Dec. 14, 1948. J. LIBEN 2,456,068

DISPENSER FOR STACKED ARTICLES

Filed Oct. 3, 1946

Fig. 2.

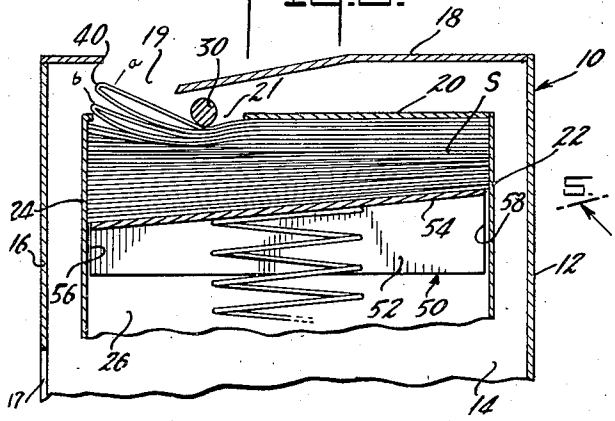


Fig. 4.

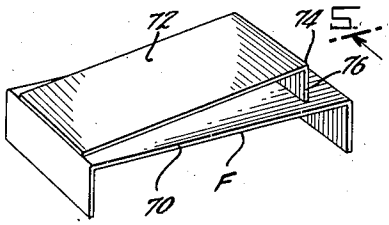


Fig. 5.

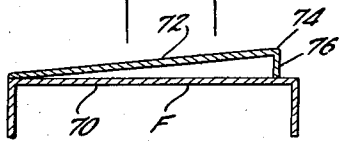


Fig. 3.

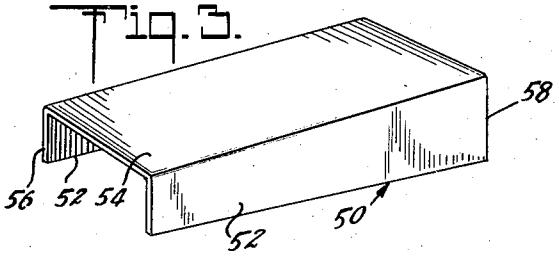


Fig. 6.

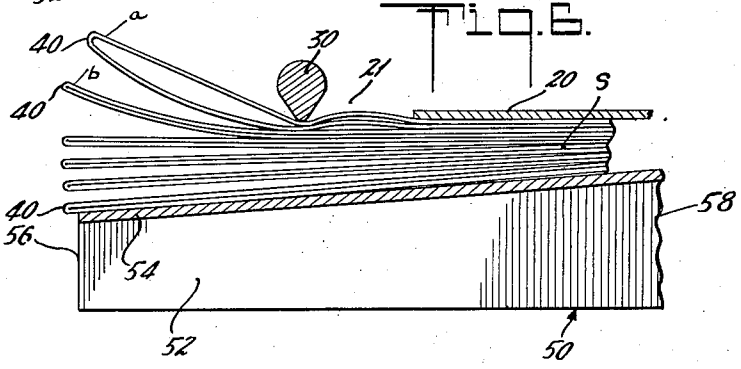
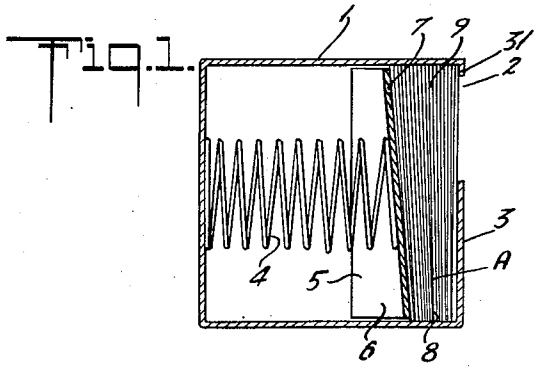


Fig. 1.



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DISPENSER FOR STACKED ARTICLES

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2 Claims. (Cl. 312—62)

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My invention relates generally to dispensing devices, and in particular it relates to devices for dispensing stacked articles. My invention is well adapted to devices for dispensing such articles as paper napkins and the like, although its use is not so limited, having many other and wider applications. For purposes of illustration only, the invention will be described in relation to dispensers for stacks of paper napkins.

The present invention relates broadly to that type of stack dispensing device which contains a follower plate upon or against which the stacked articles rest, the follower plate urging the stack towards the dispensing opening. Specifically, the invention relates to the follower plate component and its positioning with respect to the stacked articles and with respect to the dispensing opening. In one specific aspect thereof, my invention relates to the follower bed component of the type of dispensing device described and claimed in Shapiro Patent No. 1,965,060, dated July 3, 1934.

