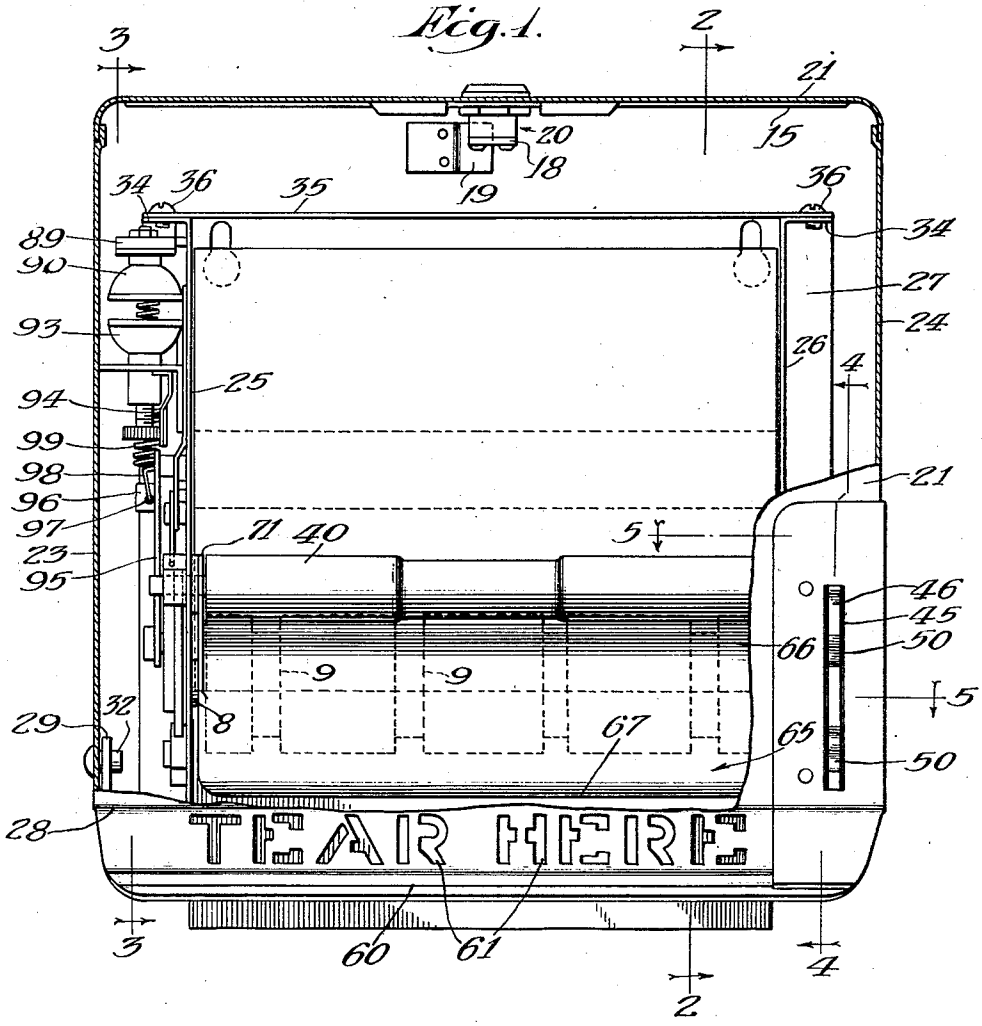
Oct. 6, 1942. F. G. STEINER ET AL 2,298,179

CABINET FOR DISPENSING SHEET MATERIAL

Original Filed March 25, 1940 3 Sheets-Sheet 1

Fig. 1.



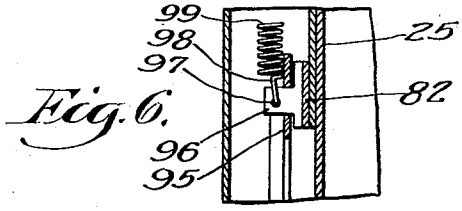


Fig. 6.

