Jan. 20, 1959 P. A. WOOSTER 2,869,951

DISPENSING DEVICES FOR FAN-FOLD SHEET MATERIAL

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Fig. 1.

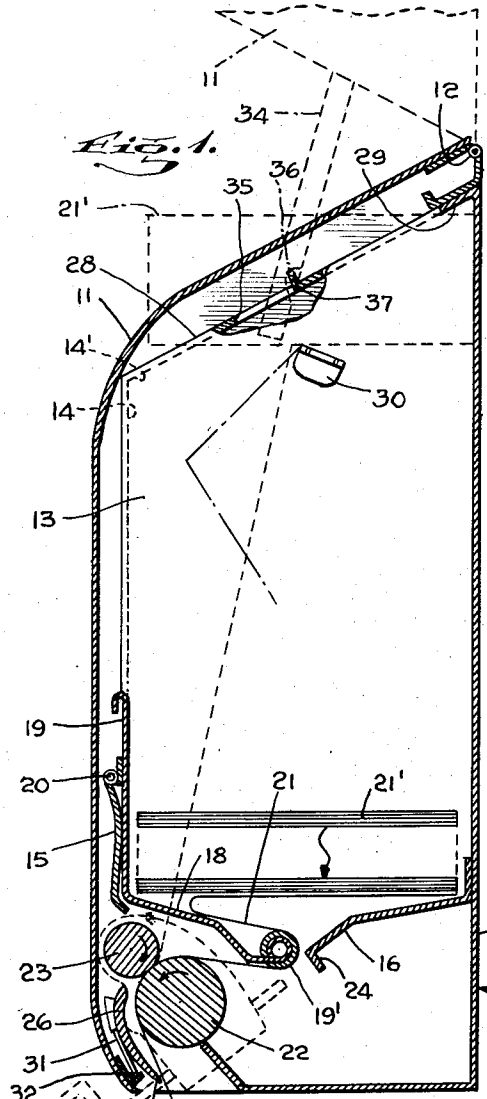


Fig. 2.

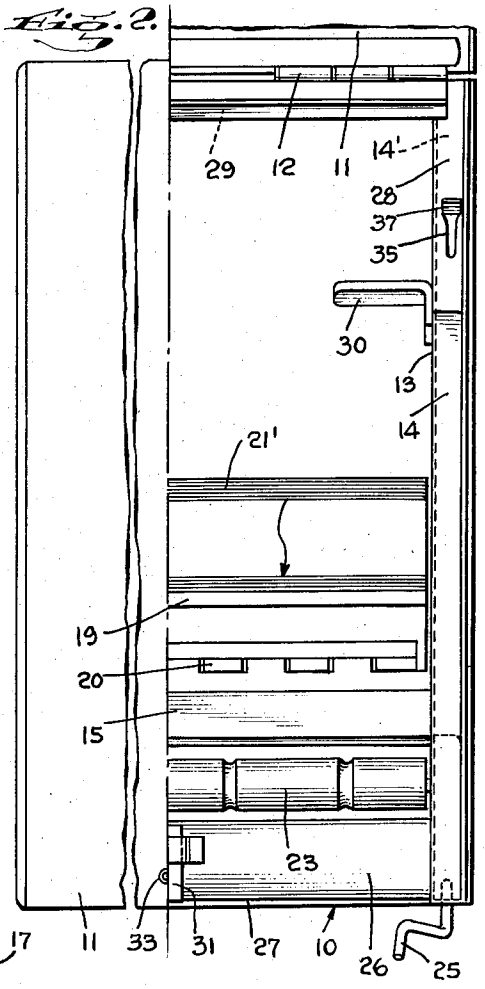


Fig. 3.

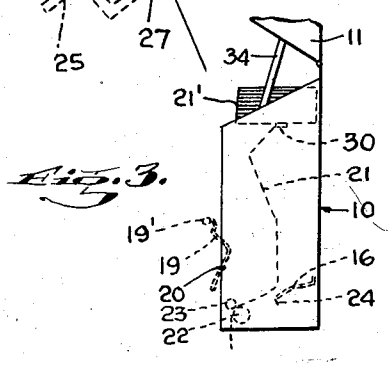
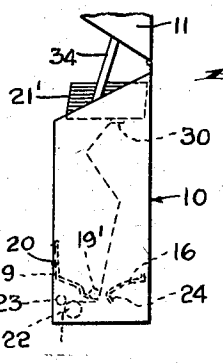


Fig. 4.



