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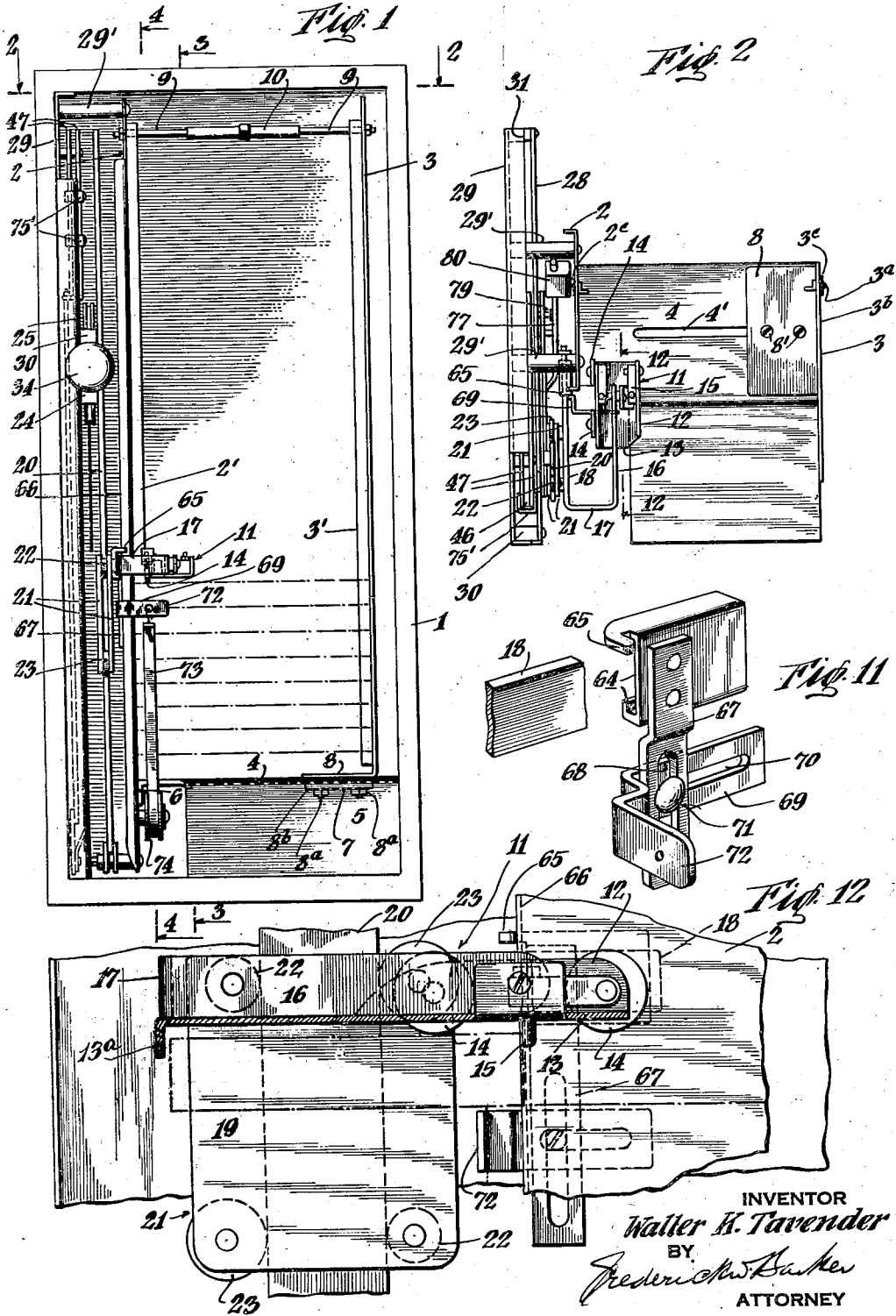
W. K. TAVENDER