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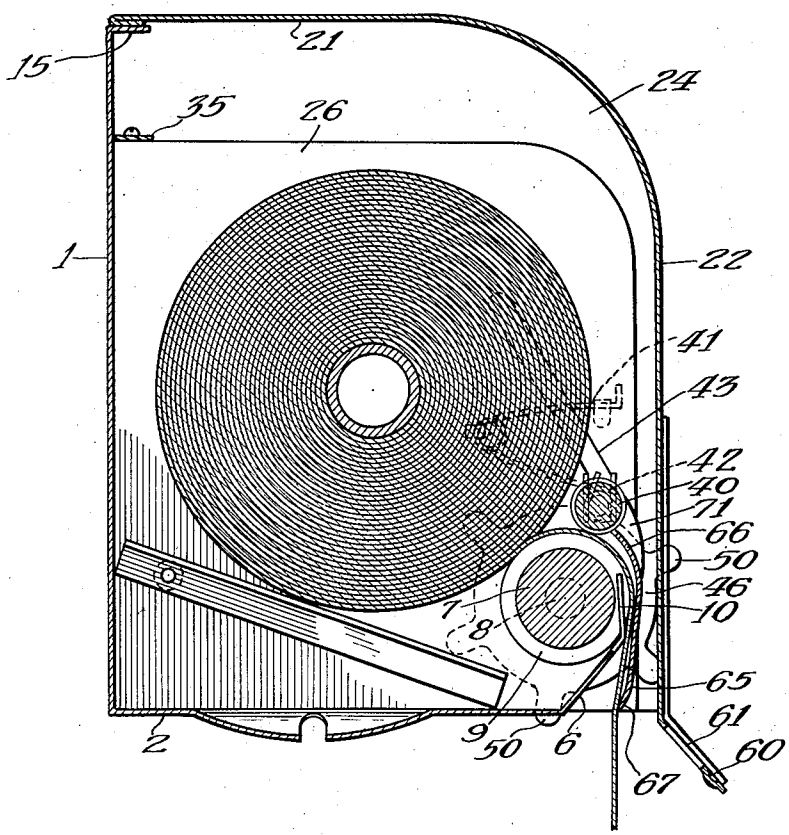
CABINET FOR DISPENSING SHEET MATERIAL

Original Filed March 25, 1940 3 Sheets-Sheet 2

Fig. 2.



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CABINET FOR DISPENSING SHEET MATERIAL

Original Filed March 25, 1940 3 Sheets-Sheet 3

Fig. 3.

