Jan. 13, 1931. A. C. GRUNWALD 1,788,949

TOWEL CABINET

Filed June 28, 1928 5 Sheets-Sheet 1

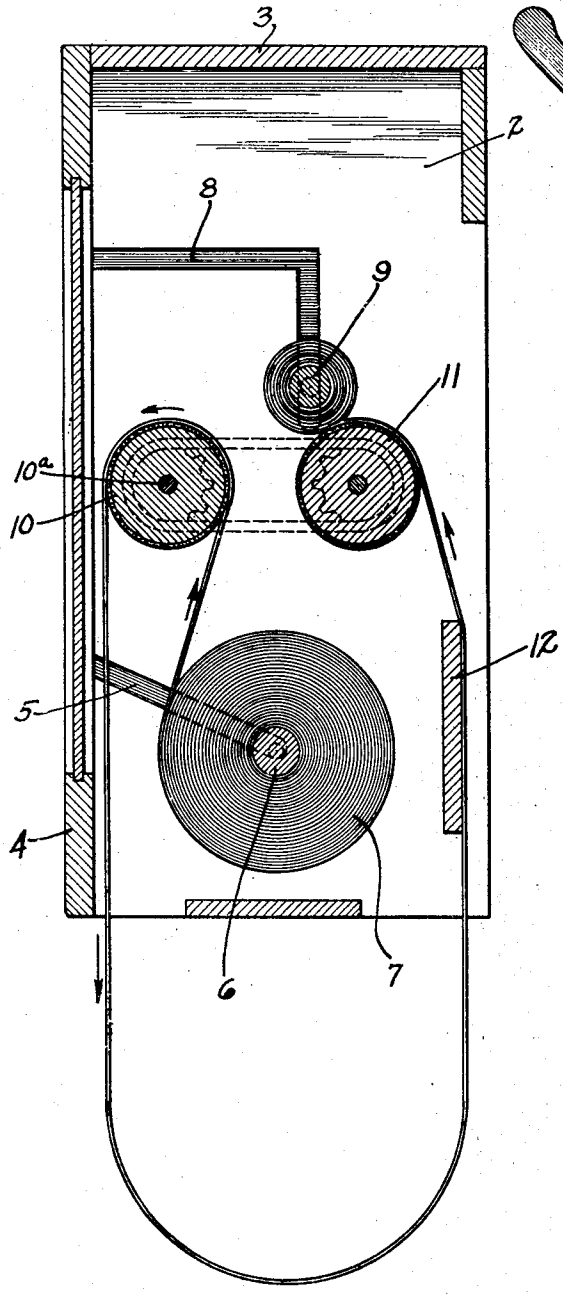

FIG. 1

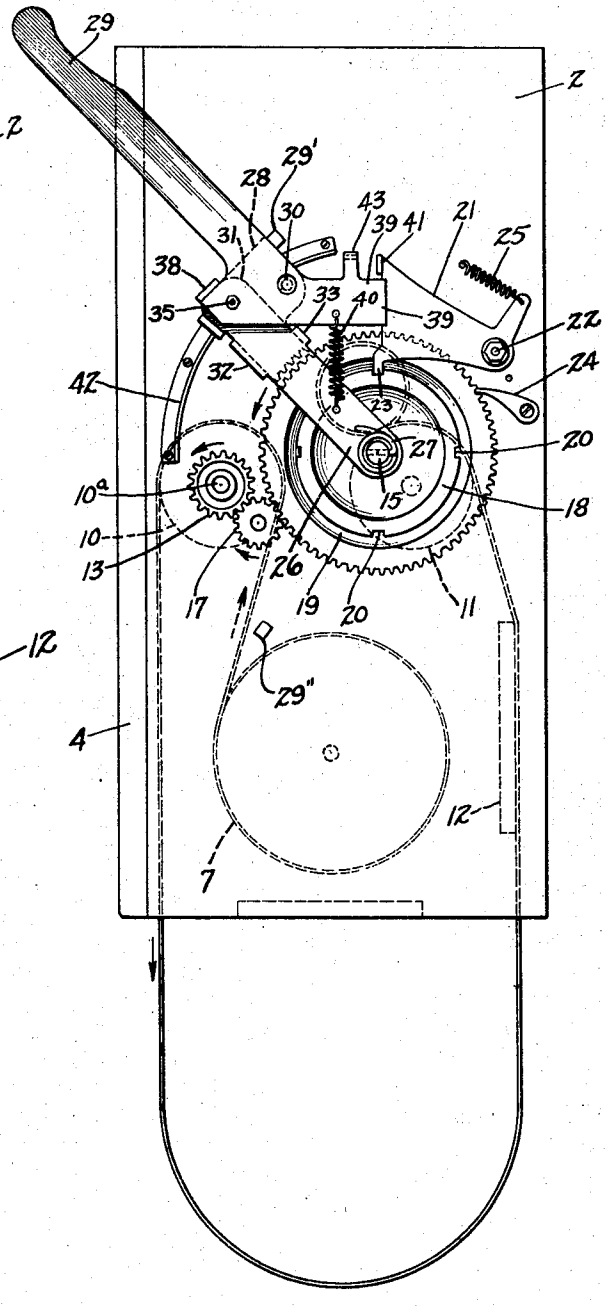

FIG. 2

