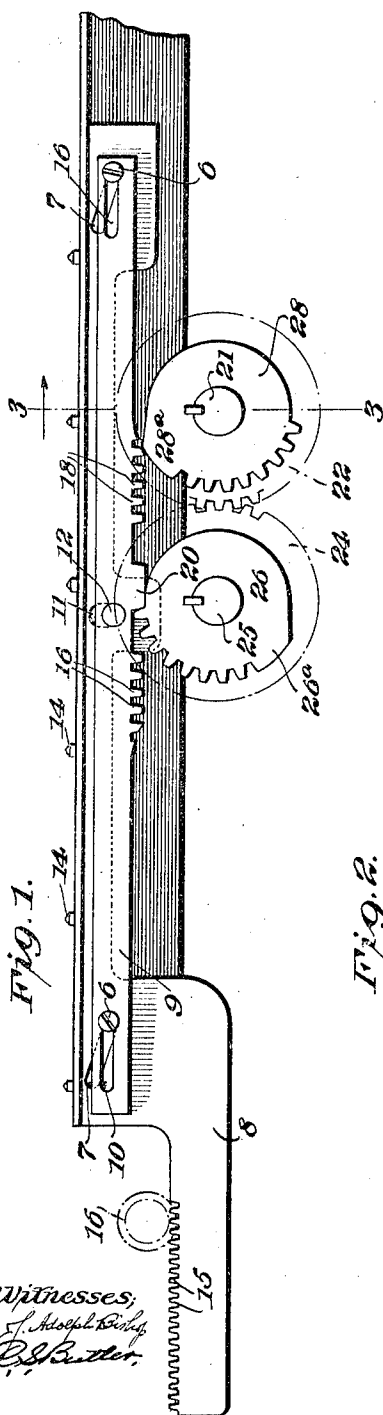


1,061,753.

Fig. 1.



Witnesses;
J. Adolph Bishop
C. S. Butler.

Fig. 2.

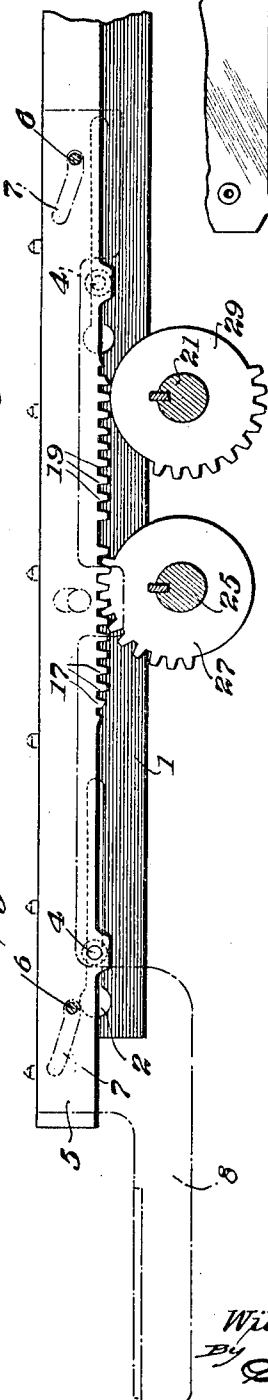


Fig. 5.

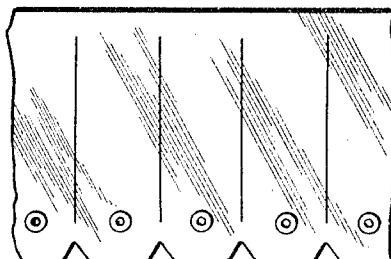


Fig. 4.

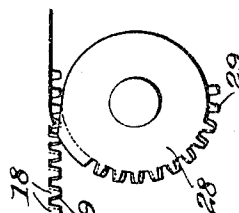
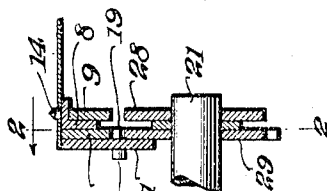


Fig. 3.



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UNITED STATES PATENT OFFICE.

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FEEDING MECHANISM.

1,061,753.

Specification of Letters Patent.

Patented May 13, 1913.

Original application filed September 24, 1912, Serial No. 722,062. Divided and this application filed January 20, 1913. Serial No. 743,179.