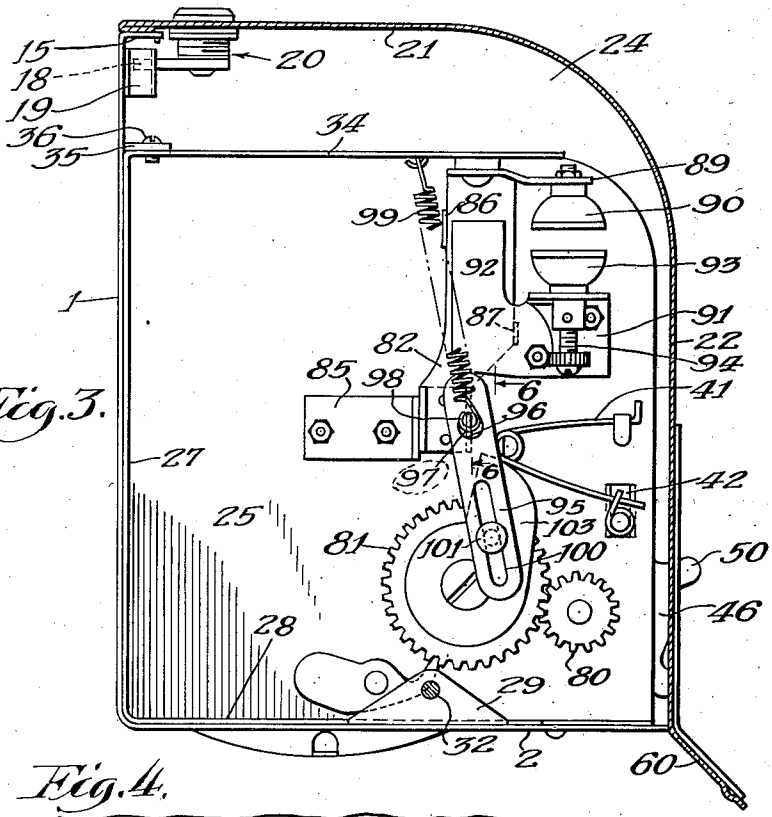


Fig. 4.

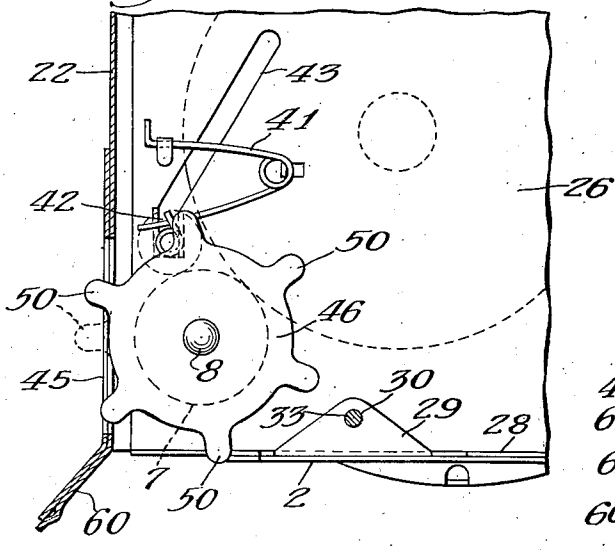
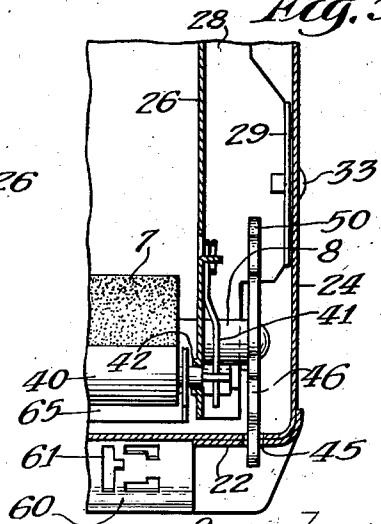


Fig. 5.



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Patented Oct. 6, 1942 2,298,179

UNITED STATES PATENT OFFICE

2,298,179

CABINET FOR DISPENSING SHEET MATERIAL

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Original application March 25, 1940, Serial No. 325,686. Divided and this application April 21, 1941, Serial No. 389,596

6 Claims. (Cl. 271—2.3)

This invention relates to improvements in dispensing cabinet constructions, and has among its objects to simplify and cheapen the construction, make it easier to operate, make it more rugged, and facilitate assembly and disassembly of the parts.

This application is divisional of our copending application Serial No. 325,686, filed March 25, 1940, which has matured into Patent No. 2,273,384, February 17, 1942, and the invention is directed particularly to means by which preliminary feeding operation of the paper after tear-off is obtained, and to this means in relation to a stop mechanism or to a time-stop mechanism controlling and controlled by a measuring roll or equivalent dispensing control means. The preliminary movement of this feeding mechanism by means of a single abutment which projects at the front of the casing is also a feature. This invention also concerns details of the assembly structure of a part of a stop mechanism which the roll controls and is controlled by.

