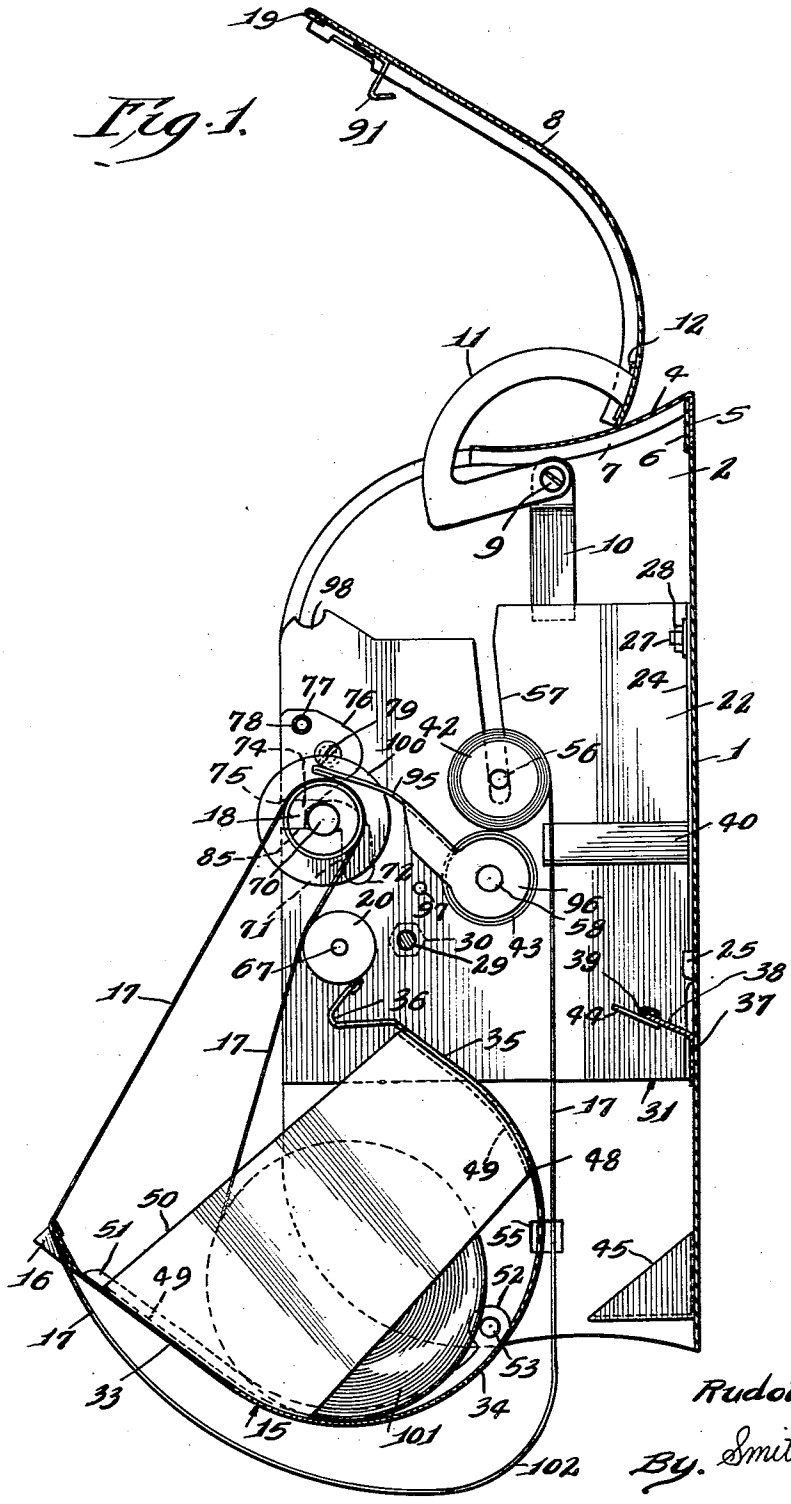
Nov. 27, 1956 R. G. BIRR 2,772,133

DISPENSING APPARATUS FOR SHEET MATERIAL

Filed July 14, 1951 7 Sheets-Sheet 1

Fig. 1.



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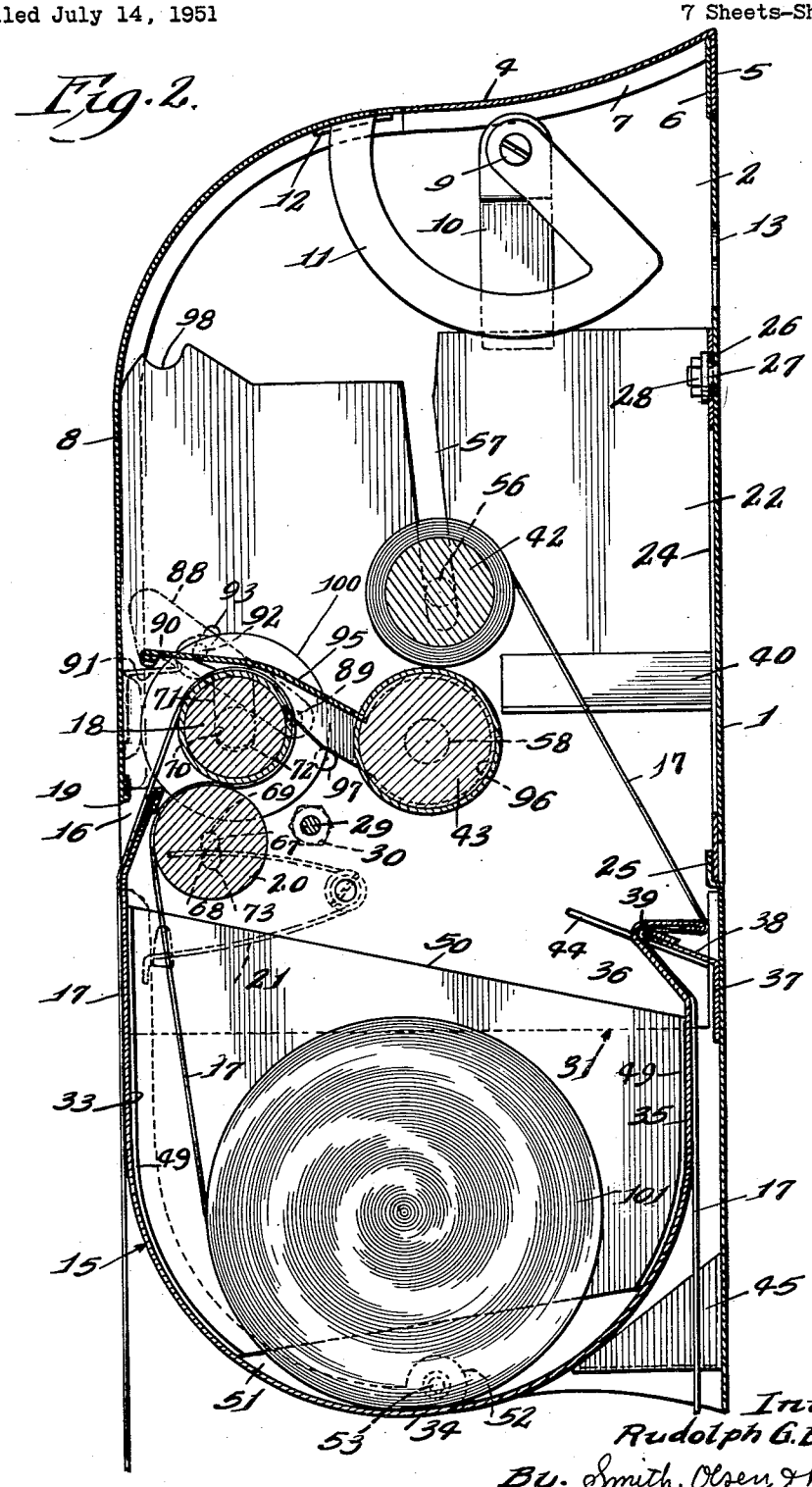
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DISPENSING APPARATUS FOR SHEET MATERIAL

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Fig. 2.