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TOWEL CABINET

Filed June 28, 1928 5 Sheets-Sheet 2

FIG. 3

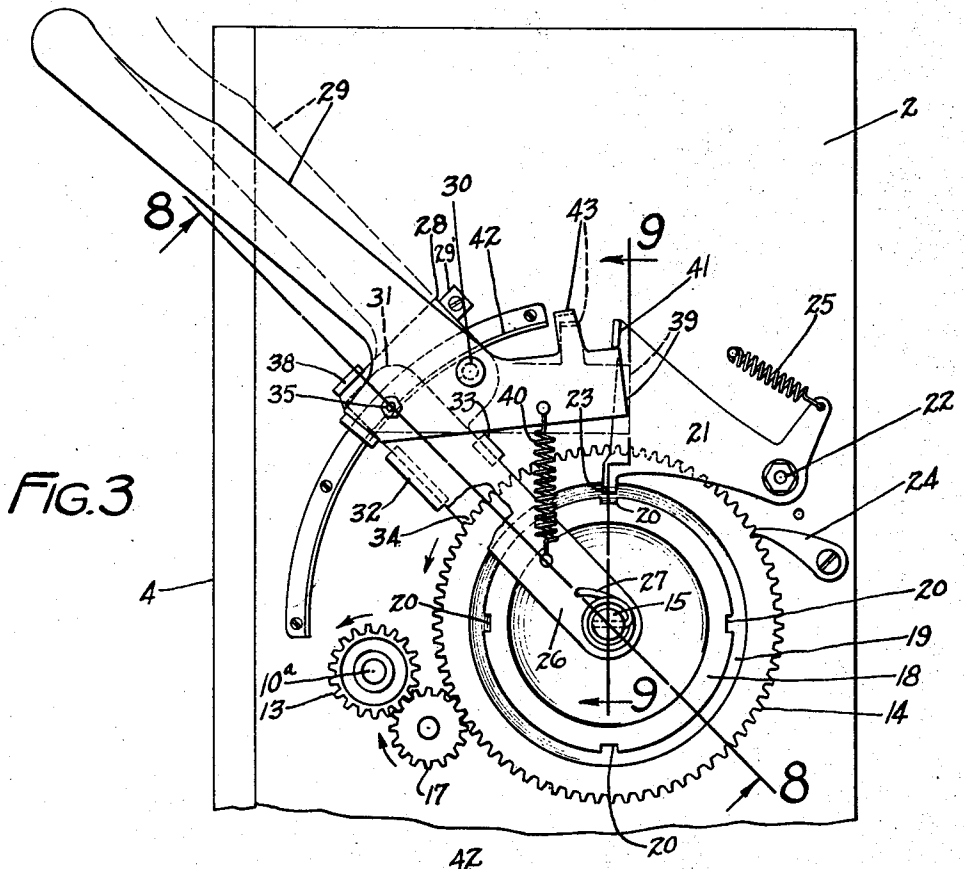
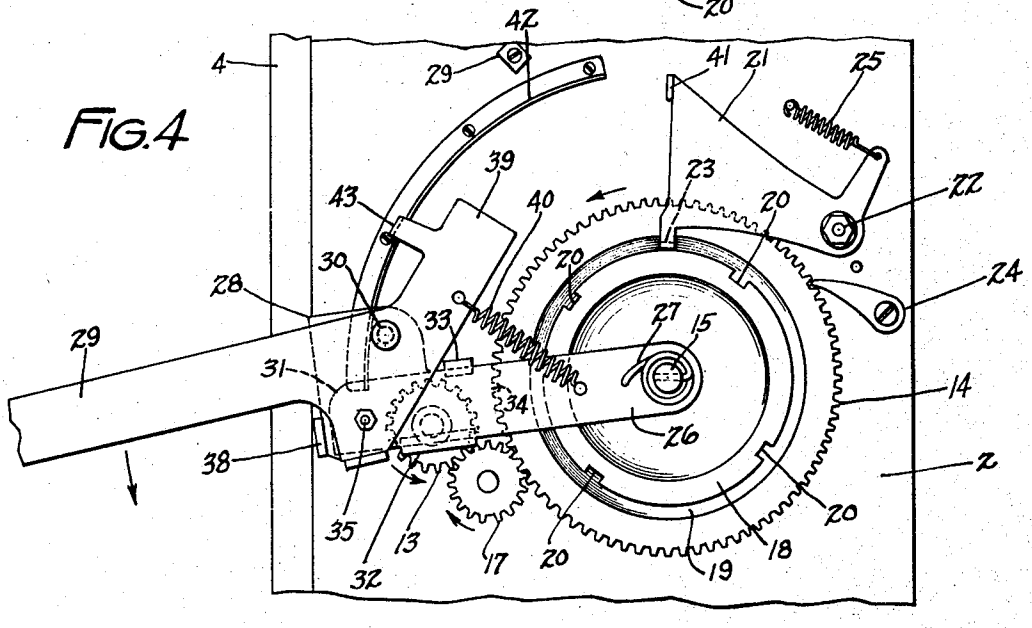