INVENTOR.
PHILIP A. WOOSTER

BY Howard E. Thompson Jr.
ATTORNEY

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DISPENSING DEVICES FOR FAN-FOLD SHEET MATERIAL

Philip A. Wooster, San Rafael, Calif., assignor to West Chemical Products, Inc., Long Island City, N. Y., a corporation of New York

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6 Claims. (Cl. 312—39)

This invention relates to dispensers for fan-fold sheet material of the type adapted to store and dispense fan-fold paper towels and the like. More particularly the invention relates to a dispensing device of the class described embodying mechanical driving means for feeding sheet material therefrom wherein the device includes a movable member which in one position of movement provides access to the drive means and which in the other position thereof forms support and guide means for the folded sheet material being dispensed.

In dispensing devices for fan-fold sheet material, and particularly in towel dispensers in rest rooms, public places and the like, it has been found desirable, in order to avoid excessive waste, to provide a mechanical feed mechanism limiting the rate at which towels are fed from the device. When such feed mechanism is employed however, it becomes a problem in many available devices to properly start an initial feed of toweling because of inaccessibility of the parts of the feed mechanism. This difficulty is particularly noticeable in the case of fan-fold type paper towels which in order to function properly must be supported along forwardly and rearwardly disposed folded edges with clearance for feeding through guide means substantially mid-way between such edges, whereas the mechanical feed mechanism is preferably forwardly of such guide means in order to provide delivery of towels at the front of the dispensing device.

An object of my invention is to provide an improved construction in dispensers for fan-fold towels wherein the towel guide means intermediate folded edges of towels is carried by a member pivotally secured to the device in a manner to provide free access to a mechanical feed mechanism for towels. A further object of the invention is to incorporate in the movable member carrying said guide means, bin forming means cooperating in the support and alignment of folded towels within the device.

These and other objects of the invention will be readily apparent from a consideration of the following specification taken together with the accompanying drawing in which a preferred adaptation of my invention has been shown with the various parts thereof identified by suitable characters in each of the views and in which:

Fig. 1 is a vertical sectional view as seen from one side of the device indicating fan-fold towels arranged therein and fitting around guide means and mechanical feed rollers;

Fig. 2 is a composite front view of the device as seen in Fig. 1 with the right-hand side indicating the device with the cover raised to expose the internal structure and the left-hand side showing the cover in the normal closed position;

Fig. 3 is a partial diagrammatic view similar to Fig. 1 indicating the relative position of parts when towels are being threaded through the mechanical feed rollers; and

Fig. 4 is a view similar to Fig. 3 showing the relative position of parts after my movable guide means has been

turned to its operative position and before towels have been replaced in the storage compartment of the device.

In Figs. 1 and 2 of the drawing there is shown a typical dispenser for fan-fold paper towels comprising a body part **10** adapted to be secured to a wall or other support and cover part **11** pivotally secured to the upper edge of the body part by hinge means **12**. The body part has forwardly extending end walls **13** including outwardly extending stiffening flanges **14**, said side walls being connected at the lower portion of the body part by transverse front wall member **15** and a downwardly inclined flange **16** secured to the rear or mounting wall **17** of the body part.

The downwardly extending flange **16** forms part of the towel support means within the body part. A corresponding towel support means at the forward portion of the body part is provided by the angularly disposed flange **18** of the movable bin forming member **19** which is pivoted by hinge means **20** to the upper edge of the front wall part **15**. The flange **18** carries at its lower edge and substantially centrally of the body part **10** a roller **19'** which in its lower position as shown in Fig. 1 of the drawing forms a guide for the smooth feed of towels **21** from a fan-fold stack **21'** of towels to feed rollers **22**, **23** of a mechanical towel feed mechanism. The free edge of the flange **16** has a downwardly and rearwardly extending edge portion **24** providing both stiffening of the flange **16** and a smooth contour over which towels **20** may pass when being drawn from the direction of the rear wall **17** of the body part.

There is diagrammatically indicated a hand crank **25** for driving the rollers **22** and **23** in feeding the desired length of towels from the device and forwardly of the roller **23** is a transverse member **26** having a lower cutting edge **27** for severing a desired length of paper towel by merely pulling the towel in a direction away from the dispenser (horizontally as shown in the drawing). It will be understood however, that the particular mechanical towel feed and the particular form of towel severing means form no part of the present invention and are included merely to facilitate understanding of the complete operation of a typical towel dispenser.

