

Jan. 19, 1943.

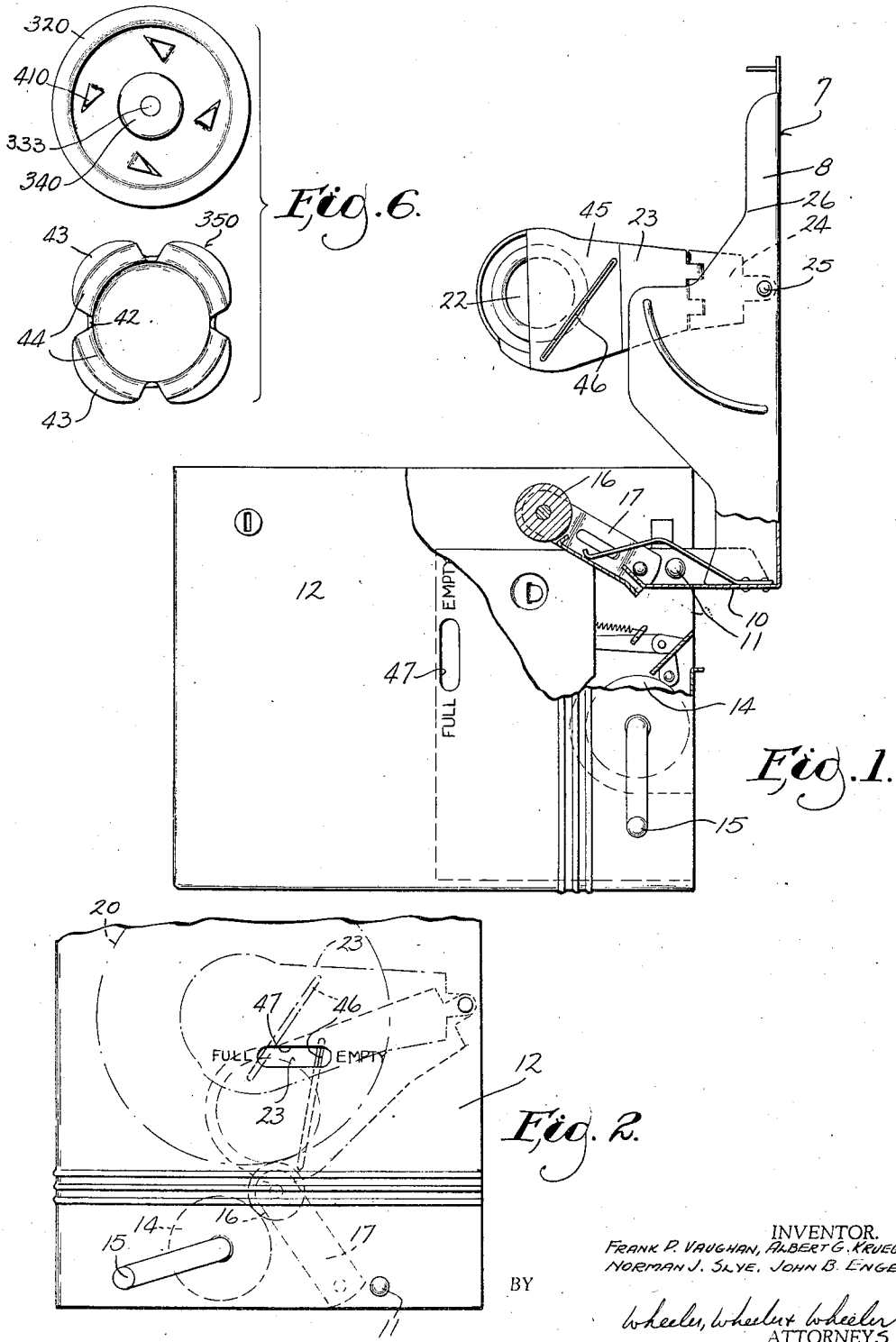
F. P. VAUGHAN ET AL

2,308,840

WEB DISPENSER

Filed Aug. 2, 1940

2 Sheets-Sheet 1



INVENTOR.
FRANK P. VAUGHAN, ALBERT G. KRUEGER
NORMAN J. SLYE, JOHN B. ENGEL

BY
Wheeler, Wheeler & Wheeler
ATTORNEYS.