FIG. 4



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TOWEL CABINET

Filed June 28, 1928 5 Sheets-Sheet 3

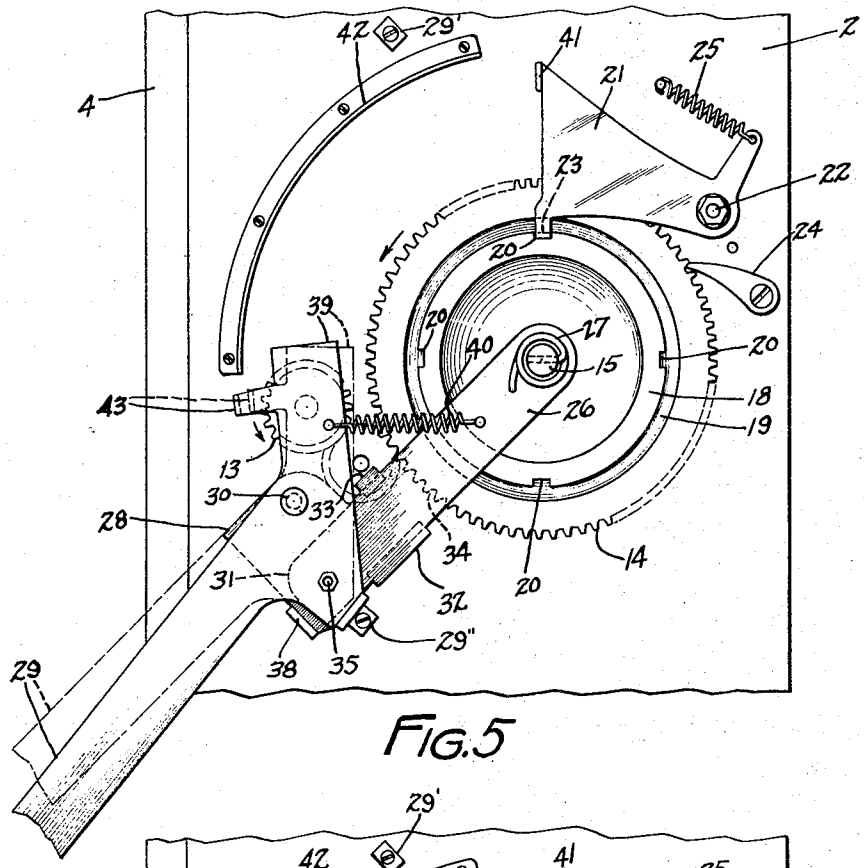

FIG. 5

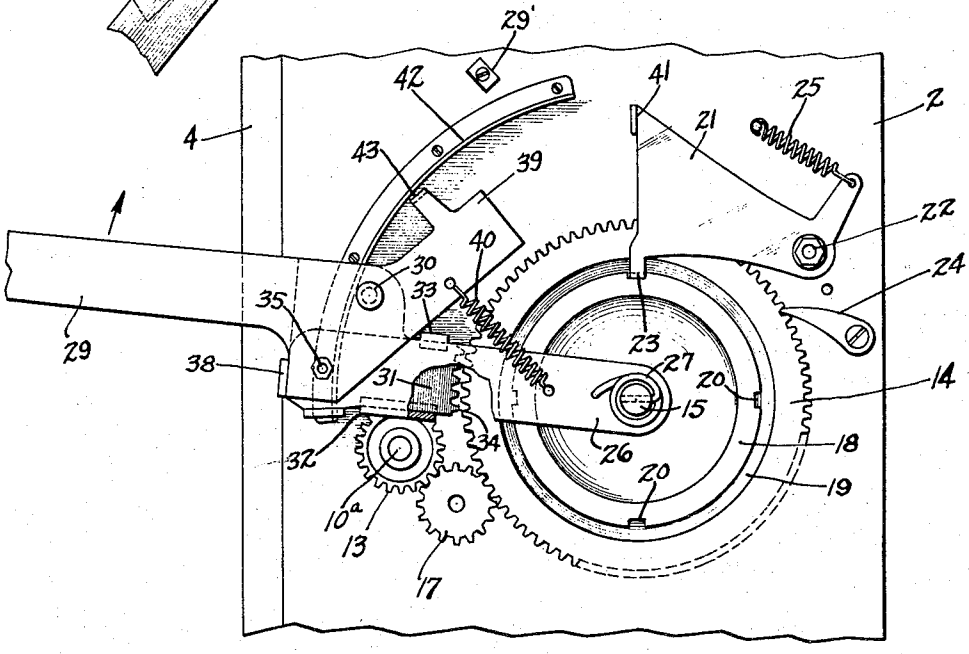

FIG. 6

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Jan. 13, 1931. A. C. GRUNWALD 1,788,949

TOWEL CABINET

Filed June 28, 1928 5 Sheets-Sheet 4

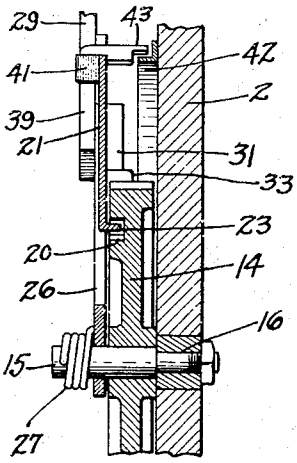

FIG. 9

FIG. 8

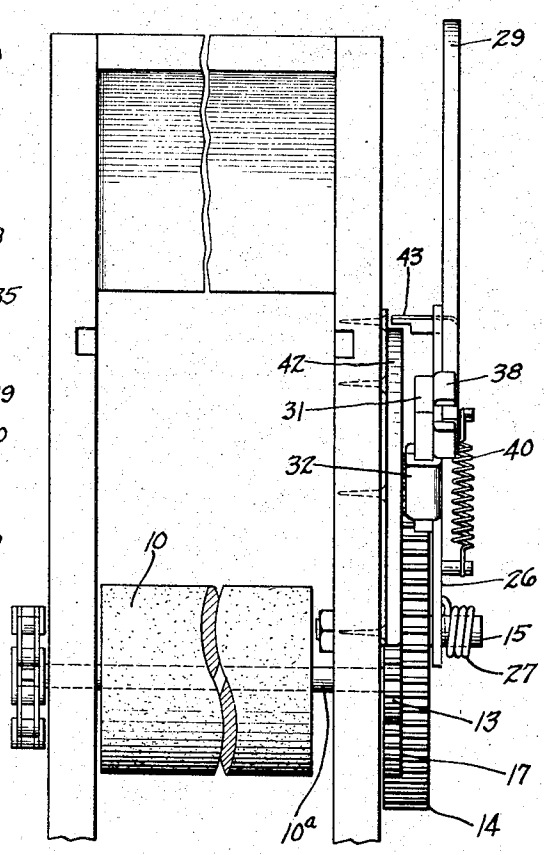

FIG. 7

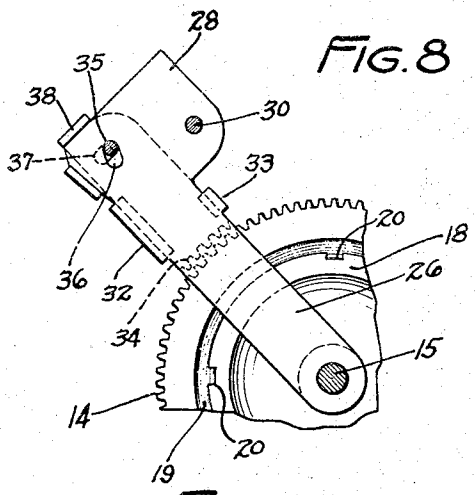

FIG. 10

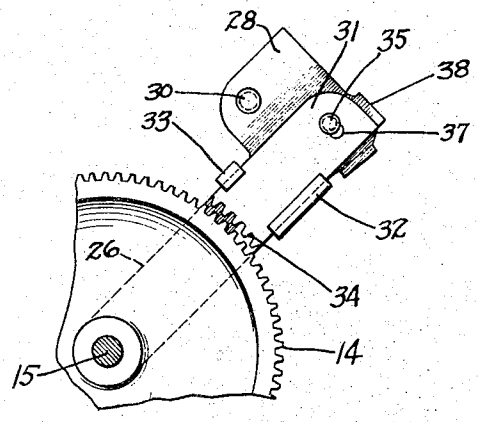

FIG. 11

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Jan. 13, 1931. A. C. GRUNWALD 1,788,949