In conventional devices for dispensing stacked articles, either manually or mechanically operated, the follower plate urging the stack towards the opening is parallel thereto, and exerts pressure equally distributed over the stack area. This pressure renders it difficult ofttimes to manually separate the upper- or top-most article in the stack, and in mechanically operated machines very frequently causes jamming and bunching, if the lever operating on the exposed front edge of the uppermost article is improperly handled or adjusted.

The main object of the present invention, therefore, is the provision of a follower plate for use in stack dispensing devices which is angulated with respect to the front, or that portion of the device against which the stack is urged; which exerts a greater pressure against one end of the stack than the other; which compresses that portion of the stack remote from the dispensing opening, and which permits and promotes easy separation of the articles at or adjacent the dispensing opening remote from the point of greatest stack compression.

An associated object of my invention is the provision of an improvement in dispensing machines of the particular type referred to in the Shapiro patent, wherein—however actuated—the device will not jam or bunch the napkins, and a succession of incomplete actuating lever manipulations will operate merely to step-by-step advance the uppermost napkin in the stack until it is in position for handling and withdrawal from

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the magazine, all without disturbing the other napkins in the stack.

Another object of my invention is the provision of a follower bed, in a stack dispensing device, which angles upwardly gradually from the end thereof to the other.

Still another object of my invention is the provision of a follower bed, in a stack dispensing device of the character described, which is higher at the rear end thereof than at the front, or article delivery end.

Other and further objects of my invention will in part be obvious, and still others will be pointed out specifically hereinbelow in connection with the following description of several illustrative embodiments thereof.

In the drawings annexed hereto, forming a part hereof,

Fig. 1 is a lengthwise vertical section through a simple type of stack dispensing device containing a follower plate constructed according to and embodying my invention;

Fig. 2 is a vertical section through a dispenser of the type shown in Shapiro Patent 1,965,060, and a stack of articles to be dispensed therewithin, the stack resting on another form of follower bed also constructed according to and embodying my invention;

Fig. 3 is a perspective view of the follower bed shown in section in Fig. 2;

Fig. 4 is a perspective view of another form of follower bed also constructed according to and embodying my invention;

Fig. 5 is a section on the line 5—5 of Fig. 4; and

Fig. 6 is an enlarged detail view illustrating the action of the dispensing mechanism of the Shapiro type upon a folded napkin atop a stack resting on the follower bed of my invention.

Referring to the form of dispensing device illustrated in Fig. 1, which comprises a rectangular, elongated casing 1, of wood, metal or the like, having a transverse opening 2 at the upper portion of the front 3 thereof, a coiled expansion spring 4 may be provided to urge follower 5 towards front 3. Follower 5 may be formed of sheet metal, wood or the like, of unitary or built-up structure, comprising side walls 6 and plate 7. Side walls 6, 6 are shorter at the top than at the bottom, that is, the walls taper so that plate 7 is angled with respect to front wall 3 against which it is urged or biased by spring 4. The stack A or articles to be dispensed will thus be compressed at the bottom 8 to a much greater extent than at the top 9, so that the stack elements at

the upper portion 9 thereof adjacent opening 3 will be partially separated from one another, and less tightly packed together, permitting their withdrawal very easily. The upper edge of front wall 3 may have a downwardly depending lip 3' defining the upper margin of opening 2, and whether the stacked articles are of such length as to extend above or below the edge of lip 3', the device will operate equally well, because of my follower.

Referring now to specific modification of my invention illustrated in Figs. 2, 3 and 5, the casing is indicated by reference numeral 10, and may comprise a front wall 12, side walls 14, 14, and a rear wall 16, which may be apertured as at 17 to permit access to the interior of the device. Top 18 is apertured as at 19 to permit manual access to or removal of the napkins from the casing. Fixed within casing 10 is a magazine having a horizontally extended magazine cover plate 20, a front wall 22, a rear wall 24, and side walls 26, 26. It will be seen that the magazine cover plate 20 is open adjacent rear wall 22, as at 21, to permit the operating rod 30 to bear down against the uppermost article in the stack disposed within the magazine and arrange same for manual withdrawal from the stack, all as described and claimed in the aforesaid Shapiro Patent No. 1,965,060.

While devices of the type described and claimed in said Shapiro patent may operate on articles of various kinds, they have been found to operate very successfully on paper napkins having a transverse line of fold at an end 40 thereof. Paper napkins so folded are superposed to form a pile or stack and loaded in the magazine through rear opening 17 so that the line of fold at end 40 is at the left (see Figs. 1 and 5) directed towards the opening 19 in the top of the machine and adjacent to and in line with opening 21, the pile or stack resting on the magazine follower or bed indicated generally by reference character 50.