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DISPENSING APPARATUS FOR SHEET MATERIAL

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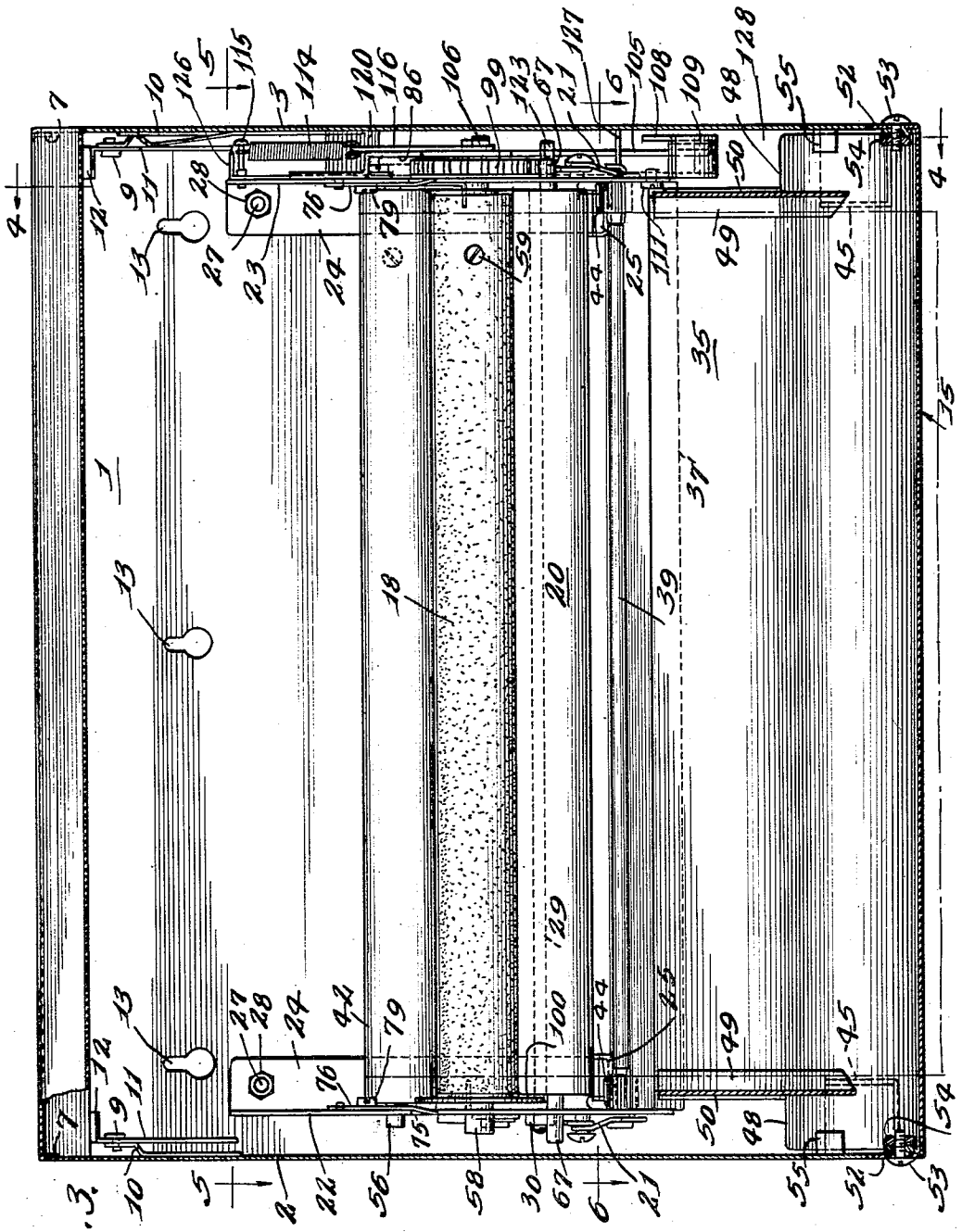


Fig. 3.

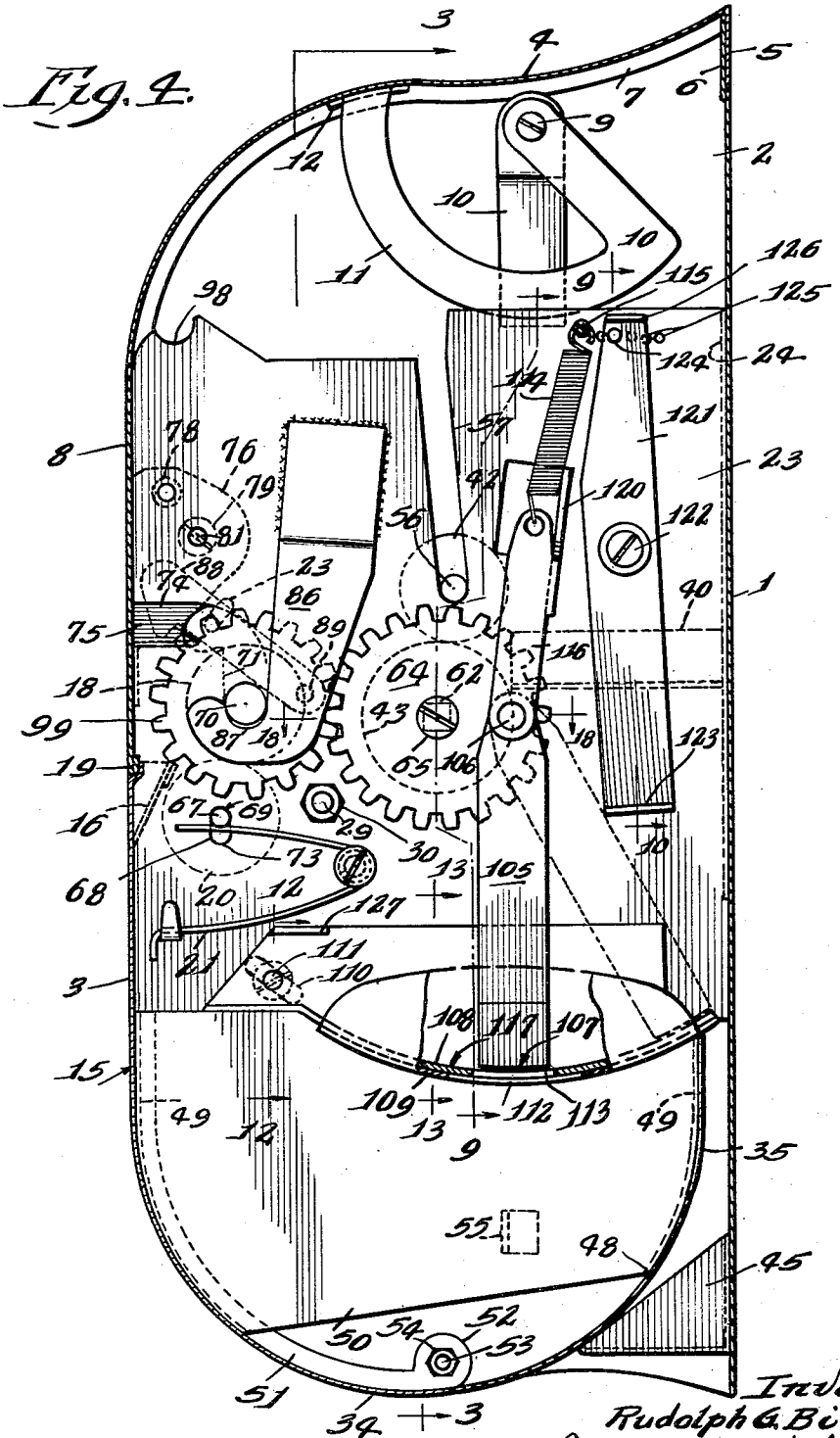
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DISPENSING APPARATUS FOR SHEET MATERIAL

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Fig. 4.