TOWEL CABINET

Filed June 28, 1928 5 Sheets-Sheet 5

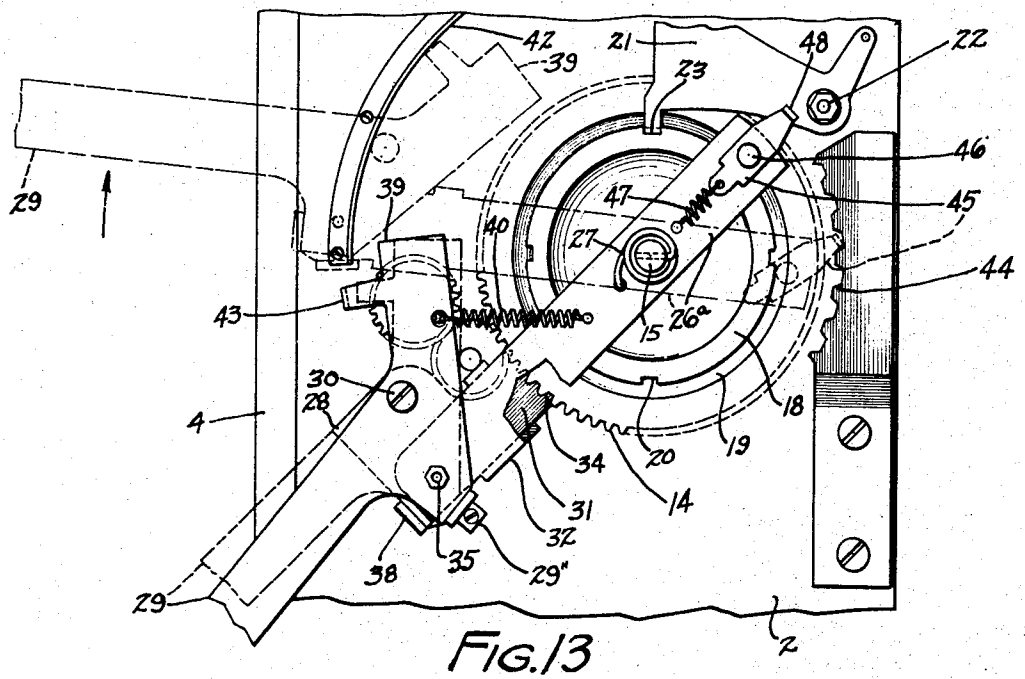

FIG. 13

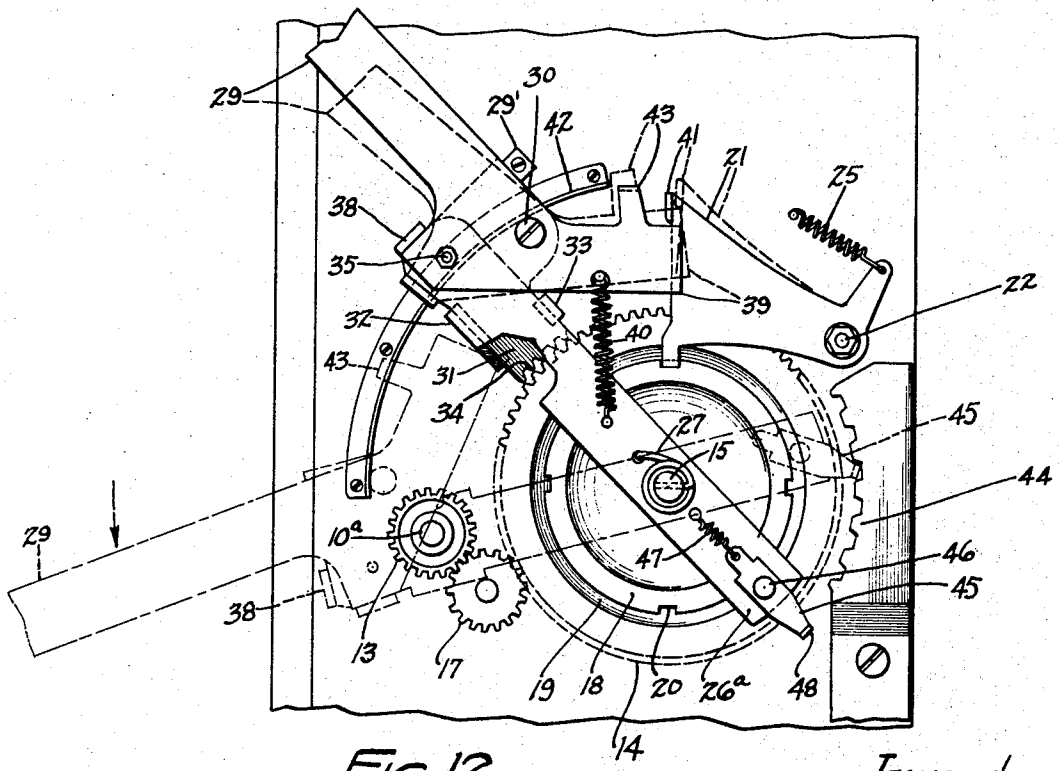

FIG. 12

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Patented Jan. 13, 1931 1,788,949

UNITED STATES PATENT OFFICE

ALBERT C. GRUNWALD, OF CHICAGO, ILLINOIS, ASSIGNOR TO STEINER SALES COMPANY, OF SALT LAKE CITY, UTAH, A CORPORATION OF UTAH

TOWEL CABINET

Application filed June 28, 1928. Serial No. 288,837.

