May 12, 1959 G. X. BATLAS ET AL 2,886,226

PAPER TOWEL DISPENSER

Filed March 12, 1956 2 Sheets-Sheet 1

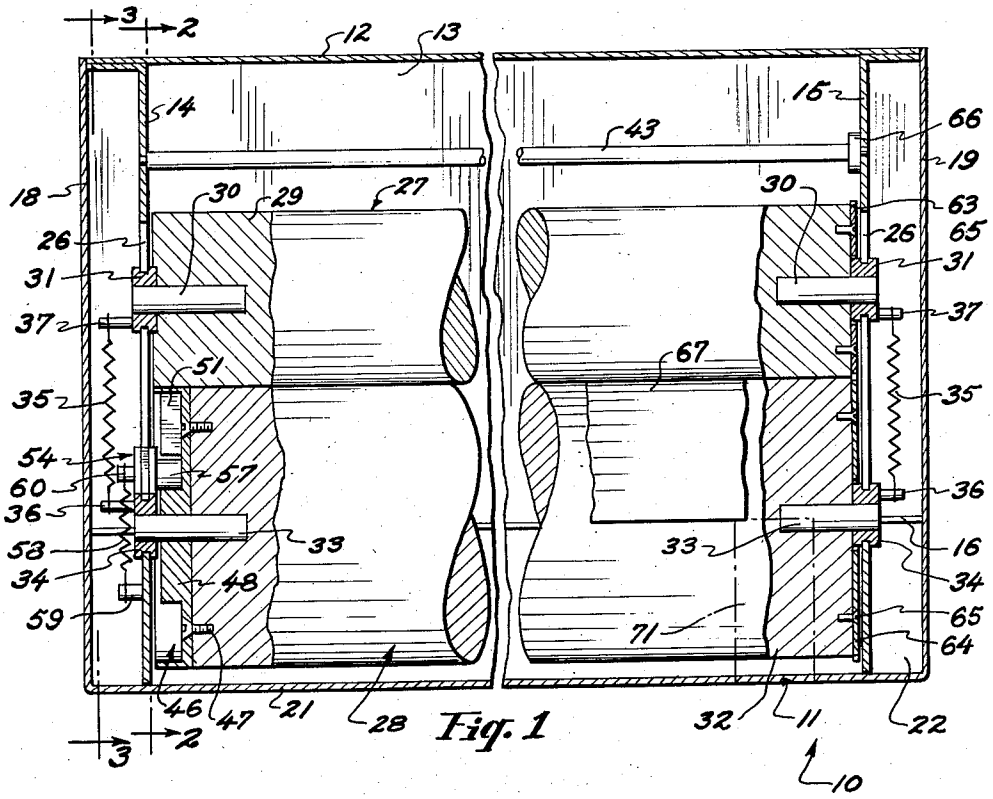


Fig. 1

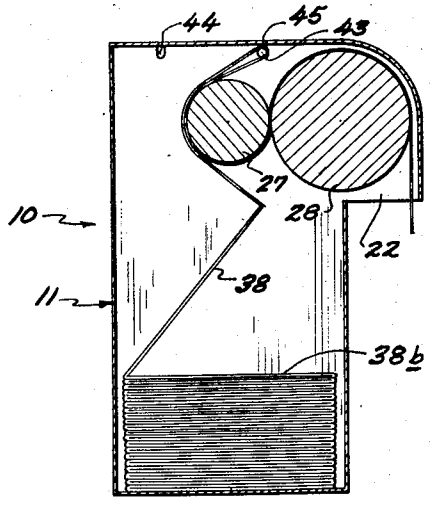


Fig. 7

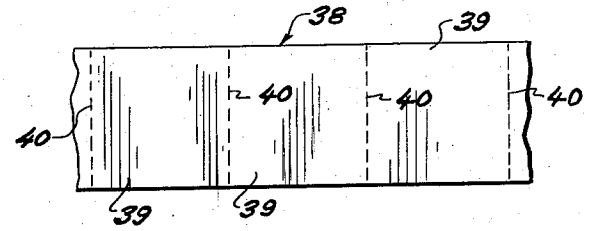


Fig. 5

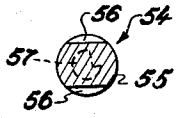


Fig. 6

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PAPER TOWEL DISPENSER

Filed March 12, 1956 2 Sheets-Sheet 2

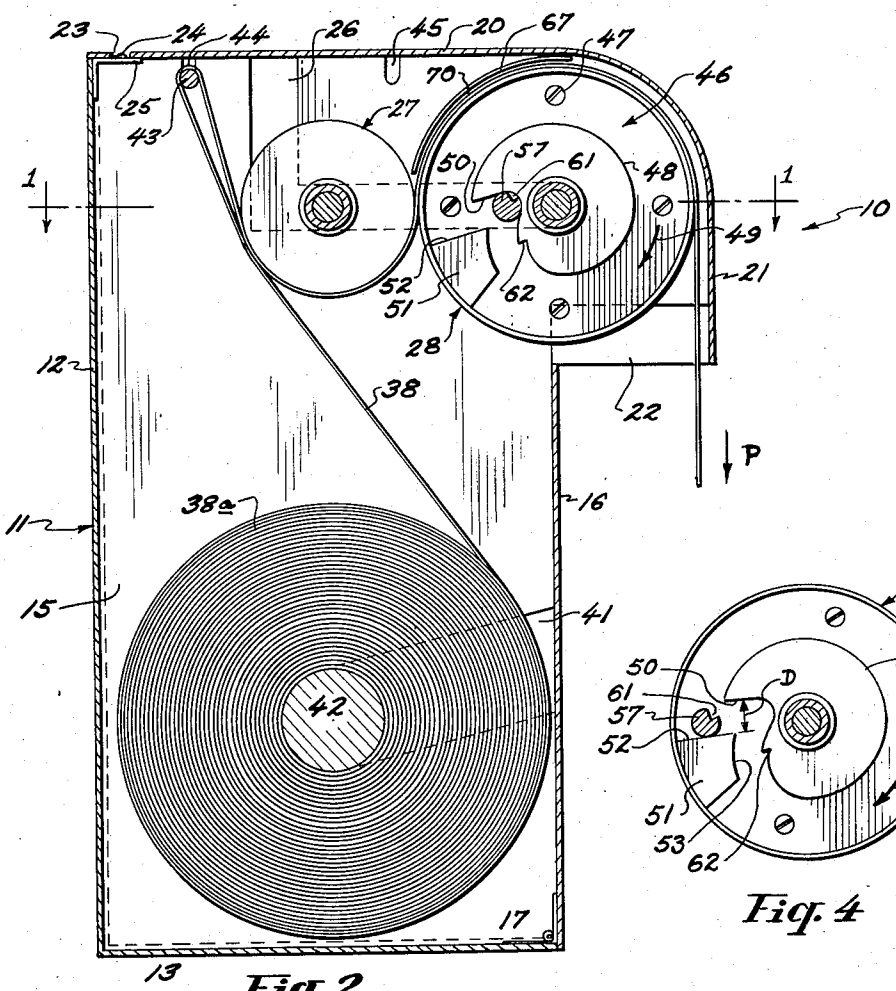


Fig. 2

Fig. 4

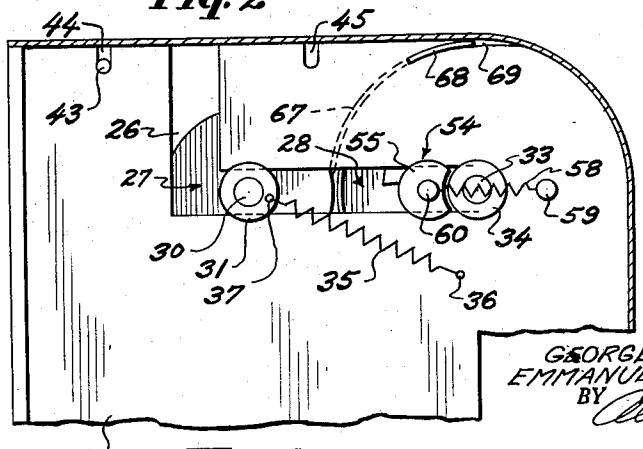


Fig. 3

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United States Patent Office 2,886,226 Patented May 12, 1959

2,886,226

PAPER TOWEL DISPENSER

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Application March 12, 1956, Serial No. 571,017

13 Claims. (Cl. 225—106)

The present invention relates to improvements in paper towel dispensers, and more particularly is directed to a device dispensing lengths of paper toweling from a continuous strip or web of the latter stored in the form of a roll or a folded stack.

An object of the invention is to provide a dispensing device of unique simplicity in construction and operation and capable of delivering individual lengths of paper toweling from a continuous strip or web of the latter.

Another object is to provide a dispensing device that is adapted, at the will of the user, to deliver either single predetermined lengths of paper toweling from a continuous strip of the latter or multiple lengths of the toweling.

A further object is to provide a paper towel dispenser that is trouble-free in operation and that requires a minimum of maintenance so that it is adapted for installation in public rest rooms and the like where hard usage, and even abuse, may be anticipated.

Still another object is to provide a device for dispensing single or separated lengths of paper toweling from a continuous perforated strip of the latter, and wherein operation of the device is effected by exerting a continuous and relatively small pulling force upon a projecting end of the strip, whereby the dispensing operation results from a normal or rational action of the user, so that there is no need for the latter to refer to instructions printed, or otherwise appearing, on the dispensing device to learn the manner in which operation is to be effected.