Features of the invention include the use of an element having peripheral abutments, each as means by which force is applied to feed the paper and operate a stop mechanism; the use of a visibly projected abutment as a means more likely to attract attention and suggest or invite the proper operation of the mechanism by a user who for the first time approaches to operate the cabinet; the use of means that avoids abrasion of the operator's finger; the utilization of one end of a stop-retracting spring as a cotter pin to hold one end of a stop-connecting link in pivotal relation with the stop; and all details of construction relating to those features, along with all ideas of means which are broader than the details shown.

In the type of paper dispensing cabinet shown herein it has heretofore been the practice to use a circular disk as means for preliminarily feeding the paper to an accessible position, and to have a small arcuate edge portion or periphery of this disk project through a slot in the front of the casing to be engaged by the operator's thumb or finger and moved to obtain this preliminary feeding. Some of these disks have been moved upwardly and some have been moved downwardly. It has been found that persons who for the first time use the cabinet and observe this small arcuate projection fail to understand what it is for, or misuse it. It is therefore one of the objects of this invention to avoid this misunderstanding and misuse by providing a projection upon which the thumb can be preliminarily laid, and which because of its projecting position is naturally pressed downwardly to feed the paper. Moreover, by the use of a projection, rather than the circular edge of a disk, greater force can be applied without injuring the finger of the operator.

The present disclosure is in a cabinet particularly designed for dispensing paper, but it will be understood that the dialing device can be used in any suitable dispensing apparatus having a stop mechanism, not necessarily a time-stop mechanism. This construction is herein applied in an art in which there is increasingly acute demand for structural simplification and efficiency of operation, combined with ease of assembly, ease of servicing, cheapness and ruggedness. Therefore, the details of construction have assumed an important place in the development of this art, particularly the art of paper dispensing.

Objects, features and advantages of the invention will appear in the description of the drawings forming a part of this specification, and in said drawings—

Figure 1 is a front elevation of the cabinet with parts broken away to show the interior construction;

Figure 2 is a vertical transverse section taken substantially on line 2—2 of Figure 1;

Figure 3 is a vertical transverse section taken substantially on line 3—3 of Figure 1 and illustrating the stop mechanism in release position and showing the means for holding the link in place;

Figure 4 is a vertical transverse section on line 4—4 of Figure 1 illustrating the structure and relations of the feed roll operating wheel;

Figure 5 is a horizontal, detailed section taken on line 5—5 of Figure 1 further illustrating the feeding wheel and its projecting relations with the slot of the cover and with the front face of the cover or door; and

Figure 6 is a detailed vertical section on line 6—6 of Figure 3 showing the utilization of the retracting spring for the stop as means to prevent disengagement of the link from its pivoting element.

In the drawings, the numeral 1 indicates the back of the cabinet and the numeral 2 the bottom thereof. This inner section, therefore, provides only the back and the bottom of the cabinet and the back and bottom are formed in one piece. The forward portion of the bottom of the cabinet is bent upwardly as at 6 so that its upper edge is arranged close to a feed or measuring roll 7 suitably journaled on upright plates by a shaft or trunnions 8.

The feed roll is grooved at 9, and the upwardly, outwardly slanted portion 6 has suitable fingers 10 which cooperate with the grooves to prevent the paper following the roll and to direct the paper, in this instance downwardly. The upper edge of the back has an inturned, forwardly directed reenforcing flange 15. Below this flange is arranged a keeper 19 with which a hook 18 of a lock generally indicated at 20 engages to secure the cover, later to be described, in closed position. The locking mechanism is of well known construction and when a key is properly inserted and moved the hook may be swung to release position to allow the front cover to be swung downwardly below the bottom 2 to act as a shelf for the supply roll during servicing.

The cover or outer section forms a top 21, front 22 and sides 23 and 24 of the cabinet, and the inner and outer sections cooperate when the outer section is closed to form a substantially rectangular compartment or box. The cover is hinged or pivoted to the inner section so that the cover can swing down below the cabinet in a position to have its top 21 act as a shelf.

