

Sept. 18, 1962

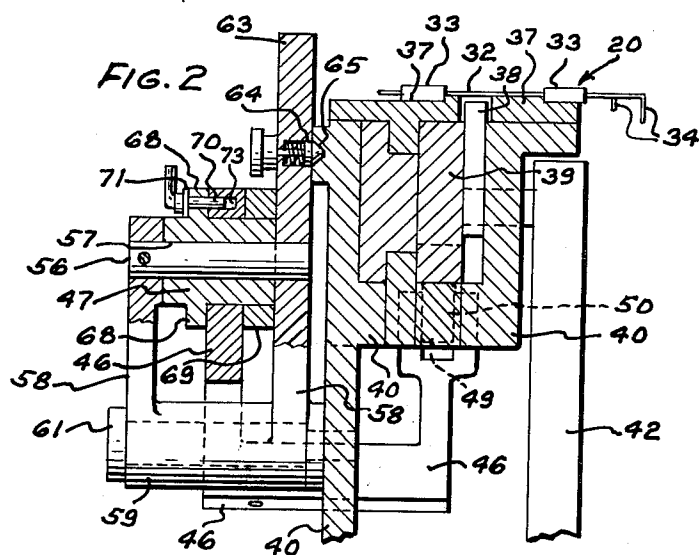
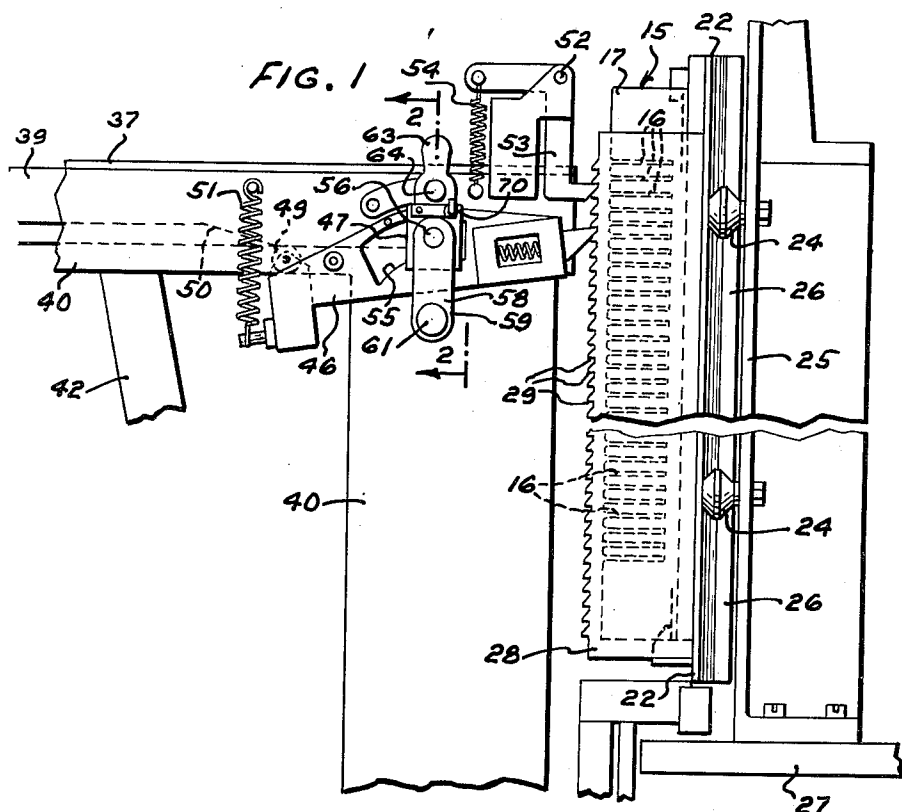
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3,054,237