A still further object is to provide a paper towel dispenser operated by exerting a pull on a projecting end of a strip of paper toweling, and wherein the operating characteristics are such as to permit the exertion of the required pull with wet hands without causing tearing or premature separation of the paper toweling strip.

An aspect of the present invention resides in the provision of a dispenser for lengths of paper toweling defined between spaced apart, laterally extending lines of perforations in a continuous rolled or folded strip of paper toweling, which dispenser includes a dispensing roll and a pressure roll between which the continuous strip of paper toweling is passed, so that, as the free or projecting end of the paper toweling strip is pulled from the dispenser, the dispensing roll is rotated, and a cam and spring-urged follower mechanism associated with the dispensing roll to momentarily arrest rotation of the latter at the end of an operating cycle, that is, when a length of paper toweling has been advanced between the rolls, thereby to permit separation of the advanced length of toweling from the remainder of the continuous strip along the line of perforations defining the trailing end of the advanced length, and then to release the dispensing roll for further rotation in response to a renewed pull exerted upon the paper toweling strip.

Another aspect of the invention resides in the provision of a cam and spring-urged follower mechanism that automatically imparts an increment of reverse rotation to the associated dispensing roll after the rotation of the latter has been arrested so that, if a steady pull is exerted upon the projecting end of the paper toweling strip, the increment of reverse rotation of the dispensing roll will cooperate with the steadily exerted pull to ensure separation of the foremost length of paper toweling from the remainder of the strip at the weakened line of perforations defining the trailing end of that foremost length.