1,992,554

VENDING MACHINE

Filed May 7, 1932

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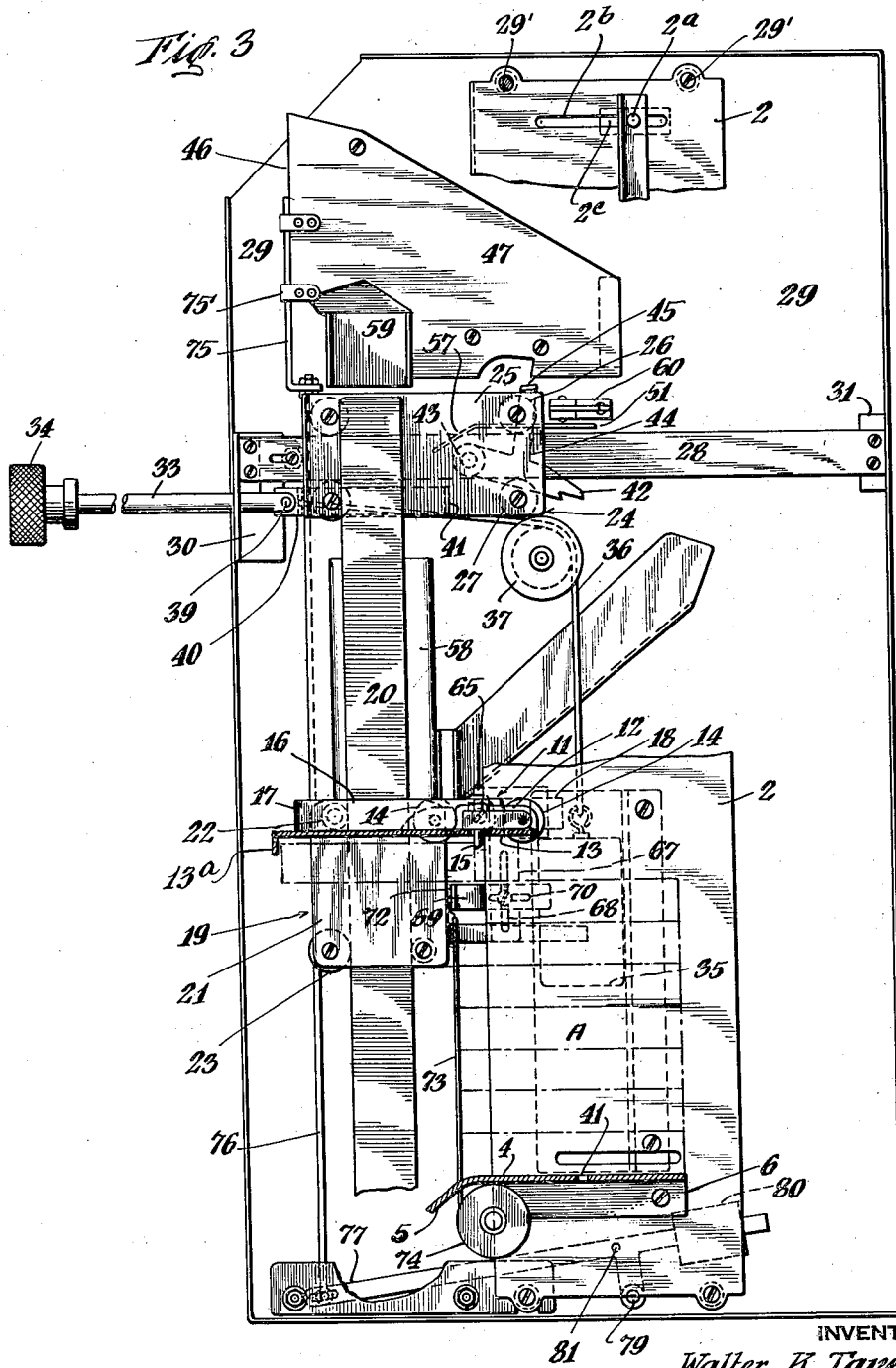
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