APPARATUS FOR SELECTIVELY INSERTING ARTICLES INTO MAGAZINES

Filed April 6, 1961

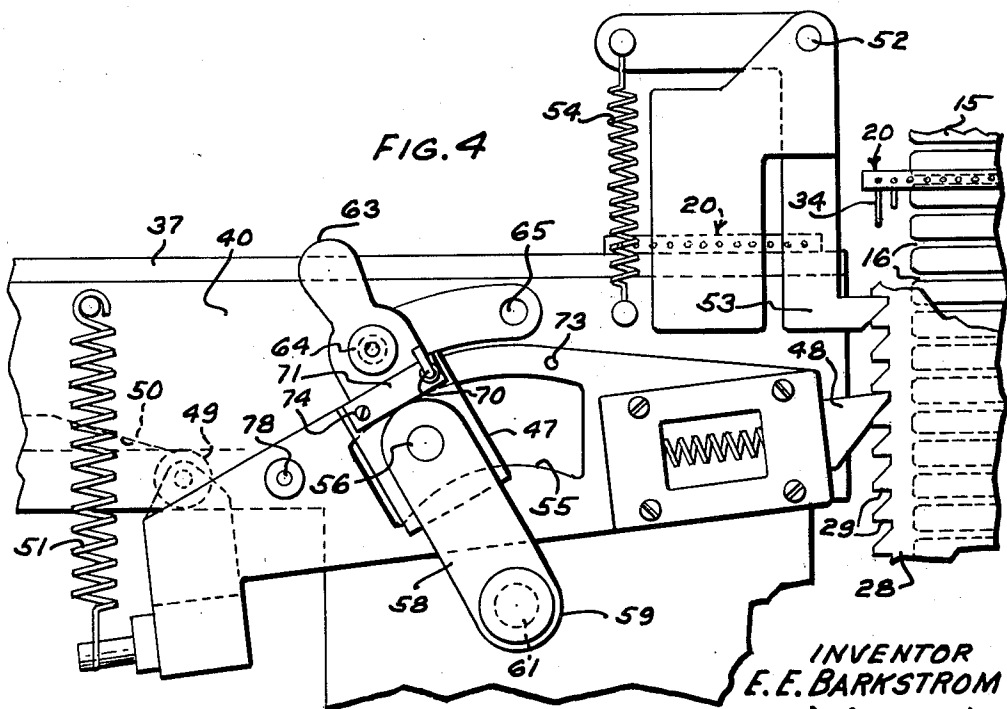
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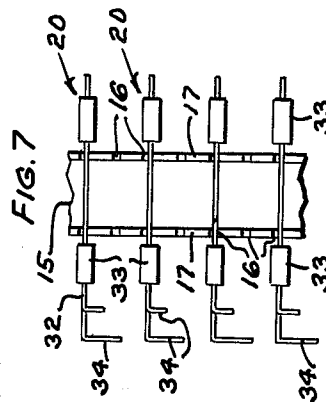
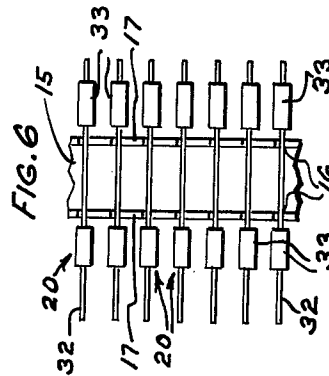
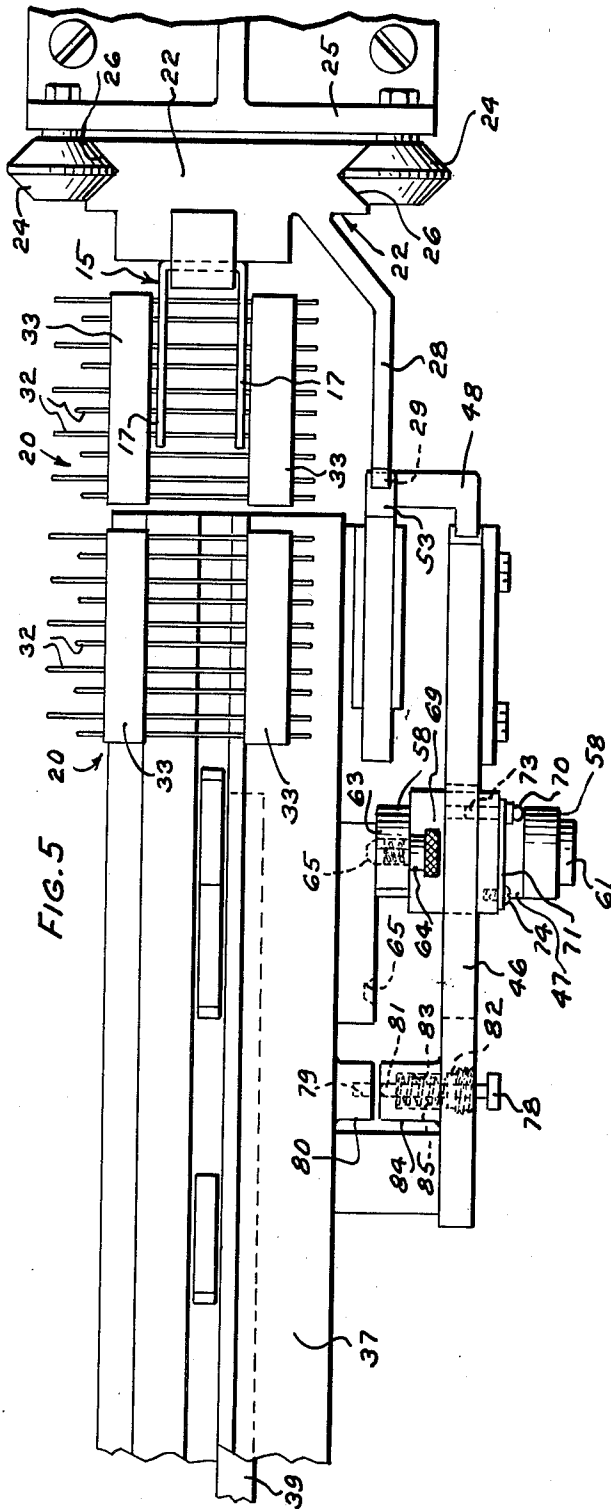
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APPARATUS FOR SELECTIVELY INSERTING ARTICLES INTO MAGAZINES

