

Dec. 12, 1939.

R. G. BIRR

2,183,252

TOWEL DISPENSING APPARATUS

Original Filed April 8, 1935

3 Sheets-Sheet 1

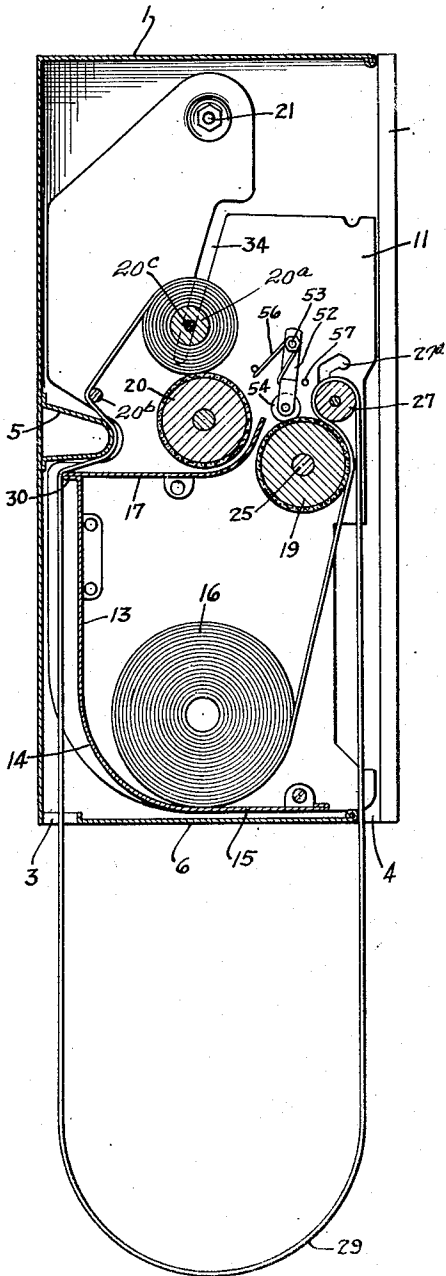


FIG. 1

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3 Sheets-Sheet 2

FIG. 3

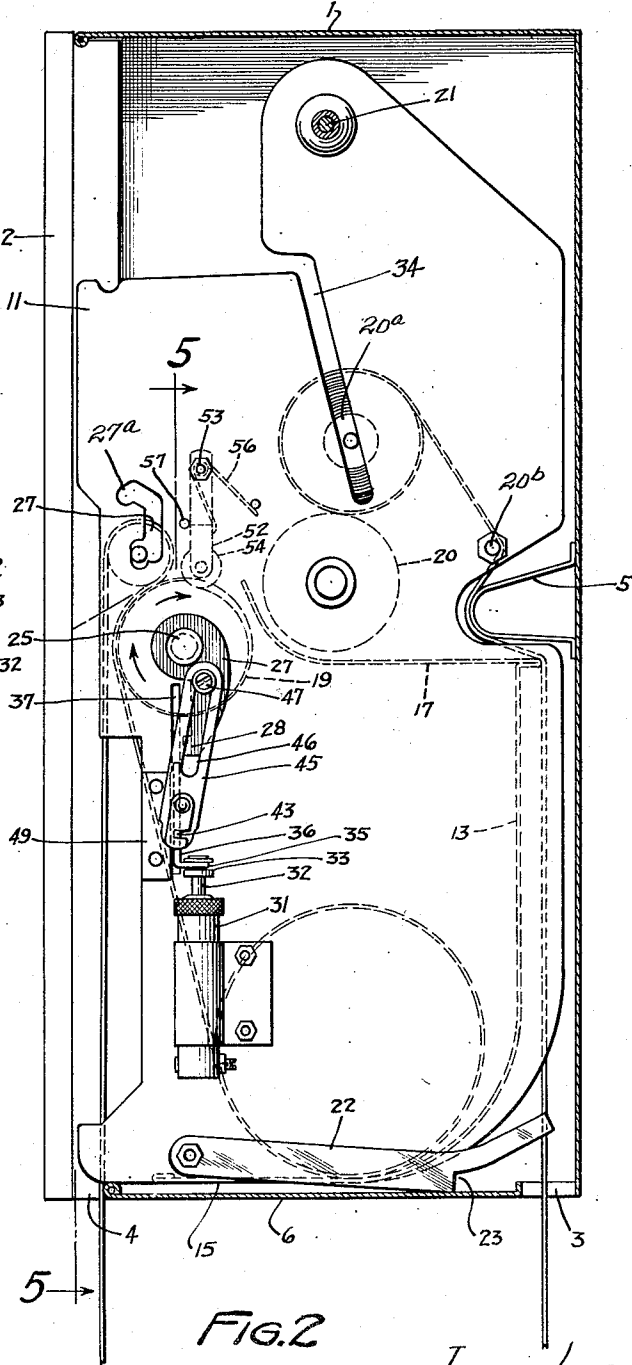
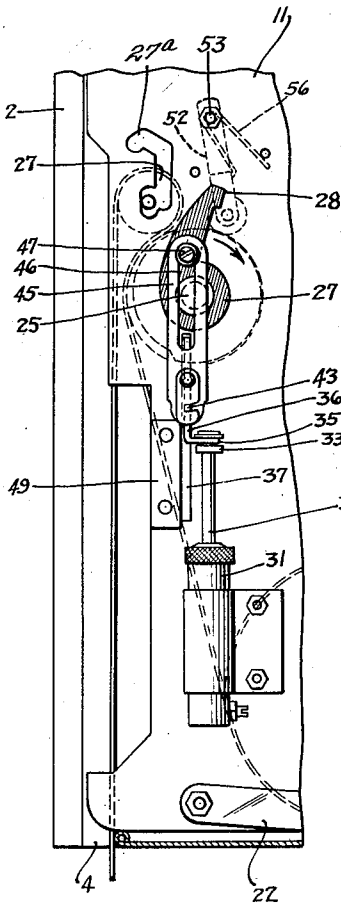


