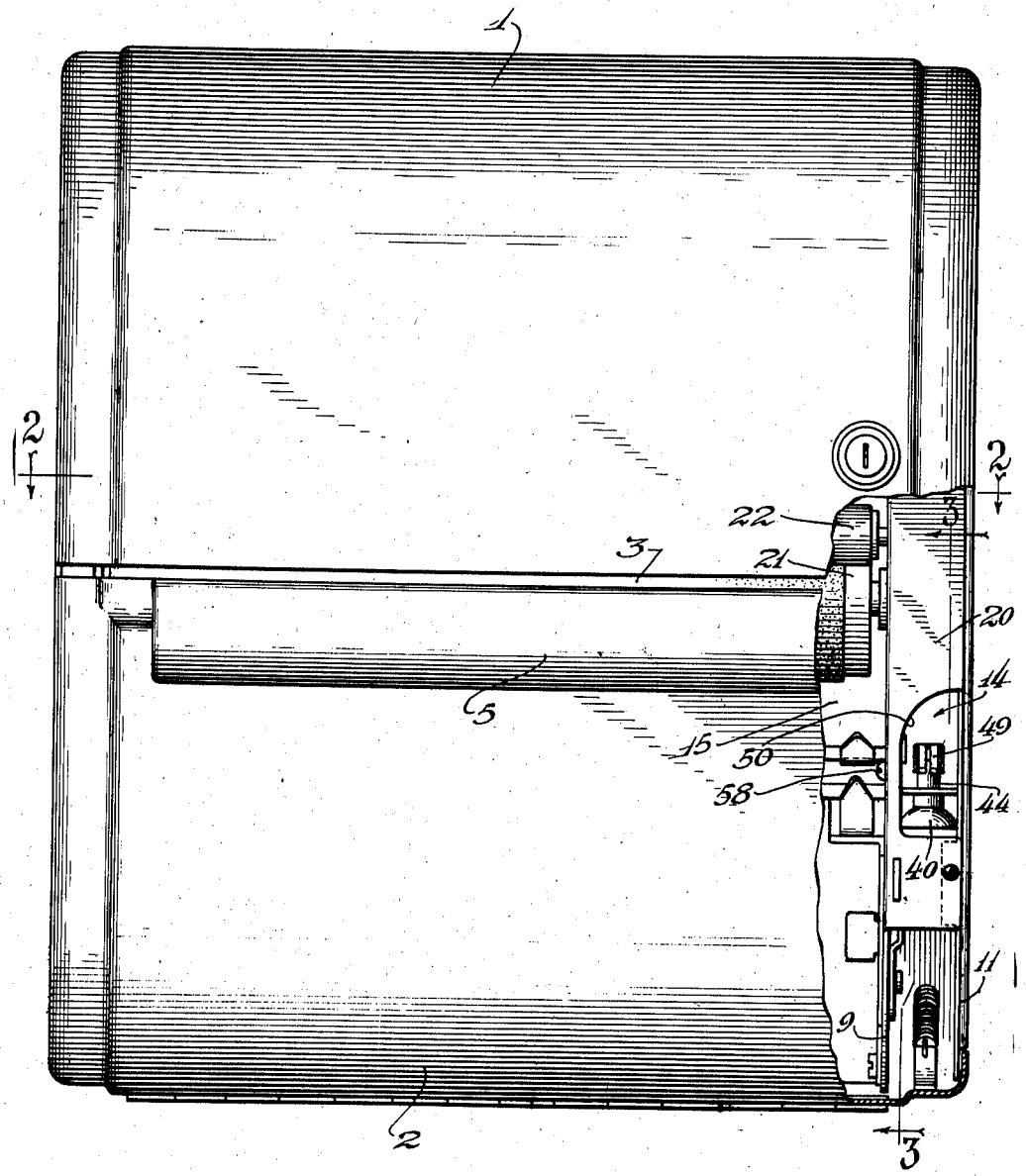
Oct. 13, 1942. A. C. GRUNWALD 2,298,882

STOP MECHANISM FOR DISPENSING CABINETS

Filed Jan. 14, 1941 4 Sheets-Sheet 1

Fig. 1.



Inventor:
Albert C. Grunwald
By Harold Olsen
Attorney

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STOP MECHANISM FOR DISPENSING CABINETS

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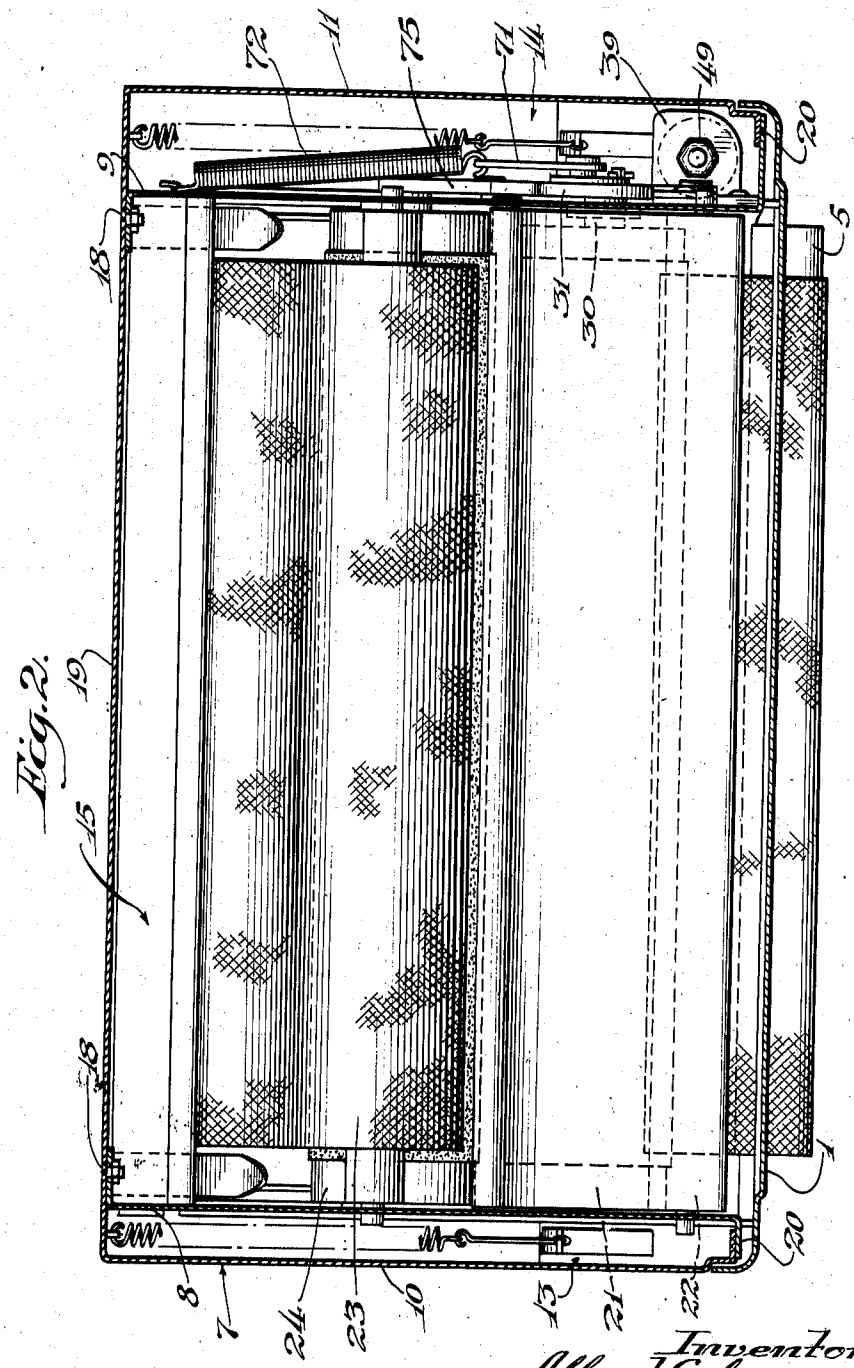