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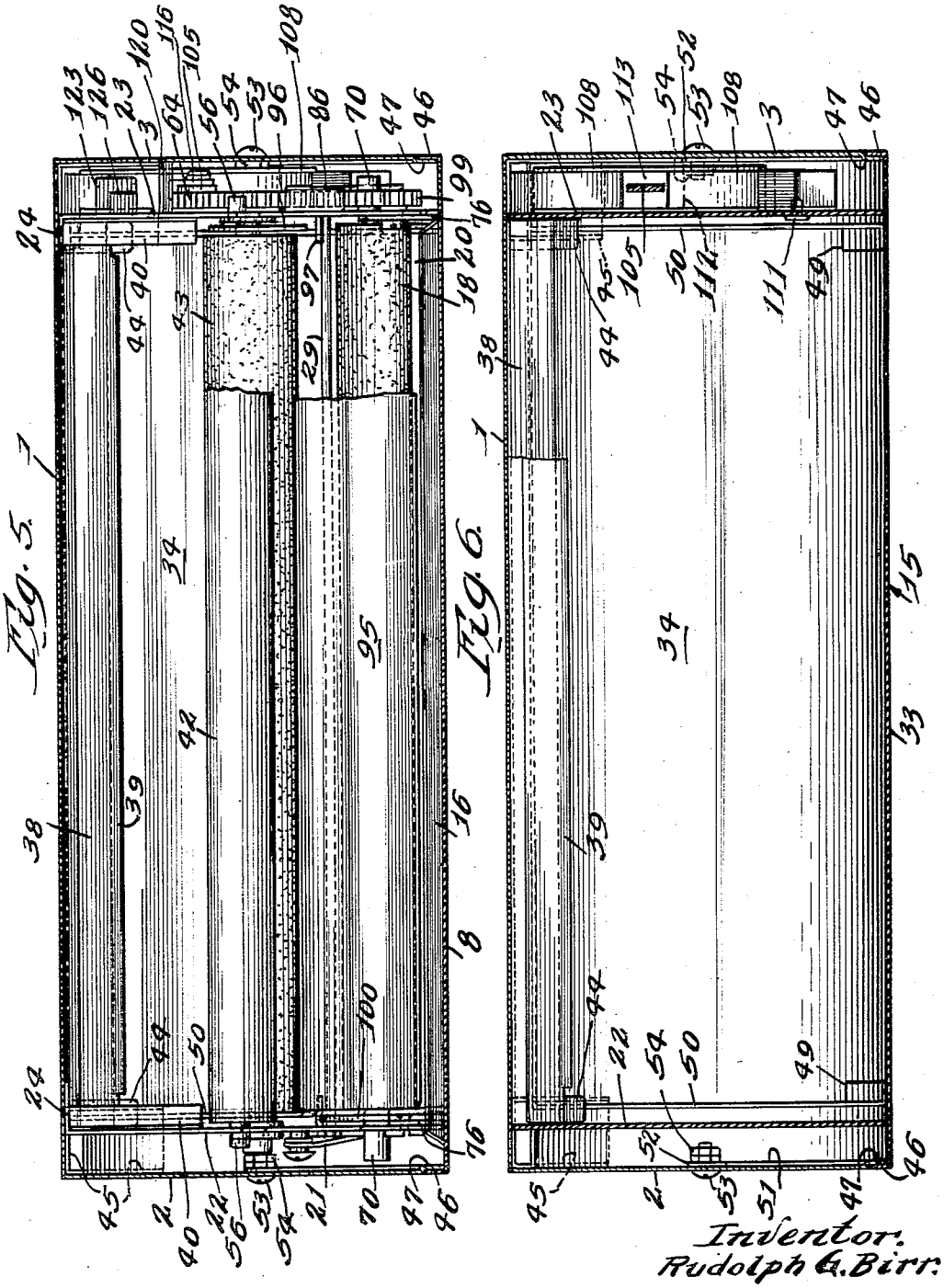


Fig. 5.

Fig. 6.

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Fig. 8.

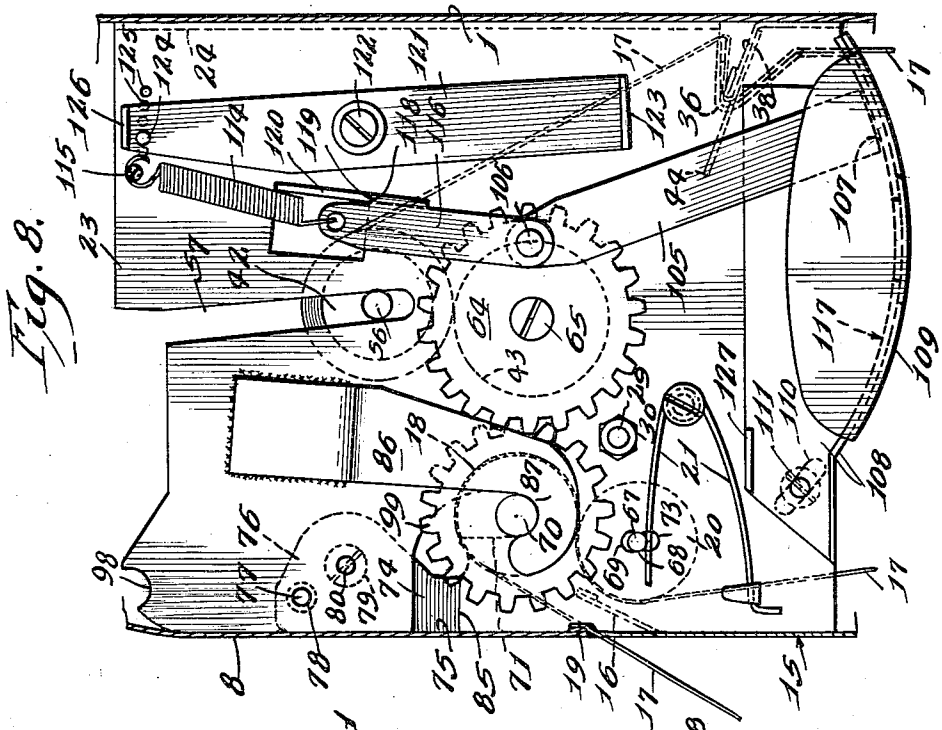
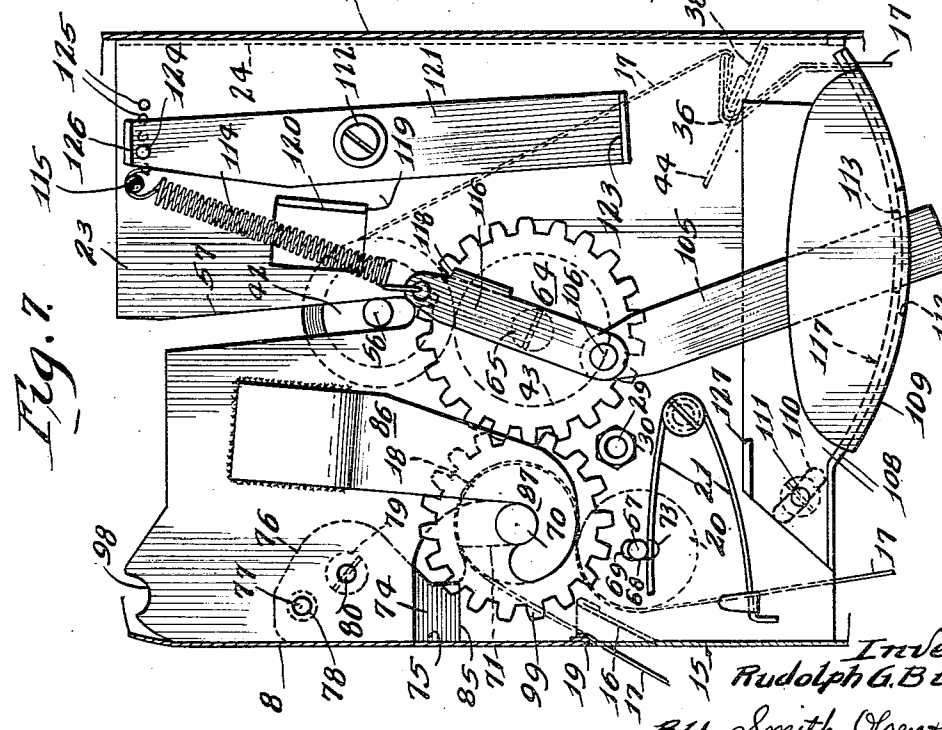


Fig. 7.

