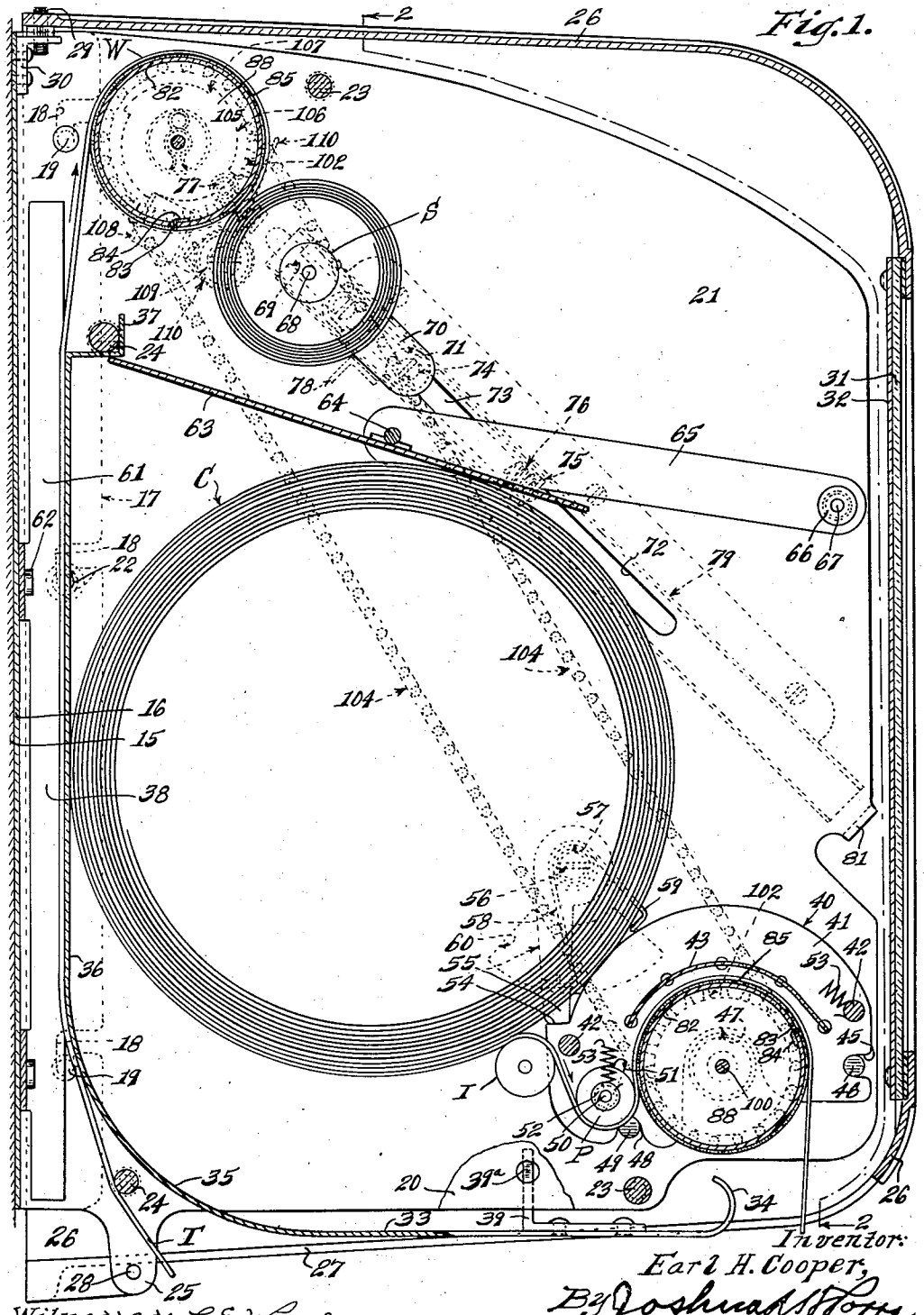
Jan. 16, 1945. E. H. COOPER 2,367,201

PINCH ROLL ASSEMBLY

Original Filed Jan. 30, 1941 3 Sheets-Sheet 1

Fig. 1.



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PINCH ROLL ASSEMBLY

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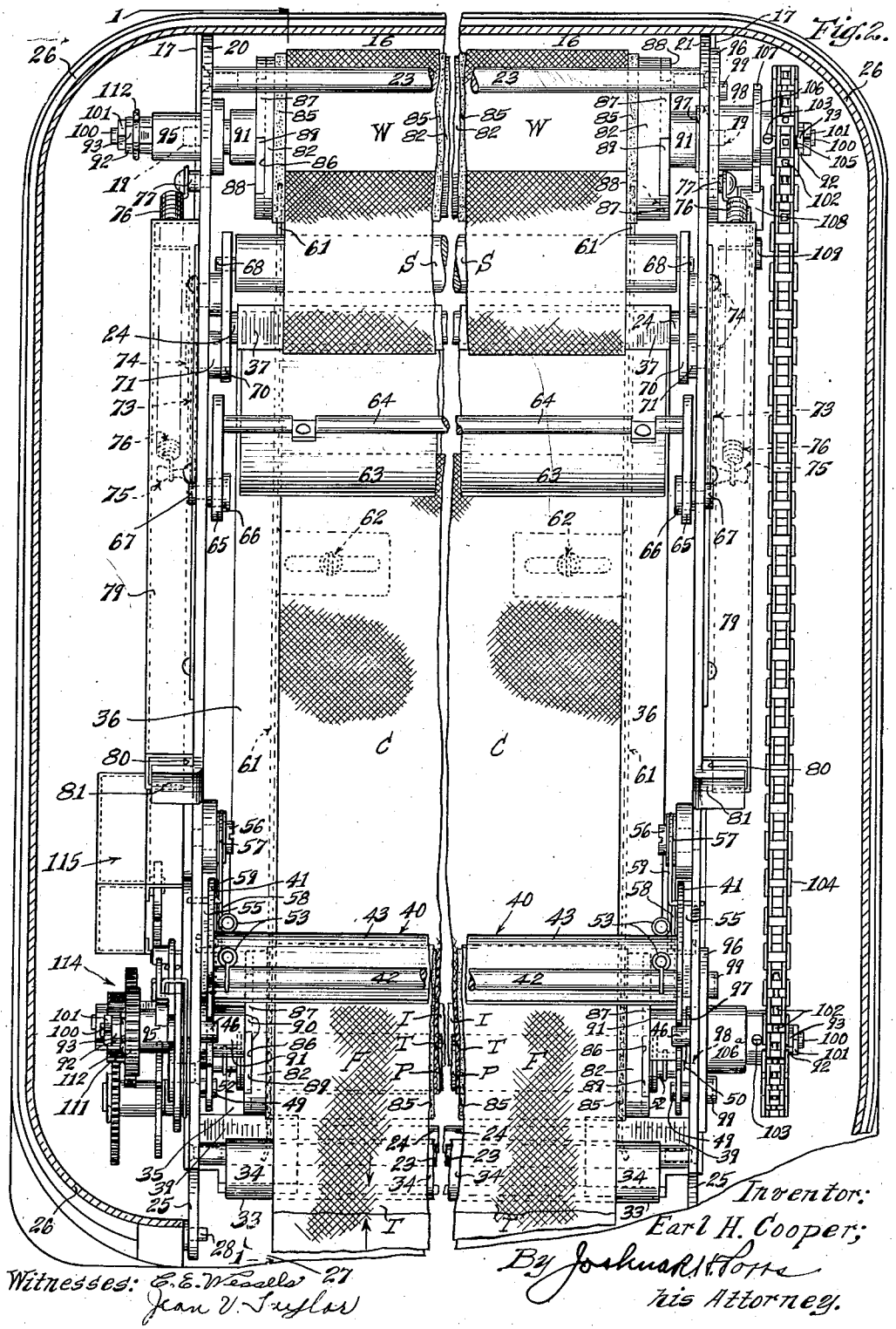