The object of my invention is to provide an attachment adjacent to the feed mechanism of a continuous web towel cabinet by means of which a user of the cabinet can deliver a predetermined length of clean towel web in position for use without grasping and pulling the towel web itself.

A further and particular object is to provide an attachment of this description having means to prevent the user of the cabinet after releasing the feed roll from grasping the towel web and pulling out an undesirable or unnecessary length of web and thereby wasting the clean towel and adding to the expense or upkeep of the cabinet. It has been determined in actual practice the suitable or necessary length of clean towel that should be delivered with each operation of the cabinet and anything in excess of this becomes wasteful and expensive. My improvement provides for sufficient delivery of towel to insure good service but eliminates waste.

A further object is to provide an operating and control lever which having become engaged with the towel delivery means cannot be released until it reaches the end of its stroke and during its return stroke must be idle or inactive. With this attachment it is necessary for the user to move the control lever to the end of its stroke before the return movement can be effected, and during such return movement it will be impossible for the user to re-engage the lever device with the feed mechanism until the lever has been returned to the starting point.

Other objects of the invention will appear from the following detailed description.

The invention consists generally of various constructions and combinations, all as hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings forming part of this specification, Figure 1 is a vertical sectional view through a towel cabinet embodying my invention;

Figure 2 is a side view showing the feed control device;

Figure 3 is a detail view of a part of the cabinet illustrating in full lines the initial movement of the delivery or control device;

Figure 4 is a similar view showing the position assumed by the delivery mechanism when it has partially completed its stroke;

Figure 5 illustrates the delivery or control mechanism at the end of its stroke and the feed mechanism in its locked position;

Figure 6 is a corresponding view showing the control device when it has partially completed its return stroke;

Figure 7 is a view looking at the front of the cabinet showing the position of the control mechanism thereon;

Figure 8 is a sectional view on the line 8—8 of Figure 3 illustrating the relative position of the parts of the control mechanism;

Figure 9 is a detail sectional view on the line 9—9 of Figure 3 showing the relative position of the locking dog and the ring with which it engages;

Figure 10 is a detail view partially in section showing the normal inactive position of the sliding dog and the gear with which it engages;

Figure 11 is a similar view looking at the opposite side of the slide and its supporting bar;

Figure 12 is a view showing the normal position of the mechanism before the locking device is moved to its release position.

Figure 13 is a similar view showing the control mechanism at the limit of its downward movement.

In the drawing, 2 represents the side walls of the cabinet; 3 the top thereof; 4 a door at the front of the cabinet; and 5, slots in the side walls adapted to receive the spindle 6 on which the web of clean towel 7 may be wound. Similar guides 8 are provided in the upper portion of the cabinet to receive the spindle 9 on which the soiled portion of the towel is wound in the operation of the cabinet. 10 represents a forward feed or delivery roll having a driving connection as shown in Figure 1 with the forward roll for simultaneous movement and these rolls have roughened surfaces and are of substantially the same diameter so that in the operation of the cabinet they will have the same peripheral movement, and as the soiled towel portion of the web winding on the spindle 9 contacts by

gravity with the roll 11, the same length of web will be wound on the spindle 9 that is withdrawn from the supply 7 over the delivery feed roll 10. The bottom of the cabinet is open, so that a loop of clean towel depends therethrough in position to be reached conveniently by the user. A suitable guard 12 prevents the web of soiled towel from contacting with the clean supply 7. This construction corresponds substantially to that of the George A. Steiner Patent No. 1,596,125, issued August 17, 1926, and I am making no claim in this application to this construction except in combination with the novel features of the control mechanism which I will now proceed to describe in detail.

The control mechanism, by means of which the feed of the towel is regulated, is preferably located on the outer side wall of the cabinet, and a considerable portion of this mechanism may be concealed by a suitable guard or shield which will be of any convenient form and material and is omitted in the illustration of the cabinet, in order that the position and operation of the parts of the control mechanism may be more clearly understood. Applicant may, however, conceal these parts by means of a guard and prevent any unauthorized or malicious person from tampering with the mechanism.

The shaft 10^a of the delivery feed roll 10 is provided with a pinion 13. A gear 14 is loosely mounted on a stud 15 that is secured at 16 in the wall of the cabinet. An idle pinion 17 is interposed between the gear 14 and the pinion 13. The gear and the pinion turn counter clock-wise while the idle pinion 17 revolves clock-wise in the operation of the device. A ring 18 is formed on the gear 14 encircled by an annular recess 19 and said ring is provided with peripheral notches 20 equally spaced apart in the surface of the ring. A plate 21 is pivoted at 22 on the wall of the cabinet and has a dog 23 adapted to enter one of the notches 20 and lock the ring and gear against movement in either direction.

The notches 20 in the ring 18 cooperating with the dog 23 determines the degree of rotation of the gear, the movement of the feed roll and the length of clean towel that is delivered with each operation. This wiping length of clean web may be increased by providing a larger ring and a greater distance between the adjacent notches. Experiment and practice has, however, demonstrated that the notches shown in the drawing are a suitable distance apart for delivery of a proper length of clean towel.

A ratchet type of dog 24 is also provided to engage the teeth of the gear and prevent its backward movement and the rewinding or backward winding of the towel web into the cabinet. A spring 25 normally holds the dog 23 in engagement with one of the notches 20.

An arm 26 is loosely mounted at one end on the stud 15 and a coil spring 27 has one end secured in the stud and its other end in engagement with the arm, the spring having coils loosely encircling the stud and permitting oscillation of the arm for a limited distance on the stud, the tension of the spring normally tending to hold the arm in its raised position as indicated in Figure 2. The outer end of the arm 26 has a lateral extension 28 on which a hand lever 29 is pivoted at 30. A sliding dog 31 is movable in guides 32 and 33 on the arm 26 and has teeth 34 to engage the corresponding teeth of the gear. A pin 35 is mounted on the lever 29 and projects through an actuate slot 36 in the arm 26 and through a transverse slot 37 in the slide 31. The lever 29 has a wing extension 39 thereon and a coil spring 40 connects this wing with the inner portion of the arm 26 and normally tends to hold the lever 29 in contact with the stop 38 at the outer end of the arm 26, thus normally holding the slide 31 out of engagement with the gear 14. Normally the end of the wing 39 is in position to engage a lug 41 on the plate 21 so that on the initial downward movement of the lever 29 and the corresponding upward tilt of the wing 39 the plate 21 will be raised and the dog 23 moved out of its seat in one of the notches 20, thereby releasing the gear and allowing a limited counter clockwise movement thereof.

