Dec. 13, 1966 L. W. HEIN 3,291,339

PAPER SHEET DISPENSER

Filed June 18, 1965 2 Sheets-Sheet 1

Fig. 1.

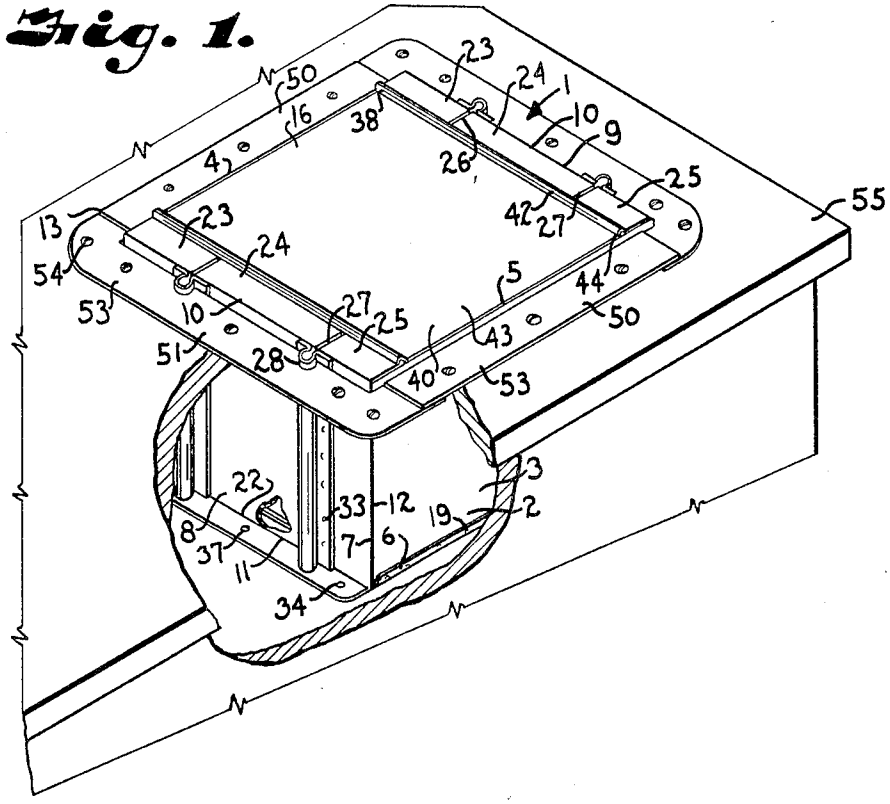
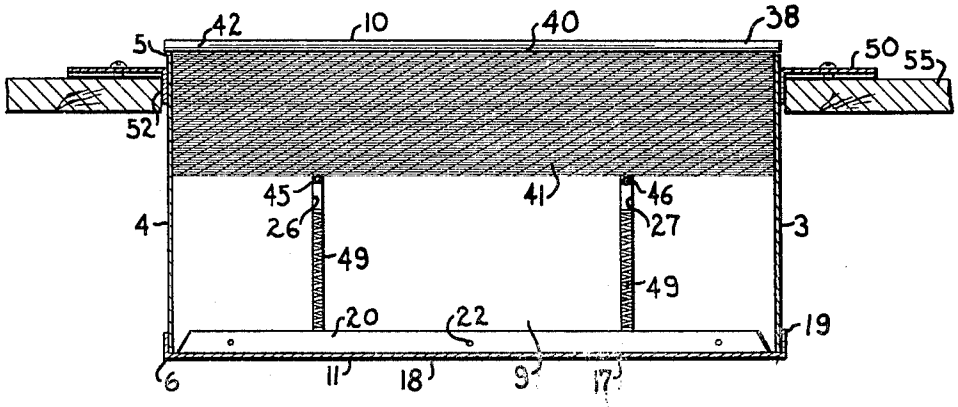


Fig. 2.



INVENTOR.
LESTER W. HEIN
BY
Fishburn & Gold
ATTORNEYS

Dec. 13, 1966 L. W. HEIN 3,291,339

PAPER SHEET DISPENSER

Filed June 18, 1965 2 Sheets-Sheet 2

Fig. 3.