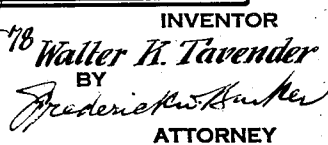
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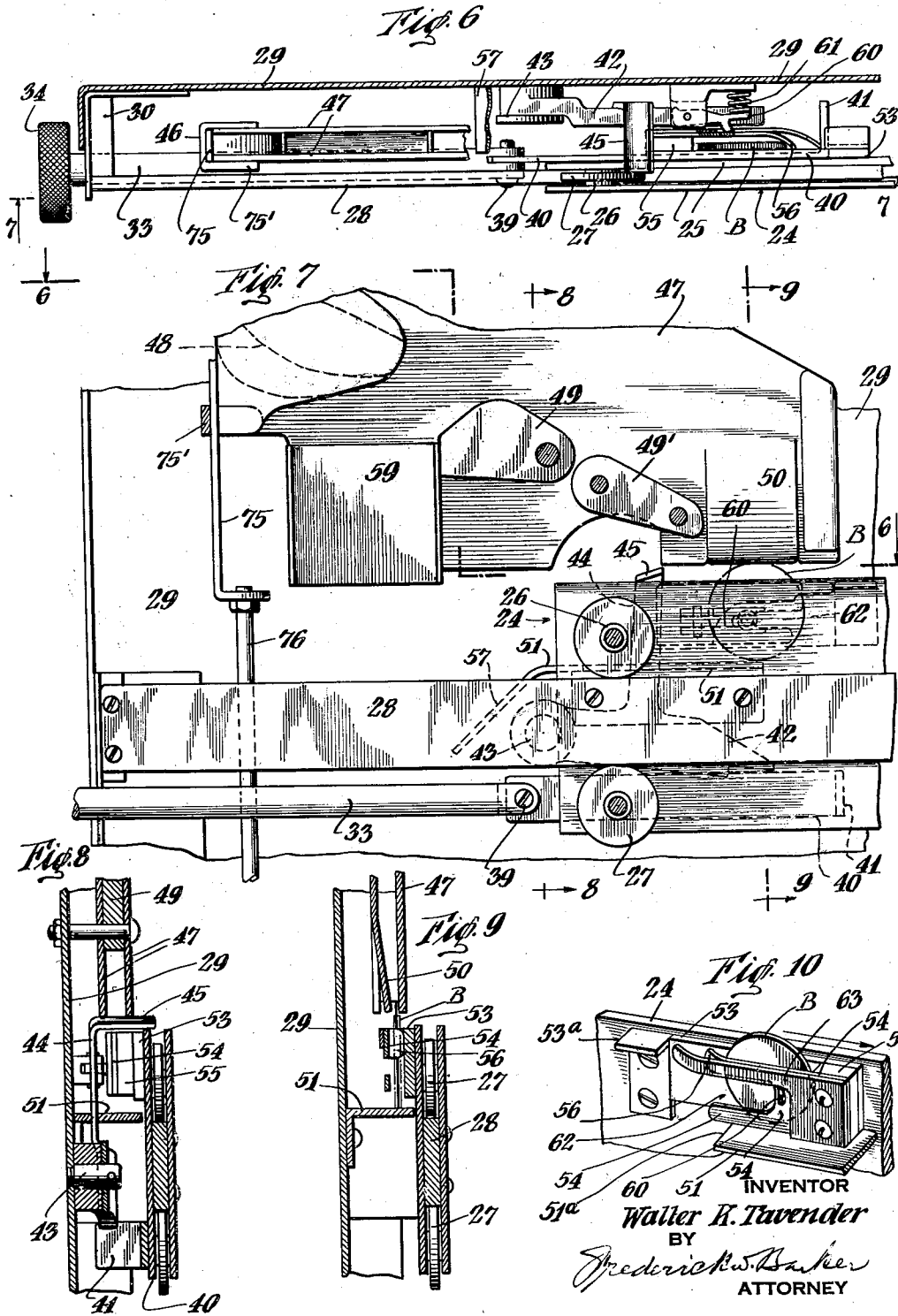
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Fig. 13