Fig. 2.

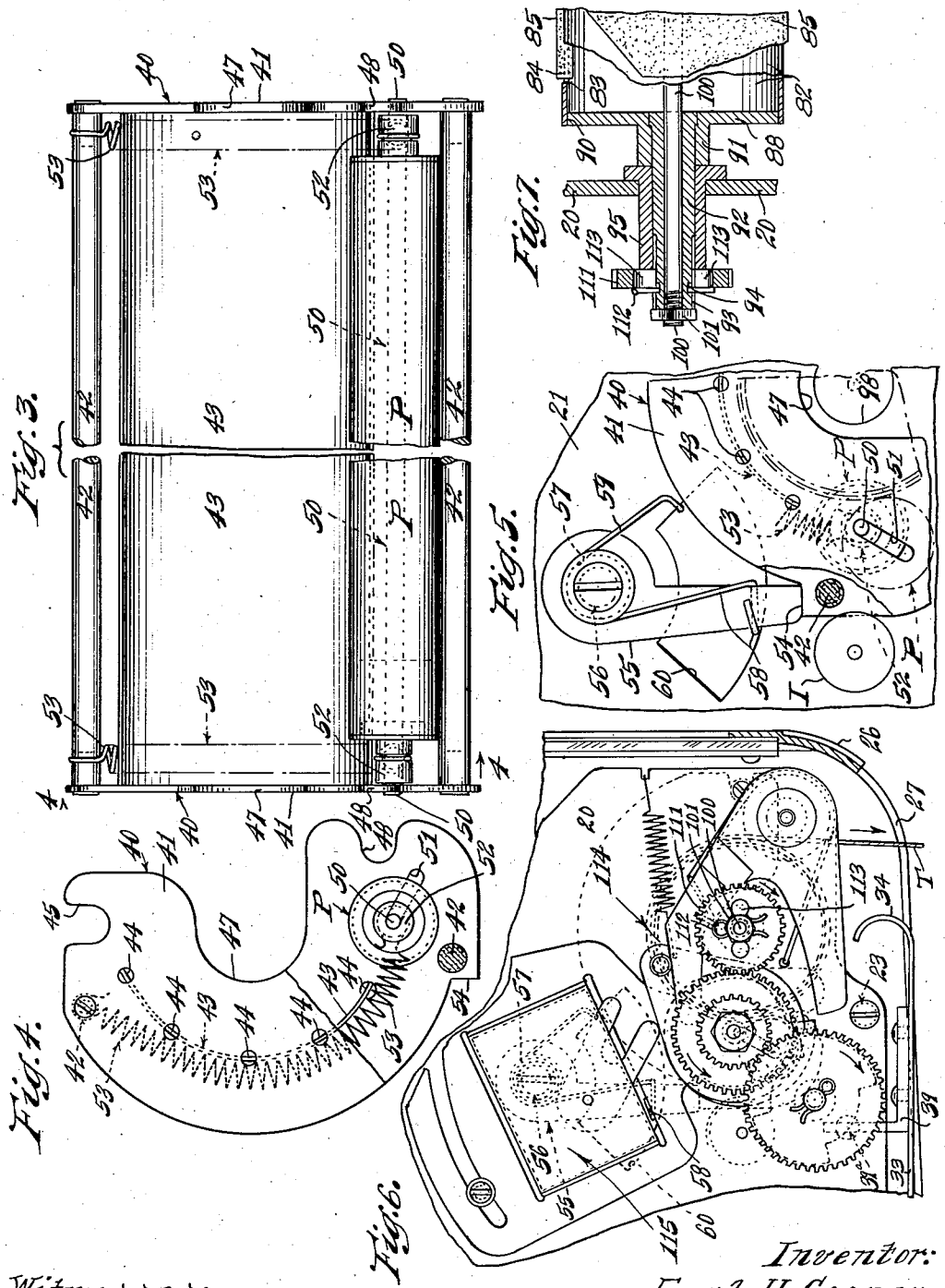
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Jan. 16, 1945. E. H. COOPER 2,367,201

PINCH ROLL ASSEMBLY

Original Filed Jan. 30, 1941 3 Sheets-Sheet 3



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Patented Jan. 16, 1945 2,367,201

UNITED STATES PATENT OFFICE

2,367,201

PINCH ROLL ASSEMBLY

Earl H. Cooper, Toledo, Ohio, assignor to Jacques Rousso, Los Angeles, Calif.

Original application January 30, 1941, Serial No. 376,575. Divided and this application January 12, 1942, Serial No. 426,432

14 Claims. (Cl. 271—2.1)

My invention relates to a pinch roll assembly for towel cabinets or dispensing devices for intermittently dispensing or paying out predetermined or desired lengths of clean toweling, paper or other material from a roll or a strip or web of cloth, paper or other material in rolled, folded or other form so as to depend from the cabinet or mechanism in the form of a loop, strip, or web and to simultaneously wind or to take up the soiled toweling after use, and is a divisional part of my prior application for patent on Towel cabinets, Serial No. 376,575, filed January 30, 1941.