Jan. 19, 1943.

F. P. VAUGHAN ET AL

2,308,840

WEB DISPENSER

Filed Aug. 2, 1940

2 Sheets-Sheet 2

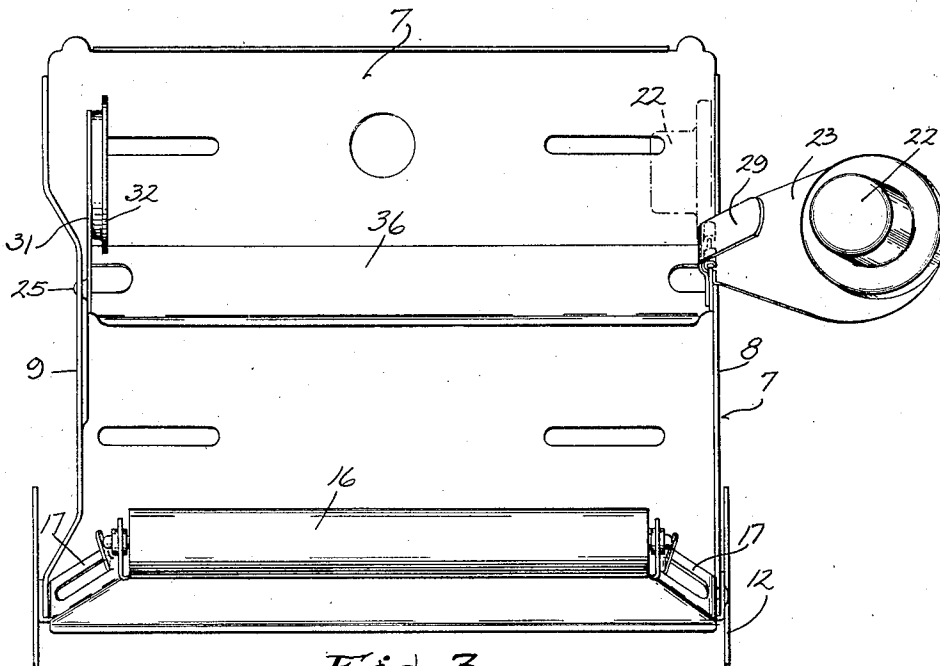


Fig. 3.

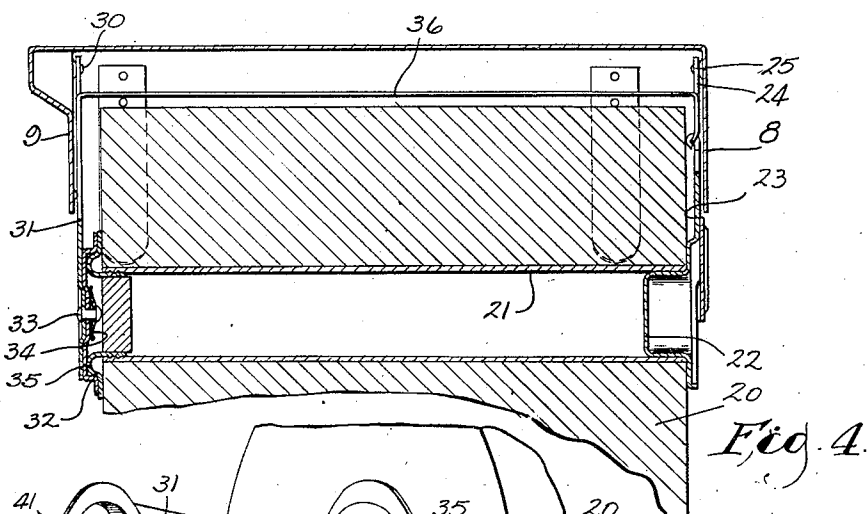


Fig. 4.