In accordance with the invention, a cam and spring-urged follower mechanism controlling the rotation of the associated dispensing roll includes a spiral cam rotatable with the dispensing roll and increasing in radius in the direction opposed to the normal rotation of the cam with the dispensing roll, the cam having a generally radial shoulder joining the radially inner and outer ends of its spiral cam curface, a follower pin engageable with the spiral cam surface and movable along a rectilinear path extending radially through the axis of rotation of the cam, the follower pin being spring-urged toward said axis of the cam so that, as the latter is rotated during a dispensing cycle, the pin is moved radially outward by the spiral cam surface, and an abutment rotatable with the spiral cam and having a stop surface that extends radially across the radially outer end of the spiral cam and is spaced circumferentially from the cam shoulder in the direction opposed to the normal cam rotation by a distance only slightly greater than the diameter of the pin so that, at the end of each dispensing cycle, the stop surface of the abutment contacts the pin, which has previously been moved into the path of the abutment by the spiral cam surface, thereby to arrest rotation of the cam and the associated dispensing roll, whereupon the pin is spring-urged radially inward between the cam shoulder and the stop surface to the radially inner end of the spiral cam surface where the pin clears the radially inner surface of the abutment to again free the cam for renewed rotation with the associated dispensing roll.

The above, and other, objects, features and advantages of the invention will be apparent in the following detailed description of illustrative embodiments thereof which is to be read in connection with the accompanying drawings forming a part hereof, and wherein:

Fig. 1 is a horizontal sectional view of a paper towel dispenser embodying the present invention and taken along the line **1—1** of Fig. 2;

Fig. 2 is a vertical sectional view taken along the line **2—2** of Fig. 1;

Fig. 3 is a fragmentary vertical sectional view taken along the line **3—3** of Fig. 1;

Fig. 4 is a detail view similar to a portion of Fig. 2, but showing the condition of the parts during another phase of the dispensing cycle;

Fig. 5 is a fragmentary plan view of a continuous strip of paper toweling of the kind to be dispensed by the paper towel dispeners embodying this invention;

Fig. 6 is a fragmentary sectional view showing the constructional details of a part included in the dispenser of Figs. 1, 2 and 3; and

Fig. 7 is a diagrammatic vertical sectional view similar to Fig. 2, but on a smaller scale and showing how the dispenser of Figs. 1, 2 and 3 can be employed when the continuous strip of Fig. 5 is stored as a folded stack, rather than as a roll, as in Fig. 2.

Referring to the drawings in detail, and initially to Figs. 1, 2 and 3 thereof, it will be seen that a paper towel dispenser embodying the present invention, as there illustrated and generally identified by the reference numeral **10**, includes a box-like cabinet or casing **11** that may be formed of sheet metal and has a back wall **12**, a bottom wall **13** joined, at its rear edge, to the lower edge of the back wall, and upstanding side frame plates **14** and **15** that are spaced laterally inward from the side edges of the back and bottom walls and that have outwardly

directed flanges along their back and bottom edges joined, as by welding, to the back and bottom walls, respectively. The casing **11** is completed by a hinged cover having a front wall **16** connected, at its lower edge, to the front edge of bottom wall **13** by a piano hinge **17** (Fig. 2) and having a height substantially less than that of the back wall **12** and being laterally coextensive with the latter, side walls **18** and **19** generally extending rearwardly from the opposite side edges of front wall **16** and, at their upper portions, projecting forwardly beyond the front wall above the upper edge of the latter, and a top wall **20** extending laterally between the top edges of side walls **18** and **19** and having a downturned forward portion **21** that depends to the level of the top edge of front wall **16** and is offset forwardly with respect to the latter (Fig. 2) to define a discharge slot **22** between the top edge of front wall **16** and the bottom edge of the downturned forward portion **21** of top wall **20**. As seen in Fig. 1, when the hinged cover is in its closed position, the side walls **18** and **19** thereof extend parallel to, and are spaced outwardly from, the adjacent side frame plates **14** and **15**, respectively, while the back and bottom edges of the side walls **18** and **19** overlap the side edges of the back and bottom walls **12** and **13** and the back edge of top wall **20** overlaps the top edge of back wall **12** to close the casing and provide a neat external appearance.

In order to releasably hold the cover in its closed position, the top wall **20** thereof may be provided with a central opening **23** (Fig. 2) adjacent its back edge to receive a ball catch **24** carried by a resilient strip **25** extending from the top of back wall **12**. Normally, the ball catch **24** is urged upwardly by strip **25** into the opening **23** and holds the cover in its closed position. However, when the cover is to be opened to permit loading of a supply of paper toweling into the casing **11**, as hereinafter described in detail, the ball catch **24** can be pressed downwardly from above and thereby released from opening **23** to free the cover for forward and downward swinging movement about the axis defined by hinge **17**.

The upper portion of each of the side frame plates **14** and **15** is formed with an L-shaped slot **26** (Fig. 2) having a vertical part opening upwardly at the top edge of the related side frame plate and a horizontal part extending forwardly from the bottom of the vertical part. The slots **26** of the side frame plates are adapted to slidably receive bearings for rotatably supporting parallel pressure and dispensing rolls **27** and **28**, respectively, between the side frame plates **18** and **19**. For example, as shown in Fig. 2, the pressure roll **27** may include a cylindrical body **29** of wood having metal pins or axles **30** projecting axially from the opposite ends thereof and rotatably received in bearings **31**. Each of the bearings **31** is in the form of a disc having a diameter greater than the width of the related slot and formed with a central, circumferential groove of sufficiently reduced diameter to there fit into the slot **26**.

The dispensing roll **28** may similarly include a cylindrical body **32** of wood preferably having a circumference equal to the length of each paper towel to be dispensed and provided with metal pins or axles **33** projecting axially from the opposite ends of the wooden body and rotatably received in bearings **34** having the same general construction as the bearings **31** and also slidably received in the slots **26**.

In installing the rolls **27** and **28** in the casing **11**, the cover of the latter is opened to expose the open ends of the slots **26** at the top edges of side frame plates **18** and **19**. The bearings **34** of the dispensing roll **28** are introduced into the open ends of slots **26** and moved downwardly and then forwardly along the latter to the forward closed ends of the slots **26**. Then the bearings **31** of the pressure roll **27** are introduced into the open ends of slots **26** and moved downwardly and forwardly

along the latter until the surface of the pressure roll body **29** contacts the surface of the dispensing roll body **32**.