Fig. 2.

Inventor:
Albert C. Grunwald
By Harold Olsen
Attorney

Oct. 13, 1942. A. C. GRUNWALD 2,298,882

STOP MECHANISM FOR DISPENSING CABINETS

Filed Jan. 14, 1941 4 Sheets-Sheet 3

Fig. 3.

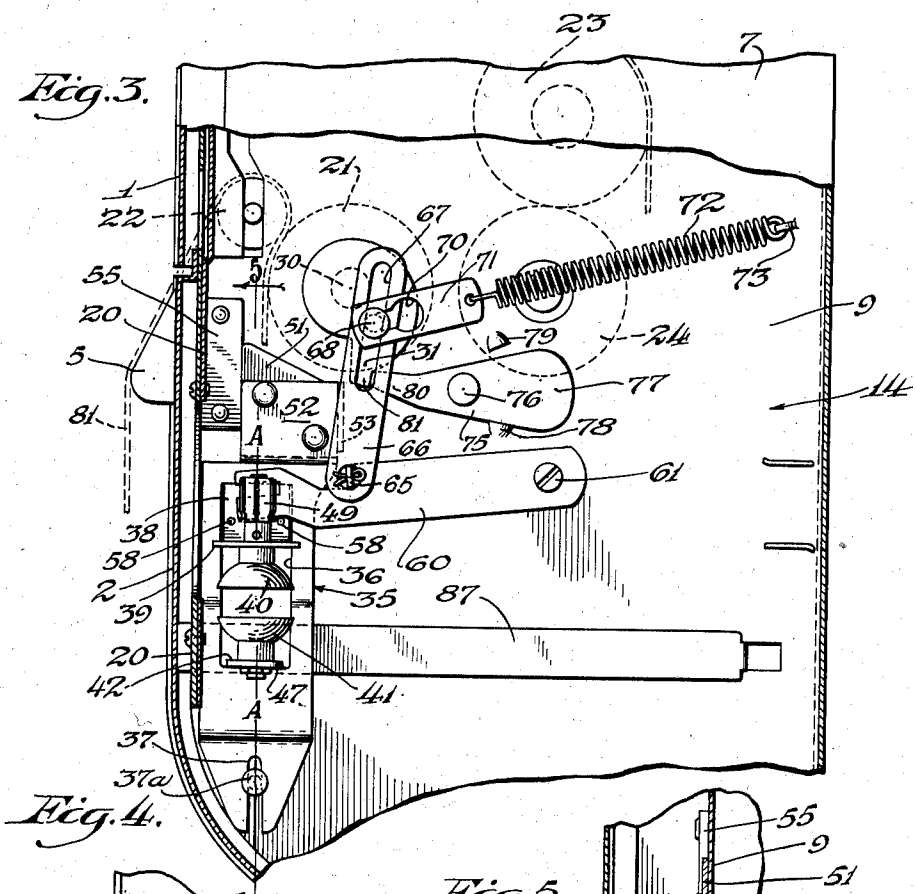


Fig. 4.

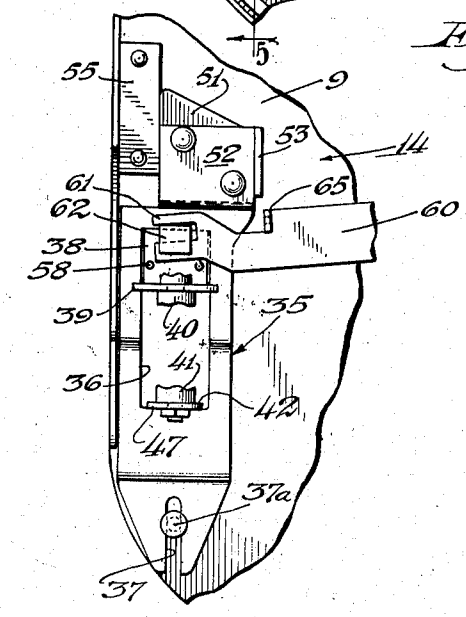
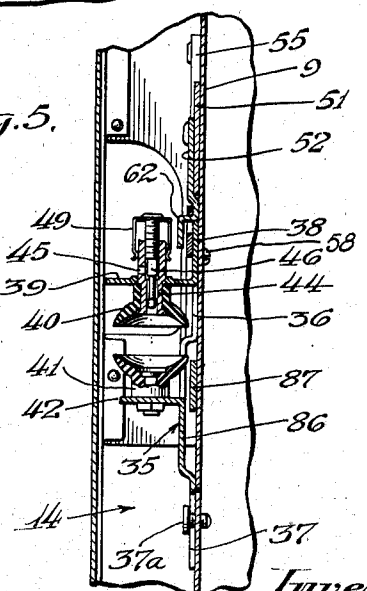


Fig. 5.



Inventor:
Albert C. Grunwald
By Harold Olsen
Attorney

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STOP MECHANISM FOR DISPENSING CABINETS

Filed Jan. 14, 1941 4 Sheets-Sheet 4

Fig. 6.

