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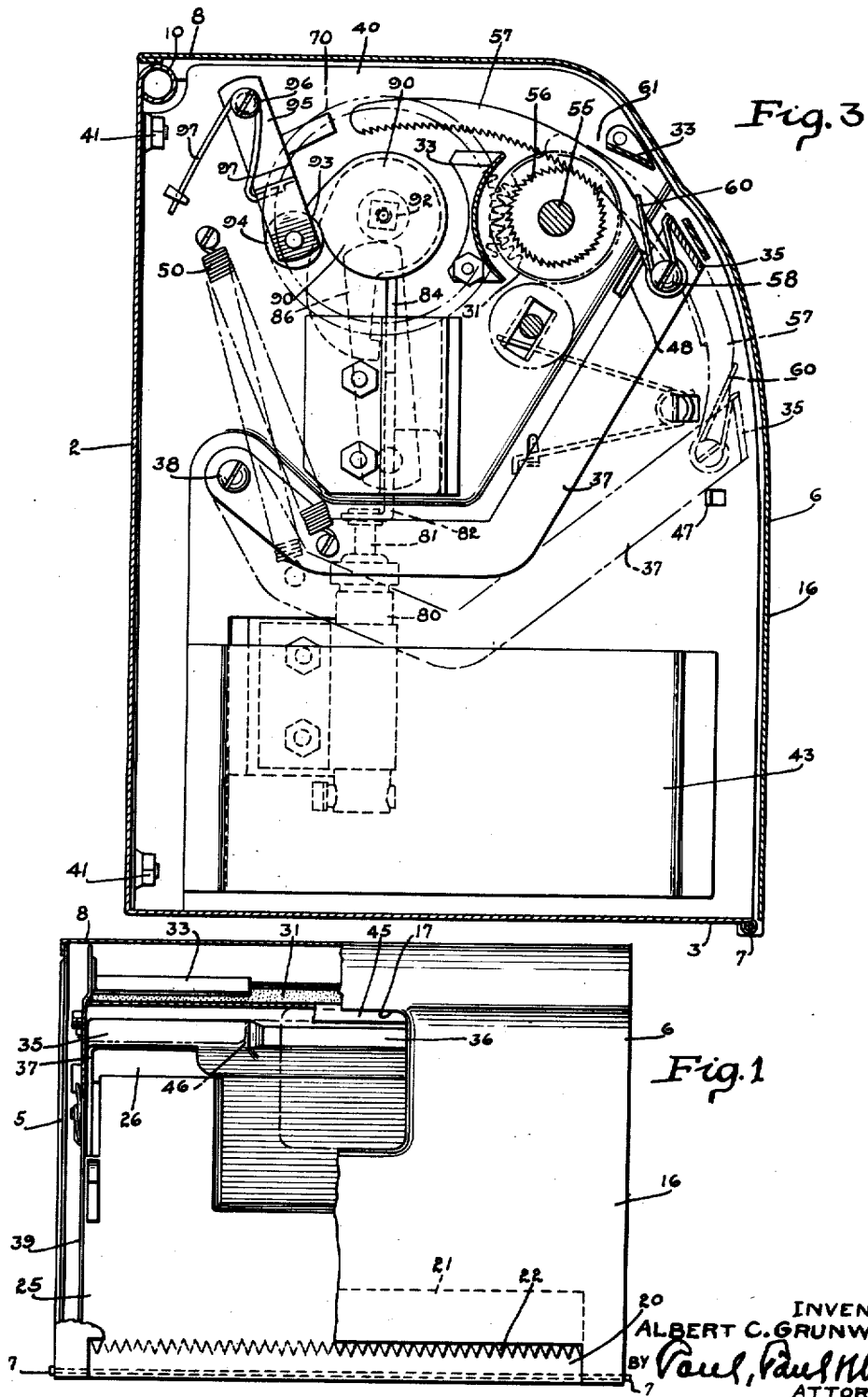
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TOWEL DISPENSING APPARATUS

