G. C. EULER.

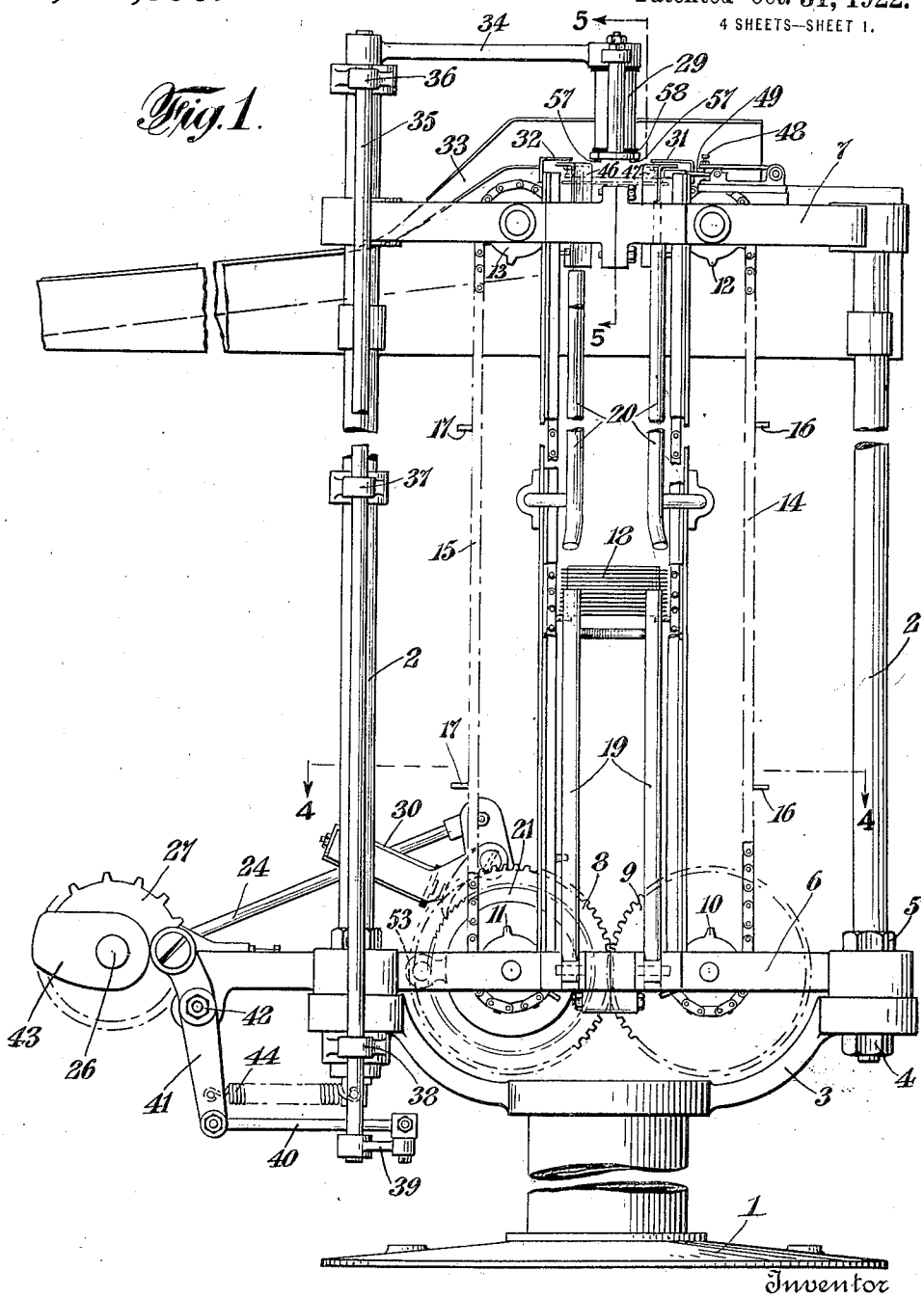
AUTOMATIC FEEDING MECHANISM.

APPLICATION FILED APR. 26, 1920.

1,433,990. Patented Oct. 31, 1922.

4 SHEETS—SHEET 1.

Fig. 1.



Inventor

By his Attorneys George C. Euler

Kenyon & Kenyon

G. C. EULER.

AUTOMATIC FEEDING MECHANISM.

APPLICATION FILED APR. 26, 1920.

