

Feb. 28, 1939.

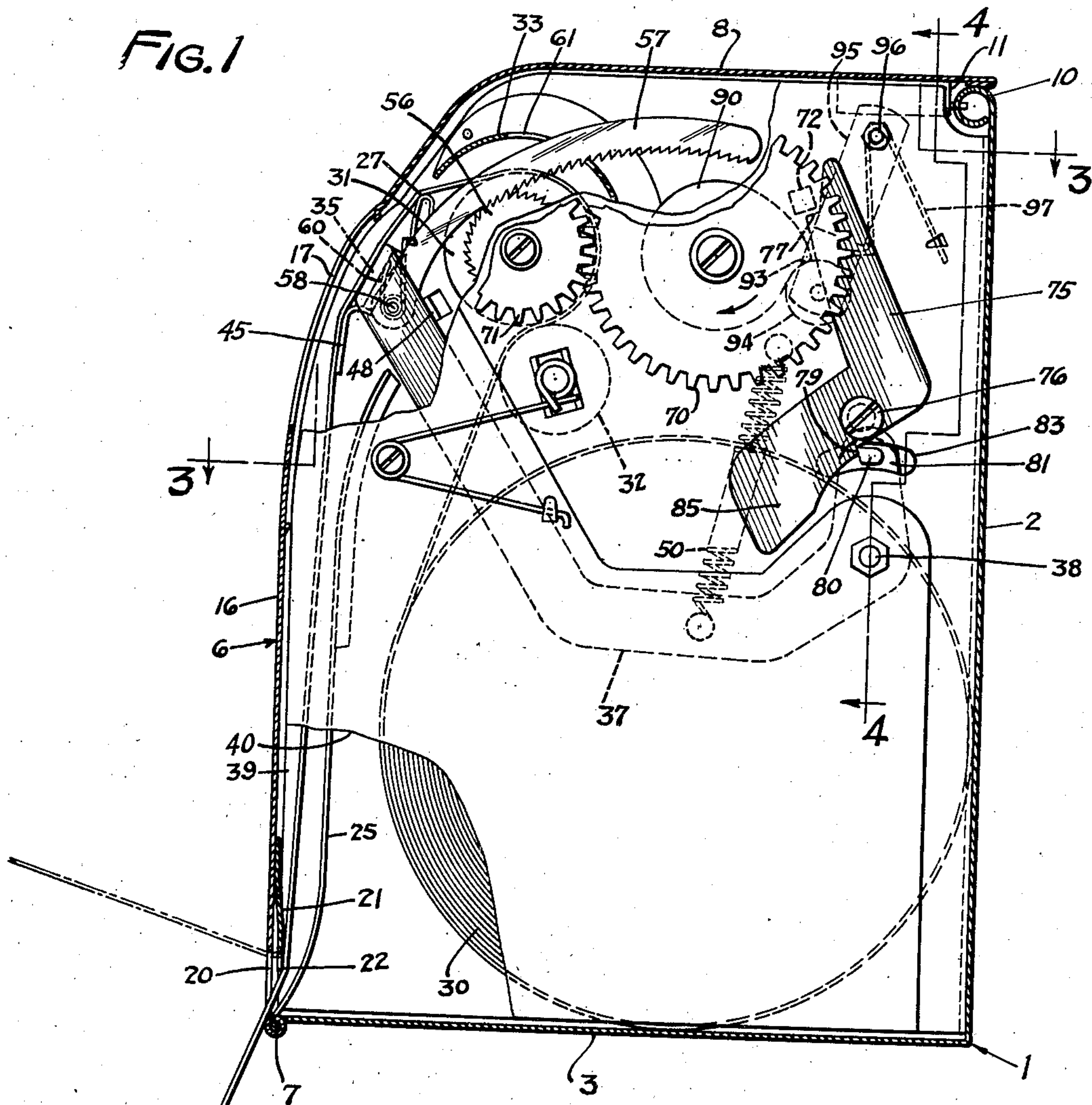
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2,149,088