FIG. 7

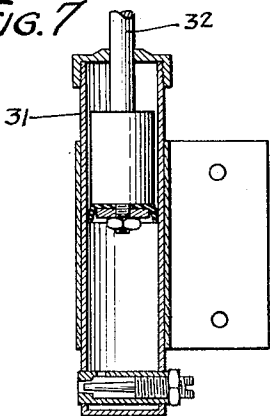


FIG. 2

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3 Sheets-Sheet 3

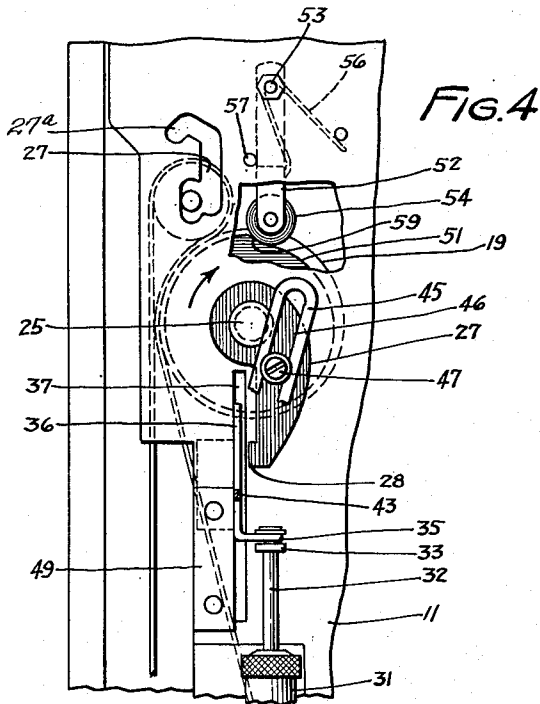


FIG. 4

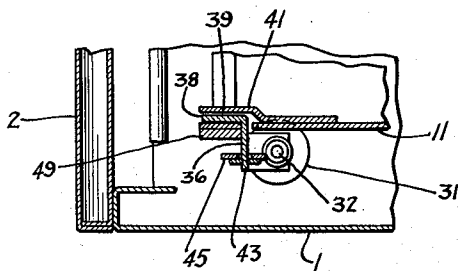


FIG. 6

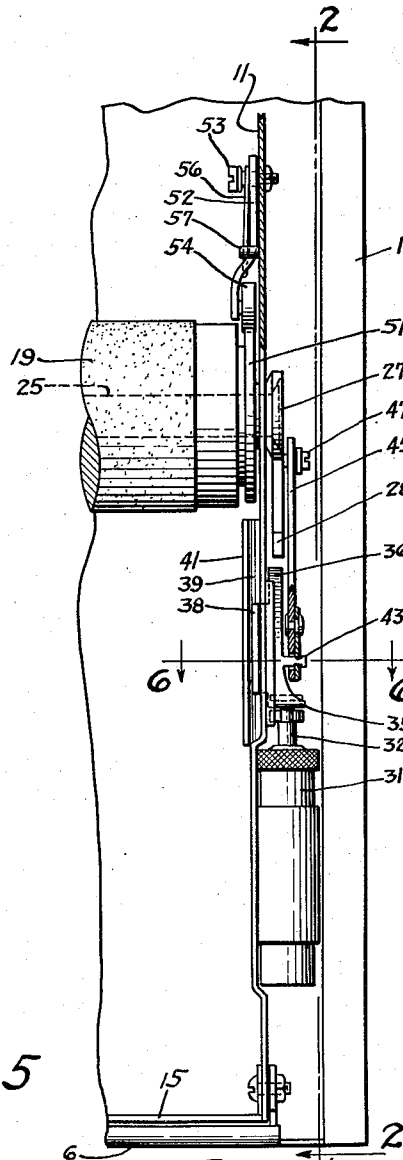


FIG. 5

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# UNITED STATES PATENT OFFICE

2,183,252

## TOWEL DISPENSING APPARATUS

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Application April 8, 1935, Serial No. 15,271  
Renewed April 5, 1939

18 Claims. (Cl. 271—2.4)

This invention relates generally to improvements in apparatus for dispensing toweling, and particularly to a mechanism so constructed that only predetermined amounts of toweling may be drawn therefrom by a user at certain time intervals, in order to avoid waste. The invention may be applied to any device in which the withdrawal of a towel of any kind moves or rotates some element which, in turn, controls the mechanism of this invention for interrupting towel delivery for a predetermined length of time after each delivery or dispensing operation.

Features of the invention include: means for the timed control of towel material; the use of a roll or equivalent element which must be moved, or rotated, as a result of clean towel withdrawal; the use of a roll for this purpose and the operation of dual stop means by the roll either directly or indirectly; the use of a toweling controlled roll directly connected to a stop arm, and means by which the stop arm controls another stop which can be moved into and out of the rotative path of the arm and which is engageable by the arm to limit the degree of clean towel withdrawal; the use of timing means and means by which one of two stops controls the