An object of the invention is to provide means to control the feeding of the towel so that in pulling a length of toweling the feeding or measuring roll is turned other than an integral number of revolutions, thereby assuring more than one stopping position so that the pinch roll will not engage the abrasive surface of the feeding roll at the same point after each feeding operation, thereby distributing the wear over the entire friction or abrasive surface of the roll and insuring a longer useful life for said surface, and positively feeding the towel and winding or taking up the soiled towel.

Another object of the invention is to provide a novel ratio of feeding, winding, timing and time release mechanism whereby the friction feeding and winding rollers are advanced other than one complete revolution each time a length of toweling is pulled down or out for use so as to cause the strip of toweling to engage different points on the surfaces of the feeding and winding rollers for every one of a multiple of operations or revolutions thereof, such as 5, thereby preventing undue wear at particular points on the friction surfaces of said rollers and increasing the useful life of said roller surfaces a multiple, i. e., five times their ordinary life.

Another object of the invention is to so arrange and support the toweling within the cabinet that practical maximum of contact areas or lengths of the toweling will be engaged with practical maximum of frictional contact areas or peripheral surfaces of the feeding and winding or take-up rollers to also insure longer useful lives for said surfaces and more positive, uniform and even feeding and winding of the toweling.

Another and important object of the invention is to provide a pinch roll which is contained in an assembly serving as a toweling guide and made separate from the rest of the mechanism thereby permitting the positioning of the pinch roll after the toweling has been placed in position and the clean toweling roll thrown in so as to make threading of the toweling unnecessary.

Another object of the invention is to place the pinch roll under spring tension so that no towel slippage is required to set the pinch roller firmly as compared with other machines which require motion of the toweling to accomplish this function.

Another object of the invention is to hold the soiled towel roll in contact with the winding or take-up roller by spring tension instead of depending upon gravity as in other machines so as to accommodate a wide variance in roll size and produce a more uniformly and tightly wound roller of soiled toweling, thus reducing the space requirement of the roll.

Another object of the invention is to provide novel means for supporting and feeding a clean toweling as well as winding up a soiled toweling including a novel construction of rollers for maintaining the toweling under tension and insuring uniform, even and positive feeding and winding of the toweling and which, in addition to the above stated object of permitting the removal of the mechanism supporting frame, to permit quick and convenient removal and replacement of the friction rollers or cylinders of the feeding and winding rollers at the place of installation or use when the friction surfaces thereof have become worn without the necessity of taking the entire cabinet back to the shop or factory.

Another object of the invention is to provide means by which the web or toweling strip is held by pressure on and against the friction feeding or dispensing roller for the clean toweling or web and winding or take-up roller for the soiled or used toweling, to insure uniform motion in a straight path and prevent sidewise shifting or spiral feeding or winding thereof, thereby keeping the web or toweling strip taut, flat instead of loose or entangled and causing tight and firm engagement thereof with the friction feeding and winding or sand rollers and feeding and winding thereof at the same ratio or rate to maintain a uniform length of depending loop for use.

Further objects and advantages will appear and be brought out more fully in the following specification, reference being had to the accompanying drawings, in which:

Fig. 1 is a vertical sectional elevation of a roller towel cabinet showing the feeding and winding means and pressure and tension means or rollers and pinch roller assembly in accordance with the invention and taken on the line 1—1 of Fig. 2.

Fig. 2 is a vertical section taken on the line 2—2 of Fig. 1.

Fig. 3 is an elevation of a pressure means or pinch roll assembly for use in connection with the feeding or dispensing roller.

Fig. 4 is a sectional elevation taken on the line 4—4 of Fig. 3.

Fig. 5 is a fragmentary elevation of the pinch roller holding means.

Fig. 6 is an end elevation timing mechanism and gearing on the lower friction or sand feeding roller, and

Fig. 7 is a detail section of one end of a friction roller.

Referring more particularly to the drawings in detail, 15 designates a vertical support such as a wall, board or plate mounted against or in a wall designed to support the cabinet thus obviating the necessity of employing a floor stand so that valuable floor space may be otherwise used. Secured to the vertical support 15 is a back mounting plate 16 preferably of metal having right angular or outstanding vertical or parallel side flanges 17 designed to removably support the frame or mechanism of the device. As shown, these side flanges are provided with a plurality of bayonet slots 18 opening at the top through the edges of the flanges to receive outstanding pins 19 projecting from the side plates 20 and 21 of the frame of the machine which supports the mechanism as a unit. If desired, three of such pins and bayonet slots may be provided, the pins 19 engaging the upper and lower slots and the intermediate slots being engaged by clamping screws 22 engaging threaded apertures in the plates 20 and 21 instead of providing pins 19 to engage the slots, so as to hold the frame from vertical displacement but permit removal thereof should occasion arise. The frame also includes upper and lower spacing and connecting or tie rods 23 and 24 having reduced ends forming shoulders to engage the inner faces of the side plates 20 and 21 so as to rigidly hold the same in uniform spaced relation parallel to each other with screws anchoring the ends of the rods at the outsides of the plates. The bottom edges of the plates 20 and 21 are provided with apertured ears 25 near their inner and lower corners and the cabinet or housing 26 which is shown as being substantially of rectangular form and open at the back is provided with a bottom opening 27 flanged inwardly around the bottom edge. While the cabinet may be pivoted or hinged to the mechanism or frame near the lower rear corner of the machine to enable it to swing forwardly and downwardly to serve as a container for holding the clean towel roll, towel guide, soiled towel roll or any other articles which might otherwise be mislaid or difficult to manipulate during the loading of the machine. In the form shown, the bottom flanges or sides of the cabinet are shown provided with inwardly extending pivot pins 28 projecting in to engage the apertures of the pivot ears or lugs 25. The cabinet is sufficiently resilient to permit the sides to be separated so that the pins will spring into the apertures when the spreading pressure is released. Thus, the cabinet may be swung down beneath the frame with its open side upwardly so as to conveniently receive and retain as well as render accessible any parts placed therein. When closed, it is swung upwardly and may be held locked by any suitable means to prevent access to the interior of the cabinet. As shown, a locking screw 29 is provided in the top wall of the cabinet adjacent the open side and edge thereof which may be operated by a socket or plug wrench to engage the keeper or aperture of an angle bracket 30 secured to the mounting plate 16. If desired, a mirror 31 may be provided at the front of the cabinet and held at the back by a removable plate 32 over an opening in the front of the cabinet with suitable interposed cushion packing to prevent breakage of the mirror.