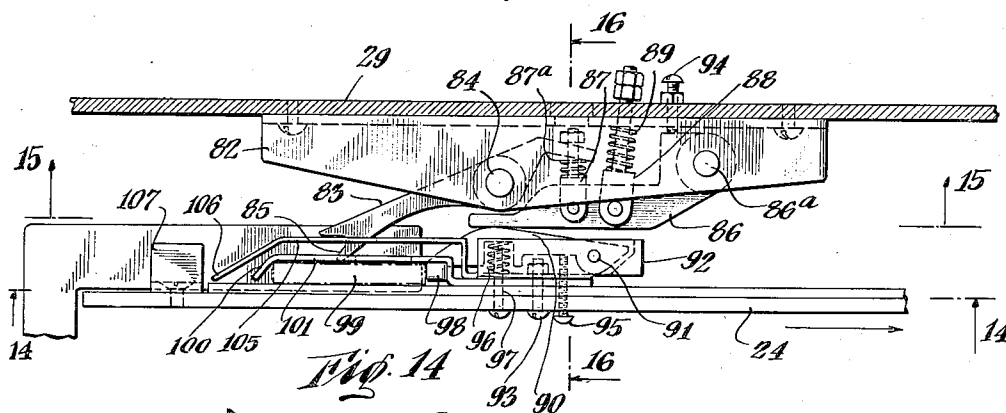


Fig. 14

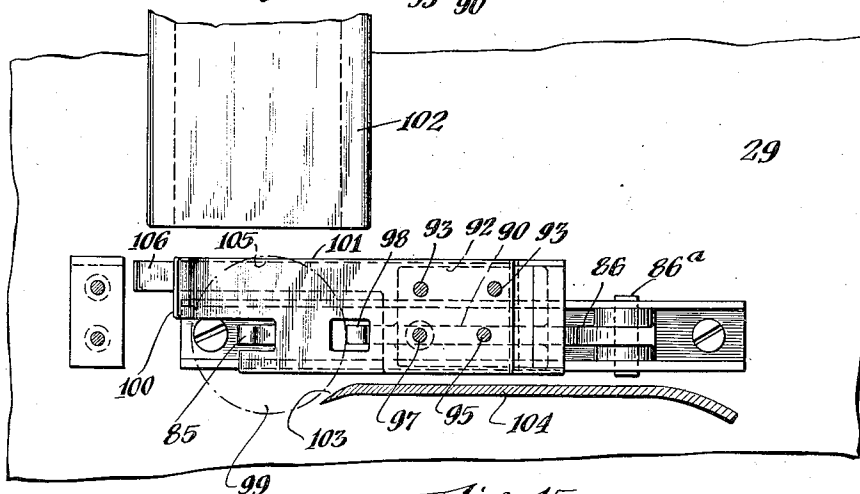


Fig. 15

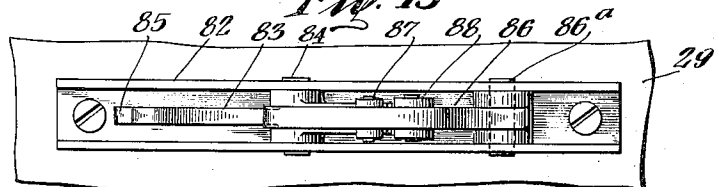
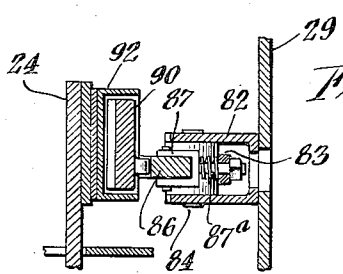


Fig. 16



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1,992,554

VENDING MACHINE

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Inc., New York, N. Y., a corporation of Dela-
ware

Application May 7, 1932, Serial No. 609,807

6 Claims. (Cl. 312-67)

This invention relates to vending machines, and my improvements are directed to an apparatus of simple and economical construction having relatively few movable parts, wherein a fixed support
5 for stacked vendible articles is employed and wherein the topmost articles are to be removed, in succession, through the medium of coin actuated delivery mechanism, until the stack thereof is depleted, and whereby, when the bottom article
10 of the stack has been removed, the coin admission means becomes automatically closed.