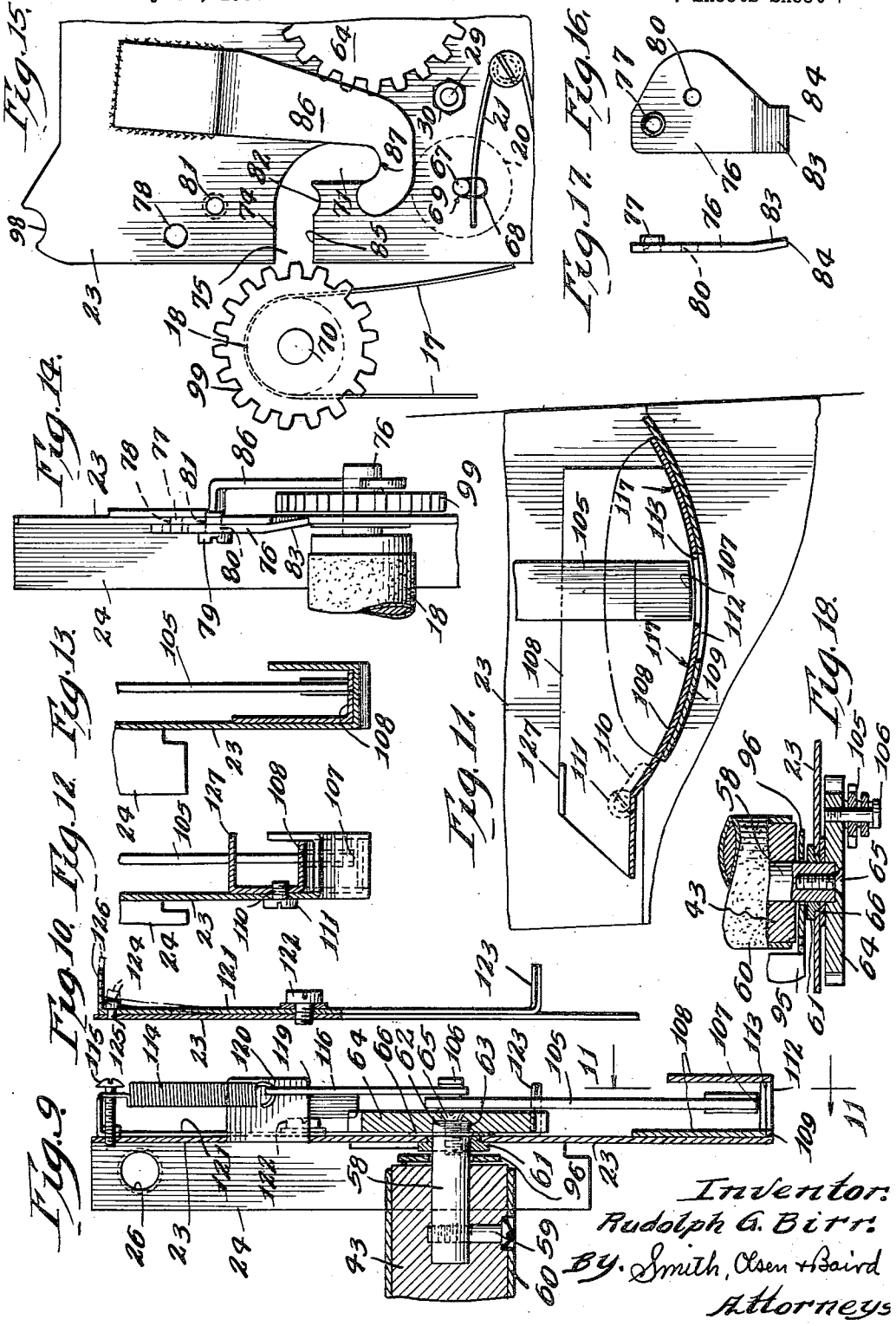


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DISPENSING APPARATUS FOR SHEET MATERIAL

Filed July 14, 1951 7 Sheets-Sheet 7



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2,772,133

DISPENSING APPARATUS FOR SHEET MATERIAL

Rudolph G. Birr, Lombard, Ill., assignor to American Linen Supply Co., Chicago, Ill., a corporation of Nevada

Application July 14, 1951, Serial No. 236,807

13 Claims. (Cl. 312—38)

This invention relates generally to improvements in cabinets for dispensing sheet material such as toweling, and discloses new structures, which are of value, for dispensing paper as well as washable fabric toweling.

This is a highly developed art and the devices are used in a highly competitive commercial field so that small economies are important. Means for attaining such economies are difficult of conception.

Because of rising costs, it has become increasingly necessary to simplify and improve the action of the mechanisms, facilitate assembly and disassembly and servicing, and reduce the number of parts. The invention herein has achieved a number of economies and simplifications, among which are: a very much increased area of frictional contact between the toweling and the granular-surfaced measuring roll to prevent slippage; the provision of means whereby the inner unit which supports the dispensing mechanism can be removed without cutting the toweling or removing the toweling from the cabinet; simplification of the structure of the clean towel roll-supporting means, and making it function for multiple purposes not heretofore conceived of; and providing a new form of stop mechanism, part of which is made of one piece with one of the upright plates of a removable inner unit.

Various kinds of materials, including washable fabrics, are used for toweling, and corresponding variations in quality and thickness are therefore encountered. The cabinets should be adapted to handle all kinds of fabrics with a minimum of slippage. Washing changes the quality of the toweling. The best way to overcome slippage for all kinds of toweling, washed or unwashed or repeatedly washed, is to increase the area of contact of the toweling with the measuring roll. This I have accomplished herein in maximum degree by placing the measuring roll above the pinch roll, and by wrapping the toweling around the measuring roll.

The structure disclosed have found valuable use in a type of dispenser in which fabric toweling is pulled out by a user, and in which an amount equal to that pulled out is taken up into the cabinet. In such cabinets a loop is formed which hangs below the cabinet, and an important object is to substantially prevent shortening or lengthening of the loop which, if it occurred, would mean that slippage between the toweling and the measuring and pinch rolls, or between the take-up drive and soiled towel rolls had taken place.

An important cause of slippage is the use of a stop to limit the amount of toweling which can be pulled out at one operation. Generally, to economize toweling, a timer is used to prevent an immediate consecutive pull-out operation, and thus the user must wait before more toweling can be obtained.

In prior devices slippage occurred when the measuring and take-up drive rolls were suddenly started or stopped, respectively, by hurried violent jerking of the toweling by the user, and by the sudden arrest of the rolls by the stop during such hurried jerking action. Under the above conditions of pull-out action, the "sanding" on the rolls (used to increase friction) was also worn away particularly at the meeting line between the measuring and pinch rolls. The invention herein overcomes slippage and localized wear.