Filed Sept. 5, 1936

5 Sheets-Sheet 1



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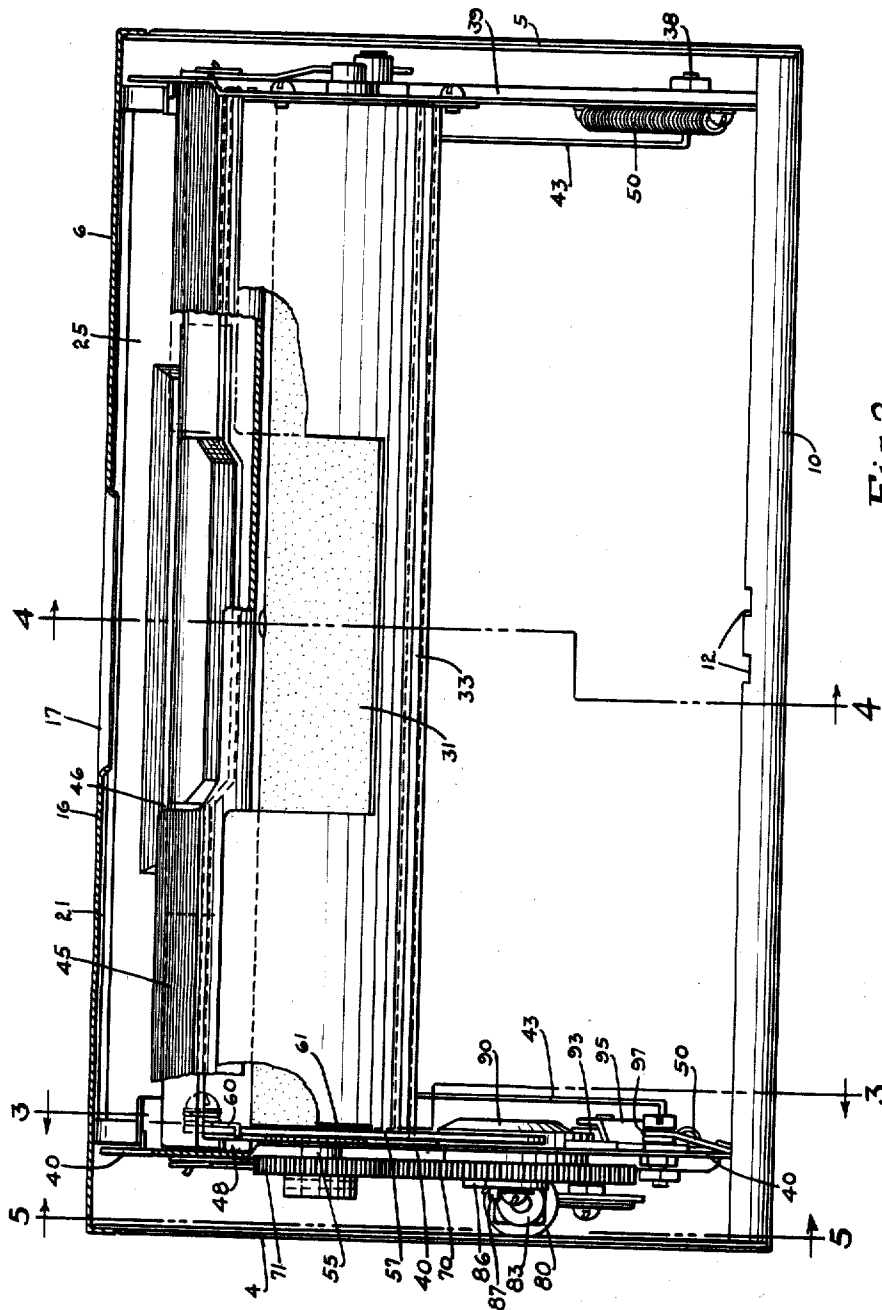