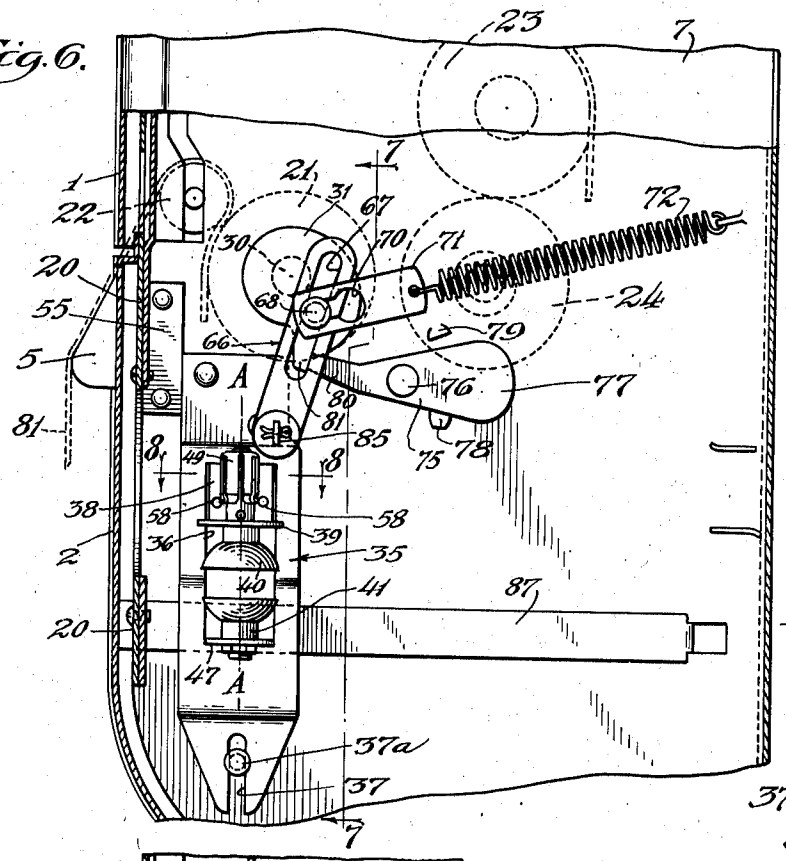


Fig. 9.

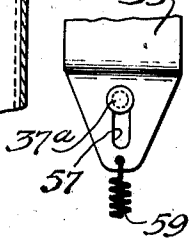


Fig. 7.

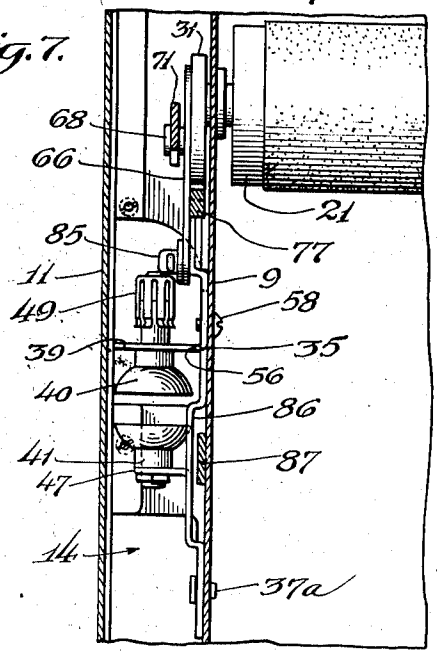
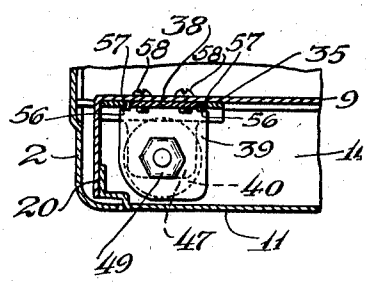


Fig. 8.



Inventor:
Albert C. Grunwald
By Harold Olsen
Attorney

Patented Oct. 13, 1942 2,298,882

UNITED STATES PATENT OFFICE

2,298,882

STOP MECHANISM FOR DISPENSING CABINETS

Albert C. Grunwald, River Forest, Ill., assignor to Steiner Sales Company, Salt Lake City, Utah, a corporation of Utah

Application January 14, 1941, Serial No. 374,367

29 Claims. (Cl. 271—2.3)

This invention relates to a stop mechanism per se, as well as to a time-stop mechanism per se, and also relates to each mechanism in combination with the dispensing means of a dispensing cabinet in such a way as to facilitate assembly and disassembly of the mechanism.

Objects are to provide a balanced-action, easy-acting, comparatively noiseless non-jamming stop mechanism in which the parts are so related that the hard wear to which these mechanisms are submitted is substantially reduced, thus extending periods between which the mechanism must be repaired or replaced, and correspondingly lengthening the periods between inspection.

Another object is to provide a time-stop mechanism in which the means for adjusting the timer to change the timing interval is placed at the very front of the cabinet where it is easily accessible.

A feature relates to the accessibility of the holding means for one of the guides for the slide-stop from the inside of a detachable unit upon which the dispensing unit is mounted. Although the details of the unit itself are not a feature, the location of the fastening or holding means in combination with the unit is claimed.

Another object is to provide a stop-slide which is applied to its guide, first by engaging one guide with a pin by moving the slide in direction of reciprocation, and then moving the slide toward the face of the support, and then applying means to engage with a second guide, and releasably securing the last mentioned means.

Another object of the invention is to provide an assembly structure adapted for the particular structure of the cabinet shown herein, the arrangement being such that after assembly of the parts of the cabinet, including the stop, the slide-stop can be removed without dismantling or disconnecting certain other parts of the cabinet.

Another object of the invention is to reduce the area of the parts which are in frictional contact with one another to a minimum consistent with ruggedness, and particularly to reduce to a minimum the contact areas of the edges.

An object of this invention is to provide an improved time-stop mechanism which can be easily assembled and in which the automatic opening movement of one of the stops is accomplished without the use of a spring. Another object is to provide a balanced mechanism in which the force for setting the stop and timer is evenly applied so that rocking motions of one of the stops, which is a slide-stop with reference to its guides, is substantially entirely prevented, thus reducing the wear to a minimum.

A problem in the manufacture of time-stops for dispensing apparatuses has been to obtain easy, relatively noiseless action and free motions of the movable slide-stop in both directions, with a minimum of motion and of wear. Heretofore, to prevent jamming and assure positive release of the stop, springs have been used, but these springs have so acted as to unduly wear the guide means of the slidable stop member. Moreover, the dispensing mechanism had to be operated against the tension of the spring. In addition, original assembly has been difficult and when there has been need for repair it has been difficult to dismantle the slide and associated operating mechanism.

It is an object of this invention not only to reduce wear in the slide, but to prevent all binding and to obtain a free and unfailing release of the slide-stop without the use of springs, as well as to provide a very simple means of attaching the slide-stop so that it can be easily removed for repair, adjustment or replacement. In some instances the use of a stop-retracting spring is advisable, and the present invention permits of such use without resultant undue wear on the guides of the stop, and in such manner as to make for ease of operation.