1,433,990.

Patented Oct. 31, 1922.

4 SHEETS—SHEET 2.

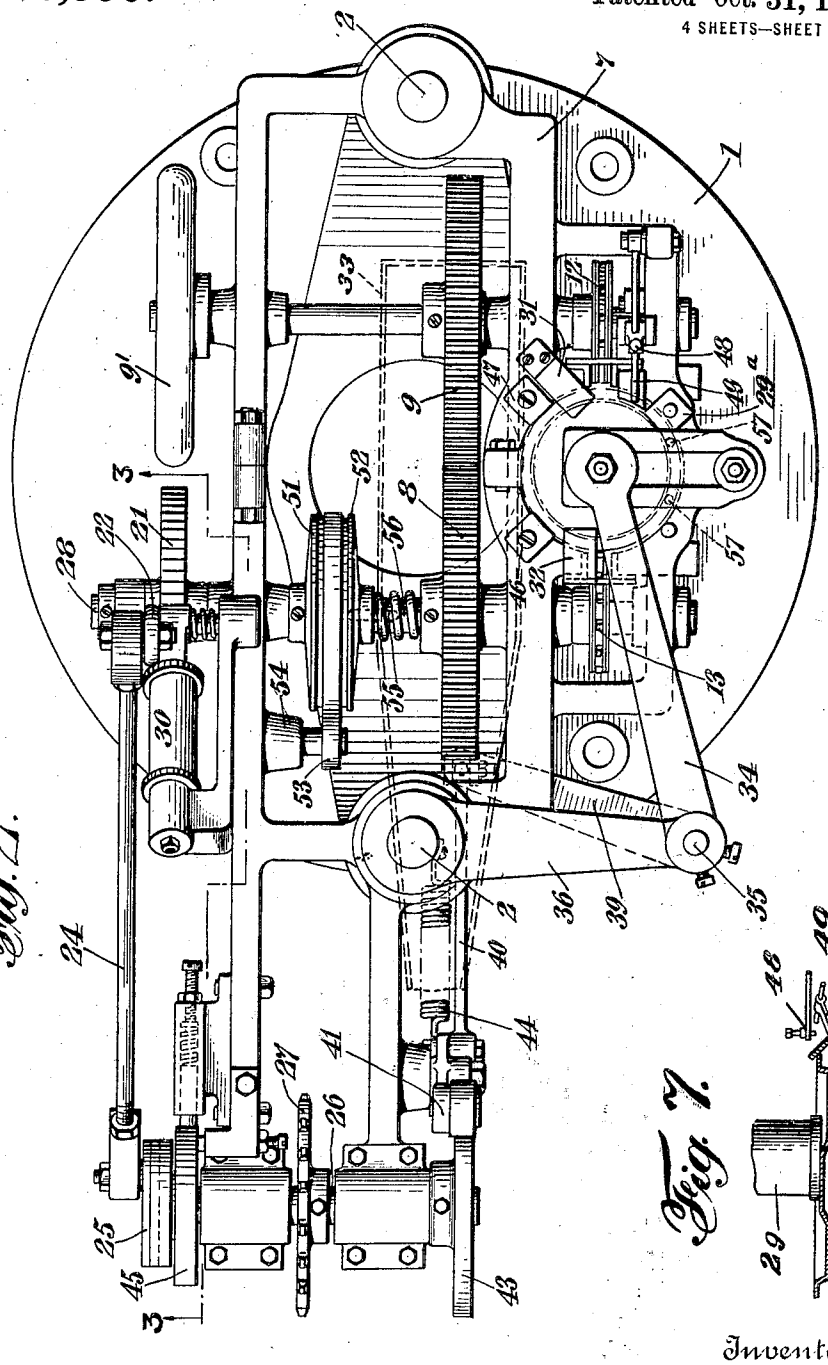


Fig. 2.

Fig. 7.

Inventor

By his Attorneys George C. Euler.

Kenyon & Kenyon.