Fig. 2

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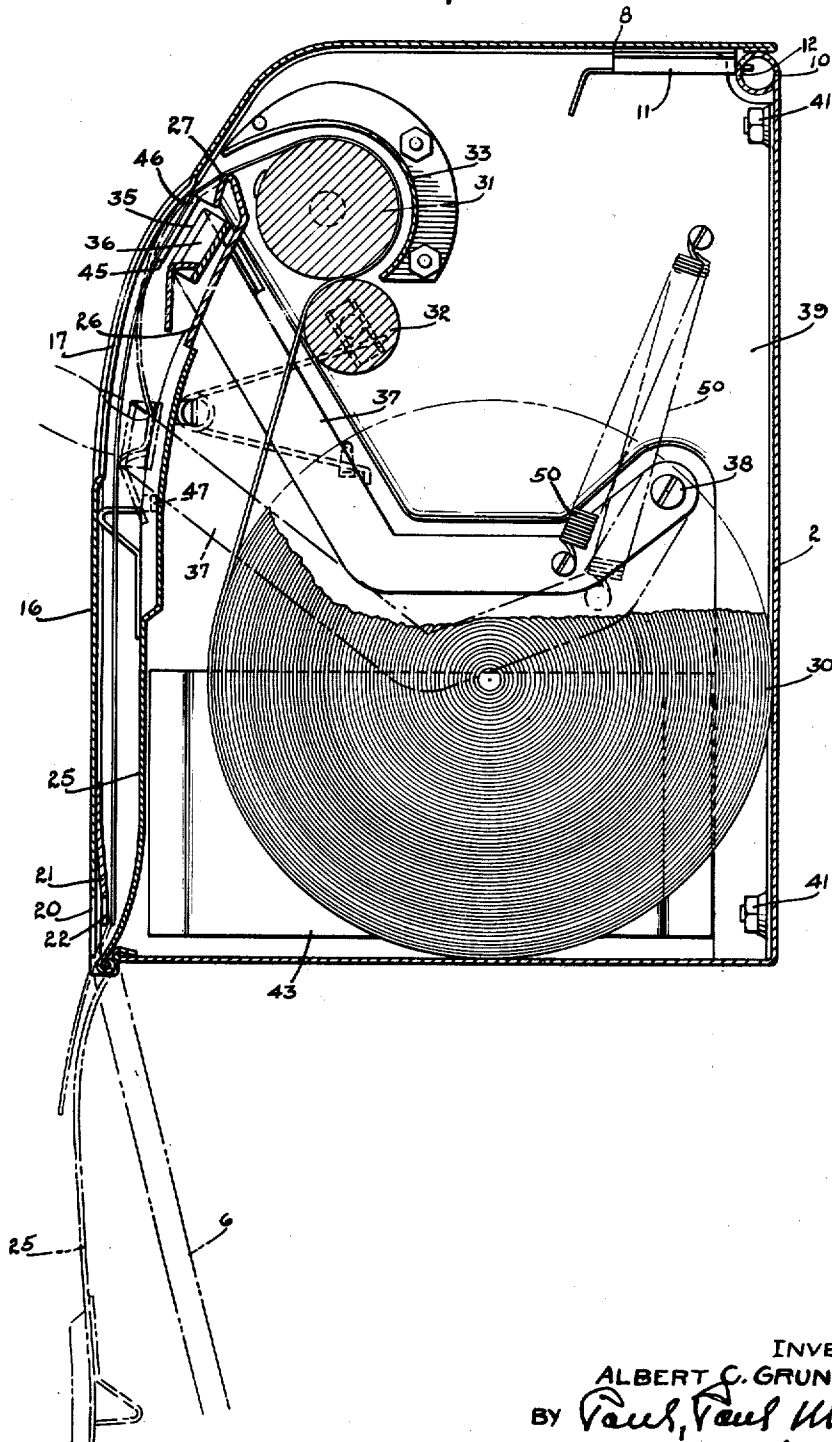
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TOWEL DISPENSING APPARATUS