The pressure roll **27** is urged forwardly against the dispensing roll **28** and the latter is, in turn, held in the position where its bearings **34** are against the forward closed ends of the slots **26**, by tension springs **35** which, at their front ends, are connected to anchors or pins **36** projecting from the side frame plates **14** and **15** and, at their back ends, are removably looped around pins **37** projecting from the pressure roll bearings **31** (Figs. 1 and 3).

As seen in Fig. 2, the front ends of the slots **26**, and, hence, also the axis of rotation of the dispensing roll **28**, are disposed so that a vertical plane tangent to the roll **28**, at the front of the latter, will extend through the discharge slot **22**, whereby the paper toweling to be dispensed can pass upwardly between the rolls **27** and **28** and then downwardly around the latter to exit from the casing **11** through the slot **22**.

The dispenser **10** is intended to dispense lengths of paper toweling from a continuous strip or web of the latter, as indicated generally by the reference numeral **38** on Fig. 5, and wherein the individual lengths **39** of paper toweling are defined between laterally extending lines of perforations **40** that are spaced apart by distances equal to the circumference of the dispensing roll **28**. The continuous strip or web **38** of paper toweling may be wound into a roll **38***a* (Fig. 2) for storage within the casing **11**, or, as indicated in Fig. 7, the continuous strip or web **38** can be folded in alternately opposed directions about the lines of perforations **40** and fold lines intermediate the latter to provide a folded stack **38***b* for storage within the casing or cabinet **11**.

In order to support the roll **38***a* of paper toweling, the side frame plates **14** and **15** are provided with slots **41** (Fig. 2) extending downwardly and rearwardly from the front edges thereof to receive and retain the opposite ends of a support rod or core **42** on which the roll **38***a* is rotatably mounted. It has been found that the direct feeding of the paper strip from the roll **38***a* between the rolls **27** and **28** sometimes results in over-running of the roll **38***a* during the removal of paper from the latter, and that it is desirable to exert a drag or braking action on the paper strip **38** between the roll **38***a* and the pinch between rolls **27** and **28**. Such a drag or braking action can be exerted by providing a rod **43** (Figs. 1, 2 and 3) that is alternatively supported, at its opposite ends, in upwardly opening recesses **44** or **45** in the upper edges of the side frame plates **14** and **15**. The recesses **44**, which receive the rod **43** when the strip **38** is stored in the form of a roll **38***a* within the cabinet or casing **11** (Fig. 2), are disposed at locations in back of the vertical plane passing through the axis of pressure roll **27**, while the recesses **45**, in which the rod **43** is supported when the strip **38** is stored in the form of a folded stack **38***b* (Fig. 7), are disposed at locations in front of the vertical plane passing through the axis of the pressure roll. In either case, the strip **38** is passed upwardly, from the roll **38***a* or stack **38***b*, in back of the pressure roll **27**, then over the rod **43** from the back to the front, and then down and under the pressure roll prior to passing upwardly between the latter and the dispensing roll **28**. With the strip **38** passed around the rod **43** in the manner described above, it is apparent that relatively short (Fig. 2) or relatively long (Fig. 7) portions of the paper strip **38** moving in opposite directions are brought into frictional contact with each other against the surface of the pressure roll, thereby to exert a smaller or greater frictional drag upon the strip **38** prior to the passage of the latter between the rolls **27** and **28**. This frictional drag has proved to be effective in exerting an ironing action on the strip to prevent wrinkling of the latter between the pressure and dispensing rolls. When the strip **38** is stored in the form of a folded stack within the cabinet or casing **11**, as

in Fig. 7, the inertia drag of the roll 38*a* of Fig. 2 is no longer present, and the rod 43 has to be arranged in the recesses 45 to provide greater areas of the strip moving in opposite directions and in frictional contact with each other, thereby to correspondingly increase the frictional drag resulting therefrom.

The dispenser 10 further includes mechanism for controlling the rotation of the dispensing roll 28 so that, at the end of each dispensing cycle, the rotation of roll 28 will be momentarily arrested, in a manner to cause separation of the strip 38 along a line of perforations 40 thereof, and then the roll will be automatically released for renewed rotation without requiring any manipulation by the user other than the natural and almost instinctive exertion of a downward pulling force upon the end of the paper strip projecting from the slot 38.

The control mechanism of the illustrated embodiment of the invention includes a cam member 46 (Figs. 1, 2 and 4) in the form of a disc of the same diameter as the body 32 of roll 28 and secured to one end of the body 32, for example, by screws 47. The cam member 46, on its outer surface, has a spiral cam surface 48 (Figs. 2 and 4) which increases in radius in the direction opposed to the normal rotation of the cam member with roll 28, which is indicated by the arrows 49, between a radially inner end and a radially outer end connected by a substantially radial shoulder 50. The cam member 46 further has an abutment 51 projecting from its outer surface and formed with a stop surface 52 at its leading end, considered in the direction of the normal rotation of the cam member. The stop surface 52 extends radially with respect to the axis of rotation of the cam member across the radially outer end of cam surface 48 and is spaced from the shoulder 50 in the direction opposed to the normal rotation by a distance D (Fig. 4) which will hereinafter be defined in detail. The inner edge 53 of the abutment 51 extends generally parallel to the adjacent portion of the spiral cam surface 48 and is spaced radially outward from the latter by a distance that is approximately equal to the distance D.