G. C. EULER.

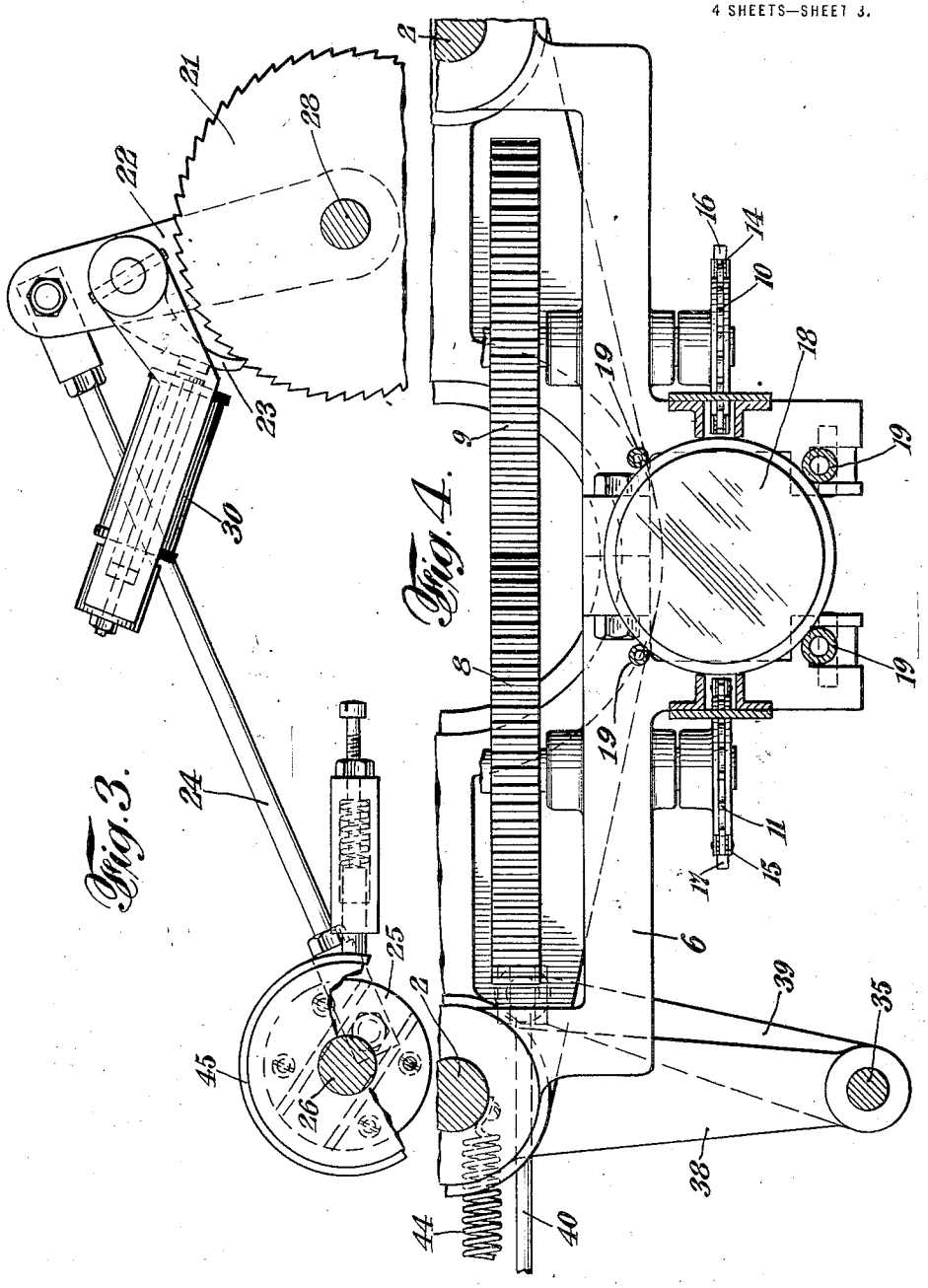
AUTOMATIC FEEDING MECHANISM.

APPLICATION FILED APR. 26, 1920.

1,433,990.

Patented Oct. 31, 1922.

4 SHEETS—SHEET 3.



Inventor

By his Attorneys. George C. Euler.

Kenyon & Kenyon

G. C. EULER.

AUTOMATIC FEEDING MECHANISM.

APPLICATION FILED APR. 26, 1920.

1,433,990.

Patented Oct. 31, 1922.

4 SHEETS—SHEET 4.

Fig. 6.