timing means and, in turn, is controlled thereby for timed withdrawal of the stop from stop position; the use of a dash-pot type of timer in any of the combinations described; the provision of means for preventing interference with the timing apparatus by the stop means; and all broader ideas of means inherent in the construction, along with the details of construction disclosed.

Objects, features and advantages of the invention will be set forth in the description of the drawings forming a part of this application, and in said drawings

Figure 1 is a central vertical transverse section illustrating one form of the invention;

Figure 2 is a vertical transverse section on line 2—2 of Figure 5, illustrating the time-stop mechanism, with the parts positioned as before the length of clean toweling has been pulled out by the user;

Figure 3 is a fragmentary view similar to Figure 2 with the stop mechanism positioned as after the user has withdrawn about one-half of a length of clean toweling, and with the timer fully set;

Figure 4 is a fragmentary view similar to Figure 2 with the stop mechanism positioned as after the user has completed the withdrawal of a length of toweling and with the timer beginning its timing operation;

Figure 5 is a front inside view of the cabinet with the stop mechanism partly in section as on line 5—5 of Figure 2;

Figure 6 is a fragmentary plan section on line 6—6 of Figure 5 illustrating the guideway for the slidable stop;

Figure 7 is a vertical section through the timer.

This invention is embodied in a wall type of towel dispensing cabinet, but the invention is applicable to any type of cabinet, wherein withdrawal of single towels or withdrawal of predetermined lengths of roll toweling, operates movable means.

