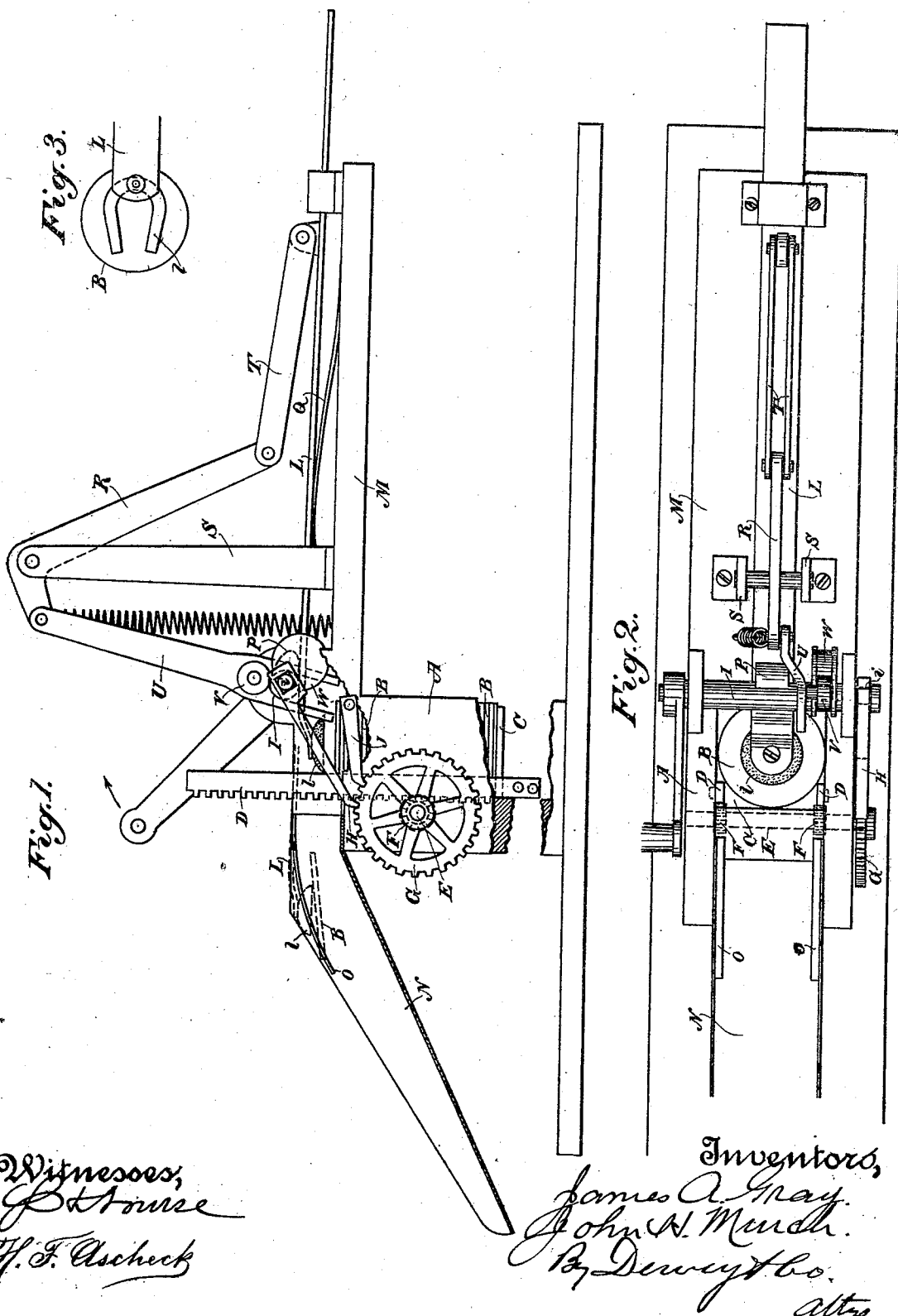


(No Model.)

J. A. GRAY & J. H. MURCH.
BLANK FEEDING DEVICE.

No. 513,776.

Patented Jan. 30, 1894.



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UNITED STATES PATENT OFFICE.

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ASSIGNORS TO ROBERT D. HUME, OF GOLD BEACH, OREGON.

BLANK-FEEDING DEVICE.

SPECIFICATION forming part of Letters Patent No. 513,776, dated January 30, 1894.

Application filed May 1, 1893. Serial No. 472,636. (No model.)

To all whom it may concern:

Be it known that we, JAMES A. GRAY and JOHN H. MURCH, citizens of the United States, residing in the city and county of San Francisco, State of California, have invented an Improvement in Feeding Devices; and we hereby declare the following to be a full, clear, and exact description of the same.

Our invention relates to an apparatus for feeding blanks or pieces of any description, such as metallic disks, can heads, sheets of metal which are to be used for making cans or cylindrical or globular objects, or for other purposes where pieces are to be fed in succession singly.

It consists in certain details of construction which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a side elevation of our feeder. Fig. 2 is a plan view of the same. Fig. 3 shows the application of a magnet as a lifter.

In the present case we have shown our invention as applied to an apparatus for taking circular disks from a pile and delivering them into a chute to be conveyed to a point for further use, but it may be used upon almost any shaped piece or article.

