May 22, 1934. W. F. BUTLER 1,959,342

AUTOMATIC MACHINE FOR FEEDING KEYS AND STACKING THEM

Original Filed Feb. 20, 1926

Fig. 1

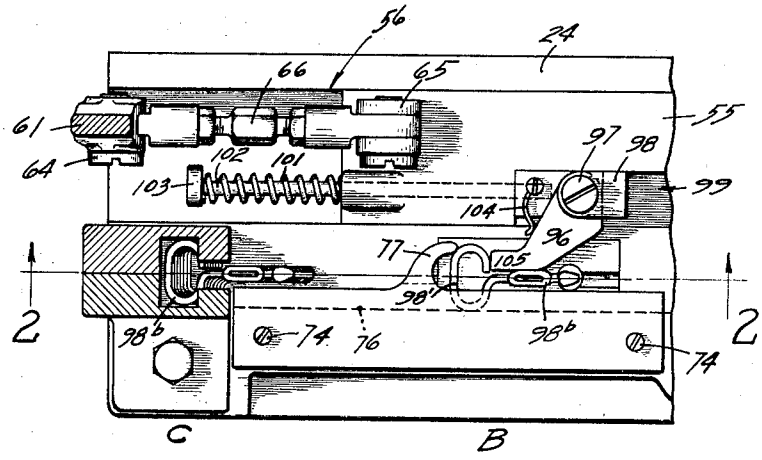


Fig. 2

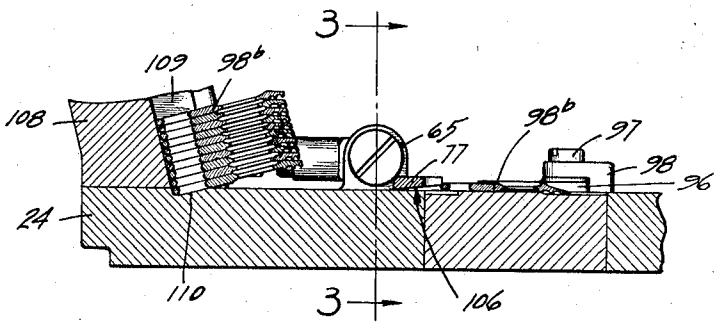
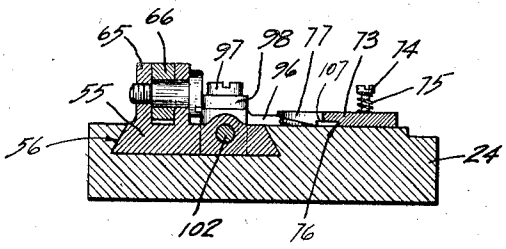


Fig. 3



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AUTOMATIC MACHINE FOR FEEDING KEYS AND STACKING THEM

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Original application February 20, 1926, Serial No. 89,534. Divided and this application August 22, 1931, Serial No. 558,742

3 Claims. (Cl. 214—6)

My invention relates to a novel means and method of feeding distinctively shaped relatively small objects and arranging them in predetermined position for a future operation. In particular, my invention relates to a novel method and apparatus for automatically feeding can opening tearing strip keys, and like sufficiently rigid articles, and automatically restacking the keys in a magazine. This is a division of my application Serial No. 89,534 filed February 20, 1926 on Automatic machine for feeding keys from a drum and flattening and stacking them.

Of recent years the use of tearing strip containers has been greatly increased and with such use has come the need of efficient opening keys. It is necessary to provide each container with a key and the practice has been to attach a key to the cover of a container in a manner which will prevent its unintentional displacement but which will permit removal when the key is to be used in opening the container.

The most satisfactory method of attaching keys has been by welding a portion of the key to the container cover. Probably the most satisfactory key in use today is one provided with weakened parts which permits attachment of the key to the can cover in a manner that allows the removal of the key by a tearing away of the key from a small portion thereof which has been welded to a can cover. Such a key is disclosed in the Young Patent No. 1,495,830.

A particular variation of the type of key disclosed in the said Young patent and one on which my apparatus is adapted to operate, is that embodied in the Stollberg Patent No. 1,754,447. In the key illustrated in the Stollberg patent the lower extremity of the same has been flattened to provide a part readily severable from the shank or other portion of the key and this flattened portion is provided with a protuberance struck out from one face of the flattened portion to permit subsequent welding of that portion of the key to a can cover.

The apparatus set forth in my pending application, previously referred to, is designed to feed keys from a promiscuous mass of keys automatically into stacked formation and to automatically remove a key from the lower extremity of the stack and position it beneath a flattening die where mechanism operates to flatten the extremity of the key and provide it with the protuberance mentioned. After the key has been flattened, it is automatically conveyed to a place of deposit where the keys are automatically placed in stacked formation. In other words the keys are restacked and it is with this final stacking feature that the present application is particularly concerned.

While I have disclosed an apparatus adapted to form the type of key disclosed in the aforementioned Stollberg patent, the various steps in the operation of my invention are equally adaptable to keys of other form and the structure disclosed is merely an embodiment of a preferred form.

The principal object of the present invention is the provision of an apparatus for feeding keys or similar objects and stacking them in superimposed position for a subsequent operation.