Referring first to Figure 1: Numeral 1 indicates the outer casing of the cabinet. This casing is provided with the usual door 2 and has in its bottom, near the rear vertical wall, an elongated slot 3, upwardly through which the toweling is drawn to be connected to a soiled towel roll.

The front edge of the bottom 6 of the casing is spaced from the door 2 to form an elongated slot 4 through which the toweling passes to a point beneath the cabinet where it is positioned to be grasped by the user. Attached to the rear wall of the casing is a bracket 5 which forms part of a means for smoothing out the soiled toweling before it reaches the soiled towel roll.

Within the casing 1 is an element, referred to herein as a swing-housing, which supports most of the mechanism. This housing is formed by two side plates 11, only one of which is shown, cross-connected at their lower portions by a plate having a vertical portion 13, a curved portion 14 and a horizontal portion 15, the latter portion forming the bottom of the swing housing and providing a support for a roll of clean toweling 16. A second plate 17 extends from the portion 13 and overlies and is spaced from the first plate, and extends horizontally forwardly as shown. The outer end of the plate is curved upwardly to lie between the feed and takeup rolls, respectively, indicated at 19—20. The swing housing is pivoted by suitable means indicated at 21, the pivot being arranged near the top of the outer casing 1. As shown in Figures 5 and 6, the side of the swing-housing is spaced from the side of the cabinet 1.

After the door 2 of the casing 1 is open, the housing can be swung outwardly to facilitate introduction of fresh toweling and/or removal of soiled toweling, as well as for adjusting the mechanism mounted on the side plate members 11. For holding this swing housing in its outermost position, while loading and unloading, a prop arm 22 is pivoted to the plate 11, as shown, and is notched at 23 to engage the forward edge of the bottom

of the outer casing 1. Two such arms may be employed, one attached to each plate 11.

After introduction of a roll of clean toweling 16, the end of the toweling is first engaged with the feed roll 19, which roll is fixed to a shaft 25 rotatably journaled in plates 11. The toweling is then brought around a pinch roll 27 journaled in slots 27a of the plates 11. This pinch roll operates by gravity in a well known manner, to press the toweling against the feed roll to obtain the proper frictional contact to provide power for operating the takeup roll. The toweling is then brought downwardly through slot 4 and below the bottom of the casing 1, and then upwardly to form a loop indicated at 29, and is then brought upwardly through the slot 3 around a towel-smoothing edge 30 of the plate 17, then around a smoothing rod 28b, thence to the soiled towel roll 20a. The shaft 33 of this soiled towel roll is suitably guided in slots 34 in the side plates 11, and the roll rests by gravity upon and is frictionally driven by the takeup roll 20.

In cabinets of this general type, means have been provided for stopping the feed roll against further motion after a predetermined length of clean toweling has been pulled out by the user. Heretofore a push button or lever control means has been provided for manually releasing the feed roll before another length of toweling could be withdrawn from the cabinet. By practice of this invention, the stopping mechanism operates as a result of pull on the towel, and the release is accomplished automatically at the end of a time period.

Therefore, an important feature of this invention relates to means for automatically releasing the feed roll after a suitable time interval, thus dispensing with the usual push button or control lever. One embodiment, which is structurally capable of carrying out automatic timed release of the feed roll, includes (see Figures 2, 3, 4 and 5) the feed roll shaft 25, or its equivalent, suitably rotatably journaled, in this instance in plates 10 and 11 of the swing frame. The shaft 25 extends through and outwardly beyond the plate 11 and has fixedly secured thereto at its outer end an arm 27 as a stop having at its outer end a slight projection 28, cooperable with another stop herebelow described.

Mounted, as shown in Figures 2 to 6, and secured to the outer side of plate 11 is a timer 31 of the dashpot type, see Figure 7 having an upwardly extending plunger 32 provided with a head 33 which, in turn, is secured to a lateral extension 35 of a slidable stop 36. The slidable stop member 36, see Figures 4 to 6, moves in the vertical slot 37 of side plate 11 and has an angled portion 38 which slides in the guideway 39 formed between the inner side of the side plate 11 and plate 41 secured thereto, as shown in Figures 5 and 6. The stop member 36 is provided with a laterally extending integral pin 43 to which is pivotally secured one end of a link 45. The link 45 is provided with an elongated slot 46 which is traversed by the pivot pin 47 secured to arm 27 of shaft 25 of the feed roll 19.