The mechanism for controlling rotation of the dispensing roll 28 further includes a follower 54 having a disc-like body 55 with a diameter greater than the width of the slot 26 in the side frame plate 14 adjacent the cam member 46. The disc-like body 55 has straight, laterally centralized grooves 56 cut in diametrically opposed portions of the periphery thereof (Fig. 6) and the distance between the bottom surfaces of the grooves 56 is slightly less than the width of the slot 26 so that the follower 54 can be slidably engaged in the slot 26 of side frame plate 14 with the edge portions of the latter along the slot 26 being received in the grooves 56 to prevent rotation of the follower. The follower 54 is inserted in the slot 26 of the side frame plate 14 between the bearings 31 and 34 at the adjacent ends of the rolls 27 and 28 and has a pin 57 projecting axially inward from the body 55 for engagement with the cam member 46. The distance D, referred to above in defining the spacing of the surfaces 52 and 53 of abutment 51 from the shoulder 50 and the cam surface 48, respectively, is slightly greater than the cross-sectional diameter of the pin 57 so that the latter can move radially, with respect to the axis of cam member 46, through the space between stop surface 52 and shoulder 50 and so that the inner surface 53 of the abutment 51 and the adjacent portion of the spiral cam surface 48 can pass the pin 57, at opposite sides of the latter, when the cam member 46 is initially rotated with the dispensing roll 28.

A tension spring 58 extends between an anchor pin 59 projecting from the side frame plate 14 and an anchor pin 60 projecting outwardly from the body 55 of follower 54 to yieldably urge the latter forwardly along the horizontal part of the slot 26 in side frame plate 14, that is, radially inward with respect to the axis of the cam member 46.

Further, as is clearly seen in Figs. 2 and 4, the pin 57 of follower 54 has a notch 61 cut therein for engagement with a corresponding tooth 62 formed in the spiral cam surface 48 to prevent reverse rotation of the dispensing roll 28 after the forward rotation of the latter has proceeded to a predetermined extent during a dispensing cycle. The relative positioning of the tooth 62 along the cam surface 48 will be more definitely established in the detailed description of operation of the dispenser 10 appearing below.

The pressure roll 27 and the dispensing roll 28 are constrained to rotate together, and to cease rotation together, by meshing spur gears 63 and 64 (Fig. 1) which are secured, as by screws 65, to the ends of the rolls 27 and 28, respectively, adjacent the side frame plate 15, and a spacing disc 66 is preferably provided on the rod 43 adjacent the side frame plate 15 to guide the adjacent edge of the paper strip 38 and prevent contact of the latter with the gears 63 and 64 during the passage of the strip 38 between the rolls 27 and 28 and then around the roll 28. The paper strip 38 is further guided by an arcuate metal shield 67 (Figs. 1, 2 and 3) that extends laterally between the side frame plates 14 and 15 and has tabs 68 (Fig. 3) projecting from its opposite ends to be removably received and supported in slots 69 formed in the side frame plates and opening generally forwardly at the top edges of the latter. The shield 67 extends parallel to the surface of roll 28 from the surface of roll 27 to approximately the vertical plane passing through the axis of roll 28 and is spaced radially outward from the surface of the roll 28 by a small distance to define a thin passage 70 therebetween through which the paper strip 38 may pass. The shield 67 ensures that the paper strip 38, after passing between the rolls 27 and 28, will be directed forwardly around the dispensing roll 28.

Finally, the cover of the casing or cabinet 11 has a generally rectangular opening 71 (indicated in broken lines on Fig. 1) in the downturned portion 21 of the top wall to permit access to the dispensing roll 28 for directly effecting rotation of the latter without requiring opening of the cover.

The above described dispenser 10 operates as follows:

After loading of the dispenser 10, the cam member 46 is disposed as shown in Fig. 2 and the free end of the perforated strip 38 of paper toweling projects downwardly from the discharge slot or opening 22 of the cabinet 11, these conditions being normal for the start of a dispensing cycle. Thus, it will be seen that the cam member 46 is rotationally disposed, at the start of the dispensing cycle, so that the follower pin 57 engages, or rides against, the radially inner end of the spiral cam surface 48. Further, with the paper strip 38 and the cam member 46 disposed for the start of a dispensing cycle, the line of perforations 40 of the paper strip 38 immediately following the free projecting end of the latter is disposed below the pinch or line of contact between the rolls 27 and 28. Thus, when a downward pull is initially exerted on the projecting end of the strip 38, as indicated by the arrow P on Fig. 2, there is no danger that this pull will cause separation of the strip 38 along a line of perforations within the cabinet 11.

The user operates the dispenser 10 merely by pulling downwardly, as indicated by the arrow P, on the projecting free end of the paper strip 38, which action is perfectly normal and almost instinctive, thereby eliminating any need for detailed instructions that must be studied by the user prior to operation of the dispenser. The downward pull P on the projecting end of strip 38 effects downward passage of the latter through discharge slot 22 and corresponding rotation of rolls 27 and 28. The cam member 46 rotates with roll 28 and the cam surface 48 of member 46 travels past the pin 57 to progressively urge the latter radially outward with respect to the axis

of the cam member, that is, rearwardly along the slot 26 in opposition to the action of spring 58. The tooth 62 on the spiral cam surface 48 is disposed to engage in the notch 61 of follower pin 57 when the line of perforations 40 of strip 38 immediately following the free end of the latter passes upwardly between the rolls 27 and 28 so that, in the event that the strip 38 thereafter prematurely separates along that line of perforations, the notch 61 and tooth 62 will cooperate to prevent the reverse rotation of roll 28, by manual actuation of the latter through opening 71, to an extent sufficient to move the free end of the strip below, or back through, the pinch between rolls 27 and 28.