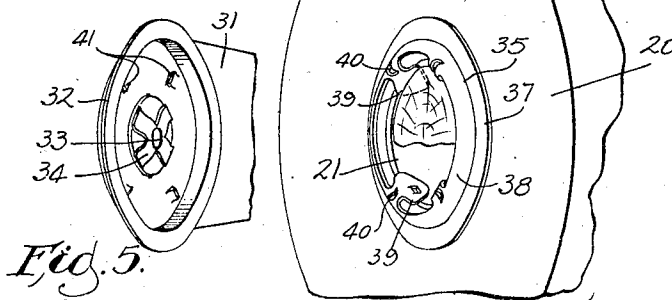


Fig. 5.

INVENTOR.
FRANK P. VAUGHAN, ALBERT G. KRUGER,
NORMAN J. SLYE, JOHN B. ENGEL

Wheeler, Wheeler & Wheeler
ATTORNEYS.

UNITED STATES PATENT OFFICE

2,308,840

WEB DISPENSER

Frank P. Vaughan, Albert G. Krueger, Norman J. Slye, and John B. Engel, Green Bay, Wis., assignors to Bay West Paper Company, Green Bay, Wis., a corporation of Wisconsin

Application August 2, 1940, Serial No. 349,866

6 Claims. (Cl. 242—55.2)

This invention relates to improvements in web dispensers, having particular application to dispensers for paper toweling.

An important object of the invention is the provision of a novel and improved dispenser back construction in which, regardless of specific details of the dispenser mechanism, the roll from which the web is dispensed is guided in a pivotally movable mount and lowered progressively as the dispensing progresses, there being an arrangement whereby the lowering of the mount in accordance with the consumption of the web automatically gives an indication of the extent to which the cabinet is full or empty.

A further very important object of the invention is to provide means for frictionally opposing the rotation of a roll from which a web is dispensed whereby to prevent overrun, while at the same time providing novel and improved means for locking the end cap of the roll core to the frictionally retarded mount to prevent accidental displacement under the tension resulting from the application of friction during the dispensing of the web.

A further object of the invention resides in the provision of a novel and improved mount for facilitating the replacement of used rolls with new rolls and using that portion of the cabinet in which the dispensing mechanism proper is housed as a means of holding the roll mount in operative engagement with the roll during the dispensing operation.

Other objects will be apparent to those skilled in the art upon examination of the following disclosure of the invention.

In the drawings:

Fig. 1 is a view partially in side elevation and partially in section showing a dispensing cabinet embodying this invention as it appears in its open position with the cabinet proper swung downwardly upon its pivotal connection with the back.

Fig. 2 is a fragmentary detail view in side elevation showing the cabinet closed in position for use.

Fig. 3 is a fragmentary detail view in front elevation of the cabinet back as it appears when the cabinet proper is swung downwardly to the position shown in Fig. 1.

Fig. 4 is a horizontal section through the back and axially through a roll core mounted therein.

Fig. 5 is a fragmentary detail view in perspective on an enlarged scale showing separated the opposing complementary faces of the end of a roll

and the mount with which the end cap is adapted for association.

Fig. 6 shows in opposite side elevations the complementary faces of the roll mount and end cap.

Like parts are identified by the same reference characters throughout the several views.

The back member 7 is screwed or otherwise fastened to the wall or suitable support to sustain the weight of the apparatus. It is provided with narrow sides 8 and 9 and a shallow bottom wall at 10 to which at 11 is pivoted the case 12. The case may be swung downwardly about its pivot to the position shown in Fig. 1 to permit the replacement of a roll of material to be dispensed. Alternatively the case 12 may be swung upwardly into connection with the back 7 in the position in which it appears in Fig. 2.