Heretofore the pinch roll has been placed above the measuring roll and has not been sanded or covered with granular friction material, but the toweling has been wrapped around said pinch roll in such manner that a downward pull on the toweling pressed the toweling more firmly against the sanding of the measuring roll.

The present invention practically overcomes slippage and undue wear of the sanding by placing the measuring roll above the pinch roll, thereby permitting the toweling to be wrapped around the measuring roll, instead of the pinch roll, thus providing a very large area of the toweling in frictional engagement with the sanding of the measuring roll, while at the same time proper "pinch" action between the measuring and pinch rolls is obtained.

Features of the invention include: all details of construction related to mounting and relations of the measuring roll to the pinch roll; the separable relations of the inner unit to the clean towel receptacle; the provision of space to allow lowering of one of the stops of the timer and the lengthening of the other; the integral relation of one of the time stops with a plate of the inner unit and the specific means for changing the amplitude of one of the stops of the time-stop mechanism.

Features of the invention also include: the use of a receptacle for receiving the clean towel supply roll; the use of a wall of said receptacle as one element of a soiled towel-smoothing means; the use of walls of the receptacle to close the front and bottom of the cabinet; and the hinging of the receptacle in a manner to permit forward swinging to a supply-receiving position outside of the cabinet, and at the same time to so position the receptacle as to facilitate upward passage of the toweling to the soiled towel take-up roll, and provide a support for the soiled towel roll when the inner unit is removed while the cabinet is loaded.

Features, objects and advantages of the invention will be set forth in the description of the drawings, and in said drawings,

Fig. 1 is a vertical transverse section through the open cabinet with the parts in loading position, and with the toweling in place;

Fig. 2 is a vertical transverse section through the closed and loaded cabinet with the parts ready for dispensing action;

Fig. 3 is a vertical longitudinal section through the unloaded cabinet taken approximately on line 3—3 of Fig. 4 with the dispensing mechanism in elevation and the supply receptacle in section;

Fig. 4 is a vertical transverse section taken approximately on line 4—4 of Fig. 3, illustrating in elevation the improved roll-driving mechanism and the improved time-stop mechanism with the time-stop released;

Fig. 5 is a horizontal plan section taken approximately on line 5—5 of Fig. 3;

Fig. 6 is a horizontal plan section taken approximately on line 6—6 of Fig. 3;

Fig. 7 is a view of the time-stop mechanism of Fig. 4 positioned as during the initial phase of dispensing action, and as immediately before initiation of pendular timer action;

Fig. 8 shows the mechanism of Fig. 7 positioned as after dispensing action, and as during pendular or swinging timer action;

Fig. 9 is a vertical section on line 9—9 of Fig. 4 through the soiled towel take-up drive roll, its bearing and its drive gear, with the pendular stop released;

Fig. 10 is a vertical section one line 10—10 of Fig. 4 showing the device for varying the timing interval:

Fig. 11 is a detail vertical section on line 11—11 of Fig. 9 showing the means for adjusting the stop or striking plate of the pendular stop;

Fig. 12 is a vertical detail section on line 12—12 of Fig. 4 further illustrating the striking plate and showing the clamping screw passing through the adjusting slot with the head of the screw accessible at the inner side of the mounting plate;

Fig. 13 is a vertical detail section on line 13—13 of Fig. 4 further illustrating the striking plate and its support;

Fig. 14 is a detail front elevation of the measuring roll showing the removable means for allowing easy removal of the roll from its bearing and from the cabinet while the toweling remains wrapped about said roll;

Fig. 15 is a detail side elevation showing the measuring roll removed and with the toweling thereon;

Figs. 16 and 17 are respectively a face view and an edge view of one of the detachable guard plates which prevent accidental removal of the measuring roll; and

Fig. 18 is a detail horizontal section of the take-up drive roll driving gear on line 18—18 of Fig. 4 showing the connection by which it supports and operates the pendular time stop.

Referring to Figs. 1, 2, 3, 5 and 6. The cabinet comprises a back 1 and sides 2 and 3, all of sheet metal made in one piece. (See Fig. 5.) The top is in part formed by an element 4 having a rear flange 5 fitting in an offset portion 6 of the back 1, and having flanges 7 secured to the sides 2, 3, as shown in Fig. 3. The remainder of the top and the upper part of the front of the cabinet is formed by a single door element 8 hinged or pivoted as at 9 to brackets 10 secured to sides 2, 3. Included in the hinging means are arcuate arms 11 fixed as at 12 to the top, which arms adapt the door to swing upwardly to the position of Fig. 1. A lower door and front and bottom of the cabinet is composed of a single element generally indicated 15 which has the form of a receptacle for the clean towel supply and which is more fully described herebelow.

The upper terminal of the lower door-forming element 15 is formed as shown at 16 in Figs. 1, 2 and 5 to provide a guide for the toweling 17 as it is pulled downwardly from the measuring roll 18. The lower terminal of the upper door 8 is rounded as at 19 and so disposed in relation to the upper terminal of the lower door as to form a towel-exit opening. (See Fig. 2.) Keyhole slots 13 are provided in the back wall 1 for hanging the cabinet on the wall.

The measuring roll 18 with the toweling thereon is over and rests on, and is pulled downwardly against a pinch roll 20, which roll is urged upwardly by a pair of springs 21, which springs floatingly support the pinch roll during dispensing so that it unfailingly performs its "pinching" action. The bearing means for the rolls 18 and 20 are more fully described below.

The dispensing rolls are all mounted on a removable inner unit, and an important improvement herein is the means which makes possible the removal of the dispensing mechanism, while the cabinet is loaded, and on the wall, and while portions of both soiled and clean toweling are in roll form and therefore while the loop remains formed. This means includes inventive modifications in the structure of the inner unit upon which the dispensing means proper is mounted, and in modification of the clean towel roll-supporting means, and in the soiled towel-smoothing means.

Referring to Figs. 2 and 3. The inner unit comprises two upright plates 22, 23, each having a flange 24 adapted to engage flatly against the inner surface of the rear wall 1 of the cabinet. The lower end of each flange is removably engaged in a socket 25 struck out from the sheet metal of the rear wall 1. Near the top, each flange has an opening 26 which is adapted to receive or fit over a projecting screw 27 fixed in the rear wall. A

nut 28 threaded on the screw clamps the flange against the rear wall. The plates are crossconnected and braced by a rod 29, and nuts 30 are suitably adapted to hold the plates in rigidly spaced relation. It will be noted that the bottoms 31 of the plates 22, 23 are spaced upwardly a substantial distance from the bottom of the outer casing of the cabinet and that after the nuts 28 are removed the unit can be swung forwardly slightly to disengage the openings 26 from the screws 27, and then the unit is free to be raised and freed from the sockets 25, and to be removed from the cabinet with all of the dispensing rolls thereon.

The clean towel supply is received and housed by a receptacle which has unique functions and a unique structure. The receptacle functions as a closure for the front and bottom of the cabinet, that is, its wall portions serve as a front wall for the cabinet and as a bottom wall therefor.

The receptacle is so pivoted that it can swing forwardly to a supply-receiving position outside of the cabinet when its door-forming front wall is pulled outwardly. (See Fig. 1.)