Since the distance between the successive lines of perforations 40 on the strip 38 is exactly equal to the circumference of dispensing roll 28, the latter, and the cam member 46, will complete a single complete revolution when the line of perforations 40 immediately following the free end of strip 38 has passed downwardly out of the cabinet to the position initially occupied by that free end. Toward the end of a complete revolution of the cam member 46 the pin 57 will have been moved radially outward by the outer end of the spiral cam surface 48 into the path of the radial stop surface 52 of abutment 51. If the pull P is exerted steadily upon the free end of strip 38 throughout the dispensing cycle to cause steady movement of the strip and correspondingly steady rotation of roll 28 and cam member 46, the stop surface 52 of abutment 51 will be moved against follower pin 57, as in Fig. 4, before the spring 58 has had an opportunity to draw the pin 57 radially inward between surface 52 and shoulder 50 to the position of Fig. 2, where the pin 57 does not interfere with rotation of cam member 46. Contact of stop surface 52 with pin 57, as in Fig. 4, abruptly arrests rotation of cam member 46 and dispensing roll 28, and, by reason of the gears 63 and 64, also of pressure roll 27 so that the paper strip 38 pinched between the rolls 27 and 28 is positively halted. Since the pull P is being exerted upon the free end of the paper strip 38 when movement of the latter is halted in the manner described above, the strip 38 will separate along the weakened line of perforations 40 then disposed between the pinch of the rolls 27 and 28 and the pulled free end, so that a length of paper toweling will come loose in the user's hand.

It should be noted that the described arrangement of the follower pin 57 and the stop surface 52 of abutment 51 helps to promote the separation of the paper strip 38 at the end of a dispensing cycle. Thus, as the pin 57 is moved radially inward along the radial stop surface 52 by the spring 58, the pin 57 causes a small increment of rotation of the cam member 46 and roll 28. Such radially inward movement of the pin 57 immediately follows its contact with the surface 52 so that the increment of reverse rotation occurs almost instantaneously with the halt in rotation to increase the impact at the weakened line of perforations of the strip then disposed below the discharge slot 22.

If the user desires to remove, in one piece, a section of the paper strip 38 having a length which is a whole multiple of the distance between the successive lines of perforations 40, separation of the strip at any of the lines of perforations can be avoided merely by relaxing or decreasing the pull P on the free end of the strip just before a complete revolution of the dispensing roll 28 has been effected so that, at the completion of a dispensing cycle, the rotational speed of the roll 28 will be sufficiently reduced to permit arresting of the rotation, by contact of stop surface 52 with pin 57, with an impact or deceleration that is too small to cause separation at the line of perforations.

When the pin 57 has been moved radially inward by spring 58 through the passage between shoulder 50 and stop surface 52, and thereby returned to the position of Fig. 2 against the radially inner end of spiral cam surface 48, it will be apparent that the dispenser 10 has completed a dispensing cycle and is conditioned for renewed rotation of the roll 28 without requiring any complex manipulation of releasing cranks and the like, or any wait for the operation of time delay release mechanisms, as in existing paper towel dispensers. Thus, the dispenser 10 can be simply operated with one hand applying a downward pull directly to the projecting free end of the perforated paper strip 38.

In the event that, during a dispensing cycle, the strip 38 accidently separates along a line of perforations disposed within the cabinet 11 between the pinch of rolls 27 and 28 and the discharge slot 22, the user can reach through the opening 71 of the cover and manually rotate the dispensing roll 28 until the prematurely interrupted cycle has been completed and the free end of the paper strip again projects downwardly from the discharge slot. Then, normal operation can be resumed.

The operation of the dispenser 10 is the same whether the paper strip 38 is stored within the cabinet 11 in the form of a roll 38*a* (Fig. 2) or in the form of a folded stack (Fig. 7) and, in either case, a dispenser of relatively great simplicity, both in structure and operation, has been provided with unique operating characteristics, specifically, the possibility of dispensing either single lengths of paper toweling from a continuous perforated strip thereof, or multiple lengths of toweling from the same strip.

Although a particular embodiment of the invention has been described in detail herein and illustrated in the drawings, merely by way of example, it is to be understood that the invention is not limited to that particular embodiment, and that various changes and modifications may be effected therein without departing from the scope or spirit of the invention, except as defined in the appended claims.

What is claimed is:

1. The combination of paper towels defined between spaced lateral lines of perforations in a continuous strip of paper toweling; and a dispenser for said paper towels comprising a cabinet containing the continuous strip of paper toweling and having a discharge slot through which a free end of the strip can be pulled for withdrawing the strip from said cabinet; pressure and dispensing rolls rotatably mounted in said cabinet in rolling contact with each other with said continuous strip passing therebetween so that said rolls are rotated in response to withdrawal of the strip through said slot by a pull exerted on the free end of the strip, said dispensing roll having a circumference equal to the distance between successive lines of perforations in the strip of paper toweling so that the dispensing roll completes one full revolution during the withdrawal of each paper towel through said discharge slot; meshing gear means on said pressure and dispensing rolls to interrelate the rotational movements of said rolls and prevent longitudinal displacement of said strip relative to said rolls; and mechanism controlling the rotational movements of said dispensing roll including a cam member rotatable with said dispensing roll, a pin movable radially with respect to the axis of said cam member and spring means urging said pin radially toward said axis of the cam member, said cam member having an abutment projecting from its radially outer portion and a spiral cam surface increasing in radius, in the direction opposed to normal rotation of said cam member, between an inner end spaced radially inward from said abutment and an outer end which is radially crossed by said abutment, said spiral cam surface having a radial shoulder connecting said inner and outer ends thereof and spaced from said abutment in the direction of said normal rotation of the cam member so that, at the end of each full revolution of said dispensing roll starting from an initial position where said inner end of the cam surface engages said pin, said pin is moved radially outward into the path of said abutment to abruptly halt

rotation of said rolls and cause the pull exerted on the free end of the strip to effect separation of the latter along the weakened line of perforations closest to that free end, whereupon said spring means returns said pin radially inward between said shoulder and abutment to its initial position against said inner end of the cam surface where said pin again is radially clear of said abutment to permit renewed rotation of said rolls.