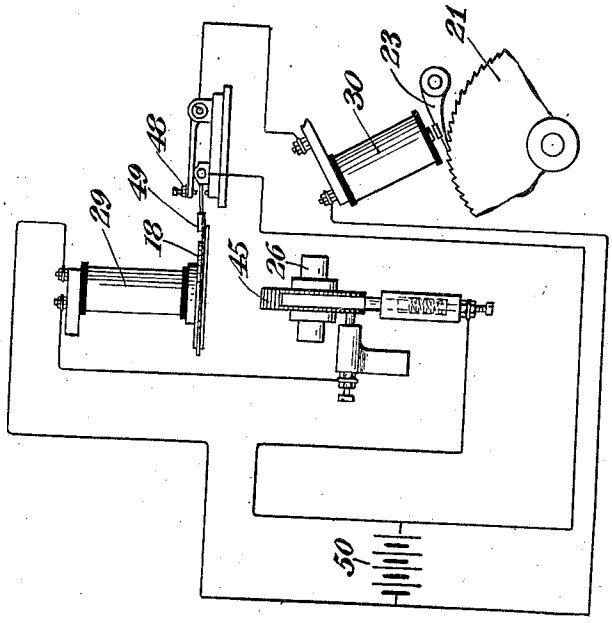
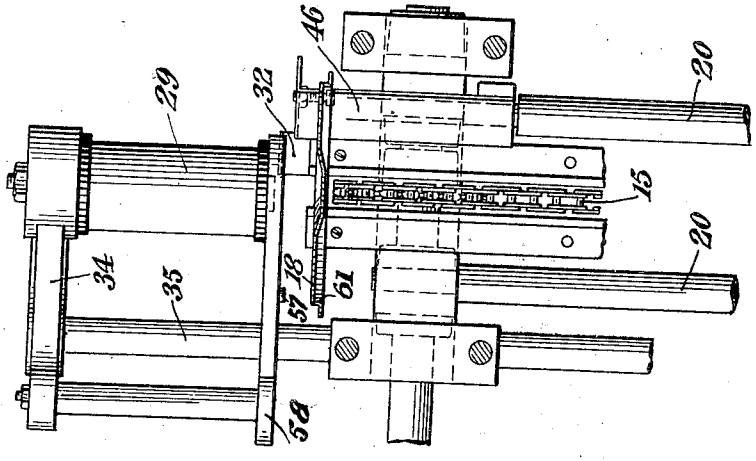


Fig. 5.



Inventor

By his Attorneys George C. Euler

Kenyon & Kenyon.

Patented Oct. 31, 1922. 1,433,990

UNITED STATES PATENT OFFICE.

GEORGE C. EULER, OF WEST NEW YORK, NEW JERSEY, ASSIGNOR TO R. B. DAVIS COMPANY, A CORPORATION OF NEW JERSEY.

AUTOMATIC FEEDING MECHANISM.

Application filed April 26, 1920. Serial No. 376,575.

To all whom it may concern:

Be it known that I, GEORGE C. EULER, a citizen of the United States, and a resident of West New York, New Jersey, have invented new and useful Improvements in Automatic Feeding Mechanism, of which the following is a specification.

My invention relates to an apparatus for handling metal disks and is particularly useful as an attachment to machines for placing metal tops and bottoms on cans.

An object of my invention was the production of a machine which would be simple in construction and operation and which, at the same time, is dependable in action.

Heretofore, with machines for placing metal covers or bottoms on cans of the type commonly employed to hold coffee, baking powder and the like, or the so-called "sanitary" can, which has the same form of top as bottom, and is employed as a receptacle for wet products, such as corn, tomatoes, soups, etc., it has been impossible to use metal disks, usually tin, for the tops or bottoms having a straight flange, and at the same time, feed these disks to the machine automatically. In cases where the straight flange on the top or bottom was used it was necessary to feed the disks to the machine by hand.

Automatic feeding devices for such machines as mentioned in the preceding paragraph have been heretofore provided, but in such cases it was necessary to crimp or curl the edge of the disk so as to make the edges thick enough to enable the automatic feeding device to feed the disks to the machine one at a time, which is essential. I know of no instance in the practical art where metal disks with straight edges have been automatically fed to such a machine.

The chief advantages of my device are (1) that by reason of the possibility of using a disk having a straight edge, a considerable amount of metal is saved, which metal was heretofore used in crimping or curling the edge of the disk so that it could be automatically fed; (2) the saving in labor which was necessary to hand-feed disks with straight edges to such a machine heretofore. By the use of my device it will be clear therefore, that an automatic feeding device is provided without the necessity of using additional metal, which serves no useful purpose other than to make it possible to automatically feed the disks to the machine.