Referring to Figs. 1 and 2. The front wall or door of the receptacle is designated 33, the bottom portion is indicated at 34, and the rear wall portion at 35. The rear wall is formed as at 36 to provide a rearwardly faced recess as one element of a soiled towel-smoothing means, the other element 37 of which is fixed to the rear wall of the cabinet and provides an upwardly slanted blade 38 marginally bent upon itself as at 39 to provide a smooth straight edge. The V-shaped recess 36 receives the blade 38 in a manner to perform a proper towel-smoothing action when the parts are positioned as in Fig. 2, following closure of the door 33. When the door is open, as in Fig. 1, ample space is provided in the rear of the receptacle for the upward passage of the toweling, by hand, for connection with the soiled towel take-up roll 42, driven by the take-up drive roll 43. The blade 38 has longitudinally spaced towel-guiding elements 44 secured to its underside. Guides 45 secured to the back 1 flank the toweling 17. These towel guides may also act as stops to limit rearward motion of the receptacle to provide space between the walls 35 and 1 for the free upward passage of the toweling. The door 33 also serves to limit rearward movement of the receptacle. The pivoting means for the receptacle or the hinging means for the door are described below. Towel guides 40 are also provided on plates 22, 23. (See Figs. 1, 2 and 5.)

Referring to Figs. 3 and 5. The long dimension of the clean towel receptacle is less than the outside dimension of the cabinet in the same direction, and is also less than the distance between the plates 22 and 23. Therefore the door-forming portion 33 of the receptacle is correspondingly longer. This front door is flanged as at 46 to fit offset portions 47 of the lateral sides 2, 3 of the cabinet. As best shown in Fig. 3, the rear or back-forming wall 35 of the receptacle is cut or offset inwardly as at 48 to make the rear wall 35 of less length than the bottom 34 and front wall or door 33. End-forming elements 50 are attached by flanges 49 to the front and rear wall 33, 35.

The door portion 33 and the bottom portion 34 of the receptacle have end flanges 51 terminating at the rear in ears 52. Pivot screws 53 pass inwardly through the end walls 2, 3 and through the ears 52 and nuts 54 are applied as shown. To limit forward motion of the receptacle stops 55 are struck out from the sheet metal end walls 2, 3 of the receptacle (see Figs. 1 and 3) and these stops are engaged by the inner side of the rear wall portion 35 of the receptacle. During repair a support for the clean and soiled towel rolls is provided while the unit is out of the cabinet, and the rear wall 35 acts to separate the soiled toweling from the clean toweling. At

the same time the continuity between the soiled towel roll and the clean towel roll is maintained.

The soiled towel take-up roll 42 has the usual trunnions 56 guided in slots 57 of plates 22, 23 of the inner unit. The take-up drive roll 43 has trunnions 58 rotatable in bearings in plates 22, 23.

Referring to Figs. 9 and 18. The right hand trunnion 58 fits in a socket in the end of the drive roll 43 and is releasably secured by a screw 59 having its slotted head countersunk in roll 43 and inwardly of the friction layer 60. The trunnion 58 passes outwardly through and rotates in a bushing 61 and has its outer end squared as at 62, and fitted in a squared socket 63 of a spur gear 64. A screw 65 secures the gear to the trunnion. A spacing washer 66 on the trunnion is interposed between the plate 23 and the gear 64. The time-stop mechanism which is operated from gear 64 and which is in part carried by the gear is described herebelow.

The spur gear 64 is in mesh with a gear 99 fixed on one of the fixed trunnions of the measuring roll 18. While this specific gear drive is a claimed feature of the invention, other forms of drive may serve. Moreover the placement of the measuring roll above the pinch roll is believed new irrespective of the use of gear or any other form of drive. The gear feature is discussed herebelow.

Referring to Figs. 4, 7, 8 and 15. The pinch roll 20 has trunnions 67 traversing upright slots 68 in the plates 22, 23. Springs 21 acting on the trunnions 67 urge the trunnions upwardly to the top 69 of the slots 68. The tops of the slots therefore constitute means for limiting upward motion of the pinch roll.

Referring to Figs. 2 and 4. I believe it is entirely new to place the measuring roll over the pinch roll to obtain a large area of contact between the sheet material and the "sanding" to prevent slippage between the sanding and the material. I also believe it entirely new to use a measuring roll, so placed, as a driving means for a soiled towel take-up roll in towel cabinets of the so-called continuous type.

The measuring roll 18 has trunnions 70 which traverse L-shaped slots 71. The bottoms 72 of these slots (see Fig. 1) constitute means for limiting downward motion of the measuring roll. Before the toweling is pulled the pinch roll trunnions are at their uppermost limits 69 as in Fig. 4 and the measuring roll trunnions 70 are raised or backed off from the bottoms 72 of their slots 71. When the toweling is pulled, both rolls move downwardly to the positions shown in Fig. 7, whereat the measuring roll trunnions engage the bottoms 72 of their slots and the trunnions 67 of the pinch roll are backed off from the tops 69 of their slots so that proper pinch roll pressure is always assured during dispensing. The pinch roll may be said to "float" at an intermediate point between the tops 69 of the slots and the bottoms 73 thereof.

In addition to assuring proper pressure action of the pinch roll during dispensing, less accuracy in machining and fitting of trunnions in relation to their bearings is necessary when an ample "degree" of floating or "play" is provided for the pinch roll trunnions in their slots after the measuring roll trunnions have engaged the bottoms 72 of their slots.

Referring to Figs. 1, 7 and 15. It is noted that the measuring roll is supported by the pinch roll. The L-shaped measuring roll bearing slots 71 have horizontal portions 74 which are open as at 75 at the front edge of the plates 22, 23 of the removable unit. Means is provided to normally prevent or guard against accidental removal of the measuring roll. This means comprises guard plates 76 (see Figs. 7, 14, 17). Each guard plate has a projection 77 which fits an opening 78 in the corresponding plate 22 or 23, and a clamping screw 79 passes through an opening 80 of the guard plate and is threaded into an opening 81 of the plate of the unit. The bottom side of each horizontal portion 74 of each bearing slot has a depression 82 therein as a rest for receiving the trunnions of the measuring roll after it has been raised for the purpose of wrapping the toweling about it. The inner edges of the guard plates form stops for limited outward movement of the trunnions. The lower portions of the guard plates are bent inwardly as at 83 and their bottom surfaces 84 abut the top surfaces 85 of the horizontal slot portions 74.

In addition to the L-shaped journaling slots 71 for the measuring roll 18, a supplemental "out-board" bearing 86 is provided at the outer side of gear 99, one such bearing may be provided for each trunnion 70. Only one bearing has been shown. Each bearing comprises a J-shaped plate providing a shallow slot-like bearing having a bottom 87 with which the trunnion 70 engages to limit downward motion of the measuring roll. When two bearings 86 are used their bottoms 87 may constitute the sole means for limiting said downward motion, or the bottom 72 of the L-shaped slots 71, and the bottoms 87 of the shallow slots of the J-shaped plates may together constitute that limiting means. More accuracy is required to horizontally align the bottoms of the pairs of slots of the plates 22, 23 and of the pairs of plates 86 than to so align only the bottoms or the seats of one of the pairs. Use of four limiting bearing means will withstand the pounding action of downward jerks of the measuring roll better than only two limiting means, but less accuracy is required to align only two limiting means. When gear drive is used, the bearings 86 are preferred because of the advantage of having bearings on both sides of gear 99. (See Fig. 14.)

Referring to Figs. 2 and 4. Latches 88 are pivoted as 89 to the inner surfaces of the lateral sides 2, 3 of the cabinet and have latch shoulders 90 engageable with shoulder brackets 91 secured to the door 8. The latches have operating pins 92 passing outwardly through slots 93 in the sides 2, 3 and latches can be disengaged by raising these finger pins.

Referring to Fig. 2. To separate the soiled toweling from the clean toweling which is on the measuring roll, a plate 95 overlies the measuring roll and is uniquely pivoted as at 96 to the trunnions 58 of the take-up drive roll 43. The plate is held upwardly in spaced relation to the toweling on the measuring roll by stop pins 97. The separator plate 95 can be swung upwardly and rearwardly when it is desired to raise or remove the measuring roll.

The upper edges of the plates 22 and 23 of the inner unit have depressions 98 in which the trunnions 56 of the take-up roll 42 may rest when servicing the cabinet.