To all whom it may concern:

Be it known that I, WILLIAM G. KIRCHHOFF, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Feeding Mechanisms; of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is an elevational view of an embodiment of my invention. Fig. 2 is an elevational view partly in section taken on line 2—2 of Fig. 3, but showing some of the assembled parts in dotted lines. Fig. 3 is a view of a section taken on line 3—3 of Fig. 1. Fig. 4 is a detail showing the operative relationship of certain parts shown in Figs. 1, 2 and 3. Fig. 5 is a fragmentary illustration of one form of material which my device may be designed to feed.

This application is a division of my co-pending application filed September 24, 1912, Serial #722,062 for Letters Patent on a tag-addressing machine.

My invention relates broadly to mechanical movements, and more specifically to a mechanism for producing a reciprocating movement alternating in transverse directions.

As herein shown and described my invention is embodied in a mechanism designed specifically for the feeding of a strip of material of a particular form intermittently in one direction. When read in connection with my co-pending application above referred to it will be seen that the material which this form of my invention is designed to feed is a strip of perforated shipping tags or a single one of such tags.

The principal object of my invention is to provide a mechanism which is operable from a rotary driving shaft or constantly rotating prime mover, and which operates in a cycle to intermittently engage and move the element to be acted upon in one direction a predetermined distance, and then to disengage the said element and return to initial position.

Another object of my invention is to produce such a mechanism wherein all of the parts are positively driven.

A further object of my invention is to produce a mechanism for the purpose described which is simple, strong, and compact.

Other and further objects of my invention will be hereinafter pointed out or will be obvious from an understanding of the device.

A suitable support 1 is provided with longitudinal slots 2 in which operate wrist pins 4 carried by a lifting rack bar 5, and by virtue of which the said lifting rack is supported upon the support 1, but is adapted to slide longitudinally thereon. The lifting rack 5 carries studs 6 which are adapted to operate in inclined slots 7 of a feeding bar 8 and to support said bar upon lifting rack 5. Also carried upon studs 6 is a holding rack bar 9 which is enabled to slide longitudinally relative to lifting rack 5 by virtue of slots 10 in which the pins 6 engage. Feeding bar 8 is provided with a transverse slot 11 in which operates a stud 12 carried by holding rack 9. Feeding bar 8 carries suitable engaging devices 14 which may be formed according to the purpose for which the mechanism is designed; those illustrated being in the form of pilots which are adapted to engage in the perforations of shipping tags so as to carry them with feeding bar 8 during certain movements of the latter. The feeding bar also may be provided with suitable gear teeth 15 adapted to mesh with a gear wheel 16 to transmit motion thereto.

The lifting rack 5 is provided with a left hand set of gear teeth 17 and a right hand set of gear teeth 19. The holding rack 9 is provided with a left hand set of gear teeth 16, a right hand set of gear teeth 18 and a medial lug 20. A driving shaft or prime mover 21 carries the gear 22, which, by virtue of a gear 24, drives the countershaft 25 in the direction opposite to the rotation of driving shaft 21. The driving shaft 21 carries the mutilated gear 28 which is adapted to cooperate with the right hand set of teeth 18 and medial lug 20 of holding rack 9. The driving shaft 21 also carries mutilated gear 29 which is adapted to cooperate with the right hand set of teeth 19 of lifting rack 5. Countershaft 25 carries mutilated gear 26 which is adapted to cooperate with the left hand set of teeth 16 and medial lug 20 of holding rack 9, and countershaft

25 also carries mutilated gear 27 which is adapted to cooperate with the left hand set of teeth 17 of lifting rack 5. Mutilated gears 26 and 28 have specially formed cam portions 26^a and 28^a which are adapted to cooperate with holding rack 9 at certain times in the rotation of shafts 21 and 25.