A bottom plate 33 is provided for the cabinet but is supported between the side plates 20 and 21 of the frame and this bottom also serves as a separator between the clean toweling roll and the ascending soiled toweling and can be swung clear of the back of the machine or back mounting plate 16 to provide ready access thereto for simplifying the task of loading as will be hereinafter more fully explained. The front edge of the bottom plate 33 is shown rolled or curled up as at 34 spaced from the front wall or bottom of the front portion of the cabinet and at the back or rear corner is curved upwardly as indicated at 35 over the lower rod 24 to receive and support the clean towel roll when the same becomes small. This plate is then extended vertically as at 36 to form a separator or vertical partition in spaced parallel relation to the back mounting plate 16 and provide a narrow transverse vertical channel 38 therebetween through which the soiled or used towel may be passed to the winding or take-up roller, as will be later described and prevent contact thereof with the clean toweling. The top edge of the vertical plate portion 36 is provided with an angular portion 37 directed forwardly and then upwardly to frictionally spring or resiliently set under and against the upper rod 24 to hold the plate in position at the back of the frame in front of the channel or space 38. The bottom 33 is pivoted between the side plates 20 and 21 preferably in spaced relation to the rolled front edge 34 and for this purpose, may have angular brackets 39 of L-shaped form rigidly secured thereto at the top by riveting or otherwise and provided with outwardly extending pivot lugs 39a extending through correspondingly located apertures in the side plates 20 and 21. In this manner, the bottom plate together with the partition may be swung on the pivots so that the curled end 34 swings downwardly and rearwardly, the bottom portion 33 upwardly, and the vertical portion 36 upwardly forwardly and downwardly so as to expose the back of the cabinet or frame when the clean towel roll is not in position.

The feeding roller is designated at F and is journaled between the plates 20 and 21 near the lower forward corners thereof and the corresponding portion of the frame, this roller being a friction or sand roll to insure gripping of the toweling T and the same as the winding roller forms a portion of the mechanism for the winding of the soiled toweling when the toweling is pulled out as will be later explained. The winding or take-up roll is designated at W and the clean towel in rolled form is designated at C, while the soiled towel roll is designated at S. An idle roller I is positioned beneath the clean towel roll C parallel to and slightly spaced rearwardly from the feeding roller F so as to take the weight of the clean towel roll when the latter is initially put into the machine to rest on the idle roller and against the vertical portion 36 of the plate where it forms a separator or partition where the soiled towel passes upwardly in con-

tact with the rear face thereof. The idle roller I is journaled directly in the plates 20 and 21 spaced from the bottom 33 and when the clean towel roll C becomes sufficiently small in diameter, it may pass down against the curved portion 35 between the roller I and the partition 36. A pinch roller P is positioned between the feeding roller F and the idle roller I and when in operative position, projects below the latter but is designed to be pressed against the toweling on the feeding roller F. It will be noted that the strip or web or toweling from the roll C passes over the idle roller I down under the pinch roller P, after which it passes upwardly over the feeding roller F so as to engage the frictional surface thereof over more than one-half the circumference thereof and insure positive gripping action between this roller surface and the comparatively rough surface of the toweling so that when the latter is pulled downwardly, as indicated by the arrows in Figs. 1 and 2, the feeding roller F will be positively rotated in addition to uniformly and evenly feeding the toweling. The toweling T then extends downwardly from the feeding roller F through the opening in the bottom of the cabinet between the front thereof and the curled portion 34 so as to hang in the form of a loop and then extending upwardly against the rear lower truss rod 24 in back of the partition 36 and then forwardly over and around the winding or take-up roller W for an area of over one-half of the circumference thereof and then wound upon the soiled towel roller S which is mounted to be pressed toward the winding roller W as will be later explained.

The pinch roller P is contained in an assembly which serves as a toweling guide and is separable from the rest of the mechanism, thereby permitting the positioning of the pinch roll after the toweling or clean towel C has been thrown in or placed in position. For this purpose the assembly includes a pinch roller frame 40 including arcuate end plates 41 connected by tie rods 42 and also a curved guide or guard plate 43 having tongues 44 spaced along the ends thereof to engage corresponding spaced holes in the end plates 41 so as to hold the guard plate in conformity to the feeding roller above and in spaced relation thereto so that the clean toweling may pass therebetween. The plates of the pivoted assembly or frame are detachably and pivotally mounted between the side plates 20 and 21 and for this purpose may be provided with recesses 45 in the outer ends of the arcuate plates 41 and communicating with the edges thereof to engage pivot lugs 46 extending inwardly from the side plates of the frame. The bottom edges of the end plates 41 have arcuate recesses 47 to accommodate the journals of the feeding roller F and fit around and over the same. The plates 41 are also provided with notches 48 corresponding to the notches or recesses 45 but located at the opposite edges of the plates 41 facing downwardly remote from the pivoted side at the lugs 46 to engage over lugs 49 also projecting inwardly from the side plates 20 and 21 of the frame so that when the pinch roller assembly is mounted on the lugs 46 and swung inwardly and downwardly under the clean toweling roll C, the pinch roll P will press the toweling down between the feed roller F and towel supply roll C and the idle roller I and also draw the same taut to be fed in the direction indicated by the arrows as seen in Fig. 1. This causes the pinch roller to friction or snap past the supply or roll C of toweling by pressing in the latter between the same and the idle roller I, and the feeding or friction roller F, so as to render the toweling taut or place the same under tension. This avoids the necessity of threading the towel or causing movement or pulling of the towel to tighten the same after the towel is in position, as in other machines. The pinch roller P has a spindle 50 the ends of which engage in inclined slots 51 in the end plates 41 in tangential or divergent relation to the periphery of the feeding roller F and spaced from the adjacent end of the guard plate 43. The pinch roll has its ends journaled in hubs or spacing collars 52 positioned inside the plates 41 and coil springs 53 are fastened to the hubs or collars 52 and to the tie rod 42 at the pivoted end of the pinch roller frame or assembly and hold the pinch roller toward the feeding roller by tending to move the same in the slots 51 toward the upper ends thereof. The top edges of the plates 41 adjacent the free ends thereof are provided with shoulders or notches 54 which are engaged by locking dogs 55 pivoted on stud pins 56 at the inner faces of the side plates 20 and 21 to hold the pinch roller frame or assembly 40 and toweling guide 43 in position. The coils of V-shaped springs 57 are mounted on the stud pins and one arm 58 hooks over the dogs 55 while the other arm 59 is anchored at one end of a segmental opening 60 in each side plate 20 or 21 so as to permit access to the dogs for releasing the same from the outside of the plates 20 and 21 whereby the pinch roller assembly may be swung outwardly on its pivots 46 and displaced from the frame. However, when the pivot roller assembly is mounted on the lugs 46 and swung inwardly as previously explained, the dogs 55 will automatically engage the shoulders 54 and lock the pinch roller assembly in position.