The mechanism which actually dispenses the web from the roll hereinafter to be described, is mounted in the case 12 and need not be referred to in detail. It includes a dispensing roll 14 which may be manually operated by crank 15. In the particular device disclosed an intermediate roll 16 is carried by bracket arm 17 from the back structure 7 in a position such as to be engaged by the dispensing roll 14 when the case 12 is swung to its closed position shown in Fig. 2. The intermediate roll at 16 may be omitted if desired. If used, it provides direct support for the rolled web 20 of material which is to be dispensed. If roll 16 is omitted the roll of web material 20 will rest directly upon the dispensing roll 14.

The roll 20 is provided with a tubular core 21 (Fig. 4). The end of the core 21 at the right hand side of Fig. 4 is open to receive a boss 22 formed at the free end of the hinged portion 23 of an arm 24 which is fulcrumed at 25 to the back structure 7. The short side 8 of the back structure is so reduced in extent at 26 that when the arm 24 is swung upwardly about pivot 25 into registry with portion 26, the end portion 23 of such arm will swing outwardly upon its hinged connection to the position shown in Fig. 3. The arm is preferably provided with a leaf spring 29 biasing the end portion 23 of the arm toward its outward position.

At the opposite side of the end structure in pivotal connection at 30 with the side 9 thereof, is another arm 31 upon the free end of which is a shallow cup 32 rotatable upon the rivet 33 and pressed by spring washer 34 into frictional engagement with the arm 31 in opposition to such rotation. The shallow cup-shaped member 32 constitutes a mount for the reception of the end

cap 35 which, in accordance with conventional practice, is pressed into at least one end of the tubular core 21 of roll 20. The mount 32 is axially aligned with boss 22. Yoke 36 connected with arms 24 and 31 constrains such arms to move in unison about their respective pivots 25 and 30 to maintain the aforesaid alignment of the parts which receive the opposite ends of the core.

The purpose of the frictional pressure engagement of the mount 32 with the arm 31 is to prevent the overrun of the roll 20 as the web is dispensed therefrom. In order that the roll as a whole may benefit by the frictional braking action above described, it is necessary to provide some positive driving connection between the roll core 21 and the cup-shaped mount 32. This is done in the following manner.

The end cap generically designated by reference character 35 comprises an annulus 37 abutting the outer face of roll 20 as best shown in Figs. 4 and 5. In the inner periphery of annulus 37 is a bead 38 of which the outer diameter corresponds to the inner diameter of the cup-shaped portion of the rotatable mount 32 so that these parts nest telescopically as shown in Fig. 4. At suitable intervals about the inner periphery of bead 38 are arms 39 projecting into the interior of the core 21 to maintain the end cap in connection with the core and the roll. As shown in Fig. 5, each of the arms 39 is provided with a beveled cut at 40 to provide openings into which the prongs 41 carried by the mount 32 are receivable. These prongs may be struck up integrally from the inner surface of the mount 32 and they are all inclined at an angle opposite to the direction in which motion is transmitted from the roll and the core and the end cap to the mount. Consequently, as the web is withdrawn from the roll to produce rotation of the core and end cap, each prong 41 engaged in one of the beveled notches at 40 provides a firm interlock between the end cap and the mount to require the mount to turn with the core, thus subjecting the core to the friction developed between the mount and the arm upon which it is pivoted.

Not only are the parts so interlocked as to require the mount to partake of the movement of the core, but, in addition, the inclination of the prongs 41 is such that so long as the parts are subject to the pressure developed in the dispensing of the web they will also resist separation in an axial direction. But for this arrangement there might be some tendency for the parts to cam upon each other in a direction tending to separate them axially under the tension produced by the withdrawal of the web and the retarding friction of the mount. Due to the inclination of the prongs and the bevel of the notches 40 in the end cap, the greater the stress which must be transmitted from the core to the mount the greater is the interlocking engagement against axial separation.

In the construction shown in Fig. 4 and Fig. 5 the portion 37 of the end cap is a complete annulus and the arms 39 provide a discontinuous surface within the core. In the construction shown in Fig. 6 the end cap 350 is so devised that the sleeve portion 42 receivable within the core is the only portion of the device which constitutes a complete annulus.