The operation of the mechanism is as follows. At the beginning of the cycle of operation the wrist pins 4 are in the left hand ends of slots 2. In this position the feeding bar 8 stands at its lowest position relative to the support 1 with the studs 6 in the left hand ends of the inclined slots 7. With the lifting bar 5 in this position the teeth of mutilated gear 29 have just passed out of mesh with the teeth 19 of lifting rack 5, and the cam member 28^a will be in engagement with the holding rack 9 to prevent longitudinal movement of the holding rack 9 and the feeding bar 8. Rotation of shaft 21 will cause gear 27 to come into mesh with teeth 17, and as this gear is revolving in a clockwise direction lifting rack 5 will be moved to the right. As holding rack 9 and feeding bar 8 by virtue of their engaging members 11 and 12 are held against longitudinal movement by cam member 28^a during this movement of lifting rack 5, the travel toward the right of lifting rack 5 causes studs 6 to ride down in slots 7 and lift feeding bar 8. Feeding bar 8 lifts vertically until studs 6 reach the right extremities of slots 7, whereupon feeding bar 8 is moved to the right with holding rack 9 by the engagement of the teeth of gear 26, first with lug 20 and then with teeth 16.

When holding bar 9 has reached the limit of its movement to the right, the operation just described will be repeated inversely, cam member 26^a will engage holding rack 9 to hold it and feeding bar 8 while lifting rack 5 will be moved to the left by the engagement of gear 29 with teeth 19. This initial leftward movement of lifting rack 5 will lower feeding bar 8 by virtue of the movement of studs 6 in slots 7. When feeding bar has been lowered the teeth of gear 28 will engage the teeth 18 of holding rack 9 and transmit feeding bar 8 leftwardly in the lowered position until it reaches its left hand limit of travel, thus completing the cycle. From this description it will be seen that feeding bar 8 is moved to the right in its elevated position relative to support 1 and to the left in its lowered position. This effects the feeding operation of the strip of tags, which may be supported as illustrated in Fig. 3 with the perforations in position to be engaged by the pilots 14; as feeding bar 8 is transmitted leftwardly below the strip, raised until the pilots engage the perforations in the strip, and then transmitted to the right carrying the strip with it the predetermined distance, whereupon feeding bar 8

is lowered, thus disengaging the strip. Upon each succeeding cycle the strip will be fed an equal distance.

Whereas I have shown my invention embodied in a mechanism designed for one specific purpose, it is obvious that it is not limited to a mechanism for feeding shipping tags, but that by suitable modifications it is adapted to be applied in any instance where an intermittent feed in a single direction is required. I therefore do not intend that my invention shall be construed as limited to the specific form illustrated and described.

What I claim is:

1. A feeding mechanism comprising in combination cooperating rack bars, a feeding bar cooperating therewith, and means for moving the rack bars longitudinally to cause a longitudinal and transverse reciprocation of said feeding bar.
2. A feeding mechanism comprising in combination a lifting rack, a holding rack, a feeding bar adapted to be actuated by said racks, means for moving said racks longitudinally, means for moving said feeding bar transversely as one of said racks moves longitudinally thereof, and means for moving said feeding bar longitudinally with the longitudinal movement of the other rack.
3. A feeding mechanism comprising in combination a lifting rack, a holding rack, a feeding bar operated by said racks, means for reciprocating said racks simultaneously, and means for holding one of said racks against longitudinal movement during a portion of the movement of the other rack.
4. A feeding mechanism comprising in combination a lifting rack, a holding rack, a feeding bar actuated by said racks, gears for moving said racks in one direction, gears for moving said racks in the opposite direction, certain of said gears being provided with means for holding one of said racks against movement during a portion of the movement of the other rack.
5. In a feeding mechanism in combination, a feeding bar provided with means for engaging the material to be fed, movable rack bars having slot and pin connections with said feeding bar whereby said feeding bar may be moved in different directions by longitudinal movements of said rack bars, and means for moving said rack bars to cause longitudinal and transverse movements of said feeding bar.
6. In a feeding mechanism, the combination of a support, a rack bar mounted on said support, a feeding bar mounted on said rack bar, a second rack bar mounted on said rack bar; said rack bars having slot and pin connections with said feeding bar, and means for actuating said rack bars to move said feeding bar in different directions.
7. In a feeding mechanism the combination of a pair of actuating shafts, pinions

carried by said shafts, rack bars movable by said pinions, a feeding bar movable by said rack bars, said feeding bar being adapted to be reciprocated longitudinally and transversely by longitudinal movements of said rack bars.

In testimony whereof I hereunto affix my

signature in the presence of two witnesses, this 30th day of December, 1912.

WILLIAM G. KIRCHHOFF.

Witnesses:

M. P. SMITH,

C. S. BUTLER