Advantages and features of the invention are also disclosed in the description of the drawings, and in said drawings—

Figure 1 is a front view of a closed cabinet with parts broken away to illustrate the location and arrangement of the time-stop mechanism, and the accessibility to the means for adjusting the timing interval of the timer;

Figure 2 is a horizontal section approximately on line 2—2 of Figure 1;

Figure 3 is a vertical section taken approximately on line 3—3 of Figure 1, illustrating one form of the invention and showing the stop in non-stop or open position;

Figure 4 is a view similar to Figure 3 showing the detail of the connection of the lever with the slide;

Figure 5 is a vertical detail section taken approximately on line 5—5 of Figure 3;

Figure 6 is a view similar to Figure 3, but showing another form of the invention;

Figure 7 is a vertical section taken approximately on line 7—7 of Figure 6;

Figure 8 is a horizontal section taken approximately on line 8—8 of Figure 6; and

Figure 9 is a detail showing a modification in which a stop-retracting spring is used.

The invention has been shown applied to a form of dispensing cabinet for sheet material which has an outer casing and an inner unit detachably secured within the casing and which carries the dispensing mechanism, including the stop and timing mechanism. This unit includes an upright plate spaced from one side wall of the outer casing and acting as a partition between and in part defining an inner chamber and an outer chamber. The dispensing means is in the inner chamber which is very much wider than the outer chamber. It is an object of the invention to have means releasably holding a movable part of the stop mechanism and to have this means held by a screw having a slotted head accessible from the inner chamber. The details of detachability of the inner unit are not claimed herein, but the arrangement of the time-stop in relation to one plate of this detachable unit and to the front of the cabinet is part of the present invention.

The dispensing cabinet is known as a "continuous" towel dispenser. In this type of device fabric toweling is dispensed from a roll, the toweling being brought out through an opening in the front of the cabinet and being passed downwardly and then rearwardly below the cabinet to form a loop, and then being passed upwardly to a soiled towel take-up roll. This mechanism per se forms no part of the general invention and is therefore referred to only in a general way. The pull on the toweling provides power for setting the stop mechanism.

The numeral 1 indicates the upper door of the cabinet and the numeral 2 the lower door. This cabinet is of the general type shown in a copending application Serial No. 225,398, filed August 17, 1938, in which I am co-inventor with another.

The upper door is so hinged that it opens upwardly and the lower door is so hinged that it opens downwardly. The two doors cooperate to form a discharge opening 3, outwardly through which the toweling passes in the manner shown in dotted lines in Figure 3. The toweling is held outwardly from the front face of the lower door by a projecting device generally indicated at 5. The upper door overlaps portions of the lower door and the upper door has a lock.

Referring to Figure 2. The cabinet comprises an outer casing generally indicated at 7 and an inner unit which includes two vertically arranged side plates designated 8, 9. These side plates are spaced from the corresponding side walls 10, 11 of the outer casing so that lateral chambers respectively indicated at 13, 14 are formed. The very much larger central chamber is formed between the plates, this chamber being generally indicated at 15.

The principal parts of the invention of this application are located in the chamber 14, which it will be noted lies laterally of chamber 15, with the plate 9 forming the common wall of both chambers. The inner unit is detachably held by means of nuts and screws 18 to the rear wall 19 of the outer casing. At the front each plate 8, 9 has a flange overlapping a corresponding flange of the side wall of the casing. The flanges are generally designated 20. The usual measuring roll is indicated at 21, and is symbolic of means which must be moved if dispensing is to occur. The pinch roll is indicated at 22. The take-up roll is generally indicated at 23 and the take-up drive roll is indicated at 24. It will be understood that the measuring and take-up drive rolls are driven in unison.

Now referring to Figure 3, which shows the preferred form of stop mechanism of the present invention. The measuring roll has a shaft 30 which extends through a suitable bearing in the plate 9 and has attached thereto stop-arm 31 which is engageable with a slide stop, the construction and mounting of which latter stop forms the principal feature of this invention.

This slide-stop is generally designated 35. The slide is mounted on the outer face of the plate 9 and in chamber 14, and has two openings, one a relatively wide and elongated opening indicated at 36, and located intermediately of the upper and lower ends of the slide, and the other a relatively much narrower opening indicated at 37, and in this instance having the form of a slot which is open at the bottom of the slide, thus forming a fork.

The slide has two guides, one cooperative with each opening. The upper guide has the form of a bracket having an upright portion 38 entering the opening 36 and cooperating therewith as a guide. This support or bracket has a horizontal shelf portion 39 (see Figure 5) upon which is mounted one part of a timer which is composed of two parts adapted to be brought together when the slide-stop is in stopping position. As herein shown, these parts comprise a cup 40 mounted on the bottom face of shelf 39 as shown, and a second cup 41 mounted on the upper face of a shelf 42 of the slide-stop 35. The rims of these rubber cups are adapted to be brought together to be vacuum attached when the slide-stop is in stopping position. The upper cup 40 is mounted on the lower end of a tube 44 which has an air intake opening 45 controlled by a needle valve 46. The upper end of the valve is threaded into the tube as at 47 and has thereon a cap composed of prongs 49 engageable with the exterior roughened surface (not shown) of a tube 44. The prongs 49 provide a yieldable, frictional lock for holding the needle valve in any adjustable position.

The use of the two rubber cups is quite important because little or no wear occurs when the rims of the two cups are engaged under pounding impact. There is little wear because of the spreading action of the rubber when the cups are thus forcibly brought together. The stretchable rubber material of the cups, between their points of attachment and points of contact or rims, actually swings about the contact points or rims as fulcra. The action may be well visualized by putting the tips of the thumbs and index fingers of both hands together and then while the tips remain in contact, moving the tips away from and toward one another along a line connecting the tips, said tips representing the fulcrum points, i. e., the rims.

The balanced slide-stop structure is particularly advantageous for use with the cups herein because by its use the axes of the cups are alined on a line extending longitudinally or in direction of reciprocation of the slide and arranged midway between opposite longitudinal sides of the slide.

A pin 37*a* cooperates with the slot 37, to form a second guiding means for the slide. With the open end slot the slide can be engaged with

or disengaged from the pin by motion in direction of its reciprocation.

It is a feature of this invention (see Figures 1 and 3) that the slide-stop is arranged immediately adjacent the front of the cabinet in a manner to bring the timing adjustment element **49**, as well as the cups which are also disposed immediately adjacent the front, so that said element **49** can be engaged by passing the fingers through an opening **50** in the wide flange **20** of the plate **9**.

The slide-stop has an upper offset extension **52**, to the inner face of which is suitably attached a filler plate **51**. The extension **52** has a horizontal, right angle projection **53** which is engageable by the stop arm **31** when the slide-stop is in its uppermost or stopping position. In order to take the strain of impact off of the guides for the slide, the filler **51** engages a plate **55**. The outer edge of the filler **51** is abuttingly and slidably related to the impact-taking element **55**. It may be said that the element **55** cooperates with the parts **38** and the pin **37***a* to guide the slide **35**, although the principal guides are parts **38** and **37***a* in cooperation with the corresponding openings. Of course, the use of element **55** is preferred, but it is not always necessary.