It will be noted by reference to Figure 2 that the slidable stop 36 is normally positioned out of the path of the arm 27. The link constitutes means whereby one stop controls the other to move it to stop position and thereafter release it for independent movement under action of the timer. This is accomplished as follows: The user pulls out a towel, or pulls on the toweling, thus rotating the roll shaft 25. Stop arm 27 rotates in

clockwise direction, moving across the motion path of the slide stop 36 to the position shown in Figure 3, whereat the stop arm has accomplished about half of its rotative movement, and the stop slide is at its upper limit of stop movement. The arm continues to rotate, hits the slide and finally assumes the position of Figure 4 slightly spaced from the slide as shown. Because of the slotted link connection, the stop arm 27 is allowed to move independently of the stop slide leaving the latter in upper or stop position. Motion of the slide to stop position, sets the timer, the stem of which is directly connected to said slide. Setting consists in pulling the plunger, see Figure 7, to its uppermost position, as is well known in this art. From its position in Figure 4, the stop member 36 and plunger 32 move downwardly by gravity, being retarded by the piston in cylinder 31. The slot 46 allows the stop arm 27 to quickly move to the position of Figure 2. A plate 49 may be provided upon the side plate 11 adjacent the vertical slot 37 to act as a buffer or backing plate for the stop slide 36, when struck by the extension 28 of the stop arm 27, due to forcible quick withdrawal of the toweling by the user.

The above link and the means by which it is connected so that the roll or equivalent element is caused to operate the slide 36, differs from other devices which use pins and camming surfaces, in which one part merely contacts and slides along another. In this case, there is a positive connection symbolized by the link and its means of connection. It is understood herein that when I use the word "connection" I mean a positive connection, as distinguished from camming action which involves no "connection" in the sense used herein. It is further understood however, that the positive connection of this invention may be made in other ways, and that I believe myself the first to use a connection wherein one stop is moved into the path of the other and thereafter released for independent motion out of the path, and moreover, I believe myself the first to provide a connection of such a character that part of said connection moves with one of the stops, or with the setting element of a timer, as the stop or timer moves independently away from stop position. It is further understood that the element 36 does not have to be a stop, but can be part of a connection or connecting means by which the roll 19 (or its equivalent) sets the timer. Moreover, it is understood that the element 36 may be used with or without the timer and yet be moved into stop position and released for independent movement away from stop position by the connection claimed herein. It is further noted that the connection in this embodiment moves with the part 36, whether part 36 be a stop only or whether it be a timer-setting connection only, or whether it performs the dual function of stop and timer element, or stop and timer-setting element.

To prevent the extension 28 of the arm 27 from remaining in frictional contact with the slide stop 36 following its impact therewith, and thus interfering with downward travel of slide 36 (see Figures 4 and 5) the feed roll 19 has a cam-like member 51 secured thereto at the inner side of and adjacent the plate 11 of the inner housing. An arm 52 pivotally mounted on the side plate member 11 as at 53 has a cam roller 54 adapted to engage the periphery of the member 51. A spring 56 urges the arm 52 against the stop pin 57 and the cam roller 54 against the cam mem- 75

ber 51. Referring to Figure 4 the cam member 51 is provided with an inclined surface 59 which engages the roller 54 just before the stop arm 27 strikes the slide stop 36. The roller is thus moved against the action of its spring. When after pulling out, the user releases his pull upon the towel, the cam roller 54 acting forcibly against the inclined surface 59 rotates the feed roll 19 in counter-clockwise direction a short distance (or until the arm 52 again engages the stop pin 57) to cause the extension 28 of arm 27 to assume the spaced relation shown and before mentioned.

I claim as my invention:

1. An apparatus for dispensing sheet material including a roll which must be rotated if dispensing is to occur, means for limiting feed roll motion including first and second movable stops, the second being slidable, said stops being co-operable to stop roll motion after dispensing of a given amount of sheet material, means by which the roll controls motion of the first stop, a link by which the first stop operates the second to move it to stop position and thereafter release it for independent movement.