Stops 29′ and 29″ are provided at the end of the stroke of the lever in each direction to positively limit its downward and upward movement, thereby preventing any inexperienced or malicious person from damaging the control mechanism or rendering it inoperative for the purpose designed.

In the normal position of the control mechanism the feed roll will be locked through its connection with the gear 14, the movement of which is regulated by the notches 20 and the tilting plate 21. To obtain a length of clean towel suitable for wiping purposes, the user will grasp the lever 29 and tilt it from the dotted line position in Figure 3 to the full line position in the same figure. This movement of the lever will release the gear by disengaging the dog 23 from its notch 20 and the user may if he desires, grasp the web of clean towel and pulling thereon, rotate the gear and deliver the web of clean towel until the dog 23 reaches the next notch 20 in the ring 18 when movement of the gear and the feed roll will be positively checked. It is intended that the user should continue his grasp of the lever 29 and operate the mechanism by moving the side 31 inwardly on the arm 26 until its teeth meshes with the teeth of the gear, and thereupon continued movement of the lever will rotate the gear and the feed roll for a limited distance, depending upon the space between the notches 20 in the ring

18. In case, however, the user having released the gear by the initial operation of the lever 29, should thereupon remove his hand from the lever and attempt to operate the cabinet by pulling on the towel web, he will be able to obtain a certain length of clean web and no more, as the feed mechanism will be positively locked as soon as the dog 23 enters the next notch in the ring. If the user retains his grasp on the lever, its continued movement through the engagement of the dog 31 with the gear, will rotate the gear counter clockwise and through the pinions 13 and 17 will revolve the feed roll and begin the delivery of a web of the clean towel. This delivery will be positively checked as soon as the dog 23 drops into the next notch in the ring. Thus a user while he may deliver the towel either by grasping the lever to operate the feed roll or by pulling on the web after release of the roll cannot in either case feed out more than a suitable wiping length with each operation.

It is desirable in a cabinet of this kind that provision be made to prevent the user from returning the operating lever to its normal position until it has first completed its downward stroke and a proper length of towel has been delivered. To prevent the return of the lever before it has completed its full stroke, I provide a curved cam or flange 42 on the wall of the cabinet in position to engage a lug 43 on the wing extension 39. This lug is so positioned that when the lever has engaged the dog 31 with the gear and the rotation of the gear begins and with it the feed of the clean towel, the lug 43 will ride on the upper face of the cam 42 and will continue in engagement with this cam until the lever has nearly completed its downward stroke. At a predetermined point in the downward movement of the lever, the lug 43 will pass out of engagement with the upper face of the cam and release of the lever will allow the spring 40 to move the dog 31 out of engagement with the gear and thereupon backward movement of the lever to its normal position is permitted without affecting the gear or the feed roll operatively connected therewith. Backward movement of the gear and a corresponding movement of the feed roll will be prevented by the engagement of the dog 24 with the teeth of the gear. The tilting of the lever 29 through the power of the spring 40 and the disengagement of the dog 31 from the gear teeth will move the lug 43 to a position where it will be on the under side of the cam 42 and in this position it will be impossible for the user of the cabinet to tilt the lever downward again and re-engage the dog 31 with the teeth of the gear 14 until the lug 43 has passed out from under the cam and this will not occur until the lever reaches a predetermined point in its upward or return stroke. It will be understood that after the initial movement of the lever and the release of the gear, if the user releases the lever and pulls on the towel web instead of operating the lever as intended, a certain length of towel will be delivered and the operating lever and its connections will move with the gear to the limit of its downward stroke. Thus, if a person who has been accustomed to grasping the towel web and pulling it out of the cabinet attempts to operate this cabinet in a similar manner, he may do so as soon as he has released the delivery mechanism by the initial movement of the lever, but he cannot obtain a greater length of towel web than he would have if he had retained his grasp on the operating lever and moved it to the limit of its downward stroke. Hence, with this cabinet, a user may obtain a certain length of towel web by the manipulation of the operating lever alone, or after releasing the mechanism, by the movement of the lever he can obtain the same length of clean web and no more by pulling on the towel web.

The rotation of the gear 14 and the feed of the towel with each stroke of the lever, will be governed by the distance between the notches 20 on the ring 18, the lug 23 sliding on the peripheral surface of the ring, and when it has been dis-engaged from one notch, it will be held against the ring by the tension of the spring 25 until the dog reaches the next notch and when it drops into this notch, the gear will be locked and it will be necessary to return the lever 29 to its initial raised position before the gear can be released again. The return of the lever 29 to the dotted line position shown in Figure 3, and the full line position in Figure 2 by the tension of the spring 40, will allow the wing extension 39 to pass under the lug 41 as indicated by full lines in Figure 3 and be positioned to raise the plate 21 and release the gear when the next user grasps the operating lever.

By means of the foregoing described construction, it will be noted that the user of the cabinet having released the gear and started its revolution and the feed of the towel by the downward movement of the lever 29, cannot, when the lever has only completed a portion of its stroke, return it to its normal raised position. He must depress the lever and the arm 26 to the position indicated by full lines in Figure 5, and when this has been done, a predetermined length of clean towel will have been fed out of the cabinet, and he cannot obtain a greater length by pulling on the towel web. The user cannot at any point in the up-stroke of the lever, re-engage the dog 31 with the gear, as such movement is positively prevented by the engagement of the lug 43 with the under face of the cam 42. Hence, an idle upward

stroke of the lever is necessary to return it to its initial working position, and when the lug on the lever passes out of engagement with the cam so that the dog 31 may be re-engaged with the gear, the wing extension 39 will be under the lug 41 in position to again release the gear as soon as the lever is operated.