Although the attendant should lower the measuring roll 18 by hand from the servicing position of Fig. 1 to the dispensing position of Fig. 4, he does not always do so. However, the parts are so made and related that closure of the upper door 8 will push the measuring roll off the ledges 85, and it will fall to operative or dispensing position with gear 99 on the measuring roll in mesh with gear 64, and with the said roll resting on the spring-urged pinch roll as in Fig. 4. To this end the gear 99 is made to project outside of the cabinet when the measuring roll is in the servicing position of Fig. 1. The left end of said roll has on its trunnion 70 a disk 100 of the same diameter as that of the gear 99 so that both disk and gear project in equal degrees. Thus the door pushes both ends of the roll simultaneously and the axis of the roll 18 is maintained in parallelism with the axes of the bearing slots 71, and of the pinch roll as the measuring roll falls to its dispensing position at which gears 64 and 99 are meshed.

Discussion of advantages and operation

It is of great advantage to be able to remove the entire dispensing mechanism from the cabinet without taking the cabinet off of the wall, and while the cabinet is loaded with toweling. Heretofore this could not be done without cutting the toweling to avoid the time-consuming operation of pulling the entire length of twenty-five to fifty

yards of toweling from between the feed rolls and therefore unrolling one or the other of the rolls of toweling. The present invention provides for the removal of one of the feed rolls to a point outside of the cabinet while toweling is on the feed roll, thus permitting the feed roll, in this case the measuring roll **18**, to be disengaged from the toweling by a movement in an axial direction.

In prior devices the bottoms of the side plates of the inner or dispensing mechanism unit were extended to the bottom of the compartment for the clean toweling to serve as lateral elements of said compartment and to pivotally support one element of the soiled towelingsmoothing means. With such a construction it was necessary to remove the roll of clean toweling if it became necessary to remove the unit while the cabinet was loaded and on the wall. This necessitated removal of the clean towel roll, and generally its deposit on a dirty floor, and resultant waste of clean toweling because the dirty toweling had to be "run off" to the soiled towel take-up roll so that a subsequent user would not have to see or use previously soiled toweling. This was wasteful and required more frequent replenishment of the supply.

In the present cabinet the toweling does not have to be cut or unrolled, nor will it be soiled, in the manner mentioned. When it is desired to remove the inner unit, the guard plates **76** are detached and the measuring roll is moved to the position of Fig. 15, and is then moved axially to disengage it from the clean toweling **17**. The released clean toweling is then laid on top of the clean towel roll **101** in the open receptacle 34 and then nuts **28** of the inner unit are removed and the unit lifted out of its sockets **25**. After removal of the unit the soiled towel roll **42** can be lowered to rest on the rear surface of the rear wall **35** of the receptacle, and thus be separated from the clean toweling while the unit is out of the cabinet.

After repair and just before the unit is re-introduced into the cabinet, the soiled towel roll **42** is raised and dropped into the guide slots **57**, then the unit is secured at **25** and **28**. The looped clean toweling is then raised from its temporary position on supply roll **101** and the measuring roll **18** is then introduced axially into or through the loop and then the measuring roll is put back on ledges **85** and the guard plates **76** are applied as in Fig. 1. Then the upper door 8 is closed to push the measuring roll **18** into its bearings as in Fig. 4. Thereafter the lower door **33** is closed to move its receptacle to the towel-smoothing position of Fig. 2. The cabinet is then again ready for dispensing action.

Referring to Fig. 1. In the ordinary process of loading the cabinet, the roll of clean toweling **101** is laid in the open receptacle, the toweling **17** is then brought upwardly from the front of the supply roll **101**, is engaged with the front of the pinch roll **20**, and is then wrapped around the measuring roll **18** while that roll is raised as shown in the figure. The toweling is then pulled downwardly to form a loop **102**, then is passed upwardly behind the clean towel receptacle and secured to the take-up roll **42**. The bottom door **33** is then closed which action moves the receptacle and its smoothing element **36** to the smoothing position of Fig. 2. The upper door is then closed and latched, and the cabinet is then ready for dispensing.

Stop mechanism

Various kinds of time-stop mechanisms have heretofore been used in relation to towel dispensers but the time-stop mechanism herein is the simplest in construction of any known to me. It is basically the mechanism shown and claimed in my United States Letters Patent No. 2,691,561, issued October 12, 1954, and is composed essentially of only three parts: a swingable stop bar pivoted to some part which is movable by the act of dispensing; a stationary stop plate with which the bar engages while the bar is swinging and an opening through which the bar can pass when not swinging and by which the bar is caused to swing when the bar is withdrawn therefrom by dispensing action. This new stop mechanism can be applied to any towel dispensing cabinet which has a measuring roll but it is particularly stressed herein in relation to part of its structure which is an integral part of a removable inner unit of the type of so-called "continuous" cabinet, shown herein, and in which that part lies between the end wall **50** of the clean towel receptacle and the outer wall **3** of the casing of the cabinet.

One of the objects of this arrangement is to provide for increased down-spacing of the integral stationary stop plate, herein accomplished by providing space between the end wall **50** of a clean towel receptacle and the outer wall **3** of the cabinet (see Figs. 3, 5 and 6). This down-spacing of the stop allows for a longer swingable stop which will have a longer timing period as will be explained.

Another important improvement herein relates to a very much simplified time-stop mechanism. This mechanism is operated from spur gear **64** of the soiled towel take-up roll **42**.

Referring first to Figs. 4, 7 and 8 in which the parts of the time-stop mechanism are respectively positioned, as during stop release; as at the beginning of dispensing action; and as during timing action. The time-stop comprises a metal stop bar **105** swingingly pivoted as at **106** to the gear **64** in eccentric relation to its rotative axis. The bottom **107** of the bar is adapted to engage an arcuate stationary stop plate **108** which is slidably engaged with trough-like arcuate plate **109** which is of one piece with the upright plate **23** of the inner unit. (See Figs. 9, 12 and 13.) The plate **23** has an arcuate slot **110** through which passes a clamping screw **111** which has threaded engagement with the slidable plate **108**. The integral or lower plate **109** has an elongated opening **112** and the slidable or upper plate has a shorter opening **113**. The pendular stop **105** is adapted to pass downwardly through the openings **112**, **113** as in Fig. 7 during the initial part of the dispensing operation. Withdrawal of the stop **105** from the upper opening **113** during dispensing causes the pendular stop **105** to swing as in Fig. 8.

Spring **114** attached as at **115** to plate **23** is connected with link **116** pivoted on the pivot **106**. This spring raises or "backs-off" the stop **105** slightly from the stopping surface **117** of the slidable or adjustable plate **108** so that the pendulum stop is free to swing in parallel relation to surface **117** and perform its timing function. Upward or back-off motion of the stop **105** is limited by the engagement of shoulder **118** with shoulder **119** on a lug **120** struck out from the metal of plate **23**. The parts are so related that the spring **114** positions the link **116** to assure engagement of the shoulders **118**, **119** as the link moves from its position in Fig. 7 to that in Fig. 8. As soon as the pendulum stop ceases to swing it assumes the stop-released position of Fig. 4 over opening **113**, **112**. To shorten the amplitude of the swinging stop bar **105** or pendulum, and therefore shorten the timing period, I provide a strip **121** of spring metal and pivot it as at **122** (see Fig. 10) to the upright plate **23** of the inner unit. The element **121** has at its bottom a terminal outwardly directed projection **123** adapted to be engaged by the swinging stop **105** when the element **121** is rotated sufficiently in clockwise direction. Means for securing the time-adjuster element **121** in any one of a plurality of positions comprises a pin **124** fixed to the element **121** at its top, and a series of openings **125** in plate **23** which said pin can enter. A finger projection **126** is provided by which the element **121** can be flexed outwardly to disengage the pin **124** and permit rotation of the element in clockwise or anti-clockwise direction to respectively decrease or increase the timing period of the swinging stop **105**. The finger projection **126** is near the top of the plate **23** to be easily accessible to the attendant. The slide plate **108** is arcuately slidable to dis-

pose the opening 113 in opposition to the bottom of the stop bar 105. Walls on which the cabinets are hung are not always perpendicular and so adjustment of the plate 108 is necessary to align stop and opening.