The upper edges **28** of the side walls **13** of the body part and flanges **14'** thereof are inclined downwardly toward the front of the cabinet and are joined adjacent the back wall **17** with a narrow stiffening means **29** which also carries the hinge **12**. The stiffening means **29** in conjunction with inwardly protruding lugs **30** on the end walls **13** provide support for a fan-fold stack **21'** of towels, (note the dotted line position in Fig. 1 of the drawing), during the loading operation which will be more fully hereinafter described.

The cover part **11** envelops top, side and front portions of the dispenser when in closed position and is retained in the closed position by snap engagement of a leaf spring **31** carried by the transverse member **26** of the body part with a flange **32** at the lower edge of the front wall cover **11**. This leaf spring can be disengaged with the flange **32** by merely inserting a pointed article through an aperture **33** provided in the cover **11** in alignment with the spring **31**. (Note Fig. 2.) It will be understood however, that any type of fastening or locking means including, if desired, a key actuated lock could be employed in the device.

It will be noted from a consideration of Fig. 1 of the drawing that the flange **16** and the downwardly inclined flange **18** of the movable part **19** together form substantially symmetrical portions of a towel supporting bin within the body part of the device. This is important in providing the smooth and proper feed of towels from a fan-fold stack **21'** which may vary in

height to an upward limit defined by the inwardly extending lugs **30**. When it is necessary to fill the device and initiate a new feed of towels through the feed rollers **22, 23**, the movable part **19** is pivoted to a position as shown in Fig. 3 of the drawing with the roller **19'** thereof in a raised position forwardly of the body part. When in this position a fan-fold stack **21'** of towels is supported on the lugs **30** with a length of towels **21** hanging within the body part and it will be evident that there is ample space provided between the forward edge **24** of the flange **16** and the hinge **20** as well as ample space between the roller **19'** and the fan-fold stack **21'** for a person to insert one or both hands to facilitate proper feeding of towels between the rollers **22** and **23**. When this feed has been established the movable member **19** is swung to its bin forming position as shown in Fig. 4 of the drawing and while the fan-fold stack **21'** of towels is still supported by the lugs **30** operation can be tested to be sure that towels are being fed properly by the rollers **22, 23**. Thereafter the stack **21'** of towels is removed from the lugs **30**, the slack is taken up either by refolding towels on the bottom of the stack or by feeding towels through the rollers **22, 23** and the stack **21'** is placed into operative position as shown in Fig. 1 of the drawing.

When an operator is filling the device the cover **11** is supported in the elevated position by means of side braces **34** pivoted to the cover **11**, which are movable in slots **35** in the flanges **14'**; the braces having notches **36** to engage upwardly extending stop members **37** at the rear or upper ends of the slots **35**.

Additional towels may be added to the stack **21'** and adhesively or otherwise secured to provide continuous feed of towels. Thus if the device is properly attended and complete exhaustion of towels is prevented, the frequency of having to re-feed towels through the rollers **22, 23**, can be kept at a minimum. It will be evident however, that the combination of the movable bin forming part **19** and its roller **19'**, together with the supporting means as provided by the lugs **30** is distinctly advantageous both in providing free access to the rollers **22, 23** from within the apparatus and in leaving the operator's hands free to properly adjust and feed towels therethrough.

Various changes and modifications in the apparatus as herein disclosed will occur to those skilled in the art and to the extent that such changes and modifications are embraced by the appended claims it is to be understood that they constitute part of my invention.

I claim:

1. In a dispensing apparatus for fan-fold sheet material having bin forming means for supporting a fan-fold stack of sheet material along forwardly and rearwardly disposed folded edges thereof, guide means between and substantially equidistant from said folded edges facilitating smooth withdrawal of sheet material from said stack, mechanically driven feed rollers below and forwardly of said guide means for feeding sheet material from the lower front portion of said apparatus, and an upwardly swinging cover normally closing the front of said apparatus, the improvement that comprises a fixed flange within said apparatus forming the rear support and guide means thereof, and a pivotally mounted part forming the front support and guide means within said apparatus, said pivotally mounted part being movable with respect to said fixed flange and to a position outwardly of the apparatus when said cover is raised providing free access for threading sheet material between said feed rollers.