TOWEL DISPENSING APPARATUS

Filed Dec. 4, 1936

3 Sheets-Sheet 1



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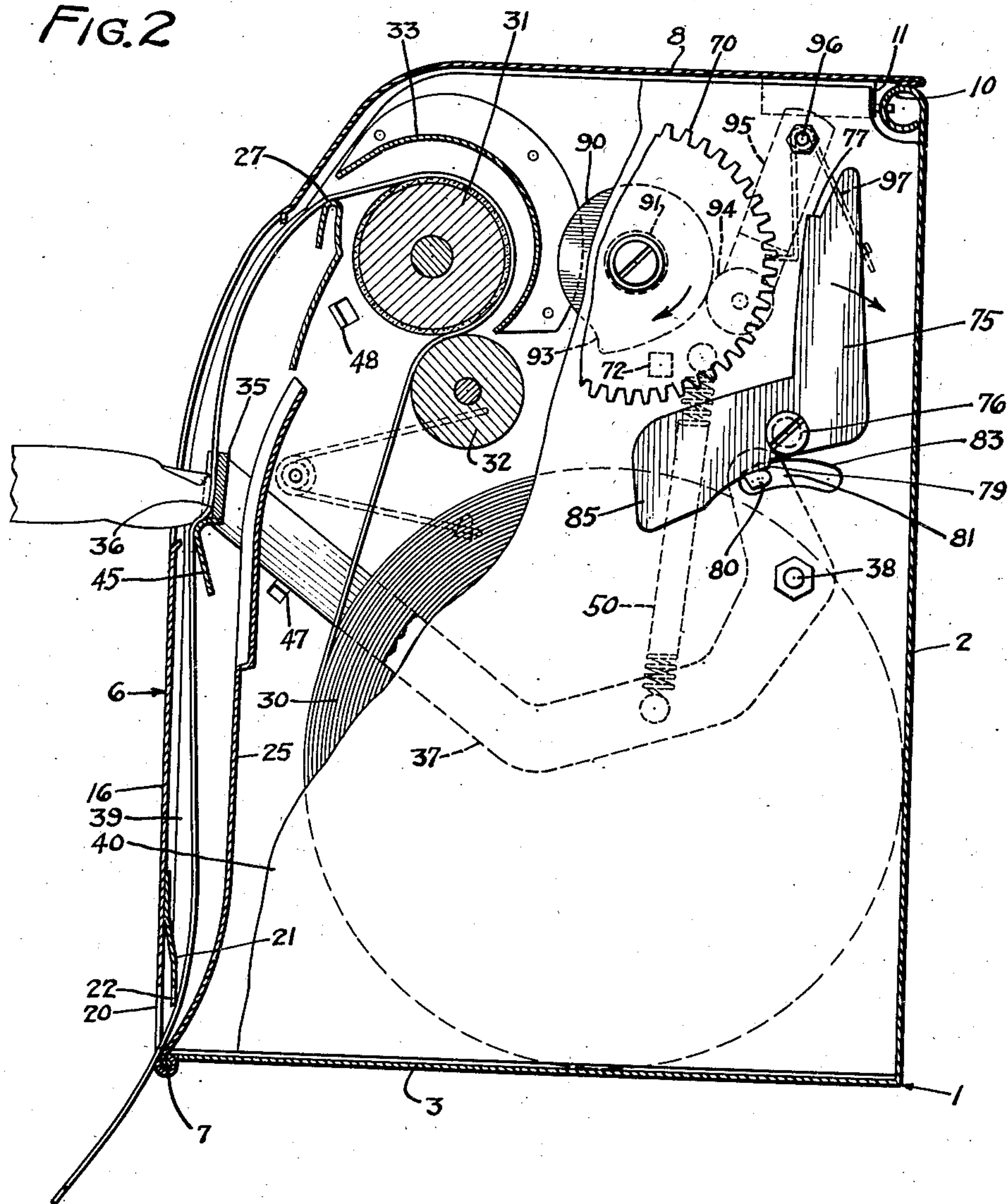
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3 Sheets-Sheet 2