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Fig. 4



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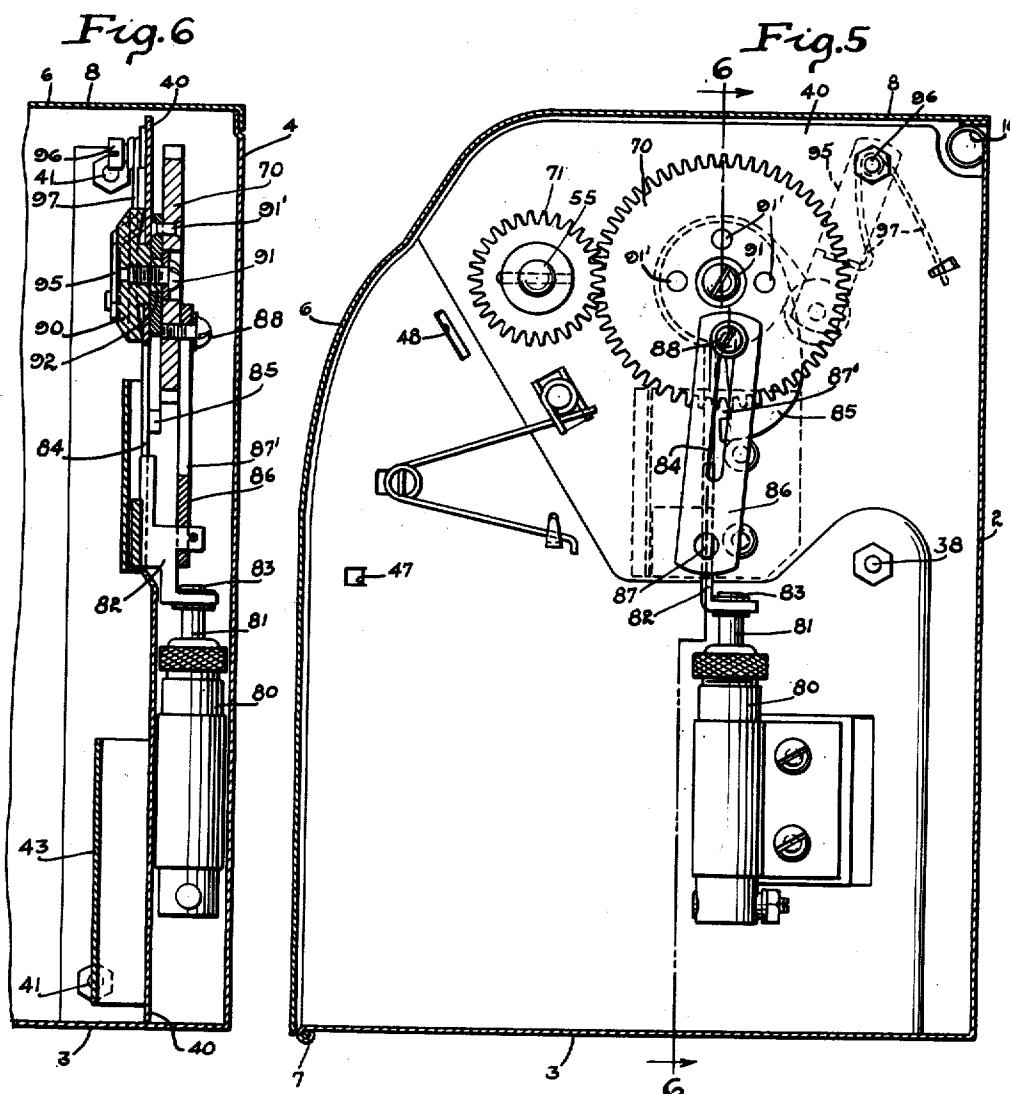