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3 Sheets-Sheet 3



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1

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APPARATUS FOR SELECTIVELY INSERTING
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5 Claims. (Cl. 53-246)

This invention relates to apparatus for selectively inserting articles into magazines, and more particularly to mechanism for feeding articles into magazines in selectively spaced relation to one another.

An object of the present invention is to provide an improved apparatus for selectively inserting articles into magazines.

Another object of the invention is the provision in a magazine loading apparatus of mechanism for feeding articles into a magazine in selectively spaced relation to one another.

With these and other objects in view, the invention contemplates the provision of a magazine having a plurality of uniformly spaced recesses for receiving articles therein and a carrier mounted for vertical movement for supporting the magazine for movement therewith. The articles are supported on a horizontal track and are advanced step by step along the track and into the magazine by a feed mechanism including a reciprocable feed bar and a plurality of feed pawls thereon. A lever is supported pivotally intermediate its ends on a movable fulcrum member and is actuated by the feed bar to index the carrier and the magazine.

Mechanism is provided for shifting the fulcrum member to two positions relative to the lever and to a supporting frame so that when the fulcrum is in a first position, the lever is rocked about an axis through the fulcrum member by the reciprocating feed bar to index the carrier and the magazine through a first distance to align successive recesses of the magazine with the tracks to receive the articles. With the fulcrum member in the second position the lever is actuated by the feed bar to index the carrier and the magazine through a second distance equal to twice the first distance to align alternate recesses of the magazine with the tracks to receive articles of a different type and size.

Other objects, advantages and novel aspects of the invention will become apparent upon consideration of the following detailed description, in conjunction with the accompanying drawings, in which:

FIG. 1 is a fragmentary side view of an apparatus for inserting articles into magazines embodying the present invention;

FIG. 2 is an enlarged vertical cross sectional view of the apparatus taken on the line 2-2 of FIG. 1;

FIGS. 3 and 4 are enlarged fragmentary side views of the apparatus showing the indexing lever with a shiftable fulcrum member therefor in different positions;

FIG. 5 is a fragmentary plan view of the apparatus; and

FIGS. 6 and 7 are fragmentary elevational views of magazines with two different types of articles therein in differently spaced relation to one another.