The dispensing mechanism is mounted on spaced vertical plates respectively indicated by numerals 25 and 26, each plate having three outturned flanges respectively indicated at 27, 28 and 34. The flanges 27 and 28 are respectively attached as by spot welding or riveting to the back and bottom of the cabinet. The bottom flange 28 of each plate is extended outwardly as shown in Figure 1 and has an upturned bearing-forming portion 29 having a bearing opening 30.

Each of the sides 23, 24 of the cover has pins, these pins being respectively indicated at 32, 33, which pins engage in the bearing opening 30. The pins are suitably secured in the cover as by riveting. In assembly the sides of the outer cover are first sprung outwardly, then the pins are registered with the openings 30, and then the sides are released, whereafter the resiliency of the sides holds the pins in pivotal relation in the bearing opening. This permits easy assembly or removal of the outer cover for repair or for repainting. Inasmuch as the cover provides the four visible sides of the cabinet, simple repainting of the cover, so far as appearance is concerned, is the equivalent of supplying a new cabinet. The making of the bearing-forming elements in one piece bent up from the stiffening flanges of the reenforcing plates of the two-element inner cabinet section makes for simplicity in manufacture and for strength.

The top flanges of the plates 25 and 26 are cross-connected by a bar 35 held by suitable screws 36. It will, of course, be understood that the cross-connected plates with their flanges spot welded form means for stiffening the front and back, providing a very rugged base upon which the outer cover is pivoted. This stiffening is particularly desirable because of the strains through the pivoting means when the cover is open and loaded with a supply roll preparatory to servicing.

The cabinet in this case has two feed rolls respectively indicated at 7 and 40, the roll 40 being held yieldably against the roll 7 but being movable away therefrom. This roll 40 is pressed toward the roll 7 by means of springs 41 acting on trunnions of the roll 40 which project through slots 42 in the upright plates.

The slot 42 of plate 26 (see Figures 2 and 4) has as an extension a diagonal slot 43. This slot 43 allows assembly or removal of the roll 40. In assembly one trunnion of the roll is first inserted in the slot or bearing 42 of the plate 25 and then the opposite trunnion of the roll 40 is inserted in the slot 43, and then moved downwardly and forwardly to the position of the roll 40 in operative relation with roll 7, after which the spring 41 is applied as shown in Figure 4.

An important feature of this invention is the means for operating the roll 7 or its equivalent, to preliminarily feed the paper and for setting a stop mechanism or a time-stop mechanism. The object is to provide a positive means for turning the roll to start the paper to bring the paper to a position whereat it can be grasped by hand and pulled. This operation is not only necessary when servicing the cabinet, but is an operation sometimes necessary by users of the cabinet.

One of the objects is to provide a device which can be operated without abrading the fingers and this is particularly desirable for men who have to service a large number of cabinets and therefore have to use their thumbs repeatedly for initially moving the paper to the position mentioned. Moreover, in the case of a user it is an object to provide a form of operating element which will be prominent, and by its appearance suggest its use, or particularly will suggest its direction of operation, which is downwardly. When the element projects in the manner to be described, the user naturally will lay the thumb upon it and pull downwardly. It has been found that this is not true for a member for the same purpose in which a portion projects and presents a smooth arcuate surface against which the thumb or finger is placed. In these cases either the user does not know what to do with the cabinet because there is nothing to suggest what to do, as in the case of the abutment projection, or sometimes moves the disk in the wrong direction, for example upwardly, and believes the cabinet is inoperative because he does not get results.

It will be understood that heretofore when a small circular edged portion of a disk is projected through the slot in the front of a cabinet the amount of friction by the finger tips or thumb tip and the thin edge of the disk was such as to result in painful abrasions, particularly for service men. The load required to be moved by the abutment, or heretofore by the frictional action, is considerable. It will be noted that it is necessary to repeatedly move the operating element by step-by-step finger action in the old practice against the thin edge of a disk. This objection to the circular thumbing surface could be partly overcome by thickening the disk, but in that case die stamping was made more expensive. By using an abutment finger the disk can be a thin disk, the abutments can be rounded, and painful abrasion of the skin of the fingers is avoided.