Means may be provided for evenly guiding the toweling through the machine consisting of suitable spacing means, blocks or guides along the sides thereof at the back and shown in the form of guides 61 for the toweling to engage the side edges thereof which may be of angular formation and if desired, provided with slots to receive screws 62 for permitting adjustment to the width of the towel. A separating plate 63 is pivoted off center as at 64 on a shaft extending transversely of the plate and rigidly secured thereto so that the short side of the plate extends forwardly and the long side extends rearwardly to engage under the angular portion 37 with the forward portion resting on the clean towel roll C. This plate is pivoted at the free inner ends of a pair of opposed arms 65 closely adjacent the inner faces of the side plates 20 and 21, these arms being pivoted as at 66 to said side plates with screws 67 for removably mounting the arms and plate in position. The soiled towel roller S has reduced trunnions 68 journaled in open bearings or recesses 69 in the upper ends of the bearings or bars 70 which have spaced flanged collars 71 adapted to slide in elongated forwardly inclined slots 72 in the side plates 20 and 21. These bearings or bars 70 are retained in position by strips or slides 73 mounted on the reduced ends of the flanged collars 71 and held by clamping screws 74. The slides 73 have outstanding angular or bent ends 75 to each of which a coiled spring 76 is anchored at one end and at the opposite end by means of screws or the like to the plates 20 and 21 of the frame as indicated at 77 so as to normally exert upward tension to press the soiled towel roller S toward the winding or take-up roller W. Each slide 73 is provided with a finger piece 78 bent

therefrom to extend between the plate and a housing 79 of angular flanged construction secured to the outer faces of the plates 20 and 21 and each having a slot 80 through which said finger piece operates. Lugs 81 are provided on the side plates spaced from the lower ends of the guideways of housings 79.

The feeding and winding or take-up rollers F and W constituting the friction or sand rollers are substantially alike in construction and each comprises a tubular cylinder or tube 82 of metal or other suitable material and provided with aligned longitudinal slots 83 near each end through which the tapered ends 84 of a spirally wound emery or sand paper strip 85 are bent, inserted and anchored, the strip being suitably anchored or glued to the cylinder if desired. The ends of the cylinder are provided with spaced segmental notches 86 equidistantly spaced apart and preferably three in number forming corresponding intermediate projections 87. Disks 88 forming webs fit the notched ends of the cylinder or body and for this purpose are provided with spaced projections 89 to enter the notches 86 and corresponding notches 90 to receive the projections 87 to reinforce and close the ends of the tubes as well as connect the cylinder and disks to cause them to rotate together. The disks or webs fit snugly in the ends of the cylinders and are provided with outwardly projecting tubular flanges or hubs 91 forming spacing means between the disks and the frame members 20 and 21 and receiving shouldered tubular trunnions 92 which are keyed to the disks and the hubs to turn therewith. The tubular trunnions 92 are provided with two opposite flattened surfaces 93 at their outer portions and a peripheral groove 94 circumscribing the same and intersecting the flattened portions. Flanged bearings 95 are mounted on the trunnions 92 and have their flanges positioned within and against the inner face of the plate 20 adjacent the hub 91 at one side of the frame. At the opposite side a separate or removable bearing plate 96 is bolted to the plate 21 and has a sleeve or hub 97 extending into an opening 98 of larger diameter than the hub 91 as seen in Fig. 2. Screws 99 secure the plate 96 in position and a tie rod 100 extends through the roller and the tubular trunnions or bearings 92 and have their threaded ends anchored as by nuts 101 engaging threaded ends of the tie rod thus to hold the parts in assembled relation and against end thrust by engagement with the ends of the tubular trunnions or bearings 92. At one side of the frame, sprockets 102 are mounted on the flattened portions 93 of the trunnions and fixed by a set screw 103 while an endless drive member or chain 104 is trained around the sprocket wheels to cause the friction rollers to rotate in unison. They are held in position by spring cotter pins 105 which engage the annular grooves 94 at one end, preferably the right side of the machine although this is optional. The corresponding end of the winding roller W is provided with a ratchet wheel 106 on the flattened portion of the trunnion 92 with its hub or collar between the plate 96 and the hub or collar of the sprocket wheel 102 (see Fig. 5). At the bottom roll F, there is no ratchet wheel but the collar is retained (see Fig. 7). The teeth 107 of the ratchet wheel 106 are engaged by a pawl 108 pivoted at 109 to a boss on the plate 21 and held by a spring 110 into engagement with the teeth 107 so as to prevent backward or retrograde movement of the winding roller so that the soiled towel cannot be unwound from the soiled towel roller and so that the parts can only be driven in one direction tending to feed the clean toweling and wind the soiled toweling. A collar 106a is mounted to take up space on the trunnion 92 of roller F at the bottom in lieu of the ratchet wheel 106 as provided on the roller W at the top where the ratchet wheel 106 and pawl 108 are provided to prevent reverse rotation, and to avoid end thrust. However, this construction permits quick removal and replacing of a friction roller by simply removing the nuts 101, rods 100 and drive parts by removing the screws 99 of the plates 96 so that the hubs 91 at one side can be displaced through the corresponding openings 98 and the webs or disks set in the ends of the body 82 displaced outwardly so that the body or cylinder can be removed and a new one inserted and secured in position. Thus, the notched construction of the friction or sand rolls where the disks or webs set into the ends of the body or cylinder of the roll enables replacement of the worn friction or sand surface by substitution of the body only by reason of the separate bearing plates at the right hand or side plate 21 and the entire removal and substitution can be effected without disassembling the machine. The tie rod construction of the assembly converts any transverse load on the sand roll hubs into a lineal stress on the tie rod and not on the web assembly alone.

Thus, if under extreme abuse something must give way, the resulting deformity will only be the stripping of the threads on the tie rod by failure of the cylinder and its sprocket wheel to turn together because the nuts 101 are jammed against the bearing sleeves on trunnions 92 at the threads. Thus, the hubs will be slightly loose on the trunnions 92 but not broken and the machine will not be out of service. The cost of this common type repair is reduced to just a fraction of the usual cost or entirely eliminated by this construction.

The control mechanism of the machine for the feeding, winding, timing and time release mechanism is preferably mounted at the left hand end of the lower friction or feeding roller adjacent the plate 20 at the outside and for this purpose a spur gear or pinion 111 is mounted on the flattened portions 93 of the trunnion 92 and is held in position by a spring cotter pin 112 engaging the annular groove 94 adjacent the flanged bearing 95 at that side. The gear 111 is also held by keys 113 fitting the flattened portions 93 and registering recesses in the gear as shown in Figs. 2 and 6. A gear 114 is driven by the gear 111 and operates checking and releasing mechanism adapted to be controlled by a timing mechanism 115 as shown and described in my copending application Serial No. 376,575, filed January 30, 1941.