The present loading apparatus which is an improvement of the article loading apparatus disclosed in E. W. Larsen et al. Patent 2,846,832 comprises an elongated magazine 15 of U-shaped cross section (FIGS. 1 and 5 to 7) having a plurality of uniformly spaced parallel slots 16 in the side walls 17 thereof for receiving and supporting articles 20 therein in spaced relation to each other. The magazine 15 is releasably supported in a carrier 22 that is guided for vertical movement in a loading station by a plurality of rollers 24 which are mounted on a frame 25

2

and ride in trackways 26 of the carrier 22. The frame 25 is supported on a table 27 which may be movable to provide for the movement of the carriers 22 and magazines 15 to and from the loading station. A ratchet bar 28 having teeth 29 thereon spaced apart from one another a distance corresponding to the spacing between the slots 16 of the magazine 15 is fixed to and forms a part of the carrier 22.

As shown herein (FIGS. 5 to 7) the articles 20 are in the form of wire spring relay components each comprising a row of wires 32 secured in fixed and spaced relation to each other in molded blocks 33 of dielectric material. The articles 20 are of different types, the wires 32 of one type (FIG. 6) being straight and the article being of such size that they may be supported in successive slots 16 in the magazine. In a second type of articles (FIG. 7) the wires 32 thereof have laterally disposed end portions 34 which project from the wires to such an extent as precludes the loading of the articles into successive slots of the magazine and necessitate the loading of these articles into alternate slots 16 in the magazine in order to avoid interference between articles.

Upon leaving a fabricating machine (not shown) the articles 20 are supported on a horizontal track 37 and advanced therealong step by step by a plurality of feed pawls 38 mounted on a reciprocatory feed bar 39 of an article feeding mechanism of the type disclosed in Rasmussen et al. Patent 2,861,676. The feed bar 39 is supported in a stationary frame 40 and is actuated by suitable means including a lever 42.

Mechanism is provided for indexing the carrier 22 and the magazine 15 step by step upwardly in timed relation to the reciprocation of the feed bar 38 and to the transfer of successive articles 20 from the track 37 to the magazine 15. This indexing mechanism includes a lever 46 which is mounted on an adjustable fulcrum member 47 for pivotal movement about an axis through the fulcrum member. A feed pawl 48 is slidably mounted at one end of the lever 46 and is spring urged into engagement with the teeth 29 of the ratchet bar 28. At its other end, the lever 46 carries a roller 49 that engages a cam 50 on the feed bar 39, the cam cooperating with a spring 51 to rock the lever 46 and impart successive indexing movements to the carrier 22 and the magazine 15 in response to reciprocation of the feed bar 39. The carrier 22 is held against downward movement by a pawl 53 which is supported on a fixed pivot pin 52 and is urged by a spring 54 into engagement with the teeth 29 of the ratchet bar 28.

The fulcrum member 47 extends transversely through an arcuate slot 55 in the lever 46 and is supported for movement therein relative to the lever 46 and to the frame 40 between first and second operative positions indicated in FIGS. 3 and 4. A pivot pin 56 extending through a bore 57 in the fulcrum member 47 is supported in the arms 58 of a yoke member 59 and supports the fulcrum member 47 and the lever 46 thereon for pivotal movement about the aforementioned axis through the fulcrum member. The yoke 59 is supported on a pivot pin 61 secured to the frame 40 for pivotal movement thereon and has a handle 63 extending upwardly from one of the arms 58 by means of which the yoke 59 and the fulcrum member 47 is shifted between the first and second operative positions (FIGS. 3 and 4). A spring pressed detent 64 (FIG. 2) on the handle 63 cooperates with a pair of recesses 65 in the frame member 40 to releasably hold the yoke 59 and the fulcrum member 47 in either of the operative positions with respect to the frame member 40.