By inspection of Figure 8 it will be noted that the shelf **39** has shoulders **56** which overlap the face of slide **35**, and the screw or screw pin **37***a* has a head that also overlaps contiguous parts of the slide. The shoulders **56** and the head of the pin **37***a* act to prevent undue movement of the slide away from the face of the plate **9**. It will be understood that the proper clearances are provided between the openings and guides so that the slide when released can freely fall by gravity to the position shown in the drawing, after release by the cups or time-stop mechanism.

The upper edge of **38** is engaged by the upper edge of the opening **36** as a stop to limit the downward motion of the slide-stop **35**. The upper end of the slot **37** could alone act with pin **37***a* as a stop, in the same manner as shown in Figure 9. The degree of motion of the stop-slide can be relatively small, as shown, because of the fact that there are two parts of the timer which engage and remain engaged during the entire timing period. This fact in turn reduces wear. The outer edges of **38**, and the inner edges of opening **36** engage over a sufficiently elongated area to adequately guide the slide, but the total area edge of engagement is relatively small. The same remarks apply to the guide slot **37** and its pin. The sides of the slot **37** have only tangent or point contacts with the pin. The diameters of the cups are made as small as possible, consistent with the needed flexibility and wear requirements.

Although it is an object of this invention to avoid the use of a retraction spring for the stop, the invention is not entirely limited to this feature because with the openings **36** and **37** alined on the midline the structure, with or without its timer elements or cups, is so balanced that one end of a spring could be attached below the lower opening and between it and the bottom of the slide to lie below and in an extension of the midline, so the force of the spring could be applied to the slide in a manner not to rock the slide or to cause any binding or undue wear between the slide and its guides. This scheme is shown in the modification of Figure 9, in which the opening **57** is closed at the bottom and the spring **59** is attached as shown.

In the case where the lower opening does not open at the lower edge of the slide to form a fork which in assembling is engaged over the pin by a down motion, it is necessary to unscrew the pin to disassemble the slide after the guide in the upper opening has been removed. Of course, balance and reduction of wear to a minimum is accomplished in either case.

The part **38** of the bracket is releasably secured by means of screws **58** having their heads accessible from the inner side of the unit or middle chamber **15**. This is a feature. It will be understood that the stop structure of this invention is not limited in its application to this particular type of dispensing mechanism or to this particular type of cabinet. The mechanism may be applied to one side of any plate and the screw heads are accessible from the opposite side.

The means for raising the slide includes in this form a lever or arm **60** pivoted as at **61** at a relatively great distance from the midline A—A of the slide and with respect to which line the openings in the slide, as well as the cups, are symmetrically arranged to obtain a balanced structure. The outer end of the arm **60** (see Figures 4 and 5) is forked as shown at **61** and this fork is engaged over a horizontal portion of a finger **62** which is struck out from the upper edge of the opening **36** just as the shelf **47** is struck out from the lower edge of this opening **36**. The manufacture of the slide thus lends itself to a stamping operation in which by a single operation the opening **36** is formed, as well as the parts **62** and **47**, and openings **37** and **57**. It is noted that finger **61** is also on line A—A so that the force for moving the slide is applied directly along that line. The amount of play between the inner sides of the prongs of the fork **61** and finger **62** is relatively slight because the degree of motion of the slide is slight.

To the arm **60**, intermediately of its fork and of the pivot **61**, is attached as by pivoting to lug **65** a link **66** having a slot **67** traversed by pin **68** which is screwed into the arm **31**. Detachably secured to the pin **68** as by a keyhole slot **70** is a link **71** having one end of a spring **72** attached to it, the other end of the spring being secured to the lug **73** of the plate **9**. The spring **72** acts to back off the arm **31** after it has come in contact with the element **53** of the slide-stop to assure that the slide is free for downward movement away from stop position at the end of the timing period of the timer and following the release of the cups or their equivalent.

The backing off movement is limited by the outer end of a lever **75** pivoted as at **76** and engageable as shown with the arm. The lever is weighted as at **77** and when in locking position the weighted end lies against a stop **78**. A stop **79** limits release movement to a position at which its forward end **80** momentarily lies below and out of the path of the lower end **81** of the arm **31**. The lug **65** to which the lower end of the link **66** is pivoted is preferably arranged on a vertical line passing through the axis of rotation of the measuring roll **21**.

Where the lever **60** is used, the force for moving the slide is applied also along the aforementioned midline A—A, which extends in direction of translation. This additionally makes for smooth operation and avoids rocking of the slide in both directions of translation, thus reducing wear and avoiding sticking, particularly

after the slide is released to move, in this case by gravity, to non-stop position.

In this preferred form of the invention where a relatively long arm or lever is used the degree of reciprocating motion is relatively small so that the force applied by the lever is always applied substantially along said line. The open end slot **37** serves two purposes. It allows a slight relative horizontal motion between the arm and the slide and the fork permits easy connection of the arm with or disconnection of the arm from the slide. For convenience in manufacture the finger **62** is struck out from the metal as the opening **36** is formed, and the fork engages over a horizontal portion of this finger. The important feature is that the force for moving the slide is applied on a line upon which the timer members or cups, as well as the guide means, are alined.

Referring to Figure 3. When the toweling **81** is pulled the measuring roll **21** is moved in clockwise direction, also moving the arm **31** in this direction away from the outer end **89** of the lever **75**. During this motion the pin **68** engages the upper end of the slot **67** raising the link and therefore the lever **60** and the slide **35** into the stopping path of the arm. By the time the pin **68** has reached the uppermost part of its arc the cups have been compressively brought together to assume vacuum attached relation to hold the slide while the pin continues to move downwardly in the slot, while the link merely swings about its pivot **65**. At the end of the time period as determined by the adjustment of the needle valve **46**, vacuum annulment occurs and the slide falls again to the position shown in the figure, and out of stop position with the part **53** below the lower end of the arm **31** so that the arm is again free to move to permit more toweling to be pulled out or dispensed.

It is conceivable that other mechanisms may be used for moving the slide, although the exact arrangement of the link with reference to the lever **60** and the relation of that lever to the slide are features herein. The mounting of the slide is per se a feature.

In the second form of the invention shown in Figure 6 the lever **60** is omitted and the link **66** is attached directly to the slide **35**. In both forms the slide and the cups associated with it are alined on the line A—A and all the parts are arranged symmetrically with relation to this line to obtain balanced action without the use of springs for positively moving the slide away from stop position. The second form differs principally in that the lever **60** is omitted and that the lower end of the link **66** is pivoted to a projection **85** of the slide. In this instance, the projection **85** lies forwardly of a vertical line passing through the axis of rotation of the measuring roll **21**. However, by the time the pin **68** has engaged the upper end of the slot to raise the slide, the pin has passed forwardly of a vertical line passing through the center of the pin **90** and during the major portion of the upward travel of the slide, the slide is submitted to only a very little lateral movement.