With this apparatus it is desirable that the vendible articles be in the form of packages, or the like, having flat surfaces, so that they may be
15 conveniently piled in a vertical stack, and the delivery means comprise a wheeled device which is adapted to rest upon the topmost article, and is provided with means for engaging said article to pull it off the stack.

The wheeled device travels on a vertical guide member which at its upper portion is connected to a carriage that travels along a fixed horizontal bar, said carriage being engaged with a manually
20 operating member, by whose agency the carriage is drawn forwardly, thereby causing the delivery means to eject the topmost article.

The carriage is normally held fast by lock means until a proper coin has been introduced into the mechanism, whereupon, in starting to actuate the operating member, the coin releases the
30 lock means, when the carriage is free to be moved forwardly and thereby to eject the topmost article.

Other features and advantages of my invention will hereinafter appear.

In the drawings:

Figure 1 is a front elevation of a vending machine including my improvements, with the front of the cabinet removed.

Fig. 2 is a horizontal section, taken on the line 2-2 of Fig. 1.

Fig. 3 is an enlarged side sectional view, taken on the line 3-3 of Fig. 1.

Fig. 4 is a similar view, taken on the line 4-4 of Fig. 1.

Fig. 5 is a sectional detail, taken on the line 5-5 of Fig. 4.

Fig. 6 is a horizontal section, taken on the line 6-6 of Fig. 7.

Fig. 7 is a side elevation, looking in the direction of the arrows 7-7 of Fig. 6.

Fig. 8 is a section taken on the line 8-8 of Fig. 7.

Fig. 9 is a section taken on the line 9-9 of Fig. 7.

Fig. 10 is a perspective detail of the coin supporting means.

Fig. 11 is a perspective detail of the means of connection between the carriage and the front guard support.

Fig. 12 is a partial sectional view, taken on the line 12-12 of Fig. 2.

Fig. 13 is a top plan view of modified coin supporting means, which includes means for rejecting washers and the like.

Fig. 14 is a section on the line 14-14 of Fig. 13.

Fig. 15 is a section on the line 15-15 of Fig. 13, and

Fig. 16 is a cross section on the line 16-16 of Fig. 13.

As premised, my improved vending machine is of economical construction and, hence, has relatively few moving parts, which are of simple character.

In Figs. 1 and 2 there is represented a casing 1, which contains a frame comprising a fixed side wall 2, and an opposed wall 3 which is adjustable toward and from said fixed wall, to vary the width of the intermediate space, according to the width of the vendible articles A that are to be stacked between said walls upon a fixed base 4. Said base 4, which is inclined downwardly at its forward portion, as at 5, has an angled portion 6 by which it is attached to the fixed wall 2, and also has adjustable means of connection 7 with an intumed flange 8 of the wall 3. The adjustable means herein shown consists of a slot 4' through base 4 which receives screws 8' that depend from flange 8, and are secured by nuts 8a and a washer 8b. The walls 2 and 3 are further
35 adjustably connected as by the rod sections 9 and turnbuckle 10.

The walls 2 and 3 respectively carry angled members 2', 3', that are vertically disposed and provided near both ends with bolts 2a, 3a, slidable in horizontal slots 2b, 3b, said bolts being yieldingly adjustable by spring washers 2c, 3c. These angled members thus serve as rear guides or limits for the stack of articles and are adjustable to accommodate articles of varying lengths.

The stack of articles supports an ejecting device which is generally indicated by the numeral 11, and consists of a trough shaped member having the walls 12 and base 13, the walls 12 carrying wheels 14 by which said member may ride upon the topmost article of the stack thereof, and said base pivotally carrying a depending spur or pawl 15 which is adapted to engage behind the rear end of the topmost article, to withdraw said topmost article in the forward movement of the

ejector. It will be understood that the pawl 15, being pivoted, is free to swing upwardly in the rearward movement of the ejector, as it passes back over a succeeding topmost article, preparatory to the engagement of said pawl with the rear end of said article. Base 13 carries a forward hook 13a to lie in front of the topmost article and prevent its being shifted out.