The lever 46 is supported on the fulcrum member 47 against movement thereon parallel to the axis of the pivot pin 56 by flanges 68 of the fulcrum member 47 on one side of the lever and by a spacing collar 69 on the other side thereof. A detent 70 secured to one end of a leaf

spring 71 extends through an aperture in the flange 68 and cooperates with a pair of recesses 73 in the lever 46 to releasably secure the fulcrum member 47 to the lever in either of the operative positions of the fulcrum member. The spring 71 is secured at its other end 74 to the fulcrum member 47.

It will be understood that as the feed bar 39 reciprocates, the cam 50 thereon actuates the cam follower 49 on the lever 46 through a predetermined distance and rocks the lever and the fulcrum member 47 about the pivot pin 56. When the fulcrum member is set in the position shown in FIG. 3, the feed pawl 48 of the lever 46 is oscillated through a short stroke to effect the indexing of the carrier 22 and the magazine 15 through a short distance equal to the length of one tooth 29 of the ratchet bar 28 to position successive slots 16 of the magazine in the path of travel of the articles 20 on the track 37 for receiving articles 20 of the first type therein (FIG. 6).

When the fulcrum member 47 is set in the position shown in FIG. 4, the lever 46 is supported thereby so that in response to actuation by the cam 50 on the feed bar 39, the feed pawl 48 on the lever is oscillated through a longer stroke to effect the indexing of the carrier 22 and the magazine 15 through a distance equal to the length of two teeth 29 of the ratchet bar 28 so as to position alternate slots 16 of the magazine 15 in the path of movement of the articles on the track 37 for receiving articles of the second type therein (FIG. 7).

To facilitate the shifting of the fulcrum member 47 from one position to another, a holding pin 78 is slidably mounted on the lever 46 for movement into a recess 79 in a boss 80 on the frame member 40 to hold the lever 46 against movement. The shank of the holding pin 78 is supported in a bore 81 in the lever 46 and has a shoulder 82 intermediate its ends which is slidable in a counterbore 83 formed in a boss 84 extending laterally from the lever into close proximity to the boss 80. A spring 85 interposed between the shoulder 82 and the end of the counterbore urges the holding pin 78 to a normally retracted position with the end thereof disengaged from the recess 79 in the boss 80.

When it is desired to change the position of the fulcrum, the operator presses the holding pin 78 into the recess 79 to hold the lever temporarily against movement. The detents 64 and 70 are then retracted by the operator to release the yoke 59 and the fulcrum member 47 for movement relative to the lever 46 and the frame 40, after which the operator engages the handle 63 and shifts the yoke from one operative position to the other. On completion of the shifting of the yoke to the desired position, the detents 64 and 70, respectively, serve to lock the yoke 59 to the frame 40 and the fulcrum member 47 to the lever in the selected position. The holding pin 78 is then released and returns to its normal retracted position disengaged from the recess 79, and the indexing mechanism is in condition to index the carrier 22 and the magazine 15 through the selected distance.

It is to be understood that the above-described arrangements are simply illustrative of the application of the principles of this invention. Numerous other arrangements may be readily devised by those skilled in the art which will embody the principles of the invention and fall within the spirit and scope thereof.

What is claimed is:

1. In an apparatus for feeding articles into a magazine having a plurality of equally spaced recesses for receiving the articles, means including a reciprocatory feed bar for intermittently advancing a row of said articles along a first path and inserting the endmost article into recesses in the magazine, means for guiding said magazine for movement along a second path transversely of said first path, means including a lever actuated by said feed bar for moving said magazine step by step along said second path to align successive recesses of said magazine with said first path for receiving the articles, a fulcrum member mounted

on said lever for movement to a first position and to a second position on said lever and for supporting said lever for pivotal movement about an axis through said fulcrum member, means for shifting said fulcrum member to and from said first and said second positions on said lever without moving said lever, and means for supporting said fulcrum member in said first and said second positions for pivotal movement about said axis, said lever being operable with the fulcrum member in said first position thereon to effect the indexing movement of the magazine through a first distance and the alignment of successive recesses of the magazine with said first path and being operable with the fulcrum member in said second position thereon to effect the indexing movement of the magazine through a second distance equal to a multiple of said first distance.