From sleeve 42 project arms 43, corresponding portions 44 of which provide a bead engageable within the shallow cup-shaped form of the mount here shown at 320. The ends of the several arms 43 abut the face of the roll and the space between

the arms provides openings into the beads 44 to receive the somewhat longer prongs 410 of the mount 320. Mount 320 is pivoted on a rivet 333 under pressure of a spring washer 340 in the same manner as mount 32 shown in Figs. 4 and 5. Motion is transmitted to mount 320 from end cap 350 in the same way, and frictional resistance developed by friction between the mount and its supporting arm is imparted to the core in the same manner.

It is characteristic of both devices that the prongs 410 and 41 are in each case carried by the mount rather than the end cap, this being important for several reasons. In the first place, the parts co-operate more effectively. In the second place, there is less danger of injury to the operator than would be the case if the prongs projected from the end cap. Finally, from the standpoint of economy it is much less expensive to form the prongs once for each cabinet than it would be to provide separate forming operations on every end cap to be used therein, the end caps usually being discarded with the cores when the roll of web thereon is exhausted.

Connected with the hinged portion 23 of the roll mounting arm 24 is an end plate 45 upon which there is formed a diagonal rib at 46. In the side of case 12 is a slot 47 through which the rib 46 is visible in the various positions of arm portion 23 as the web is consumed from roll 20. Thus the movement of the rib across the slot from front to rear indicates the progressive use of the web between the full roll and the empty core. To facilitate the use of this feature in an indicator one end of the slot 47 bears the designation "full" and the other end bears the designation "empty."

Assuming that one roll has been consumed, the case 12 is swung downwardly upon its pivotal connection at 11 with the back structure 7, thus exposing the empty core and the core guiding arms 31 and 24, 23. Notwithstanding the withdrawal of the case, the pivoted portion 23 of arm 24 cannot swing outwardly, being held by the side wall 8 as shown in Fig. 1.

However, if the core is grasped and the arms 31, 24 are swung upwardly to register the hinge 28 with the cut away portion 26 of the side 8 of the back structure 7, the leaf spring 29 will force open the hinged portion 23 of arm 24, thereby withdrawing the boss 22 from the core and freeing the core for removal.

A core carrying a full roll 20 and provided with an end cap 35 or 350 is now brought into position in registry with the frictional mount on arm 31, such arm being held up by the fact that the other hinged movable arm portion 23 is overlying the side wall 8 of the back structure.

The cut away portions of the end cap are manipulated into the cup-shaped mount 32 or 320 in such manner that the prongs of the mount enter the relieved portions of the end cap in interlocking engagement therewith. The swinging arm 23 is then manipulated to press boss 22 into the open end of the core in opposition to the bias of spring 29, and the mounted roll is then lowered to a position where it rests either on the idler 16 or the dispenser roller 14. In either case the swinging arm portion 23 will now be engaged within the side 8 of the back structure 7. Consequently the roll will be held in proper dispensing position. The swinging of the case 12 upwardly to the position shown in Fig. 2 encloses the parts and brings the dispensing scale represented by the length of slot 47 into operative relation to the

dispensing indicator as represented by the rib 46.

As successive portions of the web are dispensed by the rotation of the feed roller 14, the size of roll 20 will decrease and the weight of the roll will cause it to swing downwardly about the pivots provided at 25 and 30 for the respective arms. The weight of the roll is borne at all times by the dispensing feed roller 14 (or the interposed idler 16). Consequently, as the size of roll 20 decreases the arms will pivot downwardly, thus moving rib 46 across the dispensing scale represented by the length of slot 47 toward the indication showing that the case is empty.

We claim:

1. In a web dispenser, the combination of a housing having a relatively fixed back wall, a support for rolls of paper webbing comprising arms pivoted to the back wall and provided with core engaging members, a roll supporting core normally engaged by said members, one of said arms being intermediately hinged to permit withdrawal of its associated member from the core, a flange on the back wall normally preventing core releasing movement of the hinged section and having a reduced portion permitting such movement when the arms are in one position of swinging adjustment, complementary housing walls movable away from the back wall to open the cabinet and provided with a manually operable dispensing roller adapted to support the roll of paper webbing when said movable housing walls are closed upon the back wall.