In the preferred form shown in Figure 3 the center line A—A of the slide is brought substantially nearer to the front of the cabinet, it being noted that the outer edge of the element **51** is offset from the outer edge of the lower portion of the slide **35**. In Figure 3 this outer edge of the slide **35** is immediately adjacent one of the flanges **20**, while in Figure 6 the outer edge of the slide is spaced from the flange **20** by a distance equal to the width of the impact plate **55**. In both forms the slide structure and its mounting are substantially the same.

As best shown in Figures 5 and 7 the slide **35** has an outwardly offset portion **86**, this being for the purpose of bridging an element **87** which forms no part of the present invention but which is used for controlling a smoother and space-making element which permits the hand with the toweling to be moved upwardly through the bottom of the cabinet at the rear for connection of the toweling with the soiled towel take-up roll. Of course, this arched portion **86** need not be used when the element **87** is omitted. Nevertheless, this arched portion can be used to reduce the area of contact of the inner face of the slide with the outer face of the plate **9** to reduce friction.

The common feature about the two forms of the invention herein illustrated is the use of guide openings in the slide in the alinement of the timer members, whatever their nature, on a line extending in direction of reciprocation of the slide and midway between its opposite longitudinal edges. Another common feature is the use of an open-end slot at the bottom of the slide in association with a pin, the two-guide means, as well as the timer members or cups being alined on said longitudinally extending midline.

Reduction of wear in devices of this kind is a very important item. These stop mechanisms, in many places, are operated very frequently and violently due to forceful yanking of the toweling, which brings the arm **31** into a hammering engagement with the slide in a direction at right angles to the direction of its reciprocation. It is also of great advantage to have a device which can be simply and easily assembled and disassembled. Heretofore, the connections for operating the slide to move it into stopping position and the character of the timer which was set when this movement took place involved an unequal application of the forces, so that the slide and its guides were relatively quickly worn. Moreover, the timer elements underwent unequal wear due to the fact that said elements were arranged laterally of the reciprocatory axis of the slide instead of having the parts arranged on that axis or symmetrically on either side of it, as is herein done.

In Figures 3 and 4 a line forming a downward extension of the inner face of impact plate **55** is spaced only a short distance laterally of line A—A, but this line may be made to coincide with line A—A by making the plate **55** slightly wider and plate **51** narrower. In either case, the line A—A will be as near the front of the cabinet as possible.

I claim as my invention:

1. A time-stop mechanism including a slide-stop having openings therein alined on a midline extending in direction of reciprocation, a support entering one of the openings and cooperating therewith as a guide for the slide, a timer having a part on the support adapted to engage with a second part carried by the slide when the stop is in stopping position, means adapted to hold said parts together during and release them at the end of a time period, and means entering the second opening and cooperating therewith as a guide.

2. A time-stop mechanism including a slide-stop having openings therein alined on a midline

extending in direction of reciprocation, a support entering one of the openings and cooperating therewith as a guide for the slide, a vacuum cup on the support adapted to become vacuum attached with a second cup carried by the slide when the stop is in stopping position, means for annulling vacuum action at the end of a time period, means entering the second opening and cooperating therewith as a guide, and means acting on the slide-stop at a point above both openings to raise the slide to stop position and then release it for movement away from said position.

3. A time-stop mechanism including a slide-stop having upper and lower openings therein alined on a midline extending in direction of reciprocation, the upper opening being of substantially greater area than the lower opening, a support entering the upper opening and cooperating therewith as a guide for the slide, a vacuum cup on the support adapted to become vacuum attached with a second cup carried by the slide when the stop is in stopping position, means for annulling vacuum action at the end of a time period, means entering the lower opening and cooperating therewith as a guide.

4. A time-stop mechanism including a slide-stop having upper and lower openings therein alined on a midline extending in direction of reciprocation, the upper opening being of substantially greater area than the lower opening, a support entering one of the openings and cooperating therewith as a guide for the slide, a vacuum cup on the support adapted to become vacuum attached with a second cup carried by the slide when the stop is in stopping position, means entering the second opening and cooperating therewith as a guide, and means acting on the slide-stop at a point above both openings to raise the slide to stop position and then release it for movement by gravity alone away from said position, said support and associated guide means being adapted to hold the face of the slide against the face of a support, all guide means being sufficiently loose to assure free gravity motion of the slide-stop away from stop position, and said raising means being connected with the slide by means of a projection at the top of said upper opening, and said second cup being supported by a projection disposed at the bottom of said upper opening.

5. A stop mechanism comprising a first stop, and a second slide-stop adapted to move into and out of the path of the first stop, and having an opening elongated in direction of movement, means within and cooperating with opposite longitudinal edges of the opening to provide a guide for the slide and means detachably securing said means to a support, a second opening in the plate spaced from the first in direction of reciprocation of the slide and of less width than that of the first opening, means within and cooperating with the edges of the second opening to form a guide, said guides and openings being alined on a line located midway between opposite lateral edges of the slide, and both guide means also acting to hold the slide with its face in sliding relation with the face of the support, said first stop being arranged to engage the second stop at a point beyond both openings in direction of reciprocation of the slide, but nearer to the wider opening.

6. A time-stop mechanism comprising two stops, one slidable on a support and adapted to move into and out of the path of the other stop, a timer including two members, one adapted to engage the other when the slide-stop is in the stopping path of its companion stop, said members being alined on a line located midway between opposite edges of the slide, which line extends in direction of reciprocation of the slide, means on the slide carrying one of said members, said slide having an opening and means detachably secured to the support and carrying the other member, and cooperating with the edges of the opening and with the face of the slide respectively to guide the slide in its reciprocating motion and to prevent movement of the slide away from said support.

7. A time-stop mechanism comprising two stops, one slidable on a support and adapted to move into and out of the path of the other stop, a timer including two members, one adapted to engage the other when the slide-stop is in the stopping path of its companion stop, said members being alined on a line located midway between opposite edges of the slide, which line extends in direction of reciprocation of the slide, means on the slide carrying one of said members, said slide having an opening, a bracket detachably secured to the support and carrying the other member and cooperating with the edges of the opening and with the face of the slide respectively to guide the slide in its reciprocating motion and to prevent movement of the slide away from said support, a slot at the lower end of the slide, and a guide pin in said slot, the pin and said bracket being so related that when the latter is removed from the opening the slide may be disengaged from the pin by a linear motion of the slide in direction of reciprocation.