Attached to the ejector is one arm 16 of a U-shaped member, that extends forwardly to the bend 17, whence the other arm 18 extends rearwardly, in spaced relation to arm 16, said arm 18 carrying a slide 19, that is adapted to travel upon a vertical guide bar 20. The slide 19 is composed of the separated plates 21, which are held apart by spacers 22, and have between them the wheels 23 that co-act with the edges of bar 20 to facilitate the travel of the slide, whereby the ejector is movable vertically. Thus, as the topmost article of a stack is ejected, the ejector falls by its own weight and that of slide 19 upon the next succeeding article, which becomes the topmost article.

As means for moving the ejector horizontally in the performance of its functions I employ a traveller 24 which may be composed of the separated plates 25, having the spacers 26 and the intermediate wheels 27, whereby said traveller is movably mounted on a horizontal bar 28, that extends between the front and rear of the machine. As here shown said bar 28 is secured to the frame wall 29 by brackets 30, 31.

It is to be noted that the wall 29 is in the form of a panel, to which the wall 2 is secured, in spaced relation therewith, as by bolts 29'. Said panel therefore carries all the operative elements of the apparatus, which are thereby disposed at one side within the casing.

The traveller 24 is secured to the vertical bar 20, as at 32, and thereby the movement of said traveller is transmitted to ejector 11. A pull rod 33, having an operating handle 34, co-acts with the traveller 24 for drawing said traveller forwardly, and a weight 35, connected with said pull rod by a cable 36, that passes over a fixed pulley 37, is employed for the purpose of returning said traveller and pull rod to their normal position. Also, as will be apparent, the vertical bar 20, slide 19 and ejector 11 are operated at the same time, in their out and in movements, respectively by the pull rod and weight.

Connected with pull rod 33, as by a pivot 39, is a horizontal lock member 40, which is secured to traveller 24, said member 40 having a lip 41 at its end, adapted, when the traveller is in its normal or retracted position, to co-act with a pawl 42, thereby constituting a lock that prevents the operation of the pull rod and its associated elements. Hence it follows that the lock must be released before an article can be delivered.

The pawl 42 is pivoted, in a fixed position, as at 43, at its end opposite the lip engaging end or nose, and said pawl has an upwardly extending arm 44, that is provided with an angled finger 45, whose under surface is inclined rearwardly upward. It is my purpose to provide an interponent, such as a proper coin, to be haltingly supported in position to co-act with finger 45, to lift said pawl and thereby release the traveller 24 from its locked engagement, so that the pull rod may then be capable of operation. The interponent or proper coin, such as indicated at B, is to be introduced at slot opening 46 into a passageway formed between the spaced plates 47, and guide members 48, 49, and 49' in said passageway,

will direct said coin to an outlet channel 50, whence said coin will fall upon a fixed base support 51 that is extended from the frame wall 29. While thus halted on base support 51 the coin is held in a vertical position by a side wall 53 that is secured to the traveller 24, and by a spring plate 54 that is secured to said side wall 53, in spaced relation therewith, a spacing block 55 establishing the intermediate space that separates side wall 53 and plate 54, which space is sufficient to freely receive the coin. The block 55 forms the forward boundary of said space, and the plate 54 is returned at its free end 56, to form the rear boundary of said coin retaining space.

The thus lodged coin, in the normal position of the traveller 24, is located rearwardly of finger 45, the upper edge of the coin perimeter extending into a horizontal plane lying above the inclined under surface of said finger. Therefore, as the traveller 24 is started forwardly the coin will engage said finger at its under inclined surface, thereby lifting said finger, whereby the nose of pawl 42 is released from its engagement with lip 41, permitting the traveller 24 to be drawn forwardly in the operation of the pull rod.

The base support 51 terminates at its forward end in downwardly inclined portion 57, which constitutes a guide path for directing the coin, when it has passed from under finger 45, to fall into a coin box 58, whose entrance is positioned below incline 57, in the path of the falling coin. The guide member 48 may be a magnet, serving at its poles to deflect a magnetizable disk, causing such disk to fall through a chute 59, and thus to be returned without performing any operative function in the machine. Coins or substitutes therefor that are smaller than a proper or designated coin, will fall between the free end 56 of plate 54 and the rear edge of base support 51 and thus will also be returned through the chute 59.