FIG. 2



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3 Sheets-Sheet 3

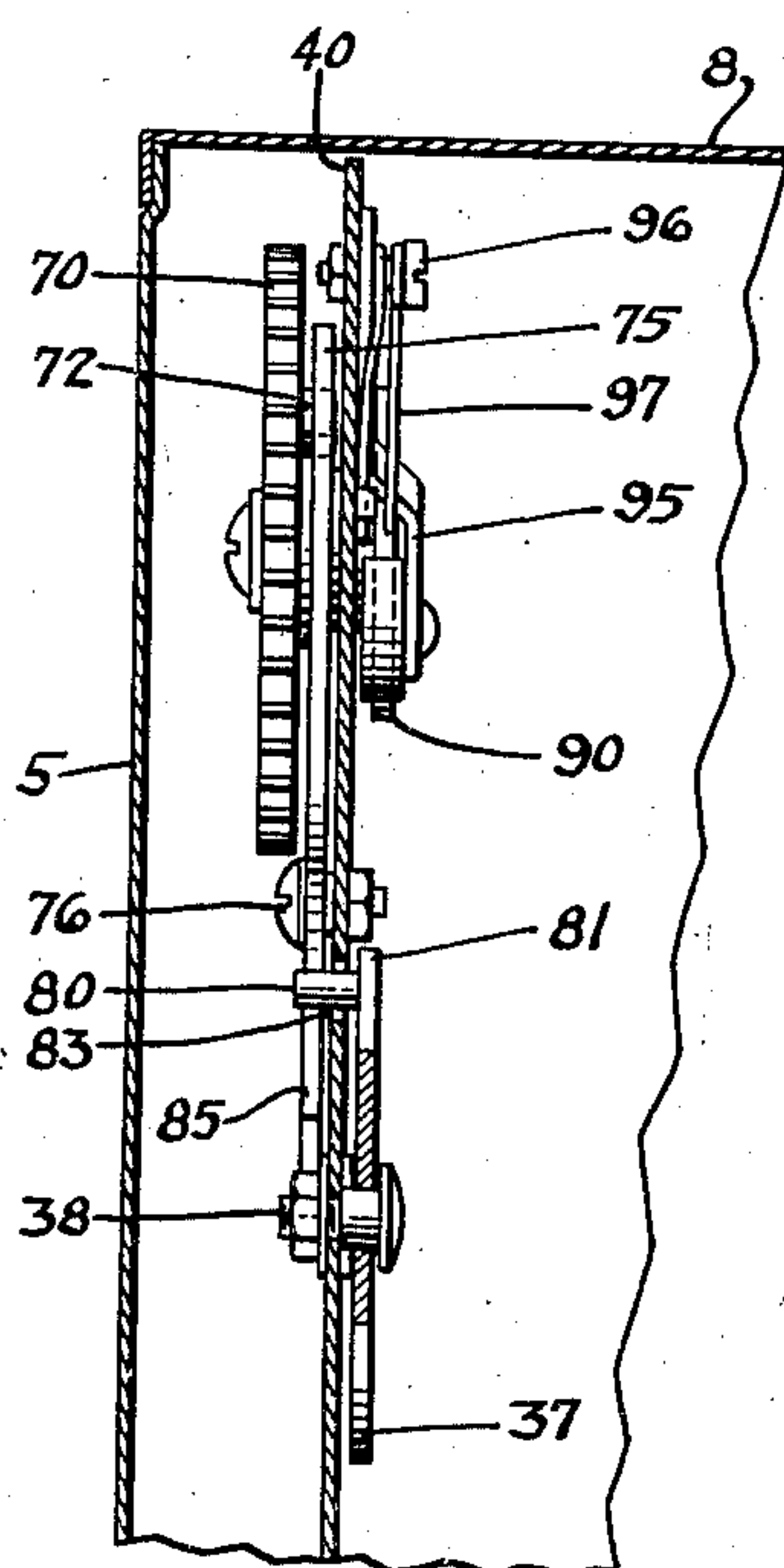
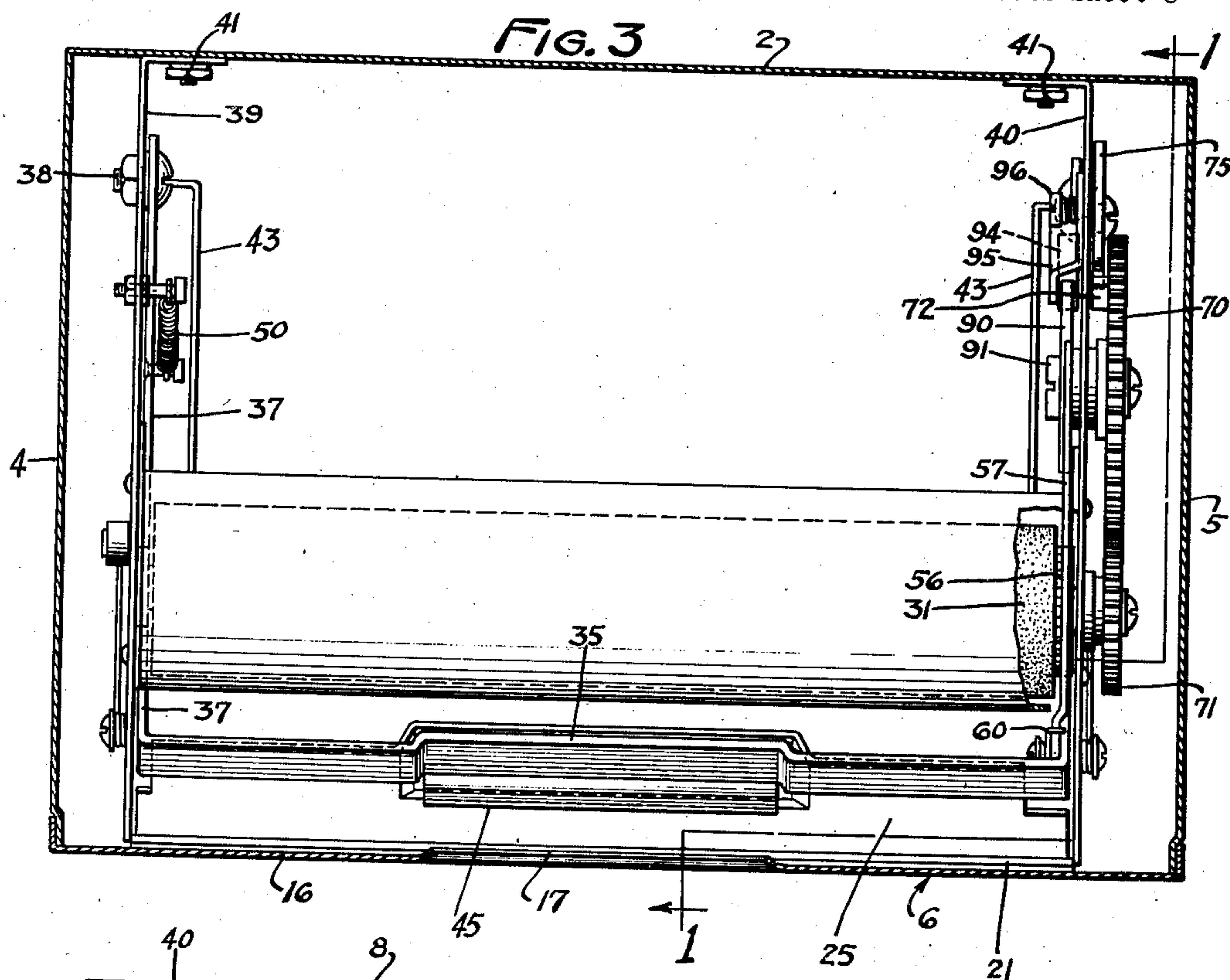


