. As shown this shaft 3 has a pinion 3^a on one end which is engaged by a reciprocatory rack bar 3^c which rack bar is attached to a cross-head or yoke 3^d forming part of my mechanical movement which I will now describe,—first remarking that the bar 3^c or cross-head or yoke 3^d may be guided by any suitable means. As shown the bar 3^c is guided in a bracket f^3 attached to the frame.

The mechanical movement.—In the example illustrated in the drawings the movement comprises a cross-head or yoke 3^d having a longitudinal slot 3^e. The slot 3^e is engaged by a suitable device, such as a roller 7^b on a pin 7^a, attached to an endless carrier 7, such as a chain, band, rope, or belt, running over suitable supporting and driving pulleys or wheels.

I have for purposes of illustration shown the carrier as a sprocket chain and running over three sprocket-gears 7^d, 7^e, 7^f, which may be arranged as desired in one plane. The gears 7^e, 7^f, are shown located in substantially the same horizontal plane, and the gear 7^d as located substantially vertically above the gear 7^e, so that there is a horizontal run of the carrier 7 between the gears 7^f, 7^e; a vertical run of the carrier 7 between the gears 7^e, 7^f; and an inclined run of the carrier between the gears 7^d, 7^f. The yoke-engaging device 7^a on the carrier traverses a path conforming to the run of the carrier; and in passing from the gear 7^e to the gear 7^d on the vertical run of the carrier it will raise the yoke 3^d and rack bar quickly and evenly, (assuming the carrier to be traveled at uniform speed,) and thereby impart a practically uniform rotary motion to the shaft 3. The yoke 3^d (and shaft 3) is

slowed down and stopped and its motion reversed as and while pin 7^a passes over the gear 7^d; and then the yoke is lowered (and shaft 3 is rotated reversely) at practically uniform but slower speed, while the pin 7^a is passing from gear 7^d to gear 7^t; and the yoke (and shaft 3) is slowed down and stopped, as and while the pin 7^a is passing around and under gear 7^t; and during the time that the pin is moving from gear 7^t to gear 7^e the yoke remains stationary (and no motion is imparted to the shaft 3) until the pin reaches the ascending side of gear 7^e. The carrier may be traveled in various ways: For example, gear 7^e may be keyed to a shaft on which is a pinion 8^a meshing with a pinion 8^b on a shaft 8^c carrying a bevel gear 8^d meshing with a bevel gear 8^e on a counter-shaft 8^f which may be driven from any suitable part of the machine to which the invention is applied. The yoke 3^d can thus be moved (and shaft 3 may thus be rotated) in one direction more slowly than it is in the other, and may be stopped during the time that the pin 7^a is traveling from gear 7^t to gear 7^e; and by varying the relative locations and distances apart of the sprocket-wheels or pulleys supporting the carrier, the pin can be made to traverse any desired path, and thus give any desired irregular or variable reciprocatory movements to the yoke 3^d (and corresponding irregular rotary motions to shaft 3). The yoke 3^d may be immediately connected to the part to be moved to give corresponding irregular motions thereto; or it may be mediately connected to the part to be operated; one mediate connection between the yoke and an oscillatory shaft 3 being indicated in the drawings.

It will be obvious from the foregoing that the invention is capable of embodiment in various forms and that it is not restricted to the specific arrangement indicated in the drawings, and I do not intend to limit myself by mere terminology of parts such as "yoke", "pin", "chain", etc., to the particular parts set forth; as such terms are intended to include any substantial equivalents for the parts so designated.

What I claim is:

1. In a mechanical movement for converting rotary into irregular reciprocatory movement, an endless carrier, means for causing the carrier to travel in an irregular path, a member movable in a plane parallel with that of the carrier, and means on the carrier engaging the member whereby the latter is reciprocated with different speeds on its alternate strokes when the carrier is traversing its path.

2. In a mechanical movement, an endless carrier, means for guiding the carrier in an endless angular path, and a reciprocatory yoke movable in a plane parallel with the plane of the carrier, and a device on and movable with the carrier and engaging said yoke whereby the latter is reciprocated with different speeds on its alternate strokes as the carrier is traversing its path.

3. In a mechanical movement for converting rotary into irregular reciprocatory movement, an endless carrier, means for causing the carrier to travel in an irregular path, a slotted yoke moving in a plane parallel with that of the carrier, and a device on the carrier engaging the slot of the yoke whereby the latter is reciprocated and at times caused to dwell when the carrier is traversed.

4. In combination, an oscillatory shaft, a gear on said shaft, a reciprocating rack bar engaging said gear, and a slotted yoke on said rack bar; with an endless carrier beside said bar, means for guiding the carrier in an angular path, and a device on said carrier engaging the slot in the yoke to reciprocate the latter.

5. In combination, an oscillatory shaft, a gear on said shaft, a reciprocating rack bar engaging said gear, and a slotted yoke on said rack bar; with an endless carrier beside said bar, a triangularly arranged set of pulleys supporting said carrier, and a device on said carrier engaging the slot in the yoke to reciprocate the latter.

6. In combination, a reciprocating rack bar, a slotted yoke on said rack bar, a triangularly disposed set of pulleys beside the bar, an endless carrier running over said pulleys, and a pin connected with said carrier engaging the slot in the yoke.

7. In combination, a shaft, a gear on said shaft; a reciprocating rack bar engaging said gear, a slotted yoke on said rack bar; an endless carrier beside said bar, triangularly disposed pulleys supporting said carrier, and a pin on said carrier engaging the slot in the yoke.

8. In combination, an oscillatory shaft, a gear on said shaft, a reciprocating rack bar engaging said gear, a slotted head on said rack bar, a triangularly disposed set of sprocket gears, an endless sprocket chain running over said gears, and a pin connected with said chain engaging the slot in the head.

In testimony that I claim the foregoing as my own, I affix my signature in presence of two witnesses.

MICHAEL ANDREW DROITCOUR.

Witnesses:
PERCY G. SHAW,
GEO. R. WHATLEY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."