A further important object of the invention resides in the novel method and means for conveying keys in succession from one station to another and for stacking said keys at the second station.

A further object of the invention resides in the novel arrangement of a restacking chute in an apparatus of the character described and in the disposition of the feeding means relative thereto so that the keys may be fed along in a horizontal plane in succession and automatically stacked, for convenient handling in a subsequent operation if desired.

Numerous other objects of the invention will be apparent as it is better understood from the following description, which, taken in connection with the accompanying drawing discloses a preferred embodiment thereof.

Referring to the drawing:

Figure 1 is a sectional plan view of the principal parts of an apparatus for exemplifying the present invention;

Fig. 2 is a longitudinal sectional view, taken substantially along the line 2—2 in Fig. 1; and

Fig. 3 is a transverse sectional view taken substantially along the line 3—3 in Fig. 2.

In the drawing only sufficient parts of an apparatus are disclosed for illustrating the steps of the present invention. Such parts may be connected with a more complete machine such as that disclosed in my pending application and these parts may be supported by a bed plate 24. In this bed plate there operates a feeding mechanism which comprises a slide 55 operating in a slot or guideway 56 formed in the bed plate. This construction prevents accidental displacement of the slide from the slot or guideway. The slide 55 receives reciprocating motion in any suitable manner, a movable lever 61 being provided for this purpose. The lower end of this lever is pivoted at 64 to a connecting turn buckle

66 pivotally connected with lugs 65 formed on the slide 55.

A feed dog 96 is pivoted at 97 on a block 98 which is located in a slot 99 formed in the upper face of the slide 55. This block 98 is normally held against the forward face of the slot by means of a spring 101 encircling a rod 102 passing through a portion of the slide 55 and being secured at its inner extremity to the block 98. The spring 101 is positioned about the rod 102 and is confined between the forward face of the slide 55 and a head 103 formed on the outer extremity of the rod.

The dog 96 is normally held in the position illustrated in Fig. 1 by means of a spring 104 wherein a forward extremity 105 of the dog 96 engages behind a head 98′ of a key 98*b*. As the slide moves toward the left, as viewed in Fig. 1, the key 98*b* is moved from its position at a station B to position at a station C, the key head sliding along an inner shoulder 76 (Figs. 1 and 3), of a spring pressed plate 73.

The key 98*b* while at station B and prior to movement by the feed dog 96, is held downwardly upon the upper surface of the bed 24 by the plate 73. This plate 73 is carried by and yieldingly held upon the bed plate 24 by screws 74 encircled by coil springs 75, the screws passing through suitable openings in the plate 73 and being threadedly engaged within the bed plate 24. The key 98*b* at the station B also rests against a projection 77 formed on the plate 73, one side of the head 98′ of the key 98*b* engaging the shoulder 76 of the plate 73.

During the movement of the key from station B to station C by the advancing feed dog 96, the plate 73 is slightly lifted by the rounded portion of the key head by reason of an incline 106 formed on the under face of the plate projection 77.

If for any reason the key should become jammed during this movement, the full stroke of the slide 55 would be taken but the dog 96 would remain in its position, this being permitted by the flexing of the coil spring 101 and no damage would result to the operating parts.

At the station C, the key is moved into a stacking mechanism 108 formed with a slot 109 provided to fit about the head of the key. The walls of the mechanism 108 and the slot 109 are inclined from the vertical and this in connection with a depression 110 formed in the bed plate 24 causes the keys to lay with their heads lower than the shank. Each key, therefore, as it is being moved into the position C is easily inserted beneath the stack of keys already positioned in the slot 109 of the magazine 108. This relative positioning of the keys is clearly illustrated in Figs. 1 and 2. As each key is inserted under the stack the weight of the stack elevates the outer or rear end of the key so that it is ready to be impinged upon by the next following key.

It is thought that the invention and many of its attendant advantages will be understood from the foregoing description and it will be apparent that various changes may be made in the form, construction and arrangement of the parts without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the form hereinbefore described being merely a preferred embodiment thereof.

I claim:

1. The method hereinbefore described, comprising maintaining a stack of can strip tearing keys in vertical superimposed position with their heads remotely located and with their free shank ends inclined upwardly with respect to their heads, and in feeding a key head foremost in horizontal position under the upwardly inclined end of the lowermost key of said stack of keys, whereby the head of the key being fed will gradually force said stack upwardly to permit said key being fed to lie in lowermost position under said stack.

2. In a device of the class described, the combination of a bed plate, an upwardly extending chute for holding a stack of can strip tearing keys, said chute and bed plate being constructed and arranged to hold said keys superimposed one over another and with their free shank ends parallel, but inclined upwardly from the bed plate, with the head of the lowermost key resting upon the bed plate, and means for feeding another key horizontally along the bed plate and into said chute, so that the head of the key being fed passes beneath the raised shank end of the lowermost key of the stack, and forces said stack and lowermost key upwardly, whereby said key being fed replaces said former lowermost key in the stack.

3. The method of stacking articles suitable for such operation, which consists in maintaining a stack of such articles superposed on one another, and forcing sidewise and wedging articles to be added to the stack successively against the bottom of the stack at an acute angle thereto, and wedging the stack upward step by step solely by the force which is applied to the said articles.

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