The disk is indicated at 46 and the abutments are indicated at 50. These abutments are in the nature of radial fingers or arms of a wheel, and are so arranged in relation to the slot 45 in the front wall 21 of the outer cover that only one finger projects at the same time and so that the one which does project normally lies in either the upper or the middle part of the slot whereby the operator can lay a finger upon it and press downwardly. Ordinarily it points slightly upwardly and outwardly. This scheme provides what may be called a disappearing lever or a succession of appearing and disappearing levers. As the operator moves the lever finger down-

wardly it eventually disappears through the slot and leaves the operator's finger in sliding relation with the outer surface of the front wall. At the moment of the disappearance of one lever finger another lever finger appears in the upper part of the slot. Good leverage is obtainable and the single projecting element invites attention and suggests the manner of operation.

Referring to Figure 5 it is noted that the abutment wheel is attached to the shaft **8** of the roll **7**, which shaft projects through the plate **26**, the plate acting as a bearing. The roll is thus at the inner side of the plate **26** and the wheel at the outer side thereof.

Referring to Figure 4. The dotted lines represent the preferred position of an abutment at the end of an operation which corresponds to the end of the setting operation of the stop and the timer. In this case the abutment or arm is disposed at about the vertical middle of the slot and projects quite prominently and provides a substantially long lever upon which the thumb or finger can be initially laid preparatory to the application of downward pressure.

Another structure, which is claimed in a copending application, relates to means for facilitating the grasping of the paper by causing it to be held in spaced relation behind a tear-off knife **60**, which knife in this instance is at the bottom of the cabinet and projects outwardly at an angle of about 45 degrees. In this instance the edge is constituted by bending the lower edge of the front wall of the outer cover or casing. Another structure which is covered in a copending application is the provision of openings in the knife by the particular means herein shown, so that sheet material lying behind the knife can be clearly seen without unusual effort after the material has been torn off and/or after it has been retracted by means to be described. We believe it new to utilize letters of direction to provide in the aggregate a large area of opening through which to view the paper back of the knife. These letters on the knife as words of direction are produced by stencilled cut-outs, that is, by stencilled lettering. The character of the letters or words or their number may be varied within the scope of the invention. The stencilled lettering is indicated at **61**, which numeral also indicates the stencilled openings. The user thus simultaneously sees the directions and the paper and a large area of opening is provided so that the paper may be easily and clearly seen.

Another structure covered in a copending application which is preferably, although not necessarily, used in combination with a knife, is an apron between which and the rolls the paper lies after having passed through the rolls in feeding direction or toward a position of accessibility. The shape of the apron and its relation to the rolls is such that when feeding the paper by means of the wheel **46**, jamming of the paper between this apron and the rolls eventually moves one of the rolls to stop feeding action, and so conditions the paper that as a result of again feeding, the paper automatically loosens itself or tends even without feeding to expand and move in the direction of accessibility.

The above is one function of the apron or an equivalent device in relation to the roll. A second function, which the apron may perform independently of the first, is to automatically bring the paper to and hold it in a position spaced rearwardly of the knife. In this embodiment the paper is held in a substantially upright position. The bottom of the apron is so related to the tear-off edge of the knife that after tear-off the paper remains projecting below the edge of the apron so that it can be viewed through the stencilled cut-outs in the knife. The apron in this case is gravity-balanced to hold the paper properly spaced and all that is necessary is for the user to reach behind the knife after sighting the paper through the openings provided by the stencilled words of direction.

Referring to Figures 1 and 2. The numeral **65** generally indicates the apron or other equivalent movable element. The apron acts to change the cross-section of the configuration of the delivery passage and thus acts to make permanent jamming impossible. This jamming occurs most frequently when someone maliciously tampers with the cabinet to try to put it out of commission, which in this day of labor troubles is not an unusual occurrence.