Operation

In the operation of the device, assuming that the cabinet is empty of toweling, the housing or cabinet proper is released by turning the locking screw 29 to disengage it from the bracket or keeper 30 whereupon it may be swung 90 degrees forwardly and downwardly on the hinged connections or pivots 28 against the vertical support 15 below the mechanism with the open side which normally fits or is disposed toward the vertical support at the back disposed upwardly and the open bottom at the rear or

back so that the top and front walls of the cabinet will form a receptacle for receiving a roll of clean toweling. It will also serve as a container for the towel guide or pinch roll assembly 40 which is removed from its operative position by swinging it upwardly on the pivots 46 and removing it from the frame. It will also support the soiled toweling roller S or any other articles which might otherwise be mislaid or difficult to manipulate during the loading of the machine. The soiled toweling roller S is merely displaced from the open bearings or recesses 69 in the upper ends of the bearings 70. A length of clean toweling T is then unrolled from the clean towel roll C and with the plate 33 swung on its pivot so as to dispose the partition or separator 36 forwardly and downwardly relative to its normal vertical position where it forms the space 38 in connection with the back mounting plate 16 the end of the toweling is then passed under the bottom of the machine in back of the rods 24 through the space 38 which has been opened by the forward tilting of the plate portion 36 so as to render accessible the back of the machine to facilitate loading. The fact that the bottom of the cabinet is integral with the separator which is normally positioned between the clean toweling roll and the ascending soiled toweling and can be swung clear of the back of the machine to provide ready access thereto greatly simplifies the task of loading. The toweling is then extended over the winding or take-up roller W and the end portion thereof wound upon the soiled towel roller S which is placed in position in the bearings 70 and pressed against the roller W by the tension of the springs 76. The plate 33 is then swung back into position with its vertical portion or partition 36 in front of the ascending toweling where it is held by the angular portion 37 frictionally and resiliently engaging the upper rod 24. With sufficient length of the clean towel depending below the machine in the form of a loop as shown in Figs. 1 and 2, the length of which may be varied as desired, the clean roll of toweling C is then thrust or placed in position as shown in Fig. 1 resting upon the idle roller I and the partition or separator 36 spaced above the bottom portion 33. The separating plate 63 which automatically floats with the pivoted arms 65 may be raised to facilitate insertion of the clean towel roll and will move down as the clean toweling is dispensed therefrom but normally may assume the position shown in Fig. 1 but always keep the soiled toweling out of contact with the clean toweling continuously during the time when the latter is unwound from the roll C and being wound on the roller S. The pinch roller and guide assembly or frame is then inserted in position by engaging the notches 45 with the pivots 46 and swinging the same rearwardly and downwardly on said pivots so that the pinch roller P will pass or snap by the periphery of the clean toweling roll C and the idle roller I permitted by the slots 51 in which the pinch roller P is journaled and the normal tendency of the springs 53 to hold the pinch roller at the inner ends of the slots. The placing of the clean toweling roll C in position as previously explained will cause the toweling T to pass over the feeding roller F and the idle roller I so that when the pinch roller assembly is placed in position as just described, the pinch roller will loop the toweling downwardly by pressure thereon between the idle roller I and the feeding roller F and will place the pinch roller and toweling under tension by pressure against the feeding roller F from the springs 53 due to the inclination of the slots 51 and the tangential relation and convergence thereof toward the periphery of the feeding roller F and the tendency of the springs to press or hold the pinch roller against the feeding roller F and toweling thereon below its axis 100 and at the same time the guard plate or guide 43 will be positioned over the feeding roller and the assembly or frame held in position by engagement of the notches 48 with the pins or lugs 49. The pinch roll is contained in an assembly which serves as a toweling guide and is separable from the rest of the mechanism thereby positioning the pinch roller after the toweling has been thrown or placed in position. This makes threading of the toweling unnecessary. Also, owing to the fact that the pinch roller is positioned under spring tension, no towel slippage is required to set the pinch roller firmly and in position pressing against the feeding roller with the interposed toweling. Most, if not all other machines, require motion of the toweling to accomplish this function. The machine is now ready to operate and when a clean wiping section of toweling is desired, the user merely grasps the clean toweling depending below the machine at the open bottom below the feeding roller F and adjacent the curled portion 34 and a downward pull exerted thereon. Due to the frictional engagement of the toweling with the feeding roller F, the latter will be rotated as well as the pinch roller P and the idle roller I to unwind the toweling from the clean towel roll C. Due to the feeding and winding rollers being positively connected by the chain 104 on the sprocket wheels 102, the winding or take-up roller W will be rotated in the same direction as the feeding roller F thereby advancing the soiled toweling around the winding roller and causing it to be wound on the soiled towel roller S by reason of the latter and the toweling thereon being pressed against the winding roller W by the springs 76 which elevate the bearings 70 in the slots 72. By holding the soiled toweling roll in contact with the take-up or winding roller by spring tension instead of depending upon gravity as in most, if not all other machines, this produces a more uniformly and tightly wound roll of soiled toweling, thus reducing the space requirement of the roll. The floating separator or plate 63 which can assume any position required by the changing sizes and positions of the toweling rolls is used to effect a conservation of space by using the space given up by the diminishing clean roll to accommodate the increasing size of the soiled towel roll.

In order to regulate the feeding or advancing of the toweling as well as the winding and the time interval of the perceptible or discernible signal which, as previously explained, is audible in this instance due to the buzzing sound of the operation of the gears of the timing or clock mechanism 151 and thus indicate to the user when the device is inoperative or when the toweling may not be pulled out, as well as give an audible, discernible or perceptible signal continuously during the period when the towel is normally used for the wiping operation or the period between which the towel is pulled or moved out and when it may be moved again, the following operation takes place. When the toweling is pulled to rotate the feeding roller F and the winding roller W, the latter will be permitted to