During rotation of the gear 64 in clockwise direction while the measuring roll is being rotated by the pulled toweling, the stop 105 first enters the opening 113, then assumes a slanted position as shown in Fig. 7. As dispensing continues, the stop 105 is withdrawn from the opening and is thus caused to start swinging or timing. The action of dispensing is so rapid that back-off occurs, as in Fig. 8, before the bottom 107 of the stop 105 can engage the stop surface 117.

The pendular stop bar 105 freely swings about its pivot. The opening in the bar (not shown) is of slightly greater diameter than that of the pin 106 to assure this freedom of movement. A projection 127 on plate 108 limits undue forward motion of the swinging stop 105.

Referring to Fig. 3. By providing a vertically extensive space 128 between the end wall 50 of the clean towel receptacle and the end wall 3 of the cabinet, vertically longer substitute plates 23 can be used to lower the stop plate 109, or its equivalent, to allow for a longer pendular stop 105 to increase the timing interval. The vertical extent of the space can be increased by making the cut-out 48 at a lower point. By lowering the cut-out 48, the back 35 will clear the stop or stop support 109 when the supply receptacle is swung to its outermost position.

I claim as my invention:

1. A towel dispensing cabinet of the continuous type having a measuring roll carried by a pinch roll, and in which the toweling is wrapped around said measuring roll and is pulled downwardly to dispense it, and having a soiled towel take-up drive roll, and in which said drive roll is driven from the measuring roll by two spur gears, and floating bearing means for said pinch roll to permit limited slight downward movement of said measuring roll against said pinch roll to increase the pressure of said measuring roll against said pinch roll in response to said downward pull of said toweling.

2. A towel dispensing cabinet having a measuring roll supported on a pinch roll, and in which the toweling is placed between said rolls and wrapped around said measuring roll to rotate said rolls, a soiled towel take-up drive roll, gears by which said measuring roll drives said take-up drive roll, floating bearings for said pinch and measuring rolls to permit substantially simultaneous downward motion of said last mentioned rolls as the toweling is initially jerked by the user to start dispensing, and springs supporting said pinch roll to allow said downward movement.

3. A towel dispensing cabinet having a pinch roll, a measuring roll supported by said pinch roll, means journaling each roll for up and down motions, first means limiting downward motion of said measuring roll, second means limiting upward motion of said pinch roll, said first and second limiting means being so related that when said measuring roll engages said first limiting means said pinch roll is spaced downwardly from said second limiting means, and springs urging said pinch roll upwardly.

4. A towel dispensing cabinet having a pinch roll and a measuring roll supported thereby, means journaling each roll for up and down motions including means for limiting downward motion of the measuring roll and means limiting upward motion of the pinch roll, the said limiting means being so related that when the measuring roll engages its limiting means the pinch roll is spaced downwardly from its limiting means, and springs urging the pinch roll upwardly, said journaling means comprising slots, and trunnions traversing said slots and said limiting means comprising the ends of said slots.

5. A towel dispensing cabinet having a pinch roll and a measuring roll supported thereby, means journaling each roll for up and down motions including means for limiting downward motion of the measuring roll and means limiting upward motion of the pinch roll, the said limiting means being so related that when the measuring roll engages its limiting means the pinch roll is spaced downwardly from its limiting means, and springs urging the pinch roll upwardly, said journaling means comprising slots, and trunnions traversing said slots and said limiting means comprising the ends of said slots, the slots for the measuring roll being adapted to allow raising and removal of said roll from the cabinet.

6. In a towel dispensing cabinet of the continuous type, a pinch roll, a measuring roll resting on said pinch roll, a soiled towel take-up drive roll, gear means interconnecting said measuring roll and said soiled towel take-up drive roll for simultaneous rotation, slotted mountings rotatably supporting said measuring roll and said pinch roll for movement toward and away from each other, spring means resisting movement of said measuring and pinch rolls in one direction in said slotted mountings, a roll of toweling having a web thereof threaded to pass between said pinch roll and said measuring roll and around said measuring roll and then downwardly to form a loop below said cabinet and then upwardly to said take-up drive roll, and a downward pull of said toweling during a dispensing operation moving said measuring roll and said pinch roll in said one direction against said resisting spring means to increase the pressure therebetween and thereby prevent slippage of said toweling around said measuring roll.

7. A towel dispensing cabinet having a towel measuring roll, a pinch roll supporting said measuring roll, bearing means for said rolls permitting downward movement of said rolls, means normally urging said pinch roll upwardly in said bearing means to support the weight of said measuring roll and to resist said downward movement of said rolls, a downward pull of toweling wrapped around said measuring roll moving said measuring roll against said upwardly urged pinch roll with greater pressure, and means limiting the downward movement of said measuring roll a predetermined amount.

8. A dispensing cabinet having a door, a measuring roll supported in said cabinet, bearings rotatably supporting said measuring roll, said bearings including elongated slots to allow said roll to be simply raised from said rotatably supported position, rest means formed in said slots on which said roll is supported after being raised, and means carried on said roll engageable by said door as it is closed to push said roll off said rest means into said rotatably supported position.

9. A dispensing cabinet having a door, a measuring roll, a soiled towel take-up drive roll, a gear on said measuring roll normally in mesh with a gear on a soiled towel take-up drive roll, bearing means for said measuring roll, said bearing means including upstanding slots in said cabinet and trunnions on said measuring roll to allow raising of said trunnions on said measuring roll along said slots to unmesh said gears, ledges formed in said slots on which the trunnions of said measuring roll may rest after raising said measuring roll, and means on the measuring roll engageable by said door as it closes to push the said measuring roll off of said ledges into said upstanding slots to allow said measuring roll to fall into remeshed gear position with said drive roll.

10. A dispensing cabinet having a door, a measuring roll, a soiled towel take-up drive roll, meshing gears on said measuring and drive rolls by which said measuring roll drives said take-up drive roll, bearing means for said measuring roll, said bearing means including slots having upper and lower positions to allow said measuring roll to be simply raised from said lower position to unmesh its gear from said drive roll gear and moved to said upper position, rest means formed in said upper position of said slots on which said measuring roll is supported at said upper position, and means including said gear on said measuring roll engageable by said door as it is closed to push said measuring roll off said rest means, whereby to

cause said measuring roll to drop to said lower position of said slots into gear-meshed relation with said drive roll.

11. A towel dispensing cabinet of the continuous type having a measuring roll for measuring a predetermined amount of toweling during a dispensing action, trunnions for supporting said measuring roll, bearing means in said cabinet normally supporting said trunnions for rotation of said measuring roll, slots formed in said bearing means to permit said trunnions to be moved along said slots to withdraw said measuring roll from said cabinet, and means detachably secured to said cabinet and associated with said slots for preventing accidental removal of said measuring roll from said cabinet.

12. A towel dispensing cabinet of the continuous type having a measuring roll for measuring a predetermined amount of toweling during a dispensing action, trunnions for supporting said measuring roll, bearing means in said cabinet normally supporting said trunnions for rotation of said measuring roll, slots formed in said bearing means to permit said trunnions to be moved along said slots to withdraw said measuring roll from said cabinet, and trunnion rests formed in said slots to permit said trunnions to be placed therein in order to support said measuring roll at a point intermediate its normal rotating position and the exterior of said cabinet.

13. A towel dispensing cabinet as set forth in claim 12, including detachable stop means associated with said trunnion rests to prevent accidental withdrawal of said trunnions on said roll from said trunnion rests to the exterior of said cabinet.

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