M. E. PETERS, G. H. FATH & A. F. MILLER.

BOX TRANSFERRING MECHANISM FOR BOX OR PACKAGE TRANSMISSION MACHINES.

APPLICATION FILED SEPT. 25, 1916.

1,239,819.

Patented Sept. 11, 1917.

2 SHEETS—SHEET 1.

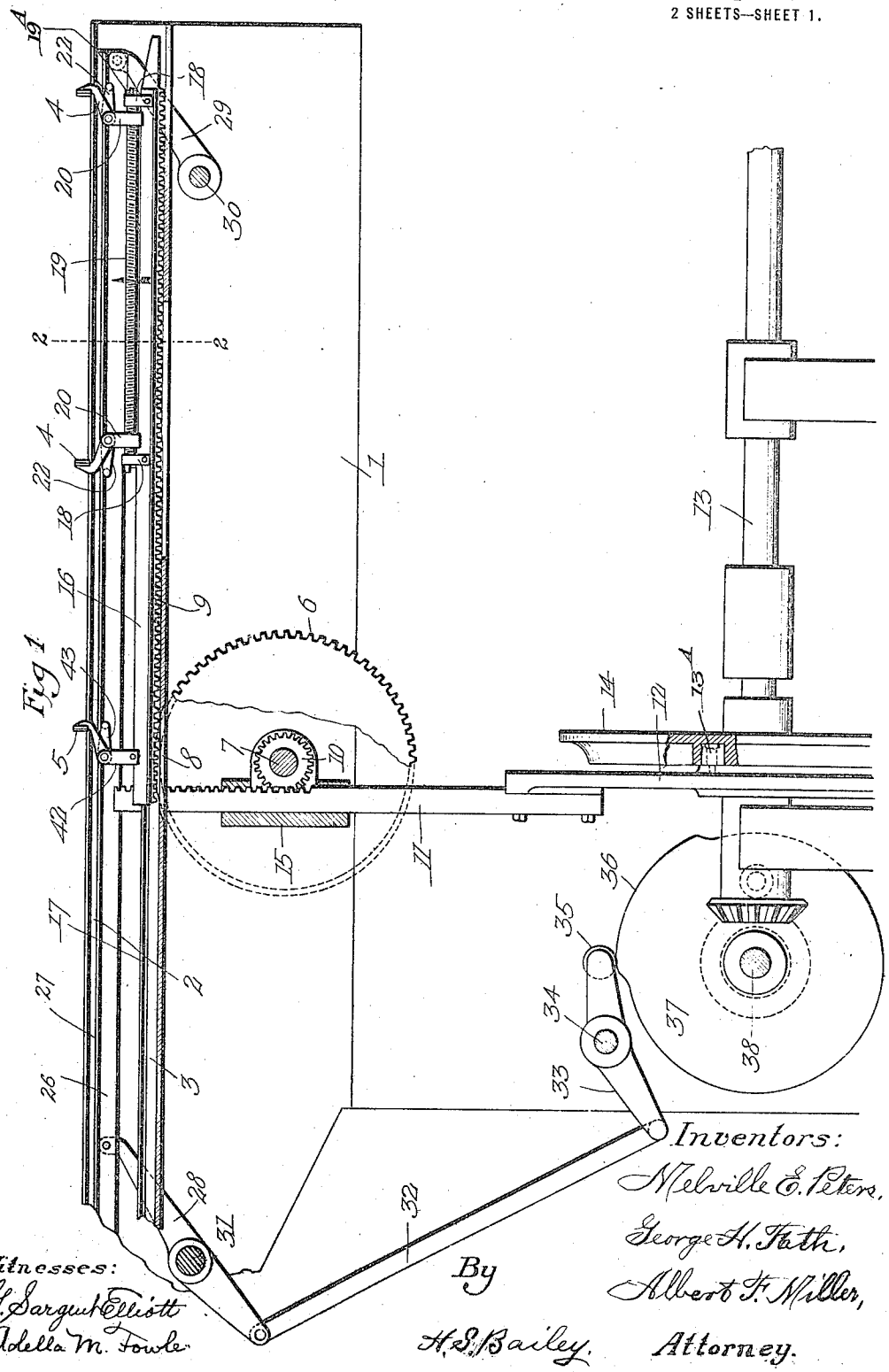


Fig 1

Witnesses:
G. Sargent Elliott
Adella M. Fowle

Inventors:
Melville E. Peters,
George H. Fath,
Albert F. Miller,

By
H. S. Bailey. Attorney.

M. E. PETERS, G. H. FATH & A. F. MILLER.

BOX TRANSFERRING MECHANISM FOR BOX OR PACKAGE TRANSMISSION MACHINES.

APPLICATION FILED SEPT. 25, 1916.