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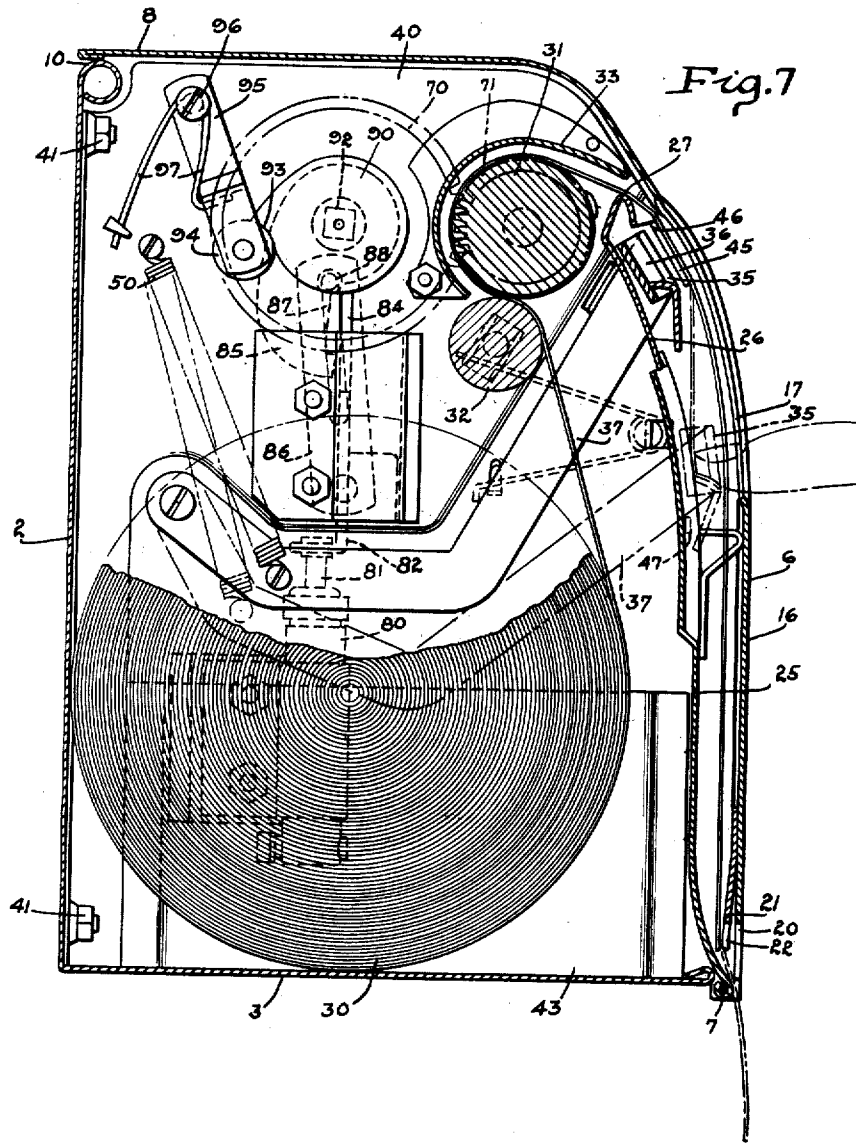
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TOWEL DISPENSING APPARATUS