It is not possible therefore in this cabinet for the user to make a partial movement of the lever and return it to its normal position and repeat such movement. Nor can the user, having moved the lever from its initial raised position, grasp the web of clean towel and revolve the delivery feed roll and pull an unnecessary length of towel out of the cabinet.

In Figures 12 and 13, I have shown a modification which consists in providing a curved rack 44 concentric with the axis of the gear 14. An arm 26^a is substituted for the arm 26. A dog 45 is pivoted at 46 on the arm 26^a and is normally held in alignment with said arm by coil spring 47. A lug 48 is provided on the end of the dog 45 extending laterally with respect thereto and adapted to engage the teeth of the rack 44 and slide thereon as the arm 26 is oscillated. When the operating lever is moved downwardly in the direction of the arrow in Figure 12, the dog will slide up on the teeth of the rack 44 and will assume the angular position with respect to the arm 26^a indicated by dotted lines in Figure 12 and the engagement of this dog in the manner shown with the teeth of the rack will prevent upward or backward movement of the operating lever during its down stroke. This will be evident from an examination of Figure 12, where it will be noted the pivot of the dog 45 is above the axis of the gear and also the point of contact of the lug 48 with the rack tooth, and hence downward movement of the end of the arm supporting the dog 45 will be prevented and the operating lever cannot be moved upward until the dog 45 passes out of engagement with the teeth of the rack as indicated by full lines in Figure 13. When this takes place, the dog will assume a position in alignment with the arm 26 and its lug will slide over the teeth of the rack and allow the arm 26^a to be swung to its raised position as indicated by full lines in Figure 12. The other parts of the mechanism are substantially the same as described with reference to the previous figures in this case, this modification relating to an extension of the arm 26 and the mounting of a dog thereon to engage the teeth of the rack 44.

The dog 45 illustrated in the modification Figures 12 and 13, will prevent backward movement of the gear when it has been released by the movement of the operating lever and in this respect have substantially the function of the dog 24 previously described with reference to the other figures of the drawing. It is important of course that provision be made to positively prevent backward movement of the gear, otherwise an inexperienced or maliciously inclined person might release the gear and then move the lever back and forth with a series of short strokes instead of swinging it to the limit of its stroke as he should do. The lever being locked to the gear could not be moved independently thereof in a backward direction, but if no provision is made for locking the gear itself, then the lever and gear might move backward together and draw the towel web back into the cabinet and defeat the purpose for which the control mechanism is designed. By the use of the dog 24 or the modified construction including the dog 45, backward movement of the gear is positively prevented and the user of the cabinet having disengaged the locking device from the gear, can only move the operating lever in the right direction, and cannot disengage the lever from the gear until it has traveled a predetermined distance, and then when the lever has become disengaged from the gear after a suitable length of towel has been fed out of the cabinet, it will not be possible for the user to re-engage the lever with the gear and operate it until the lever has been returned to its normal position where it can again actuate the plate 21 and disengage the dog 20 from the gear.

It is proposed to mount this control mechanism in a convenient place on the cabinet where it can be grasped by the user and a length of clean towel delivered. The release of the delivery mechanism will be automatic upon the initial movement of the lever and the user will be compelled to move the lever to the limit of its stroke as he cannot move it backward when it has once begun its downward movement, and when the lever has reached the limit of its stroke it cannot be re-engaged with the delivery mechanism until it has been returned to its normal position. Thus mistakes of an uninitiated person in the operation of the cabinet will be prevented and it will be impossible for any maliciously inclined person to operate the lever in a manner that would defeat the purpose of the cabinet.

In the course of manufacturing this attachment, many changes doubtless will be made in the details of construction, particularly when the article passes into mass production, and I do not therefore in this application wish to be confined to the particular construction shown or the details of the different parts as they are all susceptible of various modifications and still be within the scope of my invention.

I claim as my invention:

1. In a towel cabinet, the combination with a delivery feed roll for delivering a web of

clean towel, of means for normally locking said roll at predetermined points in its movement to deliver the clean towel, a lever adapted to be initially operated by the towel user to actuate said locking means and release said feed roll and having means to revolve said roll, said locking means having freedom of movement to relock said roll periodically and positively check the feed of the towel whereby a limited length of towel may be obtained whether delivered by said mechanism, or by pull of the user on the towel web.

2. In a towel cabinet, the combination with a delivery feed roll having a surface for contact with the web of clean towel, of means for normally and intermittently locking said feed roll, a member on its initial movement having a lug for tripping said locking means and releasing said roll and also having means adapted during subsequent movement of said member for operating said feed roll to deliver the clean towel, whereby a predetermined length of towel may be delivered by pull on the web or by manipulation of said member.

3. In a towel cabinet, the combination with a delivery feed roll having a surface for contact with the web of clean towel, of means for normally locking said feed roll, a member having a device on its initial movement for tripping said locking means, and releasing said feed roll and also having means to connect said member with said roll whereby a predetermined length of clean towel may be delivered by subsequent movement of said member or by pull on the towel web, means whereby said member becomes inactive and returns idle to its normal position, and means whereby said member is prevented from becoming operative during its return stroke.

4. A towel cabinet having a clean towel delivery feed roll, a locking means therefor, a lever mechanism having means to move said locking means to a release position and also having means to temporarily connect said lever with said feed roll and revolve it a predetermined distance when released, said locking means checking movement of said roll at a predetermined point and regulating the length of towel delivered, and allowing when released a length of towel to be delivered by pull thereon or by movement of said lever.

5. A towel cabinet having a feed roll adapted to receive and deliver a web of clean towel, a gear operatively connected with said roll, means for normally and intermittently locking said gear, and a lever mechanism having means on its initial movement to release said gear and cooperate with said locking means to allow only a wiping length of towel to be drawn out by pull on the towel and also having means on subsequent movement for engagement with said gear to revolve it a predetermined distance to deliver the same length of towel.

6. In a towel cabinet, the combination with a feed roll having a surface for contact with the web of clean towel to be delivered, of a gear operatively connected with said feed roll to revolve it in one direction, means for normally locking said gear against movement, a lever device having a dog to engage said gear, said lever device having means on its initial movement for tripping said locking means temporarily and engaging said dog with said gear, whereby a certain predetermined length of towel may be delivered either by movement of said lever device or by pull on the towel.