1,239,819.

Patented Sept. 11, 1917.

2 SHEETS—SHEET 2.

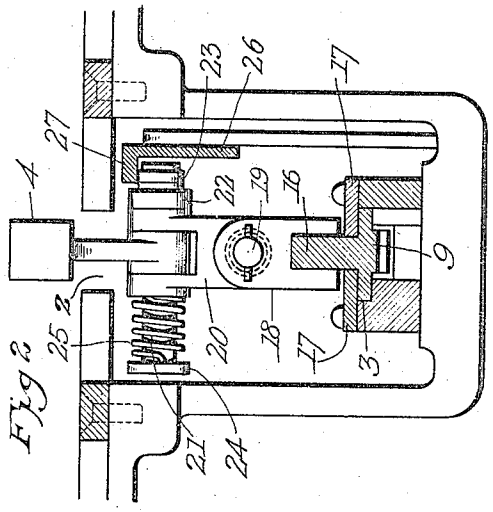


Fig 2

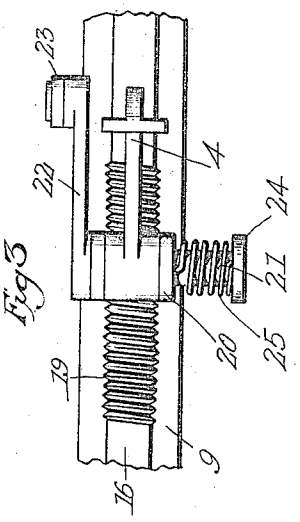


Fig 3

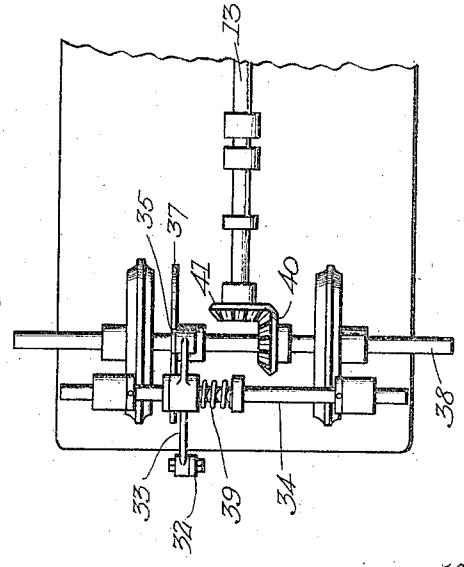


Fig 4

Witnesses:
G. Sargent Elliott.
Adella M. Fowle

Inventors:
Melville E. Peters,
George H. Fath.
Albert F. Miller.

By
H. S. Bailey. Attorney.

UNITED STATES PATENT OFFICE.

MELVILLE E. PETERS, GEORGE H. FATH, AND ALBERT F. MILLER, OF DENVER, COLORADO, ASSIGNORS TO THE PETERS PATENT RIGHTS COMPANY, OF DENVER, COLORADO, A CORPORATION OF COLORADO.

BOX-TRANSFERRING MECHANISM FOR BOX OR PACKAGE TRANSMISSION MACHINES.

1,239,819. Specification of Letters Patent. Patented Sept. 11, 1917.

Original application filed November 5, 1915, Serial No. 59,860. Divided and this application filed September 25, 1916. Serial No. 122,058.

To all whom it may concern:

Be it known that we, MELVILLE E. PETERS, GEORGE H. FATH, and ALBERT F. MILLER, citizens of the United States of America, residing at the city and county of Denver and State of Colorado, have invented a new and useful Box-Transferring Mechanism for Box or Package Transmission Machines, of which the following is a specification.

Our invention relates to a box transferring mechanism for boxes; and the object of our invention is to provide a box transferring mechanism for box wrapping machines in particular, and for use on or in connection with mechanism where boxes or packages or articles of merchandise that can be handled by it are to be transferred from a receiving point or station to a delivery point or station, and then picked up at the delivery point or station and discharged or moved away from it for further treatment.

We attain these results by the mechanism illustrated in the accompanying drawings, in which:

Figure 1 is a vertical longitudinal sectional view through a portion of a box wrapping machine, showing the improved box transferring mechanism and the operating means therefor.

Fig. 2 is a transverse vertical sectional view—enlarged—on the line 2—2 of Fig. 1.

Fig. 3 is a plan view of one of the box grippers, and portions of the threaded rod for adjusting the same, and of the slidable rack bar to which the said rod is secured. And

Fig. 4 is a plan view of a portion of the base plate of the machine illustrating more fully the mechanism for operating the bar, which depresses the box grippers.

Similar letters of reference refer to similar parts throughout the several views.