A further advantage of my invention is that the disk may be fed from the top of a stack instead of from the bottom.

My invention will be understood by reference to the following description taken in connection with the accompanying drawings forming a part thereof and in which, Fig. 1 is an evelation of the machine.

Fig. 2 is a top plan view of the machine embodying my invention.

Fig. 3 is a view taken on the zig-zag line 3 of Fig. 2 showing the feeding device.

Fig. 4 is a view taken on line 4—4 of Fig. 1.

Fig. 5 is a view on line 5—5 of Fig. 1.

Fig. 6 shows a general schematic wiring diagram of the electrical circuits involved.

Fig. 7 shows an enlarged view of the arrangement at the top of the magazine and also the relation of the feed control contacts.

The machine to be described is an attachment which may be readily applied to any machine for the purposes heretofore generally designated. It consists of a base 1, above which rise two supporting members 2, usually made of piping. At the lower end these members 2 are fastened in a yoke 3 by passing through openings therein, and are fastened thereto by means of nuts 4 and 5. A member 6 is supported by the yoke 3 and is held in place by the members 2 and the nuts 4 and 5. At the upper end of the members 2 is a member 7 which is supported by the members 2 and carries the parts presently to be described.

Mounted in the member 6 are two gear wheels 8 and 9 which are immeshed. On the shaft carrying these gears are two sprockets 10 and 11. Mounted in the member 7 at the top of the machine are two similar sprockets 12 and 13. Chains 14 and 15 are carried by the sprockets, and arranged at intervals on the chains 14 and 15 are carrying links 16 and 17. These links are for the purpose of lifting the pile of disks 18 as the sprockets 10 and 11 are rotated, as will be later explained. Arranged adjacent the path of travel of the chains and the disks 18 are a plurality of guide rods 19. The rods 19 are pivoted to and project upwardly from the member 6 and arranged above the rods 19, with an intervening space between them,

are a plurality of guide rods 20. The disks 18 are fed on to the carrier links by pulling the rods 19 outwardly around the pivots and placing the disks on the rods 19 which act as a magazine and also as a gauge by which the desired number of disks is put into the machine. When the magazine is filled it is pushed back around its pivots into the position shown. As the carrier links continue to move they pick up the disks and feed them to the magnet 29. The carrier links 16 are placed apart a distance at least equal to the length of the rods 19. On the shaft which carries the gear wheel 9 is mounted a hand-wheel 9′ by which the gears 8 and 9 may be rotated and the disks moved up to the proper place by hand before the machine is started.

Mounted on the shaft with the gear wheel 8 is a ratchet wheel 21 best shown in Fig. 2 and separately shown in Fig. 3. Mounted to swing concentrically with the wheel 21 is a member 22 carrying a pawl 23. The member 22, carrying the pawl 23 is reciprocated by means of a rod 24 which is actuated by an adjustable eccentric pin carried by a member 25 which is mounted on a shaft 26. The shaft 26 the power shaft of the machine. The shaft 26 is operated by any suitable power mechanism through the sprocket 27 or other suitable means. As the shaft 26 rotates the ratchet wheel 21 is actuated by the pawl 23 which is reciprocated by the member 24. The wheel 21 being mounted on a shaft 28, which carries the gear wheel 8, rotates said shaft and wheel. The wheel 8, being enmeshed with the wheel 9 causes the two wheels 8 and 9 to rotate together and this in turn causes rotation of the sprockets 10 and 11, which gives a slow and joggy controlled movement to the chains 14 and 15, which in turn feeds the disks 18 to an electro-magnet 29. It will be noted that the disks are jogged up instead of being smoothly fed, the jogging resulting from the action of the ratchet and pawl feeding mechanism. Arranged near the pawl 23 is an electro-magnet 30. When energized the magnet 30 raises the pawl 23 from the wheel 21 and renders the feeding mechanism inactive until such time as the magnet is de-energized or otherwise releases the pawl 23, so that it falls back into contact with the wheel 21.