A is a holder for containing the blanks B. This holder may be of any suitable shape or size to conform to the character of pieces to be used. It may be stationary or otherwise arranged to allow convenient access thereto. Within this holder is a table C upon which the pieces are supported, and from each side of this table the toothed racks D extend upwardly in suitable guides.

E is a shaft extending across the frame at a point just in front of the toothed racks, and having pinions F which are adapted to engage these racks so as to move them upwardly when the shaft is rotated. Upon the outer end of this shaft is fixed a ratchet wheel G which is actuated by a pawl H, the point of which engages the teeth of the ratchet wheel, while the other end is mounted upon an eccentric i upon the driving shaft I. A second holding pawl J retains the ratchet wheel, while the feeding pawl is drawn backward to engage another tooth. In this way, by the rotation of the driving shaft, the ratchet wheel

is advanced a tooth for each rotation, and the racks and table to which they are attached are correspondingly raised. The number of teeth in the ratchet wheel, and the number in the gears which engage the racks are so relatively arranged that a single forward movement of the pawl and the ratchet wheel will raise the table a distance equal to the thickness of the blanks which are being fed successively from the top of the pile, and in this manner the surface is always kept at the proper point with relation to the feeder.

The feeder consists of an adhering lifter l fixed to the end of an arm L, which arm is adapted to reciprocate above the table M, so that the lifter is first presented above the pile of blanks, is depressed so that by the act of depressing it will be brought into contact and caused to adhere to the pieces beneath it. The lifter may be a magnet as in Fig. 3; or it may be a flexible vacuum cup in which the air is forced out of the cup, producing a vacuum which causes one of the blanks to adhere to the edges of the cup and be lifted thereby. The arm is then advanced carrying with it the cup, and the adhering blank until it is above the delivery chute N where by means of suitable disengaging ribs or lugs O, the blank is disengaged from the lifter and allowed to fall into the delivery chute. These movements may be produced by various forms of apparatus. In the present case, we have shown the main driving shaft I provided with two cams. The cam P is fixed upon the shaft in such position that when the carrier to which the lifter is attached is in such position that the cup is above the pile of blanks, this cam presses the carrier down, thus forcing the cup down upon the pile of blanks, and expelling the air from it so as to produce a vacuum sufficient to lift the blank, when a vacuum cup is used, or forming a contact when a magnet is employed.

The carrier has a spring Q beneath or otherwise attached to it by which it is instantly raised as soon as the rotation of the shaft carries the cam so far as to release the carrier and allow it to lift. The carrier is advanced and retracted, in the present case, by means of a bell crank lever R which is journaled between two uprights S between which the

carrier slides, and the long arm of this bell crank is connected by links T with the carrier. The short arm has a rod U extending down from it, and made forked at the lower end so as to stand astride of the driving shaft which thus serves as a guide to keep it in position. Upon the side of this arm, just above the shaft, is fixed a lug or roller V. Upon the driving shaft, in line with this roller, is fixed a cam W which rotates with the shaft, and when the cam P has released the carrier and allowed it to rise by the action of its spring, this cam W engages the lug and pushes the rod upward, thus acting upon the short crank of the bell crank lever, and through it upon the long arm, the links and the carrier, so that the carrier is forced forward, and the lifter takes the blank which adheres to it, to the point where it is delivered into the chute. As before described, the blank is disengaged from the lifter by means of ribs or lugs placed with relation to it, so that they force it off when it reaches the proper point. The carrier is returned to its first position as soon as the cam W releases the lug by means of a spring, weight, or other convenient device.

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

1. A feeding device consisting of a lifter to which the article adheres, and a carrier to which the lifter is attached, a cam engaging the carrier by which it is depressed upon the article, so that the article is caused to adhere to it, and means for lifting the carrier and the adhering article, and transferring both lifter and article laterally to the desired point, substantially as herein described.

2. A feeding device consisting of an adherent lifter, a carrier to which it is secured and means for supplying articles to be lifted beneath it, mechanism comprising a shaft having a cam engaging the carrier by which the lifter is depressed upon the surface of the

uppermost piece and the lifter caused to adhere to the piece, mechanism by which the lifter is elevated and it and the adhering article transported laterally to the point of delivery, and mechanism for disengaging the piece from the lifter, substantially as herein described.

3. A feeding device for articles consisting of the lifter and a carrier to which it is attached, means for presenting the articles to be fed successively beneath the lifter, a mechanism comprising a shaft having a cam engaging the carrier whereby the lifter is depressed so that an article adheres to it, mechanism by which the carrier is moved and the lifter with its adhering article transported laterally to the point of delivery, means for disengaging the article from the lifter, and mechanism whereby the carrier and lifter are again returned to a position for picking up another article, substantially as herein described.

4. A feeding device for articles, consisting of an adhesive lifter, a carrier to which the lifter is attached, a vertically moving table upon which the pieces are placed, a rack and pinion mechanism by which the table is lifted a distance equal to the thickness of one of the pieces at each reciprocation of the carrier, a mechanism comprising a shaft having a cam engaging the carrier whereby the lifter is depressed so that a piece is caused to adhere thereto, a mechanism whereby the carrier is reciprocated and the piece moved forward to a delivery chute, means for disengaging the piece from the lifter and allowing it to fall into the chute, and mechanism for reciprocating the carrier to its normal position, substantially as herein described.

In witness whereof we have hereunto set our hands.

JAMES A. GRAY.
JOHN H. MURCH.

Witnesses:

GEO. H. STRONG,
S. H. NOURSE.