rotate by the pawl 108 riding over the teeth of the ratchet wheel 106 but restraining the same against reverse rotation so that the toweling cannot be unwound from the soiled towel roller. The construction of the means for supporting and feeding the clean toweling as well as winding up the soiled toweling, the arrangement of the rollers and the manner in which the toweling is run through the machine as well as the rollers for feeding and winding up the toweling and the arrangement of the pinch roller P and the soiled towel roller S held under constant spring pressure against the respective feeding and winding rollers F and W respectively insures uniform, even and positive feeding and winding of the toweling as it moves down at the front and up at the back. This is also due to the fact that the soiled toweling roll is held in contact with the take-up or winding roll by spring tension instead of depending upon gravity as in most, if not all other machines, thus not only producing a more uniformly and tightly wound roll of soiled towel but also reducing the space requirement of the roll. The pinch roll is also contained in an assembly or frame which serves as a toweling guide by reason of the opposite edges of the toweling strip feeding between the end plates 41 thereof and between the feeding roll and the guide plate 43 which is disposed in spaced concentric or parallel relation thereto. By having the pinch roll assembly separable from the rest of the mechanism, the pinch roll may be placed in position after the toweling has been mounted in position, thus making threading of the toweling between rollers I, P and F unnecessary, placing of the toweling is also facilitated especially due to the fact that the separator or partition formed by the vertical wall 36 may be swung away from the back of the machine when the end of the toweling is first wound upon the soiled towel roller. By having the pinch roll pressing against the feeding roll under spring tension and positioned or snapped in position under such tension over the feeding roller and under the clean towel roll so that the toweling is looped down between the idle roller I and the feeding roller F by the pinch roller P when in position as more particularly shown in Fig. 1 of the drawings, no towel slippage is required to set the pinch roller firmly. The toweling is maintained in constant uniform contact under pressure with a maximum surface of the feeding roller as well as the idling roller. This is also true in respect to the engagement of the toweling with the winding roller W over more than one-half the circumference thereof and is further insured by the pressure between the toweling on the soiled towel roller S and the periphery of the winding roller W due to the resilient mounting of the soiled towel roller and the action of the springs 76 in maintaining the roller S and the soiled toweling wound thereon against the surface of the roller W by means of the spring held bearings 70. The separators 36 and 63 also maintain the clean toweling out of contact with the soiled toweling and the latter separator compensates for the varying sizes of the clean and soiled toweling rolls. By reason of the floating action thereof so that the separator 63 can assume any position required by the changing sizes and positions of the toweling rolls, a conservation of space is effected by utilizing the space given up by the diminishing clean roll to accommodate the increasing size of the soiled towel roll and when the clean towel roll is sufficiently small it may drop between the idle roller I and the vertical plate 36 on to the bottom 33 while still pressing against the idle roller I and increasing the surface contact with the latter until entirely unwound and paid out. At this time the bearings 70 may be depressed and the soiled towel roll displaced and removed by disengaging the trunnions 68 from the bearings 70 at the open recesses 69, when the machine is again in condition for reloading in the manner previously described. It should also be noted and will be apparent from the foregoing description of the construction and operation that due to the feeding and winding rollers being of the same diameter operatively connected as described and directly controlling the feeding and winding thereof as well as the regulating and timing mechanism and intervals when the device is locked, in addition to the means for preventing retrograde movement or unwinding of the soiled toweling roll, the soiled toweling will be rolled up into the cabinet in the form of a roller at a linear rate exactly equal to the linear rate at which the clean toweling is uniformly dispensed or pulled out according to the adjustment for which the machine is set but preferably approximately eight inches, thus keeping the amount or length of the depending loop of exposed toweling substantially constant. It will also appear that while length of toweling dispensed at each use is preferably eight inches, this may be adjusted or varied as desired, as by varying the sizes of the feeding and winding rollers and the gear ratio of the driving means or gearing train, so that each successive length of toweling dispensed shall be and remain uniform once an adjustment is made. Also, the operating parts, device or feed roller and the toweling are locked against movement after each pulling of the towel and the toweling prevented from slipping when pulled unnaturally hard or in normal operation, thereby preventing rewinding of the used or soiled toweling on the clean toweling roll or unwinding the used or soiled toweling from the soiled toweling roll. Also the time interval between feedings may be controlled by the time controlled mechanism which may be adjusted as desired, say from five to twenty-two seconds or otherwise. The time controlled mechanism as well as all the other mechanisms are not accessible to any one using the machine by reason of being enclosed in the cabinet in the manner described thus, preventing tampering therewith and rendering the device fool-proof.

It may also be stated that by having the damp used toweling pass upwardly against the lower tie rod 24 and the separator or plate 36 under angular stress at the top and bottom, the damp toweling is smoothed flat instead of leaving the same folded, rumpled or uneven and free to shrink. This is assisted by placing the toweling under pressure and tension of the depending loop and pulling thereon in dispensing or pulling the toweling out or down and in use, and in being wound or taken up on the roller W and the roll S, as well as the frictional engagement and sliding against the rear lower truss rod 22 and the plate 36 whereby the toweling will be kept smooth and somewhat stretched out to normal condition or length and assisted in drying, so that the depending loop or length of toweling for use will be maintained in a loop of constant length, instead of shortening by drying in a crinkled, wrinkled, folded or uneven condition.

While I have illustrated and described the preferred form of construction for carrying my invention into effect, this is capable of variation and

modification without departing from the spirit of the invention. I, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail myself of such variation and modification as come within the scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a towel cabinet, a towel supply, a feed roller suitably journaled, an idle roller beneath and on which the towel supply rests, with the towel passing over the idle roller and the feed roller, a pinch-roll assembly separate from the cabinet and removably supported therein to be bodily displaced therefrom, said assembly when in position fitting over the feed roller and having a pinch roller journaled therein and adapted to engage the toweling between the idle roller and the feed roller, to draw the toweling taut.

2. In a towel cabinet, a towel supply, a feed roller suitably journaled, an idle roller beneath and on which the towel supply rests, with the towel passing over the idle roller and the feed roller, a pinch-roll assembly separate from the cabinet and removably supported therein to be bodily displaced therefrom, said assembly when in position fitting over the feed roller and having a pinch roller journaled therein and adapted to engage the toweling between the idle roller and the feed roller, to draw the toweling taut, whereby threading of the toweling or causing movement or pulling of the toweling to tighten the same after the towel is in position over the feed roller, is rendered unnecessary, and guiding means for the side edges of the toweling, independent of the pinch-roll assembly.

3. In a towel cabinet, a towel supply, a feed roller suitably journaled, an idle roller beneath and on which the towel supply rests, with the towel passing over the idle roller and the feed roller, a pinch-roll assembly separate from the cabinet and removably supported therein to be bodily displaced therefrom, said assembly when in position fitting over the feed roller and having a pinch roller journaled therein and adapted to engage the toweling between the idle roller and the feed roller, to draw the toweling taut, whereby threading of the toweling or causing movement or pulling of the toweling to tighten the same after the towel is in position over the feed roller, is rendered unnecessary, said pinch-roll assembly including guiding means for the edges of the toweling, and a guard plate over the feed roller.