2. The combination according to claim 1; wherein said abutment has a stop surface engageable by said pin after the latter has been moved radially outward by said cam surface, said stop surface extending radially with respect to the axis of rotation of said cam member so that, when said pin is moved radially inward by said spring means along said stop surface, an increment of reverse rotation is imparted to said cam member and to said rolls thereby to increase the impact on the pulled strip and promote separation of the latter at the line of perforations closest to its free end.

3. The combination according to claim 1; wherein said rolls are arranged within said cabinet so that the distance along the path followed by the strip from the line of rolling contact between said rolls to said discharge slot is less than the distance along the strip between the successive lines of perforations, whereby, with said cam member in said initial position, the strip can be arranged with its free end projecting from said discharge slot and with said rolls contacting the strip between its free end and the line of perforations closest to the latter, and, upon the completion of a full revolution of said cam member, the line of perforations along which separation of the strip is to be effected will project from said slot and said rolls will contact the strip between the line of perforations along which separation is to be effected and the next line of perforations thereby to prevent the imposition of the separating pull upon the latter.

4. The combination according to claim 3; wherein said cam surface has a tooth projecting therefrom and said pin has a notch to receive said tooth and then prevent rotation of said cam member in the reverse direction beyond the rotational position where said tooth and notch engage, said tooth being disposed along said cam surface so that it is engageable by said notch after said cam member and dispensing roll have been rotated from said initial position to an extent caused by withdrawal of the strip moving the line of perforations closest to the free end of the latter past the line of contact of said rolls.

5. The combination according to claim 1; wherein said slot opens downwardly at the front of said cabinet and said dispensing roll is disposed relative to said slot so that a vertical plane tangent to said dispensing roll at the front of the latter passes through said slot, and wherein said pressure roll is disposed in back of said dispensing roll and yieldably urged forwardly against the latter to grip the strip passed upwardly between said rolls and then downwardly over the top of said dispensing roll prior to emergence through said downwardly opening slot; and further comprising a rod in said cabinet parallel to said pressure roll and at a lever above the latter with said paper toweling strip passing upwardly in back of said pressure roll and over said rod from back to front, then downwardly in back of the pressure roll and under the latter prior to passing upwardly between the pressure and dispensing rolls thereby to bring oppositely moving portions of the strip into frictional engagement with each other against the pressure roll for applying a frictional drag tending to iron the strip before passage of the latter between said rolls.

6. A dispenser of the described character comprising a cabinet including back, front, top, bottom and side walls and side frame plates extending parallel to, and spaced inwardly from, said side walls, said cabinet having a downwardly opening discharge slot at the front thereof, each of said side frame plates having an L-shaped guide slot therein opening upwardly at the top edge of the related frame plate and including a horizontal portion extending above said discharge slot, a dispensing roll rotatably mounted in bearings slidably received in said guide slots, a pressure roll in back of said dispensing roll and also rotatably mounted in bearings slidably received in said guide slots, spring means removably connected between said frame plates and said bearings of the pressure roll operative to urge the latter forwardly along said horizontal portions of the guide slots into rolling contact with said dispensing roll and to urge the bearings of the latter against the forward ends of said horizontal slot positions so that a vertical plane tangent to said dispensing roll at the front of the latter extends through said discharge slot, and mechanism bringing said dispensing roll to an abrupt halt at the end of each full revolution thereof and then freeing the dispensing roll for renewed rotation through another full revolution.

7. A dispenser of the described character comprising a cabinet including back, front, top, bottom and side walls and side frame plates extending parallel to, and spaced inwardly from, said side walls, said cabinet having a downwardly opening discharge slot at the front thereof, each of said side frame plates having an L-shaped guide slot therein opening upwardly at the top edge of the related frame plate and including a horizontal portion extending above said discharge slot, a dispensing roll rotatably mounted in bearings slidably received in said guide slots, a pressure roll in back of said dispensing roll and also rotatably mounted in bearings slidably received in said guide slots, spring means removably connected between said frame plates and said bearings of the pressure roll operative to urge the latter forwardly along said horizontal portions of the guide slots into rolling contact with said dispensing roll and to urge the bearings of the latter against the forward ends of said horizontal slot portions so that a vertical plane tangent to said dispensing roll at the front of the latter extends through said discharge slot, and mechanism controlling the rotational movements of said dispensing roll including a cam member fixed on one end of said dispensing roll to rotate with the latter, a follower pin slidable between said bearings of the dispensing and pressure rolls in said horizontal portion of the guide slot in the frame plate adjacent said one end of the dispensing roll to move radially with respect to the axis of rotation of said cam member, and spring means connected between said pin and the related frame plate and yieldably urging said pin radially toward said axis of the cam member, said cam member having an abutment projecting from its radially outer portion, a spiral cam surface increasing in radius between an inner end spaced radially inward from said abutment by a distance greater than the diameter of said pin and an outer end which is radially crossed by said abutment, and a radial shoulder connecting said inner and outer ends of the spiral cam surface and spaced from said abutment by a distance greater than the diameter of said pin so that, at the end of a full revolution of said dispensing roll starting from an initial position where said pin rides against said inner end of the spiral cam surface, said pin is moved radially outward by said cam surface into the path of said abutment to be engaged by the latter for abruptly halting the rotation of the dispensing roll, whereupon, said spring means connected to the follower pin moves the latter radially between said shoulder and abutment to again engage said inner end of the spiral cam surface and thereby free the dispensing roll for renewed rotation.