The magnet 29, when energized, raises one of the metal disks 18 from the top of the stack. As the disk moves upwardly it engages a member 29ª which is bevelled on its under side (Figure 7) and therefore the disk is moved laterally a slight distance. As the disk moves laterally it passes out from under the end of the contact member 49, thus allowing the member 49 to fall into engagement with the next disk. The magnet 29 holds the disk suspended against the non-magnet member 58 until the magnet is moved, at which time the disk is carried with the magnet by means of the magnetic action aided by the projections 57 which prevent the disk from slipping off of the magnet, and is deposited in the chute 33, which leads to the machine, which applies the top or bottom, as the case may be, to the container. The disks not infrequently have an offset portion as shown in Fig. 5 thus forming a shoulder 61 and the pins 57 engaging this shoulder prevents the disk from sliding off the face of the magnet 29. The magnet 29 is carried by an arm 34, which is rigidly fastened to a rod 35, journalled at 36, 37 and 38. Attached to the lower end of the rod 35 is an arm 39 which is connected by a link 40 with one end of a member 41 which is pivoted at 42. The other end of the member 41 contacts with a cam 43 or other eccentric. The cam 43 is mounted on the shaft 26, all of the parts being supported by the member 6 as shown in Fig. 1. When the shaft 26 rotates the cam 43 actuates the member 41 against the action of a spring 44 and through the link 40 and arm 39 rotates the rod 35, which in turn swings the arm 34 and the magnet 29 around to a point over the chute 33. When the magnet has been moved to a position over the chute 33 the magnet 29 is de-energized by a commutating device 45, which is placed on the shaft 26 and rotates therewith so that the movement of the magnet 29 may be accurately timed in synchronism with the commutating device, so that the magnet may be de-energized at the proper instant. After the disk has been deposited by falling away from the magnet when de-energized, the commutating device again closes a circuit which energizes the magnet 29 so when it is back in the position shown in the drawings, it will lift another disk from the stack and the operation will be repeated automatically. By reason of the arrangement of the stops 31 and 32 and members 46 and 47 the magnet 29 carries only one disk to the chute 33 at a time. If the magnet is strong enough to lift more than one disk from the stack, the top disk will come in contact with the stops 31 and 32, and when the magnet 29 is moved, the members 46 and 47 will obstruct the movement of any disk other than the one in direct contact with the stops 31 and 32. By reason of the distance between the stops 31 and 32 and members 46 and 47, ample clearance may be provided for the passage of one disk or the distance may be such that disks of varying thicknesses may be handled by the magnet 29, or two or more disks may be handled if desired.

The ratchet wheel 21 and its co-operating pawl 23 are so arranged that the chains 14 and 15 will feed the disks 18 at a greater rate than the magnet will remove them. Consequently means are provided for tem-

porarily rendering the feeding means ineffective dependent upon the position of the uppermost disk. In Fig. 6 is shown means whereby this operation is produced. The magnet 30 is normally open-circuited at the contact 48 during the feeding operation because the member 49 is usually down out of engagement with the contact 48. When the disks are fed upwardly so that the one next under the disk held by the magnet engages the member 49 and raises it to the position so as to close the contacts 48 and 49 the magnet 30 will be energized and will remove the pawl 23 from the ratchet wheel 21 which will render the feeding device temporarily ineffective. As soon as the magnet 29 has removed a sufficient number of disks from the stack the contact at 48 will be broken and the pawl 23 will again fall into contact with the ratchet wheel 21 and feeding will be resumed. It will be noted, therefore, that the feeding is automatic.

The disks are placed by hand in the magazine and the distance between the sets of carrier links which is usually equal to the length of the rods 19, is sufficient so that one operator may attend to the feeding of a number of these machines. When the first batch of disks is placed in the magazine they are moved up to the proper position by the hand wheel 9'. Any space which may exist between the bottom of one batch of disks and the batch placed on the next set of carrier links may be filled by feeding a few disks by hand through the space between the ends of the rods 19 and 20. After the magazine is filled with disks there will be certain amount of weight and to insure that there is no loss of backward motion on the stack of disks, there is provided a friction brake, fitted with friction disks 51 and 52, the latter being the stationary part of the brake and being fastened to a stud 54 by a band 53. The brake has two outer disks 51 and 52, the disk 51 being fastened to the shaft 28 while the other one is loosely fitted to the same shaft with a keyway 55, allowing the disks to move freely over the key placed therein through a tension spring 56.