8. A time-stop mechanism comprising two stops, one slidable on a support and adapted to move into and out of the path of the other stop, a timer including two members, one adapted to engage the other when the slide stop is in the stopping path of its companion stop, said members being alined on a line located midway between opposite longitudinal edges of the slide, which line extends in direction of reciprocation of the slide, means on the slide carrying one of said members, said slide having an opening, means detachably secured to the support and cooperating with the edges of the opening and with the face of the slide respectively to guide the slide in its reciprocating motion and to prevent movement of the slide away from said support, means for moving the slide into stop position, including a lever extending substantially at right angles to the direction of movement of the slide, pivoting means for the lever arranged at a substantial distance laterally of said aforementioned midline, means detachably and pivotally securing the free end of the lever to said slide on said midline, and means arranged intermediately of the pivot means and of the detachable securing means for moving the lever to move the slide.

9. A time-stop mechanism comprising two stops, one slidable on a support and adapted to move into and out of the path of the other stop, a timer including two members, one adapted to engage the other when the slide stop is in the stopping path of its companion stop, said members being alined on a line located midway between opposite longitudinal edges of the slide, which line extends in direction of reciprocation of the slide, means on the slide carrying one of said members, said slide having an opening, means detachably secured to the support and carrying the other member and cooperating with the edges of the opening and with the face of the

slide respectively to guide the slide in its reciprocating motion and to prevent movement of the slide away from said support, means for moving the slide into stop position, including a lever extending substantially at right angles to the direction of movement of the slide, pivoting means for the lever arranged at a substantial distance laterally of said aforementioned midline, the outer free end of said lever having a slot, and said slide having a finger with which said slot is engaged to form a pivotal connection releasable by motion of the lever in longitudinal direction, and means for moving the lever to move the slide.

10. A time-stop mechanism comprising two stops, one slidable on a support and adapted to move into and out of the path of the other stop, a timer including two members, one adapted to engage the other when the slide-stop is in the stopping path of its companion stop, said members being alined on a line located midway between opposite edges of the slide, which line extends in direction of reciprocation of the slide, means on the slide carrying one of said members, said slide having an opening, and means detachably secured to the support and carrying the other member and cooperating with the edges of the opening and with the face of the slide respectively to guide the slide in its reciprocating motion and to prevent movement of the slide away from said support, a slot at the lower end of the slide and a guide pin in said slot, means for moving the slide into stop position, including a lever, pivoting means for the lever arranged at a substantial distance laterally of said aforementioned line, and means detachably securing the free end of the lever to said slide on said midline.

11. A time-stop mechanism comprising a slide-stop having a first opening extending in direction of movement of the slide, a bracket supporting one of two parts of a timer, the other part of which is carried by the slide, said parts adapted to be brought into contact when the slide is in stop position, said bracket cooperating with the opening to guide the slide for free translative motion, and also acting to loosely hold the slide against undue motion away from a support, means detachably securing the bracket to the support, a second opening in the slide, means traversing the second opening and cooperating therewith as a guide and allowing free motion of the slide, said parts of said timer and said openings being alined in direction of reciprocation of the slide-stop, and means for holding said parts together during and releasing them at the end of a time period, said slide being adapted to move solely by gravity away from stop position when released.

12. A stop mechanism including, two stops and also including two members which are brought together when one stop is in the stopping path of the other to hold said stops in stopping position, one of said stops being a slide having an opening therein, means supporting one of said members which are brought together, said means arranged in said opening and acting as a guide for the slide, a second opening in the slide and means cooperating with it to form a second guide for the slide, and means for controlling said members to allow separation at the end of a time period.

13. A time-stop mechanism including a stop slide, a timer mechanism for holding the slide in stop position, including first and second parts, the first part of which is on said slide, said slide having first and second openings spaced in direction of translation of said slide, and symmetrical with relation to a midline extending in direction of translation, the first opening being of greater width than the second, a bracket traversing the wider opening and cooperating with its edges to guide the slide and also cooperating with the outer face of the slide to hold the face of the slide in sliding relation with the face of a support, a pin in the second opening cooperating in like manner, means detachably securing the bracket to the support, the second part of said timer mechanism being carried by said bracket, and said parts being adapted to be engaged when said slide is in stopping position, and means for holding said parts together during and releasing them at the end of a time period.

14. In combination with a dispensing cabinet having an outer casing and a removable inner unit including an upright plate spaced from one side wall of the outer casing and acting as a partition between and in part defining a relatively wide inner chamber and a relatively narrow outer chamber, dispensing means in the inner chamber on said unit, and a time-stop mechanism in said outer chamber operated by said dispensing means, including a slide-stop arranged immediately adjacent the front of the outer casing and having its outer face laid against the outer face of said plate, said slide-stop having an opening, means in said opening acting as a guide for reciprocation of the slide-stop and also acting to hold the face of the stop against the face of the plate in sliding relation, a second means guiding said slide-stop to permit disengagement of the same by motion in direction of reciprocation after removal of the first means, securing said holding means in said opening in guiding relation and having a slotted head accessible from the inner chamber, whereby on release of said first guide the release and removal of the slide stop is possible without removal of the inner unit.

15. A time-stop mechanism including a slide-stop having upper and lower openings therein alined on a midline extending in direction of reciprocation, a support entering the upper opening and cooperating therewith as a guide for the slide, a timer having a part on the support adapted to engage with a second part carried by the slide when the stop is in stopping position, means entering the lower opening and cooperating therewith as a guide, a spring attached to the bottom of the slide below the lower opening and extending in direction of said midline and as an extension thereof, and means adapted to apply slide-operating force along said midline and at a level above the upper opening.

16. A stop mechanism comprising two stops, first and second, the first a slide-stop having openings alined on a midline extending in direction of reciprocation of the slide, means cooperating with each opening as a guide, an impact plate with which one edge portion of one side of the slide-stop which is above both openings slidably engages, said second stop being adapted for impact engagement with the opposite edge of said slide-stop at a point in horizontal opposition to said impact plate.

17. A time-stop mechanism including a first slidable stop vertically arranged and adapted to automatically move away from stop position, a second stop into the path of which the first stop is movable, guide means for the first stop, a timer having an element carried by part of the guide means and an element carried by the first

stop, which elements are forcibly brought into contact when the first stop is in stopping position, means for applying power to raise and bring the first stop into stop position, said guide means being alined on a midline which extends in direction of motion of the first stop, the point of application of the power for moving the first stop being on said midline and said timer elements being alined on a line which is parallel with and relatively close to said midline.

18. A time-stop mechanism, including a first slidable stop, a second stop into the path of which the first stop is movable, guide means for the first stop, a timer having an element carried by part of the guide means and an element carried by the first stop, which elements are forcibly brought into contact when the first stop is in stopping position, means for applying power to bring the first stop into stopping position, said guide means being alined on a midline which extends in direction of motion of the first stop, the point of application of the power for moving the first stop being substantially on said midline, and said timer elements being alined on a line which is parallel with and relatively close to said midline.