FIG. 4

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UNITED STATES PATENT OFFICE

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TOWEL DISPENSING APPARATUS

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a corporation of Utah

Application December 4, 1936, Serial No. 114,224

9 Claims. (Cl. 312—39)

This invention relates to improvements in sheet dispensing apparatus, the present embodiment being particularly adapted for dispensing paper toweling.

5 The present invention is generally related to a type of device shown in my co-pending application No. 99,584 for Toweling dispensing apparatus, and one object of the invention is to provide an improved stop mechanism which is controlled by a swinging paper feeding device against which the paper is frictionally held by the finger while being swung to feed the paper. The friction-held paper is thus entrained or pulled to accessible and visible position when the swinging element is moved in feeding direction. Another object is to provide a feeding device in which feeding can be obtained by repeated operations of the swinging element, or in which the paper can be brought to accessible and visible position by a single operation of said element, to be thereafter grasped by the hand and be fed or pulled out independently of said swinging element.

Features of the invention include all details of construction in relation to the above objects and to the stop mechanism and control thereof, along with the broader idea of means inherent in the disclosure.

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

Figure 1 is a vertical section in part on line 1—1 of Figure 3, with the stop mechanism in stop position;

35 Figure 2 is a vertical section similar to Figure 1, showing the stop mechanism in non-stop position and as when the finger feeding device is at the end of the feeding stroke;

40 Figure 3 is a plan section taken approximately on line 3—3 of Figure 1; and

Figure 4 is a detailed vertical section taken approximately on line 4—4 of Figure 1.

Numeral 1 generally indicates a casing having a back 2, a bottom 3, sides 4 and 5, and a hinged closure 6 which constitutes the front and top of the casing and which is hinged to the bottom 3 by a suitable pintle 7. The rear end of the top portion 8 of this closure 6 engages with a rolled bead 10 (see Figures 1 and 2) and a top portion 50 8 has a lock 11 the tumbler of which engages a slot not shown of the bead.

The front portion 16 of the closure is provided with an opening 17 through which the finger of the user can pass to engage the paper and press 55 against a bar in the performance of the feeding

operation, in the manner below described. The front wall of the closure is cut out at the bottom as at 20 and has mounted at its inner side and projecting slightly below the top of the cut out portion, a knife 21 having teeth 22, downwardly 5 directed.

Also hinged on the pintle 7 (see Figure 2) is a plate 25. Above this plate is a plate secured between plates 39 and 40 having its top bent to provide a smoothing edge 27, against which the 10 paper moves when being fed. 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 a knife 21 so that tear-off can be accomplished by 15 up-pull on the paper. The tear-off edge is concealed. The element 25 forms the front of the supply chamber. The paper roll 30 is supported directly by the bottom 3. Numerals 31—32 respectively indicate a measuring roll and a pinch 20 roll, with which the paper is frictionally engaged. When the paper is pulled the rolls are rotated. The measuring roll performs the usual function. A guard, or guide 33 is arranged as shown to direct the paper (after its passage 25 between the rolls) upwardly and outwardly to pass over and against the smoothing edge 27, to be disposed in front of a hand or finger-operable swinging bar 35, see Figures 1 and 2. This bar has a centrally arranged finger receiving 30 depression 36 into which the paper is pressed. The bar 35 is swingingly connected at opposite ends by arms 37 which are pivoted as at 38 to plates respectively indicated at 39 and 40. These plates extend from the front to the back of the 35 cabinet, are spaced from its ends 4 and 5, and are suitably secured as at 41 to the rear wall 2.

To the inner sides of these plates are attached bridging plates 43, the inner surfaces of which together act to limit the end movement of the 40 roll, and prevent its contact with parts of the mechanisms now to be described, and parts of which are mounted at or project inwardly beyond the inner faces of the plates 39 and 40.

The paper lies in front of the bar and bridges 45 the depression, and lies against the front face of an apron 45 which depends from the lower front side of the bar 35 and which apron forms a ledge or bottom for the depression. The paper is pressed against the back of the depression by 50 the finger, as shown in Figure 2. The paper is visible and accessible through the opening 17 of the front 16. The paper when so pressed is frictionally held to be entrained to accessible position as shown in Figure 2. 55

Stop lugs 47 (see Figure 2) limit downward movement of the bar 35, these lugs being engaged by the arms 37. Upward movement of the bar is limited by the engagement of these arms with stops 48. Both stops 47 and 48 are preferably punched out of the plates 39 and 40. A spring 50 moves the arms upwardly, and yieldably resists feeding motion, whereby to require sufficient finger pressure of the paper against the bar to prevent slippage of the paper relatively to the bar, in the case where a pull on the paper is depended upon to rotate the roll.