The apron is curved as at **66** and has its concave side facing the roll. In this embodiment, but not necessarily in all, there is means connecting the apron to swing about the axis of the movable roll as a center, the means being such that the apron as shown in Figure 2 is gravity-balanced to hold the paper which has passed below it in a substantially upright position spaced from the knife. Paper projecting below the knife can be drawn forwardly (also drawing the apron forwardly) and torn off against the knife, as before stated.

It is noted that the middle part of the apron is straight and the lower part is curved inwardly as at **67** to provide an edge engagement with the paper. The apron is pendently, swingingly attached by means of plates or arms **71**, although there is no intention to limit the invention to the particular manner of mounting the plate, provided that the plate or its equivalent is capable of cooperating with the rolls to form a downwardly flaring or diverging throat, capable of automatically moving rearwardly to space the paper after tear-off.

Regarding jamming by a malicious tamperer. When the tamperer with his fingers held in the throat operates the feed roll, the paper usually builds up by a series of reverse folds to finally become forcibly packed between the fingers as the base, and the movable roll. Finally sufficient force is set up and the roll **40** is raised to stop feed. When the tamperer having, he thinks, put the cabinet out of commission for further feeding, removes his fingers, the resiliently packed and folded condition of the paper causes it to automatically expand like an accordion, moving the paper in direction of accessibility or so as to be easily pullable to a position for tear-off or so as to loosen sufficiently to be easily withdrawn by hand or fed by operation of the abutment **50**. In previous devices the throat was not downwardly convergent but was so formed that there could be no automatic release after jamming.

When the paper can be jammed the cabinet is put out of commission until the door is opened by a service man and the paper torn off (therefore wasted) and the paper again threaded through and the cabinet closed by the service man.

It will be understood that the tension **41** on the pressure roll **40** is so balanced as to obtain proper feed under ordinary conditions, but nevertheless to properly react to the pressure produced by the jamming paper to raise the roll before a great deal of paper is wasted as a result of jamming.

Another feature of the invention claimed herein is a detail of the construction of the stop mechanism, which is an improvement over the stop mechanism covered in another application. The present feature consists in utilization of the spring which retracts the stop as means for releasably securing one end of the stop-operating link to the stop. This facilitates assembly and eliminates an extra part, which part is easily lost and which requires special care to apply. It will be understood that the mechanism now to be described is operated through manipulation of the element **50** which also operates the roll, which in turn is controlled by and controls the mechanism now to be described.

The operation of the stop mechanisms in this class is well known. The present mechanism is not only a stop mechanism but is a time-stop mechanism and it is of the vacuum-cup type. In Figure 3 the stop mechanism is shown in release position and is adapted to control and be controlled by the measuring roll **7**, in turn operated by an abutment element **50**. This roll has a gear **80** on its shaft or trunnion which meshes with another spur gear **81** journaled on the plate **25**. There is a stop-slide indicated at **82** laterally guided by a three-point guide means, the guide elements of which are respectively indicated by numerals **85, 86, 87**. The slide can simply be lifted out from between the guide elements and is therefore very easy to assemble. The face of greatest area of the slide is opposed to and slides against the outer face of the plate **25** and the slide has an extension **89** which supports one of the timing elements, that is, a vacuum cup **90**. A bracket **91** has an extension **92** which overlaps the slide or stop to form the sole means to prevent its movement outwardly from the plate **25**. Suitable fastening devices **93** releasably secure the bracket **91** as shown. Guide **85** is detachably connected as shown, while the other two guides are formed by being struck outwardly from the metal of the plate **25**. The bracket **91** supports a second vacuum cup **93**. When the cups are brought together they remain vacuum-attached and immovable during the timing period. Timed release is obtained by admitting air between the cups, and the rate of admission is regulated by the screw **94**.