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2,138,154

TOWEL DISPENSING APPARATUS

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Application September 5, 1936, Serial No. 99,584

12 Claims. (Cl. 164—84.5)

This invention relates to improvements in toweling dispensing apparatus and has for an important object to provide a device in which the paper is fed by the finger, or manually, including movable means against which the paper is frictionally held by the finger to be entrained when said movable element is moved in feeding direction.

Objects are to utilize finger or manual feeding for control of a stop mechanism; to obtain this control through tension or pull of the paper; and to also provide means for controlling a measuring roll independently of a pull on the paper but while the paper is pressed against a movable element and moved in feeding direction.

Other objects are: to provide a paper controlled feed and means associated therewith to cooperate with the finger to obtain sufficient friction to prevent slippage during feeding; to provide a down feed device in which the paper is finger fed or finger controlled to be disposed in tear-off relation with a tear-off knife so that up pull on the paper will result in severing; and generally to provide details of construction for carrying out the various objects in an efficient and economically gainful manner.

Features of the invention include all details of construction, along with the broader ideas of means inherent in the disclosure.

Objects, features and advantages of the invention will appear in the description of the drawings, and in said drawings:

Figure 1 is a front elevation with the front of the cover partly broken away;

Figure 2 is a top plan with the top of the swinging cover in section;

Figure 3 is a vertical transverse section taken approximately on line 3—3 of Figure 2, showing the paper tension-relieving mechanism in initial position;

Figure 4 is a central transverse vertical section on line 4—4 of Figure 2 taken through the toweling supply chamber;

Figure 5 is a transverse vertical section taken on line 5—5 of Figure 2 illustrating the time-stop mechanism;

Figure 6 is a fragmentary vertical longitudinal section taken approximately on line 6—6 of Figure 5; and

Figure 7 is a transverse vertical section somewhat similar to Figure 3 but omitting the paper tension-relieving mechanism.

Numeral 1 generally indicates the casing having a back 2, bottom 3, sides 4 and 5 and the hinged enclosure 6 which constitutes the front

and the top of the casing, and which is hinged to the bottom 3 on a suitable pintle 7. The rear end of the top portion 8 of this closure engages with a rolled bead 10 as best shown in Figure 4, and the top portion 8 has a lock 11, the tumbler of which engages a slot 12 of the bead, as shown.

The front portion 16 of the closure is provided with an opening 17 (see Figures 1, 2 and 4), through which the finger is passed to engage the paper, and press it, in performance of the feeding operation in a manner to be described. The front wall 16 of the closure is cut out at the bottom as at 20 and has, mounted on it at its inside and projecting slightly below the cut out portion, a knife 21 having teeth 22 downwardly directed.

Also hinged on the pintle 7, see Figure 4, is a plate 25 having a depressed central portion, and having its uppermost portion overlappingly engaging a transverse plate 26 bent at its top to provide a smoothing edge 27. The plates 16 and 25 are spaced to form a guide throat leading downwardly to the delivery opening 20, and directing the paper into tear-off relation with the knife 21 so that tear-off can be accomplished by up pull on the paper. The element 25 forms the front of a paper supply chamber. The paper supply has the form of a roll 30. The numerals 31 and 32 respectively indicate a measuring roll and a pinch roll, with which rolls the paper is frictionally engaged. The measuring roll performs the usual function and is either operated by the paper or feeds the paper.

A guard 33 is arranged as shown to direct the paper (after its passage between the rolls) upwardly and outwardly to pass over the smoothing edge 27 and be disposed in front of a hand or finger operated movable bar 35, having a centrally arranged finger receiving depression 36 therein said element 35 being connected at opposite ends to arms 37 which are pivoted as at 38 to plates respectively indicated at 39 and 40. These plates are suitably secured as at 41 to the rear wall 2 of the casing.

To the inner sides of these plates are attached bridging plates 43 the inner surfaces of which together form the ends of the supply or roll chamber, said plates 43 acting to limit the end movement of the roll and keep the paper from coming in contact with mechanisms, now to be described, which are also mounted on the inner faces of the plates 39 and 40.

The cross plate 36 has a front apron-like portion 45 which is cut out centrally as at 46 to allow the fingers to reach the depression 36 of

the bar 35 when in its uppermost position. The apron overlaps those portions of the bar 35 lying laterally of its central depression 36.

It is noted that the paper lies in front of the apron 45 and finger depression 36 and between the plates 16 and 25, in a position visible and accessible through the opening 17 of the front 16. The paper, as shown in dot-and-dash lines in Figures 4 and 7, is frictionally held by the finger against the bar 35 to be entrained as this bar is moved downwardly or in feeding direction. Lugs 47, see Figure 3, limit downward movement of the movable element as result of engagement of the arms 37 therewith. Upward movement is limited by engagement of these arms with outstanding lugs 48. Both the lugs 47 and 48 are preferably punched out of the plates 39 and 40. Springs 50 one attached to each arm 37 yieldably resist feeding motion of the bar 35 against which the paper is pressed, whereby to require sufficient finger pressure of the paper against said bar to prevent slippage of the paper relatively thereto, in the case where pull on the paper is depended upon to rotate the roll, and operate the stop mechanism. These retraction springs always bring the arms and element 35 to the uppermost position shown in Figure 4, following a feeding operation.