In the instance of a non-magnetic washer or the like of approximately the same size as a proper coin, this will be caught by a fixedly located pivotal hook 60 that lies normally against the plate 54 under the pressure of a spring 61, said hook impaling the washer through an open-ended slot 62 in plate 54 in the first part of the outward movement of traveller 24, so that such washer is not carried forwardly by the coin holding means, but is left behind and allowed to fall as the support 51 moves away therefrom. An outer plate 63 is placed over the plate 54 and extends therebeyond to form an additional support for a washer that has been partially ejected, prior to return of member 53, for final ejection.

In order to provide for the ejection of washers, without requiring excess motion of the traveller 24, the plate end 56 and the free end of plate 63 constitute a double hold thereon. The initial movement of traveller 24 shifts the washer until it is held between the ends of both plates 54 and 63, thus preventing swiveling of the washer while the hook 60 becomes withdrawn, and resumes its position behind the washer. Continued movement of the traveller forces the washer under the flange 53a of wall 53, whence it will fall away.

The arm 18 of the U-shaped member that connects ejector 11 with slide 19, is itself slidable in a horizontal guide 64, said guide having a hook shaped portion 65 that slidably engages an out-turned flange 66 on wall 2.

Attached to and pendent from guide 64 is a bar 67, which is provided with a vertical slot 68. Adjustably connected with bar 67 is a bracket

69 having a horizontal slot 70, the means of connection being a bolt 71 that penetrates both slots, thus permitting adjustment of the bracket both vertically and horizontally. The bracket 69 has an angled arm 72 that extends laterally and serves as engaging means for one end of a tape 73, whose other end is engaged by a spring return roller 74, that is mounted, in a fixed position, in a plane lower than the base 4.

The bracket 69 is adjusted to a position where its arm 72, with relation to the ejector, will lie in front of the next succeeding article of the stack below the topmost article, so that said bracket and the tape 73 will guard the other articles of the stack against delivery at the time of ejecting the topmost article.

As means for closing the coin receiving slot 46 when the stack of vendible articles has been exhausted, I employ a closure slide 75, operable in guides 75', and carried by a rod 76, whose lower end is pivoted to a lever 77, said lever having a pendent lug 78 by which it is fulcrumed at 79, and carrying a partial weight-compensating weight 80 at its free end. Normally, with the ejector raised by the presence of one or more articles on base 4, the weight of slide 75 and rod 76, exceeding that of weight 80, causes the slide to leave the slot 46 uncovered. But when the bottom article of the stack has been ejected, then the slide 19, which moves with the ejector, and whose lower portion depends below said ejector, co-acts with the lever 77 to cause the slide 75 to cover slot 46. Thus, when the bottom article has been ejected and the weight 35 retracts traveller 24 and also ejector 11 and slide 19, the lower portion of said slide 19, in moving rearwardly, engages a stud 81 that projects laterally from lever 77, thereby rocking said lever, in which act the weight 80 is lowered and the rod 76 is raised, thus moving slide 75 up into its slot closing position.

In the modified form of coin supporting and washer rejecting means illustrated in Figs. 13 to 16, a channel 82 is shown as secured to the frame wall 29, and a lever 83, pivoted at 84 to said channel has a tooth 85 at one end which is adapted to enter the orifice in a washer to impale it. Lever 83 is connected to another lever 86 as at 86a by a pivotal yoke 87, a spring cushion 87a being interposed between the said levers. Also, a pivotal yoke 88 connects the lever 83 with the wall 29, and a compression spring 89 normally urges said lever 86 against a lever 90, that is pivoted at 91 to the channel 92, which is carried by the traveller 24, being secured thereto as by bolt 93. An adjustment screw 94, bearing against lever 86 serves as a stop to limit the movement of said lever toward wall 29; and an adjustment screw 95, bearing against lever 90, serves as a stop to limit the movement of said lever 90 toward traveller 24. A compression spring 96, guided by a stud 97, and bearing against lever 90, urges said lever toward lever 86.