Provision is made (not shown herein) in dispensing articles of the character described to urge the magazine follower upwardly to bear the stack or pile of napkins up against magazine plate 20 and opening 21, these being roughly equivalent to spring 4 as in Fig. 1. These means are fully described and claimed in the Shapiro Patent 1,965,060 and so will not be detailed herein, it being understood that the present invention relates specifically only to the follower bed component of the device.

Follower 50 of my invention may be made of metal, wood or the like rigid, relatively stiff material, and in the modifications of Figures 2 and 3, is of inverted U-section comprising a pair of side wall members 52, 52 and a bed portion 54. Side walls 52, 52 are shorter at end 56 than at end 58, so that bed 54 slants upwardly from end 56 to end 58.

When a stack of paper napkins, folded as above described, are disposed on follower bed 54, and the follower permitted to rise upwardly, by any conventional means, bearing the stack along with it until it brings same against and into contact with plate 20 and opening 21, it will be obvious that the stack S is subject to greater compression at one end thereof than at the other. The compression effect and the braking effect is proportional to the number of paper napkins in stack S, and the angle of the follower bed 54 to the underside of the horizontally extended plate 20, and the compression decreases gradually from the portion

of the stack remote from opening 3 towards the part thereof opposite said opening. I have found that when bed 54 rises about 5° degrees above the horizontal from end 56, very good results are obtained in securing almost automatic separation of the top one or two sheets from the rest of the stack. With this, so to speak, preseparation, operating rod 30 is much less likely to disturb any of the sheets below the topmost one. The separation of the sheets induced by the varying compression and the angularity of the stacked sheets also prevents sticking between adjacent sheets, and also overcomes any tendency to stick.

My invention may be incorporated in standard, conventional machines which have the ordinary flat follower F, as in Figs. 4 and 5, with the flat, horizontally extending bed 70, parallel to the flat magazine cover plate. In this modification of my invention, a plate 72 is provided, raised upwardly at one end 74 thereof by a downwardly extended leg 76, the included inside angle between plate 72, corner 74 and leg 76 being substantially about 85°. Plate 72 may be disposed atop the conventionally flat and horizontally extending follower F, held therewithin by the magazine walls, and the folded napkin stack rested thereon, giving it the desired inclination and increasing the compression at one end thereof, over the other end thereof.

Referring now to Fig. 6, the operation of the device with the follower plate of my invention included as a part of a Shapiro-type of device is therein shown. The greater compression of stack S at the rear of the stack, remote from the magazine opening 21 and the folded napkin edges 40, 40 is clearly seen. As bed plate 54 moved upwardly, the napkins will be pressed against edge 29 of opening 21, and due to the even greater compression at the rear, and the absence of any appreciable compression at the front of the stack, immediately adjacent edges 40, 40 the napkin *a* which is uppermost will separate and rise of itself from the second napkin *b* beneath it in the stack. When operating bar 30 bears against the upper surface 99 of the spaced napkin *a*, it will be pulled taut, bearing edge 40 upwardly and inwardly so as to permit it to be grasped manually or otherwise withdrawn from the magazine. So much above the level of opening 21 is napkin end 40 raised as a result of the use of my new and improved follower plate, that even if the full stroke of operating bar 30 is not achieved, there will be no jamming or bending of the uppermost napkin, as sometimes occurs when a follower plate is used which is in parallelism with the magazine plate or front portion against which the napkins are urged by the follower.

In the form of my follower plate illustrated in Fig. 1, plate 7 is angled towards the bottom or closed portion of the front 3, and away from the portion adjacent the opening 2. The degree of angularity may be of the order of five degrees or more, with good results eventuating. This degree of angularity is not particularly significant, it being necessary to angle the follower plate only to such extent that the pressure against one end of the stack is greater to an appreciable extent than against the other end.

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

1. In a dispensing device having a follower for feeding a stack of folded flexible sheets, each having a transverse line of fold forming its forward end, towards a delivery plate having an

opening in its forward end in line with the fold lines of the stacked sheets, the dispensing device having a transverse operating rod adjacent the plate opening, the follower being closer to the plate at the end remote from the opening than at the open end thereof, thereby partially separating the uppermost sheet from the stack thereunder, the operating rod being movable against the stack to move the folded end of the uppermost sheet clear of the stack to permit manual engagement thereof for removal from the dispenser.

2. In a dispensing device as in claim 1, in which the follower angles a minimum of five degrees away from the plane of the delivery plate and is closer to the delivery plate at a point remote from the dispensing opening therewithin.

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