Referring to the drawings,—

The numeral 1 designates a box shaped frame having a table top portion that is provided with a receiving station and a delivery station or position. Through the longitudinal center of the table, a slot 2 is formed, below which is supported a slideway 3, in which box grippers 4 and 5 are reciprocally mounted.

A spur gear 6 is loosely mounted on a cross shaft 7 that extends across and is secured in bearings in the sides of the table. The spur gear projects up into a slot 8 and meshes with a toothed rack bar 9 which we term the box shifter rack, and which is mounted in the slideway 3. The gear wheel 6 has a pinion gear 10 rigidly secured thereto in any suitable manner, and this pinion meshes with a toothed bar 11, the lower end of which is bolted to a forked lever 12, which straddles the main shaft 13, and is provided with a roller 13[A] which enters a suitable cam groove in a cam disk 14, which is mounted on the main shaft. The upper end of the toothed bar passes through a guideway 15, which is rigidly secured to the shaft 7. The box shifting rack bar is provided with a centrally projecting flange 16 which extends throughout its full length. This box shifting rack is held in the slideway 3 by caps 17 which are screwed to the top edges of the slideway. To the flange above these caps two clips 18 are secured, that project above the flange and form bearings for the opposite ends of a right and left hand threaded rod 19. Upon the opposite ends of the threaded rod 19, blocks 20 are threaded, the upper ends of which are bifurcated to receive the lower ends of the gripping arms 4, which are rigidly mounted upon pins 21, which are pivotally mounted in the bifurcated ends of the said blocks, their ends extending beyond the sides of the blocks. Upon one end of each of the pins 21 is rigidly mounted an arm 22, the arms extending in opposite directions, and upon the outer end of each arm is mounted a roller 23. Upon the opposite end of each pin is secured a nut or washer 24, and a coil spring 25 is mounted on the pin between the nut and the block 20, one end of which enters a hole in the nut and its other end enters a hole in the block, these springs being under tension which is exerted to raise the arm so that their outer ends, which are upturned, will extend a slight distance above the plane of the table. The lower ends of the blocks 20 are also bifurcated, and are slidably mounted on the flange 16 of the rack bar 9.

These box gripping arms 4 have their upper ends arranged to stand vertically upright when at the limit of their upward movement, and these upper ends are adapted to move against and grip the opposite

ends of each box, when placed between them, with sufficient pressure to hold it and move it to the delivery station, as will be hereinafter described.

The outer end of the threaded rod 19 is provided with a transversely positioned pin 19A which with the terminal end of the rod is adapted to receive a hand operated socket wrench by means of which the threaded rod may be turned and the blocks 20 moved toward or away from each other to grip any size box from the smallest to the largest; as illustrated, they are shown arranged to grip a large sized box. These box grippers are moved down out of the way of each box as they deliver it to the delivery station by a longitudinal bar 26, the upper edge of which terminates in a horizontal lip 27, which at all times engages the rollers 23 on the arms 22. The opposite ends of the bar 26 are pivotally attached to levers 28 and 29 respectively, the opposite end of the lever 29 being loosely mounted on a rod 30, which extends transversely across the table and is mounted in the bearings in opposite sides of the frame. The lever 28 is mounted midway of its length upon a stationary shaft 31, which extends transversely across the table and is supported in the sides thereof.

The opposite end of this lever 28 is pivotally attached to one end of a connecting rod 32, the opposite end of which is pivotally connected to a lever 33, which is mounted midway of its length upon a stationary shaft 34, also supported in the side frames of the machine. The opposite end of the lever 33 carries a roller 35, which is engaged by a cam 36 on the circumferential edge of a disk 37, which is rigidly mounted on a shaft 38, which is supported in bearings in the side frames of the machine. The roller 35 is held against the edge of the cam disk by a coil spring 39, which surrounds the shaft 34 and is attached at one end to the lever 33 and at the other end to a collar on the said shaft. The shaft 38 carries a bevel gear wheel 40, which meshes with a similar gear 41 on the adjacent end of the main shaft 13.

As the disk 37 rotates, the cam 36 engages the roller 35, thereby rocking the lever 33, by which the rod 32 is drawn upon and the lever 28 rocked, its upper end being raised together with the upper end of the lever 29, which moves in unison with the lever 28, through its connection with the bar 26. This movement of the levers 28 and 29 raises the said bar 26, the lip 27 of which engages the rollers 23 on the arms 22 which, with the grippers 4 are permitted to rise to the position shown in Fig. 1, the cam 36 being timed to effect the raising of the bar 26 to allow the grippers 4 to engage each box and to advance it to its delivery point or station.