The operation of my device is as follows: A number of disks is placed in the magazine. The magnet 29 is energized from any suitable source such as a battery indicated at 50 in Fig. 6. When the magnet is energized it picks up one of the disks from the stack and holds it against the member 58. As the cam 43 operates the rod 35 the magnet 29, carrying a disk, is moved to the chute 33. At a predetermined point the circuit of the magnet is opened by the commutation device 45, thus releasing the disk and allowing it to be deposited in the chute. The magnet is again moved to its original position over the stack by the spring 44, and the same being magnetized, picks up another disk as in the first place and the operation is automatically and indefinitely repeated. If the stack rises to a point sufficient to close the contact at 48 the magnet 30 will be energized and will remove the pawl 23 from the ratchet wheel 21 and the feeding mechanism will be temporarily ineffective. Upon the removal of a sufficient number of the disks from the top of the stack, the contact at 48 will be again broken and the feeding will be resumed as in the first place.

From the foregoing, it is evident that the mechanism is entirely automatic; that it is reliable, simple and may be applied to any machine where automatic feeding of a metal disk or other magnetic unit is desired. If the occasion arises two disks may be fed at one time by adjusting the distance between the members 46 and 47 and the stops 31 and 32.

While I have described my invention and referred to the embodiment thereof in great detail I desire to have it understood that I in no way intend to limit my invention to the particular mechanism shown and described but that the same is limited only by the claims appearing at the end hereof.

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

1. In a device of the character described, the combination of pivoted magnetic means for removing blanks from the top of a pile one at a time, means for rotating said magnetic means around its pivot and de-energizing the said magnetic means to release the blanks, and means for feeding said blanks upwardly comprising an intermittently acting means, an electric circuit controlling said means, a fixed contact in said circuit near the top one of said blanks, a pivoted contact in said circuit resting on the top one of said blanks until said blank is under the influence of the removing means, and means then automatically causing said blanks to be moved laterally from under said contact whereby said contact engages the next lower blank, substantially as described.

2. In a device of the character described, the combination of a magazine containing elements to be singly fed, a chute for receiving said elements, a pivotally mounted magnet for separating one of said elements in the magazine from the others, means for moving said magnet around its pivot for transferring said element to the chute and depositing it, other means for imparting a lateral movement to the element in its travel from the magazine to the magnet means for feeding said elements upwardly to said magnet normally at a greater rate than required by said magnet, means controlled by the lateral movement of the elements for regulating the feeding means, and means automatically rendering said feeding means tem-

porarily inoperative when said elements rise to a predetermined point and for rendering it operative again when the top element is below said point, substantially as described.

3. In a device of the character described, the combination with a magazine containing the elements to be singly fed, a chute for receiving said elements, a magnet for separating an element from the magazine, means limiting the elements taken from said magazine to one at a time, means transferring the selected element from the magazine to the chute and depositing it there, means for feeding the elements upwardly in the magazine to the operating range of the magnet, means rendering said feeding means inoperative comprising an electrical circuit having a fixed contact adjacent the normal position of the top element, and a pivoted contact resting on the top element until said element rises to a point above its normal position, whereupon such circuit will be closed and said feeding mechanism rendered inoperative, substantially as described.

4. In a device of the character described, the combination of a magazine containing the elements to be singly fed, a magnet for removing a single element at a time from said magazine, means for feeding said elements upwardly in said magazine at a rate faster than normally required by said magnet, means for controlling said feeding means comprising an electrical circuit, a fixed contact near the upper end of said magazine, and a pivoted contact for operating said fixed contact and normally resting upon the uppermost element in said magazine, and means for moving the top element laterally from under said pivoted contact whereby said contact falls to the next lower element in said magazine, substantially as described.

5. In a device of the character described, the combination with a magazine containing the elements to be singly fed, a magnet for removing the top element from said magazine, a non-magnetic member between said magnet and said element, and projections on said non-magnetic member for preventing substantial lateral movement of said element relative to said magnet, substantially as described.

6. In a machine of the character described, the combination of means for feeding metal articles, means for handling said articles comprising a pivotally mounted magnet for lifting one of said articles, means in the path of movement of said article for causing said article to be substantially deflected during the lifting movement, means dependent upon said lateral movement for controlling said feeding means, means for rotating said magnet around its pivot while carrying one of said articles, and de-energizing said magnet to release said article at a predetermined position, substantially as described.

In testimony whereof, I have signed my name to this specification.

GEORGE C. EULER.