A ratcheting mechanism may or may not be provided to positively rotate the roll, in lieu of the roll operation by paper only. This positive roll-driving mechanism is sometimes required to relieve pulling strain incident to entrainment by finger action particularly when soft paper is used. The roll 31 has a ratcheting wheel 56 with which cooperates a curved pawl 57 pivoted as at 58 to one of the arms 37. A spring 60 yieldably presses the pawl into ratcheting relation with the wheel 56. The pawl 57 passes upwardly through an opening 61 in the guide plate 33. When the bar 35 is depressed the ratcheting mechanism drives the roll, and preferably the peripheral speed of the driven roll is slightly greater than the peripheral speed of the bar 35 so that at no time is there any substantial pulling strain on the paper, such as would tear it, which tearing is most liable to occur when the users hands are wet, and when softer grades of paper are used.

An important feature of the invention is the scheme whereby action of the bar, to feed the paper controls part of the stop mechanism to release the same as soon as feeding begins. The operation can be obtained with the finger pressing the paper against a control bar, or in other ways.

Referring first to Figure 1, the roll 31 has rotatable thereby, a gear 71 meshing with a gear 70 journaled on plate 40. The gear 70 has a stop lug 72 which normally occupies the position shown in Figure 1 and moves in clockwise direction from the position shown. The gear ratio is such that a number of rotations of the gear 71 and therefore of the roll 31 are necessary to obtain a single rotation of the gear 70. Thus to take from the cabinet the total amount of paper allowed, before the stop mechanism arrests feeding movement pumping action of the bar is necessary, that is, its movement up and down a number of times is necessary. The paper of course can be obtained without pumping by merely once depressing the bar 35 to feed or project the paper to the visible and accessible position shown in Figure 2, whereafter the paper can be drawn out by hand as in Figure 1, until limited by the stop. Referring to Figure 1 it is noted that when the paper is torn off the paper is invisible. The remainder of the stop mechanism includes in this instance a kind of bell-crank lever indicated at 75 and pivoted as at 76 to the plate. Of course other forms of lever or detents may be employed. One arm of this lever has a shoulder 77 engageable by the stop lug 72 to arrest movement of the gear 70 and therefore of the roll 31. The lower face of the other arm of the lever is provided with a forwardly slanted shoulder 79 with which is normally engaged a lug 80 carried by an extension 81 of one of the arms 37. This lug 80 passes through a slot 83 in the plate 40 to engage the shoulder 79. As the bar 35 is pushed downwardly the lug 80 moves forwardly, or in anti-clockwise direction

in Figure 1, to finally assume the position shown in Figure 2 whereat the upper arm and shoulder 77 is moved out of path of the lug 72, and held there until the bar again reaches its uppermost position. The lever 75 is weighted as at 85 and therefore has means to automatically move it to stop position. Of course, the lever is moved away from stop position against the action of this means. Just as soon as the bar starts to move downwardly the lever is promptly moved outwardly to release the lug 72.

It will be noted, see Figure 1, that there is a slight space between the lower side of the lug 72 and the shoulder 77. To obtain and maintain this spaced relation after each stopping action and to permit the lever to move to release position before the lug engages the shoulder 77 (which might jam the mechanism) there is provided, what I call, a backoff mechanism. This back-off mechanism includes a disc 90 arranged at the inner side of the plate 40 and secured by a screw 91 to move with the gear 70. The disc has a shoulder 93, which near the end of the feeding rotation of the roll, engages with a roller 94 carried by an arm 95 pivoted as at 96 to a plate 40 and yieldably pressed by spring 97 toward the disc 90. This mechanism is claimed in combination because of its backoff function to position the lug 72 and shoulder 77 for the purpose set forth.

I believe myself the first to provide a device in which the paper is pressed against an element, which when moved to feed the paper operates to disengage a stop mechanism and hold the same disengaged during the feeding operation.

It is noted of course that although the lever or detent will move toward or away from stop position respectively as the bar moves upwardly or downwardly, yet during this pumping of the bar no stopping action will be had until a number of pumping actions have occurred or until a pull on the bottom edge of the paper rotates the rolls sufficiently to bring the stop into position shown in Figure 1.

The paper must be either pumped out, or pumped and pulled out. The bar cannot be lowered without pressure of the paper against it. With the finger against the paper, even though the bar is in its lowermost position and the stop disengaged, the paper cannot be pulled out indefinitely, because with such pressure against it, it is frictionally held. If the bar is released it will of course fly upwardly and release the detent, which will then move to stop position and eventually be engaged by lug 72 to prevent further pull out of the paper until the bar is again operated.