Referring now to Figure 3 a ratcheting mechanism or its equivalent is provided for driving the measuring roll 31 so that the paper is fed in a manner to relieve pulling strain thereon incident to entrainment by finger action on the movable means 35 or its equivalent. To this end the roll 31 has a shaft 55 extending outwardly through plate 40, and has thereon a ratchet wheel 56 with which cooperates a curved pawl 57, pivoted as at 58 to the arm 37. A spring 60 yieldably presses the pawl into ratcheting relation with the wheel 56. The ratcheting pawl 57 passes upwardly through an opening or cut out 61 in the guard plate 33. When the bar 35 is depressed the ratcheting mechanism drives the roll and the peripheral speed of the roll 31 is slightly greater than the peripheral speed of the bar 35, so that at no time is there any substantial pulling strain or tension on the paper whereby breaking or tearing is avoided, which tearing is most liable to occur when the user's hands are wet.

In the modification of Figure 7 the ratcheting mechanism is eliminated because for some uses it is not necessary, and the roll 31 or its equivalent is operated by the pull of the paper, the paper being held frictionally and immovably against the bar 35 by the finger. Both schemes are claimed, that is the scheme in which entrainment of the paper operates the roll 31, and in which operation of the roll is lever controlled by the finger pressed element.

A feature of the invention is the combination of an element against which the paper is pressed and fed by the finger feed, with a time-stop mechanism. Referring to Figure 5: The roll 31 has a gear 71 meshing with gear 70 journaled in plate 40. A feature is the utilization of one of these gears for controlling the timing mechanism. The timing mechanism per se is not claimed herein. The timer includes a barrel 80 having a piston stem 81. A slide 82 connected as at 83 to the stem, moves in a slot 84 across the path of an arm 85 attached to the gear 70, as shown in Figure 6. In Figure 5 the mechanism is shown as at the end of a timing period with slide 82 withdrawn from the path of an arm 85. Down-

ward motion by gravity of the piston stem is controlled by an air valve. The timer is drawn upwardly, to set it for timing, by means of a link 86 pivotally attached to the slide 82 as at 87. The link has a slot 87' through which passes a pin 88, said pin being threaded into gear 70. The double function of the gear as a driving member and as a timer setting element, is claimed. With the parts positioned as at Figure 5 a half rotation of the roll 31 will, by means of the link, raise the stem 81 of the timer to its uppermost or set position. The relations of the stops 82 and 85 are such that the stop 82 is not lifted into the path of the arm 85 until that arm has passed well to the left from its position in the figure that has moved across and out of the path of the slide 82. At the end of the complete revolution of the roll the arm 85 engages the slide 82 as a stop to prevent further roll motion. The timer then begins to act and its downward movement to the position shown in the figure defines the timing period.

Referring to Figs. 6 and 3, the gear 70 is suitably attached to part of a back-off mechanism which includes a disk 90 arranged at the inner side of the plate 40, and secured by a screw 91 to gear 70. The stop arm 85 is held to the gear by means of rivets 91'; this arm has an opening which fits over an extension 92 of the disk 90. Sufficient play is allowed between the opposed faces of the plates 40 and the arm 85 to prevent sticking or jamming. Now referring to Figure 3, the disk 90 has a shoulder 93 which, at or near the end of the feeding rotation of the roll, engages with a roller 94 as shown. The roller 94 is carried by an arm 95 pivoted as at 96 to plate 40 and is yieldably pressed by spring 97 toward the disk 90. This mechanism per se is not claimed. Its purpose is to back-off the arm 85 to the position shown in Figure 5 immediately following impact of that arm with the slide 82. The purpose is to prevent such frictional contact as might interfere with the free timed gravity movement of the slide 82.

I claim as my invention:

1. A paper dispensing device having, a roll with which the paper is frictionally engaged, movable means against which the paper is frictionally held by the finger as said movable means is moved in feeding direction, and means operated by said movable means to positively drive said roll to feed the paper in a manner to relieve pulling strain on the paper incident to finger action on said movable means.