4. In a towel cabinet, a towel supply supported in the cabinet, a towel supporting means adjacent to said supply, a feed roller adapted to receive toweling from the supporting means and disposed at a distance from said towel supporting means, a pinch-roll assembly supported over the feed roller and bodily removable therefrom, said assembly including a pinch-roll movably journaled in the assembly and resiliently held against the feed roller, said assembly adapted to be placed in position after the toweling is passed over the feed roller, with the pinch-roller between said towel supporting means and the feed roller to engage and render the toweling taut.

5. In a towel cabinet, a casing, a feed roller journaled in the casing, a towel supply, a towel supporting means adjacent to said supply and at a distance from the feed roller, a pinch-roll frame supported movably over the feed roller and including a pinch-roll removably mounted in the pinch-roll frame and resiliently held against the feed-roller, said pinch-roll frame and the pinch roll adapted to be disposed outwardly of the casing to permit the towel to be passed over the feed roller, and then moved inwardly over the feed roller to cause the pinch roll to engage the towel between the towel support means and the feed roller and put the same under tension between the supporting means and feed roller.

6. In a towel cabinet, a towel supply, a towel supporting roller adjacent to said supply, a feed roller suitably journaled, said towel supporting roller being supported in the cabinet a distance from the feed roller, a pinch-roll frame removably supported over the feed roller and adapted to move outwardly thereof, and including a pinch-roll slidably mounted in the frame and resiliently held against the inner side of the feed roller when in operative position, said pinch-roll frame being disposed over the feed roller, after the towel is passed thereover, to cause the pinch-roll to press on the toweling between the towel support roller and the feed roller, to put the toweling under tension.

7. In a towel cabinet, a feed roller, a towel supply, a towel support adjacent to said supply and spaced from said feed roller, a pinch-roll assembly including a frame removably supported over the feed roller and adapted to be bodily displaced therefrom from above the toweling, said pinch-roll assembly also including a pinch roll slidably journaled in the frame and resiliently held against the feed roller when the assembly is in position, to cause the pinch roll to press the toweling at one side of the feed roller between the latter and the towel support, to place the toweling under tension from above the toweling after the latter is passed over the feed roller.

8. In a towel dispensing cabinet, a frame, a feed roller journaled in the frame, a towel supporting roller spaced from said feed roller, a pinch-roll assembly including a frame bodily displaceable from the first frame and cabinet, a toweling supply adjoined to said supporting roller, and a pinch roll movably mounted in the pinch-roll frame at the inside and resiliently held toward the feed roller when the pinch-roll frame is in position to engage and press down on the web of toweling between the supporting roller and feed roller, to place the toweling under tension, said pinch-roll frame including towel guiding means.

9. A towel dispensing cabinet, including a feed roller journaled therein, a toweling supply, a supporting roller adjacent to said supply and spaced from said feed roller, a pinch-roll assembly including a frame having end plates and an arcuate plate connecting said end plates, a pinch roll slidably journaled in the end plates, said pinch-roll assembly being bodily displaceable from the inside and over the feed roller and adapted to be placed in position after the toweling is passed over the feed roller to cause the pinch roll to press against the toweling web at one side of and between the feed roller and the supporting roller, to render the toweling taut and hold the same against the feed roller.

10. A towel dispensing cabinet, including a feed roller journaled therein, a toweling supply, a supporting roller adjacent to said supply and spaced from said feed roller, a pinch-roll assembly including a frame having end plates and an arcuate plate connecting said end plates, a pinch roll slidably journaled in the end plates, said pinch-roll assembly being bodily displaceable from the inside and over the feed roller and adapted to be

placed in position after the toweling is passed over the feed roller to cause the pinch roll to press against the toweling web at one side of and between the feed roller and the supporting roller, to render the toweling taut and hold the same against the feed roller, and guiding means for the side edges of the toweling, including the pinch-roll plates and parallel strips parallel to each other and opposite parallel edges of the toweling carried by the cabinet for adjustment relative to each other and opposite parallel edges of the toweling.

11. In a towel cabinet, a feed roller, a towel supply, a supporting roller adjacent to said supply and spaced from the feed roller, a pinch-roll frame removably supported over the feed roller, adapted to be bodily displaced from its support and detachably pivoted to swing over the feed roller, a pinch roll journaled in the inner portion of the pinch-roll frame to press against the toweling between the supporting roller and feed roller when the pinch-roll frame is in position, to tighten the toweling after the latter is placed over the feed roller, and means for releasably holding the pinch-roll frame in position.

12. In a towel cabinet, a feed roller, a towel supply, a towel supporting roller spaced from the feed roller, a pinch-roll frame removably supported over the feed roller, adapted to be bodily displaced from its support and detachably pivoted to swing over the feed roller, a pinch roll journaled in the inner portion of the pinch-roll frame to press against the toweling between the supporting roller and feed roller when the pinch-roll frame is in position, to tighten the toweling after the latter is placed over the feed roller, and means for holding the pinch-roll frame in position, said means being releasable externally of the pinch-roll frame.

13. In a towel cabinet, a frame therein, a towel supply, towel supporting means in the frame, a feed roller journaled in the frame in spaced relation to the towel supporting means and adapted to receive toweling from the supply, a pinch-roll frame removably and pivotally supported in the first frame, over the feed roller and adapted to swing outwardly for bodily displacement from its support or inwardly over the feed roller, and including a toweling guide over the feed roller when the pinch-roll frame is in position, and a pinch roll journaled in the pinch-roll frame and resiliently held in one direction against the feed roller and adapted to engage the toweling between the supporting means and feed roller to place the towel under tension by distention and press the toweling against the feed roller after the toweling is placed over the feed roller.

14. A towel dispensing cabinet, including a casing, a frame in the casing, a towel supply supported therein, a towel supporting roller, a feed roller journaled in the frame in spaced relation to the supporting roller and adapted to receive the toweling therefrom, a pinch-roll frame having recesses, lugs on the first frame removably engaged with the recesses, said pinch roll frame adapted to pivot on certain of the lugs for movement outwardly on the first frame and displacement therefrom, or to swing inwardly to a position over the feed roller, said pinch-roll frame including toweling guide means, a pinch roll journaled in the pinch-roll frame to press down on the toweling between the supporting roller and the feed roller, to render the toweling taut when the pinch-roll frame is in position, thereby obviating threading of the toweling and movement of the feed roller or pulling on the toweling, to render it taut, and releasable locking means to hold the pinch-roll frame in operative position.

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