7. In a towel cabinet, the combination with a delivery feed roll having a surface for contact with a web of clean towel, of a gear operatively connected with said roll, a lever device having means on its initial movement to engage said gear and revolve said roll, means whereby said lever device is held in engagement with said gear until it reaches the end of its stroke, whereby only a limited delivery of towel web may be obtained during the stroke of said lever device.

8. In a towel cabinet, the combination with a towel web delivery means, of a control mechanism therefor, comprising a gear, a lever device and means for operatively connecting it with said gear on the initial movement of said lever, and means preventing the disengagement of said lever from said gear until it has reached a predetermined point in its stroke.

9. In a towel cabinet, the combination with a towel web delivery means, of a control mechanism therefor, comprising a gear, a lever device, means for operatively connecting it with said gear on the initial movement of said lever and means for preventing the disengagement of said lever from said gear until it has reached a predetermined point in its stroke, said means also preventing the re-engagement of said lever with said gear during its return stroke.

10. In a towel cabinet, the combination with a towel web delivering means, of a control mechanism therefor, comprising a gear, an arm having a dog thereon to engage said gear, a lever carried by said arm and connected with said dog to engage it with said gear upon the initial movement of said lever, and means preventing the disengagement of said dog from said gear until said lever has reached a predetermined point in its stroke.

11. In a towel cabinet, the combination with a towel web feeding means, of a control mechanism comprising a gear, an arm and a dog thereon to engage said gear, a lever operatively connected with said dog to move it into engagement with said gear upon the initial operation of said lever, means for disengaging said dog from said gear when said lever reaches the end of its stroke, and means preventing the re-engagement of said dog

with said gear on the return stroke of said lever.

12. In a towel cabinet, the combination with a towel web feeding means, of a control mechanism therefor comprising a gear, an arm and a sliding dog thereon to engage said gear, a lever operatively connected with said dog and adapted on its initial movement to engage said dog with said gear, a cam flange adjacent said lever, said lever having means to travel on one side of said flange and cooperate therewith to prevent disengagement of said dog from said gear when said lever is moved in one direction, and also travel on the other side of said flange and hold said dog out of engagement with said gear when said lever is moved in the other direction.

13. In a towel cabinet, the combination with means for feeding a web of clean towel, of a control mechanism therefor, comprising an oscillating arm, a lever mounted thereon, means for operatively connecting said arm with said feeding means on the initial movement of said lever, and means preventing the release of said lever until it has reached a predetermined point in its stroke.

14. In a towel cabinet, the combination with means for feeding a web of clean towel, of a control mechanism therefor, comprising an oscillating arm, a lever mounted thereon, means for operatively connecting said arm with said feeding means on the initial movement of said lever, and means preventing the release of said lever until it has reached a predetermined point in its stroke, said means also preventing the operative engagement of said lever with said means during the return of said lever to its normal position.

15. In a towel cabinet, the combination with means for delivering a web of clean towel, of a control mechanism therefor comprising a gear having a ring thereon provided with notches at intervals and a dog to enter said notches and lock said gear, a lever device and a driving dog actuated by the initial movement of said lever to engage said gear, said lever having means on its initial movement to release said locking dog whereby a certain wiping length of towel may be delivered by movement of said lever or pull on the towel until said dog enters another notch.

16. In a towel cabinet, the combination with means for delivering a web of clean towel, of a control mechanism therefor comprising a gear having means for normally locking it and operatively connected with said delivering means, an oscillating arm, a dog slidably mounted thereon to engage the teeth of said gear, a lever pivoted on said arm and connected with said dog to engage it with the teeth of said gear upon the initial movement of said lever, a spring connecting said lever and arm normally tending to hold said dog out of engagement with said gear, said lever having means for releasing said gear on its initial movement, the locking means for said gear being adapted to become effective to again lock it when said lever and gear have moved a predetermined distance and in its release position permit a limited feed of the towel by movement of said lever or by pull on the towel web.

17. In a towel cabinet, the combination with means for delivering a web of clean towel, of a control mechanism therefor comprising a gear operatively connected with said delivering means, a stud whereon said gear is loosely mounted, an arm mounted on said stud and having a yielding connection therewith normally resisting the movement of said arm, means for normally locking said gear, a lever carried by said arm and a dog actuated by the initial movement of said lever to engage said gear, a spring normally resisting the engagement of said dog with said gear, said lever having means for tripping said locking means on its initial movement, and said locking means being adapted to re-lock said gear when it has reached a predetermined point, said spring automatically disengaging said dog from said gear when said lever is released.

18. In a towel cabinet, the combination with means for delivering a web of clean towel, of a control mechanism therefor comprising a gear operatively connected with said delivering means, means for normally locking said gear against movement in either direction, a lever device for tripping said locking means upon its initial movement, a dog actuated by such initial movement of said lever to engage said gear to rotate it with the further movement of said lever until said locking means again becomes effective to lock said gear, means preventing backward movement of said gear during rotation, and means preventing the disengagement of said dog from said gear until said lever reaches a predetermined point in its working stroke, and also preventing said dog from re-engaging with said gear during the return or idle stroke of said lever.

19. In a towel cabinet the combination with a delivery feed roll having a surface for contact with a web of clean towel, of a gear operatively connected with said roll, a lever device having a dog to engage said gear and revolve said roll, a cam mounted adjacent to said gear, said lever device having means to ride on said cam when said lever is moved in one direction whereby the disengagement of said dog from said gear during such movement is prevented.

20. In a towel cabinet the combination with a delivery feed roll having a surface for contact with a web of clean towel, of a gear connected with said roll, a lever device having a dog to engage said gear and operate it and said roll, a cam mounted adjacent to said gear, said lever device having means thereon

adapted to ride on said cam when said lever is moved in one direction and whereby the disengagement of said dog from said gear is prevented during such movement and said cam having means to hold said dog out of engagement with said gear on the return stroke of said lever device.

In witness whereof, I have hereunto set my hand this 25th day of June, 1928.

ALBERT C. GRUNWALD.