A feature of this invention is the means by which the link **95** is held on the pivoting projection **96** carried by the lower end of the slide-stop **82**. There is an opening in the link which fits over the projection **96** and this pivot projection **96** has an opening **97**, and the hooked end **98** of the stop-retracting spring is merely hooked through this opening. It is a very simple and easily made connection. The link has a slot **100** therein and this is loosely traversed by a crank pin **101** on the gear **81**.

Inasmuch as the general operation of the device is well known, no detail description is given, although it may be said that when the gear rotates, the crank pin **101** pulls the link downwardly, also pulling the stop **82** downwardly into the path of the stop arm **103**, at which point the stops **82** are held by the vacuum cups until the annulment of the vacuum occurs. Immediately upon such annulment the spring **99** pulls the stop again to the open or release position shown.

A feature of the invention is to provide for the connection of a retraction spring for the slidable stop such that the force applied by the spring is applied directly to the slide, and at the same time have a part of the spring act as a means for holding a pivotal link against accidental release from the stop.

The advantages of the connection of the spring **99** to the extension **96** of the slide, rather than to the link **95**, will be evident. Not only does the lower end of the spring **99** act to retain the upper end of the link on the projection **96**, but the spring acts directly on the slide and not directly on the link. Heretofore these springs have been attached to the link so that the action of the spring increased the friction between the sides of the slot **98** of the link and the crank pin **99** during operation. Therefore, by attaching the spring as herein shown, a triple function is performed of avoiding increase of friction in the manner mentioned, obtaining direct action of the spring on the stop-slide **96** and of utilization of the spring to hold the link on its pivot. Decreasing the friction decreases wear and decreases the load to be operated by the abutment disk.

We claim as our invention:

1. A dispensing cabinet having a feeding roll and having a front wall having a slot therein, a wheel having radial fingers, one only of which projects through the slot at the same time, said wheel being adapted to rotate the roll.

2. A dispensing cabinet having a feeding roll and having a front cover having a slot therein, a wheel having fingers projecting through the slot, said element being adapted to rotate the roll, the relation of the fingers to the slot being such that only one of said fingers projects at one time, so that the operator can lay his finger on said projecting finger and bear downwardly thereon to rotate the roll, whereby the finger of the wheel finally disappears through the slot, whereafter the operator's finger may continue its downward movement while in frictional engagement with the cover.

3. In a dispensing cabinet for sheet material, feeding means controlled by and controlling a stop mechanism to set the timer as feeding occurs, said cabinet having a front wall having a slot therein, a wheel having radial arms, one only of which projects through the slot at the same time, and means by which the wheel when moved by its fingers operates the feeding means, and sets the time-stop mechanism.

4. A dispensing cabinet having a feeding roll controlling and controlled by a stop mechanism, a wheel adapted to operate the roll and having peripheral radial abutments, said cabinet having a front wall having a slot through which an abutment projects, the abutments and the slot being so related that only one abutment projects at a point substantially intermediately of the top and bottom of the slot and so that firm pressure can be applied by an operator's finger to the abutment in downward direction.

5. A dispensing cabinet for sheet material, comprising a feeding mechanism, a stop mechanism controlled by and controlling the feeding mechanism to limit feeding to a predetermined amount of sheet material, said cabinet having a front wall having a slot therein, a wheel having operating arms and means by which the wheel controls the feeding means, said arms being adapted to successively project through said slot to a position accessible to the user, said feeding means stop mechanism and arms being so related that when the stop mechanism assumes feed-limiting position one of the arms assumes said accessible position.

6. A dispensing cabinet for sheet material, comprising a feeding mechanism, a stop mechanism controlled by and controlling the feeding mechanism to limit feeding to a predetermined amount of sheet material, said cabinet having a front wall having a slot therein, a wheel having operating arms and means by which the wheel controls the feeding means, said arms being adapted to successively project through said slot to a position accessible to the user, said feeding means stop mechanism and arms being so related that when the stop mechanism assumes feed-limiting position one of the arms assumes an accessible position at a point substantially midway between the top and the bottom of the slot.

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