2. A paper dispensing device having, a roll with which the paper is frictionally engaged, movable means against which the paper is frictionally held by the finger as said movable element is moved in feeding direction, and ratcheting means operated by said movable means to positively drive said roll to feed the paper in a manner to relieve pulling strain on the paper incident to finger action on said movable means.

3. A paper dispensing device having a casing having therein a roll with which the paper is frictionally engaged, and movable means separate from the roll and within the casing against which the paper is frictionally held and pulled by the finger, while the finger moves said movable element in feeding direction, said casing having an opening through which the finger is passed to perform said feeding operation.

4. A paper dispensing device having a casing having therein, a measuring roll with which the paper is frictionally engaged, means for smooth-

ing the paper after leaving the measuring roll, movable means beyond said smoothing means in direction of feed and separate from the roll and against which the paper is frictionally held and
 5 pulled by the finger while the finger moves said movable element in feeding direction, and a tear-off knife toward and into tear-off relation with which the paper is moved by said movable means.

5. A paper dispensing device having a measuring roll driven by friction of the paper as the paper is fed, and movable means against which the paper is frictionally held by the finger and pulled by the finger to drive said roll as said movable means is moved in feeding direction.
 10

15 6. A paper dispensing device having a measuring roll driven by friction of the paper as the paper is fed, feed limiting mechanism for the roll, and movable means against which the paper is frictionally held and pulled by the finger to drive said roll as said movable means is moved in feeding direction, repeated oscillations of said movable means being necessary to cause limiting action of said feed limiting mechanism.
 20

7. A cabinet having a bar therein and means
 25 mounting the bar to reciprocate, and a measuring roll from which the paper passes to the bar and is pressed thereagainst by the finger of the operator to be pulled together with the bar, whereby the bar is caused to rotate the roll and the paper is fed by the rotation of the roll concurrently with the movement of the bar.
 30

8. A cabinet having a bar therein and means mounting the bar to swing, said cabinet having an opening through which the finger can pass to
 35 press paper against the bar and move both, a measuring roll from which the paper passes to be pressed against the bar to operate the bar by the finger of the operator for feeding the paper, and means operated on bar motion in feeding direction to drive the roll and inoperative to drive the roll on reverse motion of the bar.
 40

9. A paper dispensing cabinet having a measuring roll, means for limiting the motion of the roll to thereby limit the amount of paper dispensed including a spur gear driven from the
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roll, a first stop movable with the gear, a second stop movable into the path of the first stop, and means connecting the gear with the second stop and acting as the gear moves to move said second stop into stopping relation with the first stop and thereafter release said second stop for independent movement away from stopping position.
 5

10. A paper dispensing cabinet having a measuring roll, means for limiting the motion of the roll to thereby limit the amount of paper dispensed including a spur gear driven from the roll, a first stop movable with the gear, a second stop movable into the path of the first stop and means connecting the gear with the second stop
 15 and acting as the gear moves to move said second stop into stopping relation with the first stop and thereafter release said second stop for independent movement away from stopping position and means controlled by the second stop for timing
 20 its motion away from stop position.

11. A cabinet having a front closure wall and means hinging it to open by swinging downwardly and to a point below the cabinet, a second wall forming a paper guide with the front wall and
 25 hinged also to swing down below the cabinet, means movable by the paper and from which the paper extends into said guide, a bar reciprocable in said guide and against which the paper is pressed to be pulled by the moving bar.
 30

12. A cabinet having a measuring roll having one end journaled in a plate, and a time stop mechanism controlled by and controlling the roll, a gear driven by said roll and arranged at that side of the plate opposite to the side on which the roll is located, a first stop movable with the gear and disposed between the gear and the plate, a second stop reciprocable on the plate, into and out of stopping relation with said first stop, and means by which said gear moves the second stop
 35 into stopping relation, and therefore releases it for independent motion away from stopping position.
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