I claim as my invention:

1. A sheet material dispensing device having, means for feeding the material including a movable element directly against which the paper is pressed frictionally held and pulled by the finger as said element is moved in feeding direction by that finger, a stop mechanism for the feeding means, and means by which the movable element moving in feeding direction operates the stop mechanism to release the same as feeding motion begins and maintain it in release position while feeding motion continues.

2. A sheet material dispensing device having, means for feeding the material including a swingably mounted bar directly against which the paper is pressed frictionally held and pulled by the finger as the bar is moved in feeding direction by that finger, a stop mechanism for the

feeding means which automatically assumes the stop position, and means by which the feeding means moving in feeding direction operates the stop mechanism to release the same as feeding motion begins and maintain it in release position while feeding motion continues.

3. A paper dispensing device having means for feeding the paper including, a bar against which the paper is frictionally held by the finger to be entrained as the said bar is moved in feeding direction, a stop mechanism which automatically assumes the stop position, and means by which initial feeding motion of said bar operates the stop mechanism to release it and thereafter maintains it in released position while the feeding motion of the said bar continues.

4. A sheet dispensing device having a measuring roll with which the paper is frictionally engaged, a stop mechanism and means by which the measuring roll controls and is controlled by it, means operable by the user for driving said measuring roll to feed the sheet and against which the paper that has left the roll is pressed by the finger of the user to pull it out and to move said means with the paper, and means controlled by the last mentioned means to release the stop mechanism and maintain it in release position while feeding operation by the finger of the user, directly pressing the paper against said means, continues.

5. A sheet dispensing device having, a measuring roll with which the paper is frictionally engaged, a stop mechanism for the roll including, a rotatable element having a stop thereon, a detent and means for causing it to automatically assume stopping relation with the stop, a swinging feed bar against which the paper lies after passage over the measuring roll and against which it is pressed by the finger of the user to pull it out as the bar is swung, and means by which bar moving in feeding direction operates the stop mechanism to release it and maintain it in released position while feeding motion continues.

6. A sheet dispensing device having a cabinet invisibly housing a measuring roll with which the paper is frictionally engaged, a stop mechanism for the roll including a rotatable element having a stop thereon, a detent adapted to automatically swing into stopping relation with the stop, a swinging feed bar against which the paper lies after passage over the measuring roll and against which the paper is pressed to pull the paper out

as the bar is depressed to feed the paper, and means by which the bar moving in feeding direction operates the stop mechanism to release it and maintain it in released position while said feeding motion continues.

7. A sheet dispensing device having a measuring roll with which the paper is frictionally engaged, a stop mechanism for the roll including an element rotated by the roll and having a stop lug thereon, and a stop lever and means for automatically swinging it into stopping relation with the lug, a swinging feed bar against which the paper lies after passage over the measuring roll and against which it is pressed to pull it out as the bar is depressed, means by which initial feeding motion of the bar operates the stop lever to release it and maintain it in released position as said feeding motion continues, and means operated as a result of bar motion to positively drive said roll to feed the paper in a manner to relieve the pulling strain thereon incident to finger action.

8. A mechanism for dispensing sheet material having, a measuring roll, a stop mechanism for said roll including a rotatable element having a first stop, and a second stop normally in the path of the first stop, means by which the rotatable element is driven by the roll to make a single revolution as a result of repeated revolutions of the roll, means operable by the user for positively driving the roll, and means by which the user-operable means operates said second stop to release the same when roll-driving action begins and to hold the same in released position while driving action continues.

9. A mechanism for dispensing sheet material having, a measuring roll, a stop mechanism for said roll including a rotatable element having a first stop, and a second stop normally in the path of the first stop, means by which the rotatable element is driven by the roll to make a single revolution as a result of repeated revolutions of the roll, swinging means operable by the user for positively driving the roll, and means by which the swinging means operates said second stop to release the same when roll-driving action begins and to hold the same in released position while driving action continues, said swinging means including a part against which the paper is pressed and pulled by the finger during feeding.

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