2. In a web dispenser, the combination of a housing having a relatively fixed back wall, a support for rolls of paper webbing comprising arms pivoted to the back wall and provided with core engaging members, a roll supporting core normally engaged by said members, one of said arms being intermediately hinged to permit withdrawal of its associated member from the core, a flange on the back wall normally preventing core releasing movement of the hinged section and having a reduced portion permitting such movement when the arms are in one position of swinging adjustment, complementary housing walls movable away from the back wall to open the cabinet and provided with a manually operable dispensing roller adapted to support the roll of paper webbing when said movable housing walls are closed upon the back wall, one of said movable housing walls being slotted to expose one of the core supporting arms, and said arm having an indicating device visible through the slot for indicating the degree of paper web withdrawal.

3. In a dispenser cabinet for rolled paper webs having relatively fixed and movable walls, roll supporting arms pivotally connected with the relatively fixed wall, one of said arms being provided with a hinged section and a spring urging said section toward roll releasing position, and a flange on said relatively fixed wall normally holding said hinged section in roll supporting position, said flange having a narrow portion of less width than the distance between the arm pivot and its hinge, said narrow portion being in a position for registry of the arm therewith when the arm is in its extreme raised position, whereby the spring may automatically swing the hinged portion of the arm outwardly when in registry with said narrow portion of the flange.

4. In a dispenser for rolled strips of paper and the like, the combination of a cabinet provided with a supporting back wall having housing walls hinged thereto and adapted to swing to a position exposing the interior face of the back wall, roll carrying guide arms in pivotal connection with the back wall and adapted to engage between them a roll supporting core, a manually operable dispensing roller carried by the housing walls in a position to lift and support the roll when the housing is swung to normal closed position on the back wall, said roll and its guide arms being adapted to move downwardly by gravity as the diameter of the roll is decreased by withdrawals therefrom, one of the side walls of the housing being provided with a slot exposing one of the guide arms and said guide arm having a marker extending transversely across the area of the arm exposed through the slot in a position to move from one end of the slot to the other as the diameter of the roll decreases, whereby to indicate the extent to which the material of the roll has been dispensed, without exposing any portion of the roll to access through said slot.

5. In a dispenser cabinet for rolled strips of paper and the like, the combination of a supporting wall having its side margins provided with pivotally connected roll carrying guide arms having mountings adapted to receive between them a rotary roll supporting core, a complementary housing member pivoted to the bottom portion of said supporting wall and adapted to swing downwardly therefrom to a suspended position, a manually operable dispensing roller journaled in the housing portion and adapted to swing with it into supporting relation to a roll of paper webbing carried by the core, and means for preventing said roll carrying guide arms from spreading and releasing the core when the housing is in normal relation to the back wall, one of said guide arms being adjustable to a core releasing position when the housing is swung downwardly on its pivotal connection with the back wall.

6. In a dispenser cabinet for rolled strips of paper and the like, the combination of a supporting wall provided with pivotally connected roll carrying guide arms having mountings adapted to receive between them a rotary roll supporting core and to swing downwardly with the roll by gravity, a second set of arms pivotally connected with the supporting wall below the roll carrying arms, a pinch roller journaled between the arms of the second set, means for resiliently urging the pinch roller in a downward direction, a complementary housing member pivoted to the bottom portion of said supporting wall and adapted to swing downwardly therefrom to a suspended position exposing the roll carrying arms and pinch roller, said housing being adapted to be manually swung upwardly against the supporting wall to conceal the roll and pinch roller, and a manually operable dispensing roller journaled in the housing and adapted to swing with it into lifting relation to the pinch roller and the roll to be dispensed.

FRANK P. VAUGHAN.
ALBERT G. KRUEGER.
NORMAN J. SLYE.
JOHN B. ENGEL.