2. An apparatus for dispensing sheet material including a roll which must be rotated if dispensing is to occur, means for limiting feed roll motion including first and second movable stops co-operable to stop roll motion after dispensing of a given amount of sheet material, means by which the roll controls motion of the first stop, means by which the first stop operates the second to move it to stop position and thereafter release it for independent movement, including a link having a sliding pivotal connection with the first stop, and having a pivotal connection with the other stop, timing means which can be set and which thereafter automatically operates to time, and means by which the second stop element sets the timer, as it moves to stop position and is thereafter controlled by the timer for timed motion away from stop position.

3. An apparatus for dispensing sheet material including a roll which must be rotated if dispensing is to occur, means for limiting feed roll motion including first and second movable stops, the second being slidable, said stops being co-operable to stop roll motion after dispensing of a given amount of sheet material, means by which the first stop is directly connected to the roll for motion therewith, means by which the first stop operates the second to move it to stop position and thereafter release it for independent movement, including a link having a sliding pivotal connection with the first stop, and having a pivotal connection with the other stop.

4. In a dispensing cabinet, means for dispensing sheet material including a roll which must be rotated if dispensing is to occur, a shaft for said roll, an arm fixed to said shaft, a slide movable into the motion path of the arm to prevent further rotation of the roll after dispensing of a length of sheet material, timing means connected to said slide and adapted to be conditioned for timing as the slide moves to stop position, and a connection between said arm and said slide by which the slide is during withdrawal of clean toweling moved to stop position and released to thereafter be moved independently of the arm.

5. In a dispensing cabinet, means for dispensing sheet material including a roll which must be rotated if dispensing is to occur, a shaft for said roll, an arm fixed to said shaft, a slide movable across the motion path of the arm to prevent

further rotation of the roll after dispensing of a length of sheet material, timing means connected to said slide and adapted to be conditioned for timing as the slide moves to stop position, a connection between said arm and said slide by which the slide is during dispensing of a given length of sheet material, moved to stop position and released to move independently of the arm, and means for causing said arm to be so positioned after the dispensing operation, as not to interfere with movement of the slide during the timing period.

6. A towel dispensing apparatus for sheet material including first means which must be moved if material is to be made accessible, means for limiting motion of the first means including movable stops one directly connected with said first means and rotative and the other slidable, said stops co-operable to stop motion of said first means after dispensing, means by which the rotative stop controls the sliding stop to move it to stop position and thereafter release it for independent movement, including a link slidably and pivotally connected to the rotative stop and pivotally connected to the sliding stop, a timer of the dashpot type, and means by which the slidable stop controls the timer and in turn is controlled thereby for timed withdrawal from stop position.

7. A towel dispensing apparatus including first means which moves as toweling is dispensed, a first stop operated by said means, a second stop adapted to be moved into stopping relation with the first and against which the first stop engages, and means including a cam movable by said first means for positively moving the first stop slightly away from but not out of its path of engagement with the second, following engagement of the stops, whereby to assure that the second stop is free for motion out of the path of the first.

8. A dispensing apparatus for sheet material, comprising a cabinet having first means which moves as the sheet material is dispensed, means for stopping motion of the first means to limit the amount of the dispensing, including a first stop operated by the first means, a second stop movable into the stopping path of the first stop and adapted to automatically move out of said path following engagement of the stops, and a slotted link by which the first means moves the second stop into the stopping path of the first stop and thereafter releases the second stop for automatic movement out of said stopping path.

9. A dispensing apparatus for sheet material including first means which must be moved if dispensing is to occur, means for limiting motion of the first means including, a first stop operated by said first means, a second stop movable into and out of the path of the first stop and movable automatically out of said path, means by which the first means operates the second stop to move said second stop into the stopping path of the first stop and thereafter release said second stop for automatic movement out of the path of the first stop, and means in part movable by the first mentioned means for positively automatically reversing said first stop and slightly moving the same away from but not out of its path of engagement with the second stop immediately following engagement of said stops.