Lever 90 also has a nose portion 98 which lies normally against the peripheral edge of a proper or designated coin, here indicated at 99, the opposite edge portion of said coin, at its perimeter, being engaged by the bent over end 100 of a spring finger 101, whereby the coin, which has fallen through chute 102, becomes caught by and lodged between the nose 98 and finger end 100, which elements are spaced apart exactly the distance necessary for them to constitute a frictional coin hold. Should the coin be of too small a diameter it would not be so held, but would fall away.

It will be noted that the tooth 85 on lever 83 bears with slight pressure against the coin surface, but if a washer is deposited, then the tooth 85 will enter the hole therein and impale it. When the traveller is moved operatively in the direction of the arrow thereby the lever 90 is drawn out of contact with lever 86 and thereupon lever 90 is moved under the action of spring 96, shifting nose 98 out of the path of the coin, said coin thereafter riding up incline 103 on to base support 104, in which elevated position it co-acts with finger 45 for release of the pawl 42, whereafter the coin is delivered to the coin box in the manner previously described.

It will be seen that there is another spring finger 105, having a bent over end 106 which extends beyond, but lies in the same plane as the finger end 100. When a washer has been impaled by tooth 85 and the traveller is drawn away, the washer will become held between the two, spaced points presented by fingers 101, 105, whereas if only one finger were employed the washer would be apt to swivel thereon. As thus held the washer, on the return movement of the traveller, will be displaced by contact with the flange 107. When the lever 90 leaves contact with lever 86 another effect produced thereby is that the spring pressure on lever 86 causes the lever 83 to be rocked, moving the tooth 85 away from the spring fingers 101, 105.

Variations within the spirit and scope of my invention are equally comprehended by the foregoing disclosure.

I claim:

1. The combination, in a vending machine, of fixed supporting means for a stack of articles, ejecting means supported by said stack and adapted to eject successive topmost articles, an arm connected to said ejecting means, a horizontally movable traveller, a fixed bar mounting said traveller, a vertical guide slidably engaged by said arm and connected to said traveller, and means for imparting reciprocatory movement to said traveller, said movement being simultaneously imparted to said guide and said ejecting means.

2. The combination, in a vending machine, of fixed supporting means for a stack of articles, ejecting means movably supported upon said stack and adapted to eject successive topmost articles, a slide connected to said ejecting means, a horizontally movable traveller, vertical guide means connecting said traveller to ejecting means by way of said slide, manual means for moving said traveller in one direction, and return means therefor.

3. The combination, in a vending machine, of fixed supporting means for a stack of articles, ejecting means supported by said stack and adapted to eject successive topmost articles, a slide connected to said ejecting means, a vertical guide bar for said slide, a fixed horizontal bar, a traveller on said horizontal bar, said traveller engaging said vertical guide bar, manual means for moving said traveller in one direction along said horizontal bar, and return means therefor.

4. The combination, in a vending machine, of fixed supporting means for a stack of articles, ejecting means supported by said stack, said ejecting means having a pivotal member adapted to engage a topmost article, at the rear thereof, to eject it, said pivotal member yielding to pass over the stack in the return of the ejecting means, a horizontally movable traveller, vertical guide means affixed to said traveller, a slide mounted

on said guide means, an arm connecting the slide and the ejecting means, manual means for moving said traveller in one direction, and return means therefor.

- 5 5. The combination, in a vending machine, of fixed supporting means for a stack of articles, ejecting means supported by said stack and adapted to eject successive topmost articles, a flexible guard for said stack of articles, a guard engaging member that is movable vertically in front

of the next to the topmost article, and take-up means for said guard located below the plane of said supporting means.

6. The combination, in a vending machine of fixed supporting means for a stack of articles, ejecting means supported by said stack and adapted to eject successive topmost articles, and an adjustable guard member that is supported in front of the next to the topmost article.

WALTER K. TAVENDER.