2. An apparatus for feeding articles into a magazine having a plurality of equally spaced recesses for receiving the articles comprising mounting means, rails on said mounting means for supporting the articles for movement along a horizontal path, a carrier mounted for vertical movement on said mounting means for supporting said magazine for movement therewith in the path of movement of the articles, means including a reciprocatory feed bar for intermittently advancing the articles step by step on said rail and inserting the endmost article into the recesses of said magazine, a lever, a fulcrum member mounted on said lever intermediate the extremities thereof for movement thereon to a first position and to a second position, a ratchet bar mounted on said carrier, a feed pawl mounted on one end of said lever and engageable with said ratchet bar, means on said feed bar engaging the other end of said lever for effecting the oscillation of said other end of the lever through a predetermined distance about an axis through said fulcrum member, a supporting member having means for supporting said fulcrum member for pivotal movement about said axis, means for mounting said supporting member on said mounting means for movement to a pair of positions for supporting said fulcrum member in said first and said second positions on said lever and to guide said supporting member for movement from one to the other of said pair of positions without moving said lever, and means for moving said supporting member to shift said fulcrum member to and from said first and said second positions on said lever, said lever being operable with the fulcrum member in said first position thereon to effect the indexing movement of the magazine through a predetermined short distance and the alignment of successive recesses of the magazine with the horizontal path of movement of the articles and being operable with the fulcrum member in said second position thereon to effect the indexing movement of the magazine through a predetermined long distance and the alignment of alternate recesses of the magazine with said path of movement of the article.

3. An apparatus as defined in claim 2 and including means on said lever cooperable with said mounting means for holding said lever against movement during the shifting of said fulcrum member from one position to another.

4. An apparatus as defined in claim 2 and including means for releasably holding said supporting member in each of said pair of positions on said mounting means, and means for releasably holding said fulcrum member in said first and said second positions on said lever.

5. In an apparatus for feeding articles into a magazine having a plurality of equally spaced recesses for receiving the articles, mounting means, means on said mounting means for supporting said parts for movement along a horizontal path, a carrier mounted for vertical movement on said mounting means for supporting said magazine for movement therewith in the path of movement of the articles, means including a reciprocatory feed bar for intermittently advancing the articles step by step

5

along said horizontal path and inserting the endmost article into the recesses of said magazine, a lever having a slot therein intermediate the extremities of the lever, a fulcrum member mounted slidably on said lever in said slot for movement to a first position and to a second position for supporting said lever for oscillatory movement about an axis through said fulcrum member, a ratchet bar mounted on said carrier, a feed pawl mounted on one end of said lever and engageable with said ratchet bar, means on said feed bar engaging the other end of said lever for effecting the oscillation of said other end of the lever about said axis through said fulcrum member, a yoke having means for supporting said fulcrum member and said lever thereon for pivotal movement about said axis, means for mounting said yoke on said mounting means for movement to a pair of positions to support said fulcrum member in said first and said second positions and to guide said supporting member for movement from one to the other of said pair of positions without moving said lever, means for moving said supporting member to shift the fulcrum member to and from said first and said second positions, means on

6

said lever cooperable with said mounting means for holding said lever against movement during the shifting of said fulcrum member from one position to another, means for releasably holding said supporting member in each of said pair of positions on said mounting means, and means for releasably holding said fulcrum member in said first and said second positions on said lever, said lever being operable with said fulcrum member in said first position thereon to effect the indexing movement of the magazine through one distance and the alignment of successive recesses of the magazine with the path of movement of the articles and being operable with the fulcrum member in said second position thereon to effect the indexing movement of the magazine through another distance and the alignment of alternate recesses of the magazine with the path of said articles.

References Cited in the file of this patent

UNITED STATES PATENTS

2,942,392	McCain et al. -----	Jan. 28, 1960
3,014,323	Stephen -----	Dec. 26, 1961