The rear end of the rack bar 9 has secured thereto an upright 42, which is similar to the blocks 20, and this upright supports the box discharging arm 5, rigidly mounted on a pin which passes through the upright and carries at one end an arm 43 similar to the arms 22, and which is also provided with a roller similar to the rollers 23 on the arms 22. The arm 43 is also actuated in one direction by a spring similar in all respects to the springs 25, which raise the arms 22. The roller carried by the arm 43 is in continuous engagement with the lip of the bar 26, and the discharging arm 5 is, therefore, actuated simultaneously with the gripper arms 4.

It will thus be seen that at each rearward movement of the rack bar a box is transferred from the receiving point or position to its delivery position by the grippers 4 and the box which was in the delivery position is caught by the arm 5 and discharged from the machine.

Our box or package transferring mechanism is adapted to receive boxes or packages from any feeding mechanism that will deliver them to their receiving station and can be used in box wrapping machines, such as the box wrapping machine illustrated in our pending application Serial Number 59,860, filed November 5th, 1915, of which this application is a divisional part, and can also be adapted for use on other box and package moving machines and will furnish a reliable and quick box or package moving mechanism from one point to another.

Having described our invention, what we claim as new and desire to secure by Letters Patent, is:

1. In a box or package transferring mechanism for box wrapping machines, the combination with the table provided with a longitudinal slot, with a slideway below the slot and having a receiving and delivering station, of means including a rack bar mounted in said slideway, box engaging grippers adjustably mounted on said rack bar to engage the ends of boxes of different sizes, cam actuated gearing for reciprocating said rack bar to carry said boxes to the delivery station, and means also carried by the rack for engaging a box at the delivery station and discharging it from the table, and cam actuated mechanism for depressing the said box grippers and the box discharging means during the rearward movement of the rack bar, and for releasing them at the beginning of its forward movement, and springs for raising said grippers and discharging means to box engaging positions at the beginning of their forward movement.

2. The combination with a frame having a table portion, of a bar slidably mounted therein, means for reciprocating said bar, adjustably and pivotally mounted grippers carried by said bar for engaging a box at

one position on the table and advancing it to another position, means also carried by the bar for engaging the box at the latter position and discharging it from the table, means for holding the grippers and the discharging means in box engaging position during the advancing movement of the bar, and means for depressing said grippers and discharging means on the reverse movement of the bar.

3. In a machine of the character described, the combination with the table having a longitudinal slot, of a horizontal bar slidably mounted in the table below said slot, means for reciprocating said bar, blocks adjustably mounted on said bar to have a movement toward and away from each other, box grippers pivotally mounted in said blocks for engaging a box at one end of the table and advancing it to the other end thereof, a push arm also carried by the bar for engaging the box at the latter position and discharging it from the table, a spring for projecting said grippers and said push arm up through the slot in said table during the advancing movement of the bar, and cam operated means for depressing said grippers and push arm below the plane of the table top, during the reverse movement of the bar.

4. In a machine of the character described, the combination with the table having a longitudinal slot therein, of a rack bar slidably mounted in said table below and in line with said slot, a gear wheel in mesh with said rack bar, and cam actuated means for rotating said gear wheel to impart a reciprocating movement to said rack bar, a right and left hand threaded rod rotatably mounted on said bar, blocks threaded to said rod, pivoted grippers carried by said blocks for engaging a box at one end of the table and advancing it to the opposite end thereof, a pivoted push arm also carried by said bar for engaging the box in the latter position and discharging it from the table, springs for projecting the grippers and push arm in box engaging position through the slot in said table during the advancing movement of the bar, and cam actuated means for depressing them below the plane of the table top during the reverse movement thereof.

5. The combination with a frame having a table provided with a longitudinal slot, of a rack bar slidably mounted in said table below and in line with said slot, a gear wheel in mesh with said rack bar, a pinion wheel rigidly secured to said gear wheel, and a cam actuated toothed bar in mesh with said pinion, whereby the gear wheel is rotated to impart a reciprocating movement to the rack bar, a right and left hand threaded rod rotatably mounted on the rack bar, oppositely arranged blocks threaded upon said rod, pins carried by said blocks and grippers mounted on said pins for engaging a box at one end of the table and advancing it to the other end thereof, a push arm also carried by said rack bar for engaging a previously advanced box and discharging it from the table simultaneously with the advancing movement of each successive box, arms carried by said grippers and said push arm having antifriction rollers, a bar having a horizontal flange for engaging said rollers, a spring for normally projecting said grippers and push arm through the slot in said table in box engaging position during the advancing movement of the rack bar, and cam actuated means for depressing said flanged bar, thereby to depress said grippers and push arm below the plane of the table top during the reverse movement of the said rack bar.

In testimony whereof we affix our signatures in presence of two witnesses.

MELVILLE E. PETERS.
GEORGE H. FATH.
ALBERT F. MILLER.

Witnesses:
G. SARGENT ELLIOTT,
ADELLA M. FOWLE.

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