2. In a dispensing apparatus for fan-fold sheet material having bin forming means for supporting a fan-fold stack of sheet material along forwardly and rearwardly disposed folded edges thereof, guide means between and substantially equidistant from said folded edges facilitating smooth withdrawal of sheet material

from said stack, mechanically driven feed rollers below and forwardly of said guide means for feeding sheet material from the lower front portion of said apparatus, and an upwardly swinging cover normally closing the front of said apparatus, the improvement that comprises a fixed flange within said apparatus forming the rear support and guide means thereof, and a pivotally mounted part forming the front support and guide means within said apparatus, said pivotally mounted part being movable with respect to said fixed flange and to a position outwardly of the apparatus when said cover is raised providing free access for threading sheet material between said feed rollers, said pivotally mounted part having at the inner movable edge thereof a guide roller which is operatively oriented in closely spaced relation to the guide means on said fixed flange.

3. In a dispensing apparatus for fan-fold sheet material having bin forming means for supporting a fan-fold stack of sheet material along forwardly and rearwardly disposed folded edges thereof, guide means between and substantially equidistant from said folded edges facilitating smooth withdrawal of sheet material from said stack, mechanically driven feed rollers below and forwardly of said guide means for feeding sheet material from the lower front portion of said apparatus, and an upwardly swinging cover normally closing the front of said apparatus, the improvement that comprises a fixed flange within said apparatus forming the rear support and guide means thereof, and a pivotally mounted part forming the front support and guide means within said apparatus, said pivotally mounted part being movable to a position outwardly of the apparatus when said cover is raised providing free access for threading sheet material between said feed rollers, and said pivotally mounted part comprising in its operative position a vertical wall member, an inwardly extending flange integral with and disposed at an obtuse angle to the lower edge of said wall member, and hinge means transversely of said wall member intermediate upper and lower edges thereof providing the pivotal mounting for said part.

4. In a dispensing apparatus for fan-fold sheet material having bin forming means for supporting a fan-fold stack of sheet material along forwardly and rearwardly disposed folded edges thereof, guide means between and substantially equidistant from said folded edges facilitating smooth withdrawal of sheet material from said stack, mechanically driven feed rollers below and forwardly of said guide means for feeding sheet material from the lower front portion of said apparatus, and an upwardly swinging cover normally closing the front of said apparatus, the improvement that comprises a fixed flange within said apparatus forming the rear support and guide means thereof, and a pivotally mounted part forming the front support and guide means within said apparatus, said pivotally mounted part being movable to a position outwardly of the apparatus when said cover is raised providing free access for threading sheet material between said feed rollers, and said pivotally mounted part comprising in its operative position a vertical wall member, an inwardly extending flange integral with and disposed at an obtuse angle to the lower edge of said wall member, hinge means transversely of said wall member intermediate upper and lower edges thereof providing the pivotal mounting for said part, and the free edge of said flange carrying a guide roller which is operatively oriented in closely spaced relation to the guide means on said fixed flange.

5. In a dispensing apparatus for fan-fold sheet material having bin forming means for supporting a fan-fold stack of sheet material along forwardly and rearwardly disposed folded edges thereof, guide means between and substantially equidistant from said folded edges facilitating smooth withdrawal of sheet material from said

stack, and mechanically driven feed rollers below and forwardly of said guide means for feeding sheet material from the apparatus, the improvement that comprises a fixed flange within said apparatus forming the rear support and guide means thereof, and a pivotally mounted part forming the front support and guide means within said apparatus, said pivotally mounted part being movable to a position outwardly of the apparatus providing free access for threading sheet material between said feed rollers, and means in the upper portion of said apparatus for the temporary support of a fan-fold stack of sheet material while sheet material is being threaded between said feed rollers.

6. In a dispensing apparatus for fan-fold sheet material having bin forming means for supporting a fan-fold stack of sheet material along forwardly and rearwardly disposed folded edges thereof, guide means between and substantially equidistant from said folded edges facilitating smooth withdrawal of sheet material from said stack, and mechanically driven feed rollers below and forwardly of said guide means for feeding sheet material from the apparatus, the improvement that comprises a fixed flange

within said apparatus forming the rear support and guide means thereof, and a pivotally mounted part forming the front support and guide means within said apparatus, said pivotally mounted part being movable to a position outwardly of the apparatus providing free access for threading sheet material between said feed rollers, and means in the upper portion of said apparatus for the temporary support of a fan-fold stack of sheet material while sheet material is being threaded between said feed rollers, said last named means comprising inwardly extending lugs on upper side walls of the apparatus in cooperation with a forwardly protruding flange along the top of the rear wall of said apparatus.

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