8. In a paper toweling dispenser having a dispensing roll that is rotated in response to withdrawal of paper toweling therefrom; mechanism for controlling the rotation of said dispensing roll comprising a cam member rotatable with the latter and having an abutment projecting therefrom with a stop surface at the side of the abutment facing in the direction of normal rotation of the dispensing roll and a continuous cam surface, a follower pin movable toward and away from said cam surface, and

spring means yieldably urging said follower pin toward said cam surface, said cam surface having an initial portion spaced from said abutment with sufficient clearance therebetween to freely receive said follower pin and a final portion off-set relative to said initial portion and crossed by said abutment, said cam surface further having a shoulder between said initial and final portions and spaced from said abutment to provide sufficient clearance therebetween to freely receive said follower pin so that, at the end of each full revolution of the dispensing roll starting from a position where said pin engages said initial portion of the cam surface, said pin is moved by said final portion of the cam surface into the path of said abutment to be engaged by said stop surface for abruptly halting the rotational movement of the dispensing roll, whereupon, said spring means moves said pin between said shoulder and stop surface of the abutment to again engage said initial portion of the cam surface and thereby free the dispensing roll for renewed rotation, said stop surface of the abutment being angularly displaced relative to the direction of movement of said pin when said stop surface engages said pin so that, during the movement of said pin by said spring means, an increment of reverse rotation is imparted to the dispensing roll.

9. In a paper toweling dispenser having a dispensing roll that is rotated by withdrawal of paper toweling from the dispenser; mechanism for controlling the rotation of said dispensing roll comprising a cam member rotatable with the latter, a follower pin movable radially with respect to the axis of rotation of the cam member, and spring means yieldably urging said pin radially toward said axis of the cam member, said cam member having an abutment projecting from its radially outer portion with a stop surface at the side of said abutment facing in the direction of normal rotation of the dispensing roll, a spiral cam surface increasing in radius, in the direction opposed to said normal rotation, between an inner end spaced radially inward from said abutment with a clearance therebetween sufficient to freely receive said pin and an outer end which is radially crossed by said stop surface and connected to said inner end by a radial shoulder spaced from said stop surface with a clearance therebetween sufficient to freely receive said pin so that, at the end of a full revolution of the dispensing roll starting from a position where said pin rides against said inner end of the cam surface, said pin is moved radially outward by said cam surface into the path of said stop surface to be engaged by the latter and thereby abruptly halt rotation of the dispensing roll, whereupon, said spring means moves said pin radially inward between said shoulder and stop surface to again engage said initial portion of the cam surface and thereby free the dispensing roll for renewed rotation, said stop surface extending radially with respect to the axis of said cam member so that, as said pin is moved radially inward to again engage said inner end of the cam surface, the sliding of the radially movable pin upon the radial stop surface causes an increment of reverse rotation to be imparted to the dispensing roll.

10. In a paper toweling dispenser having a dispensing roll that is rotated by withdrawal of paper toweling from the dispenser; mechanism for controlling the rotation of said dispensing roll comprising a cam member rotatable with the latter, a follower pin movable radially with respect to the axis of rotation of the cam member, and spring means yieldably urging said pin radially toward said axis of the cam member, said cam member having an abutment projecting from its radially outer portion with a stop surface at the side of said abutment facing in the direction of normal rotation of the dispensing roll, a spiral cam surface increasing in radius, in the direction opposed to said normal rotation, between an inner end spaced radially inward from said abutment with a clearance therebetween sufficient to freely receive said pin and an outer end which is radially crossed by said stop surface and connected to said inner end by a radial shoulder spaced from said stop surface with a clearance therebetween sufficient to freely receive said pin so that, at the end of a full revolution of the dispensing roll, starting from a position where said pin rides against said inner end of the cam surface, said pin is moved radially outward by said cam surface into the path of said stop surface to be engaged by the latter and thereby abruptly halt rotation of the dispensing roll, whereupon, said spring means moves said pin radially inward between said shoulder and stop surface to again engage said initial portion of the cam surface and thereby free the dispensing roll for renewed rotation, said cam surface having a tooth at a predetermined location thereon between said inner and outer ends and said pin having a notch therein to receive said tooth when the dispensing roll has been rotated to an extent bringing said predetermined location on the cam surface opposite said pin, said tooth and notch being operative, when engaged, to prevent reverse rotation of the dispensing roll beyond the position of engagement of said tooth with said notch after the forward rotation of the dispensing roll has progressed beyond said position of engagement.

11. Paper towel dispensing apparatus comprising a cabinet having a downwardly opening discharge slot at the front thereof, a continuous strip of paper toweling stored in said cabinet and having laterally extending, spaced apart lines of perforations therein defining individual paper towels between said lines, a dispensing roll rotatably mounted in said cabinet and located above said slot so that a vertical plane tangent to said roll at the front of the latter passes through said slot, a pressure roll rotatably mounted in said cabinet at the back of said dispensing roll and pressed forwardly into rolling contact with the latter, said strip passing upwardly between said rolls and then forwardly and downwardly over said dispensing roll so that a free end of the strip emerges from the cabinet through said discharge slot and can be pulled downwardly to withdraw the strip from the cabinet and cause corresponding rotation of said rolls, said dispensing roll having a circumference equal to the length of each of said individual paper towels, and mechanism controlling the rotation of said dispensing roll to abruptly halt the rotation of the latter and impart an increment of reverse rotation to said dispensing roll after a full revolution starting from a position where said free end of the strip projects from said slot and the next line of perforations is below the line of contact of said pressure roll with said dispensing roll so that the pull exerted on said free end will cause separation of the strip at said next line of perforations in response to said abrupt halt and reverse rotation, and then to automatically free said dispensing roll for renewed rotation.

12. Paper towel dispensing apparatus according to claim 11; wherein said continuous strip of paper toweling stored in the cabinet is in the form of a folded stack.

13. Paper towel dispensing apparatus according to claim 11; wherein said continuous strip of paper toweling stored in the cabinet is in the form of a roll, and further comprising means in said cabinet rotatably supporting said roll of paper toweling below said pressure and dispensing rolls.

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