10. An apparatus for dispensing sheet material having first means which must be moved if dispensing is to occur, a releasable stop mechanism for said first means, a timer and means by which it controls the stop mechanism to release it after

a predetermined timed action of the timer, said timer being adapted to be set and to thereafter automatically move to perform its timing action at the end of which the stop mechanism is released, said timer including an element movable in one direction to set the timer and moving automatically in the opposite direction during timing action, and means by which dispensing motion of the first means moves said element to set the timer and thereafter releases said element for independent motion, including a link and plural means connecting it with the first means and with the said timer element.

11. A dispensing apparatus for sheet material, including first means which must move if material is to be made accessible, means for limiting the motion of the first means after dispensing, including a stop moving with the first means and an independently mounted slide movable into the path of said stop to stop dispensing, a link, means connecting it with the first means and means connecting it with the slide in such manner as to cause the slide during dispensing to move into stop position, and immediately thereafter be released for independent movement to non-stop position.

12. A dispensing apparatus for sheet material, including first means which must be moved if the material is to be dispensed, means for limiting dispensing motion of the first means including, an arm controlled by said first means and a slide independently movable into the path of the arm to limit dispensing, said slide being adapted to automatically move out of said path, a link and means by which it connects the arm to the slide in a manner to move the slide into stopping position and thereafter release the slide for independent movement away from that position.

13. A dispensing apparatus for sheet material, including a measuring roll which must rotate if dispensing is to occur, means for limiting dispensing motion of the roll including, an arm movable with the roll, and a slide independently movable into the path of the arm to stop roll motion, a connection between the arm and the slide adapted to move the slide into stop position and thereafter release it for independent movement, timing means and means by which the slide controls the timing means and is in turn controlled thereby for timed withdrawal of said slide from stop position.

14. A dispensing apparatus for sheet material, including a measuring roll which must be rotated if dispensing is to occur, means for limiting dispensing motion of the roll including, an arm movable with the roll and a slide movable into the path of the arm to stop roll motion, a connection between the arm and slide adapted to move the slide into stop position and thereafter release it for independent movement, timing means and means by which the slide controls the timing means and is in turn controlled thereby for timed withdrawal of the slide from stop position, and means in part movable with the roll

and adapted to move the arm slightly away from the slide following engagement of the arm with the slide to stop dispensing rotation of the roll.

15. A dispensing apparatus for sheet material, including a measuring roll which must be rotated if dispensing is to occur, said roll having a shaft, means for limiting dispensing motion of the roll, including, an arm attached to the shaft and a slide independently movable into the path of the arm to stop roll motion, said slide adapted to automatically move out of stop position, a connection between the arm and the slide to move the slide into stop position and thereafter release it for automatic movement, and means in part movable with the roll and adapted to move the arm slightly away from the slide following stop engagement of the arm with the slide.

16. A dispensing apparatus for sheet material which includes a measuring roll which must be moved if dispensing is to occur, said roll having a shaft, means for limiting dispensing motion of the roll including, an arm movable with the shaft and a slide movable into the path of the arm to stop roll motion, a connection between the arm and the slide to move the slide into stop position and thereafter release it for independent movement, timing means and means by which the slide controls the timing means and is in turn controlled thereby for timed withdrawal from stop position, said slide being arranged to move toward and away from the measuring roll shaft substantially in a radial direction, and said timer including a stem which also moves in substantially the same direction as the slide.

17. A dispensing apparatus for sheet material, including first means which must move if the material is to be dispensed, means for limiting dispensing motion of the first means including, an arm controlled by the first means, and a slide movable into the path of the arm to stop dispensing, said slide adapted to automatically move out of said path, and a link and means by which it is connected to the arm and slide to move the slide into said path and thereafter release it for automatic movement out of said path, said link moving with said slide as the latter moves out of said path.

18. A dispensing apparatus for sheet material having first means which must be moved if the material is to be dispensed, means for limiting dispensing motion of the first means, including first and second stops, the first stop being operated by the first means and the second stop being independently movable into and out of the path of the first stop, said second stop being adapted to automatically move out of said path, a link, and plural means by which said link is connected respectively with said first means and with said second stop, so that during dispensing motion of the first means the second stop is moved into the stopping path of the first stop and is thereafter released for automatic movement out of such path.

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