19. In a device of the class described, a movable element, a first stop operated by the movable element, a second stop vertically arranged to move into and out of the path of the first stop, said second stop being slidably guided by means symmetrically related to a midline of said second stop which extends in direction of reciprocation thereof, means by which said movable element raises the second stop into the path of the first stop and thereafter releases said second stop for independent movement downwardly to nonstopping position, said raising means being so connected to the second stop as to apply raising force substantially along said midline.

20. In a device of the class described, a movable element, a first stop operated by the movable element, a second stop vertically arranged to move into and out of the path of the first stop, said second stop being slidably guided by means symmetrically related to a midline of said second stop which extends in direction of reciprocation thereof, means by which said movable element raises the second stop into the path of the first stop and thereafter releases said second stop for independent movement downwardly to nonstopping position, said raising means including a link pivotally connected to the second stop in such manner as to apply raising force substantially along said midline.

21. In a device of the class described, a movable element, a first stop operated by the movable element, a second stop vertically arranged to move into and out of the path of the first stop, said second stop being slidably guided by means symmetrically related to a midline of said second stop which extends in direction of reciprocation thereof, means by which said movable element raises the second stop into the path of the first stop and thereafter releases the second stop for independent movement downwardly to nonstopping position, said raising means including a lever pivoted to a support and also pivotally connected to the second stop to apply raising force thereto substantially along said midline, and a link pivoted to said lever at a point intermediately of its pivotal points, said link being operated by said movable element.

22. A stop mechanism having a second stop movable into and out of the path of a first stop, plural guiding means symmetrically related to a midline of the second stop which extends in direction of motion of said second stop, an impact plate with which one side of the second stop engages, said first stop being adapted to engage the opposite side of the second stop in a manner to cause its force of impact to be transmitted to said impact plate and means for moving said second stop into stopping relation with the first stop, and connected to said second stop at a point on said midline and intermediately of said impact plate and the point of impact of the first stop with the second.

23. In combination with a dispensing cabinet having an outer casing and an inner dispensing unit, including an upright plate spaced from one side wall of the outer casing to in part define a relatively narrow lateral chamber and a relatively wide inner chamber, dispensing means in the inner chamber on said unit, a stop mechanism in said outer chamber operated by said dispensing means including a stop arranged immediately adjacent the front of the outer casing and having a face laid against the outer face of said plate, said stop having an opening, means in the opening acting as a guide to permit reciprocation of the stop and also acting to hold the face of the stop against the face of the plate in sliding relation, second means guiding said stop to permit disengagement thereof by motion in direction of reciprocation after removal of the first guide means, and a screw releasably holding said first guide means in guiding relation and having a slotted head accessible from the inner chamber, whereby on release of said first guide means by removal of the screw, release and removal of the stop is possible without removal of the inner unit.

24. In combination with a dispensing cabinet having an outer casing and an inner dispensing unit, including an upright plate spaced from one side wall of the outer casing to in part define a relatively narrow inner chamber and a relatively wide inner chamber, dispensing means in the inner chamber on said unit, a stop mechanism in said outer chamber including a stop arranged immediately adjacent the front of the outer casing and having a face laid against the outer face of said plate, said stop having an opening, first means in the opening acting as a guide to permit reciprocation of the stop and also acting to hold the face of the stop against the face of the plate in sliding relation, second means guiding said stop to permit disengagement thereof by motion in direction of reciprocation after removal of the first guide means, and a screw releasably holding said first guide means in guiding relation and having a slotted head accessible from the inner chamber, whereby on release of said first guide by removal of the screw the release and removal of the stop is possible without removal of the inner unit, means by which the stop is operated by the dispensing means, including an arm and means connecting it with the stop in a manner to allow disconnection therefrom by a movement in a direction substantially perpendicular to the direction of reciprocation of the stop.

25. A stop mechanism including a stop having a face laid against the face of a support, said stop having an opening, first means in the opening acting as a guide to permit reciprocation of the stop and also acting to hold the face of the stop against the face of the support in sliding relation, a second means guiding said stop to

permit disengagement thereof by motion in direction of reciprocation after removal of the first guide means, and a screw releasably holding said means in guiding relation, whereby on release of said first guide by removal of the screw the release and removal of the stop is possible, means for operating the stop, including an arm and means connecting it with the stop in a manner to allow disconnection therefrom by a movement in a direction substantially perpendicular to the direction of reciprocation of the stop, said means including an open-end slot in the arm and a projection on the stop, and said second guiding means including an open-end slot and a pin traversing the slot.

26. A stop mechanism having a second vertically elongated stop laid against the face of a support and movable into and out of the path of a first stop, said stop having an opening near its top and an opening at its bottom, guides in the openings symmetrically related to the vertical midline of said stop, an impact plate attached to the support, said stop having an extension which on one side engages said impact plate, said first stop being adapted to engage the opposite side of said extension in a manner to cause its force of impact to be transmitted to the impact plate, means for moving the second stop into stopping relation with the first stop and connected to the second stop on said midline, said means including an arm pivoted to the support at a point which is a relatively great distance laterally of said midline.

27. A stop mechanism having a second vertically elongated stop laid against the face of a support and movable into and out of the path of a first stop, said plate having a relatively large opening near its top and a relatively small opening at its bottom, guides in the openings including a releasably secured pin for the bottom opening and a releasably secured bracket for the top opening, said guiding means being symmetrically related to the midline of said stop, an impact plate arranged above said upper opening and attached to the support, said stop having an extension which on one side engages said impact plate, said first stop being adapted to engage the opposite side of said extension in a manner to cause its force of impact to be transmitted to the impact plate, means for moving the second stop into stopping relation with the first stop and connected to the second stop on said midline and at a point intermediately of the impact plate and the point of impact of the first stop with the second, said means including an arm pivoted to the support at a point a relatively great distance laterally of said midline, a vacuum-operable stop-holding device symmetrical in relation to said midline and having one part on said bracket and another part on said second stop said parts adapted to assume vacuum-attached relation to hold the second stop in the path of the first stop, and means for automatically annulling vacuum action at the end of a time period.

28. A stop mechanism including a support, a stop at one side of the support and means guiding the stop including first means and a screw releasably securing the first means to the support and having a slotted head accessible at the opposite side of the support, and second means guiding the stop in a manner to permit disengagement thereof by motion in direction of its reciprocation and after removal of the first guide means.

29. A stop mechanism including a support, a stop having a face laid against one face of the support, said stop having an opening, first means in the opening and acting to guide the stop and hold it against the support, a screw securing said first means in guiding position and having a slotted head accessible at the opposite side of the support, and second means guiding the stop in a manner to permit disengagement thereof by motion in direction of reciprocation and after removal of the first guide means.

ALBERT C. GRUNWALD.