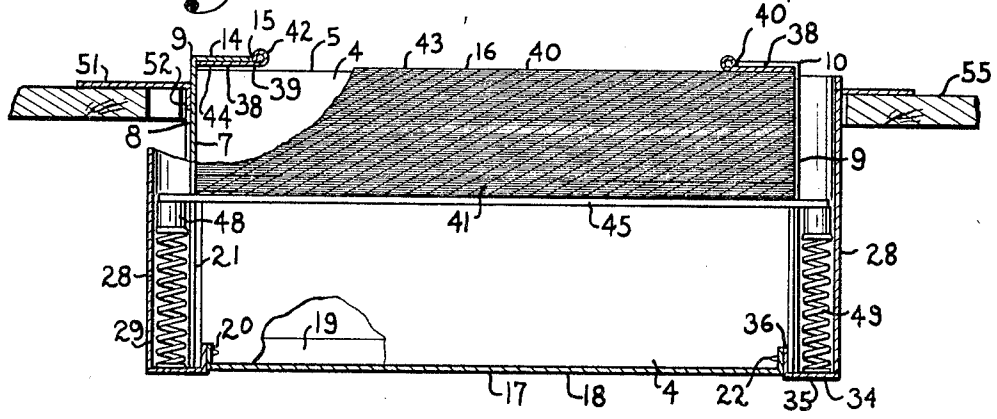
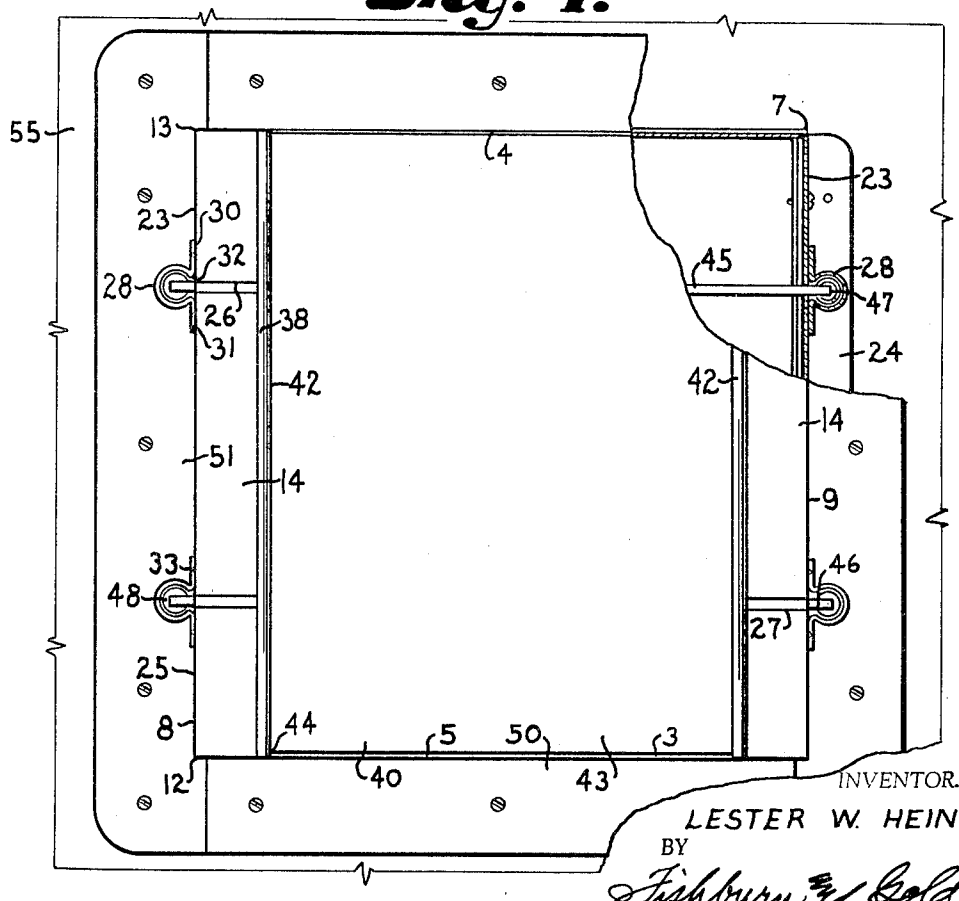


Fig. 4.



INVENTOR.
LESTER W. HEIN
BY
Fishburn & Gold
ATTORNEYS

United States Patent Office

3,291,339

Patented Dec. 13, 1966

3,291,339

PAPER SHEET DISPENSER

Lester W. Hein, 1526 E. Alton, Independence, Mo.

Filed June 18, 1965, Ser. No. 465,094

4 Claims. (Cl. 221—45)

This invention relates to dispensing devices and, more particularly, to apparatus for conveniently dispensing a single sheet from the top of a stack of sheets.

The principal objects of the present invention are: to provide a sheet dispenser which conveniently exposes a large proportion of the top sheet of a stack for grasping; to provide such apparatus wherein there is no objectionable bulge in the center of the stack and which has a large capacity for its size; to provide a sheet dispensing device which permits the top sheet to be easily withdrawn without wrinkling even if lateral force is applied to the sheet as it is withdrawn; to provide such apparatus wherein the sheet to be dispensed is retained only by contact with smooth flange members at the upper and lower edges thereof; to provide such apparatus which may be used in a great variety of positions and is easily loaded merely by urging the sheet stack through the dispensing opening; and to provide such apparatus which is of relatively simple construction, inexpensive to produce and rugged and reliable in use.

Other objects and advantages of this invention will become apparent from the following description taken in connection with the accompanying drawings wherein are set forth by way of illustration and example of certain embodiments of this invention.

FIG. 1 is a perspective view of a sheet dispenser embodying this invention flush mounted with a portion of the mounting broken away to show the depending portion of the apparatus.

FIG. 2 is a longitudinal cross-sectional view through the apparatus and mounting members particularly showing spring loaded bars contacting the bottom sheet of a sheet stack for urging the stack upwardly toward the dispensing opening.

FIG. 3 is a transverse cross-sectional view through the apparatus particularly showing the helical compression springs and spring retainers for urging the bars upwardly against the stack.

FIG. 4 is a plan view of the apparatus with a portion broken away to show details of construction.

Referring to the drawings in more detail:

The reference numeral 1 general indicates a sheet dispenser embodying this invention. The dispenser 1 comprises a rectangular container 2 having a pair of spaced apart oppositely disposed upwardly extending end walls 3 and 4 with upper edges 5, lower edges 6 and side edges 7. A pair of spaced apart oppositely disposed upwardly extending side walls 8 and 9 have upper and lower edges 10 and 11 respectively and side edges 12. The side walls 8 and 9 are joined to the end walls 3 and 4 along the respective side edges 7 and 12 forming four corners 13 on the container 2.

The side walls 8 and 9 extend horizontally inwardly of the container 2 at the side wall upper edges 10 forming opposed parallel transversely extending strips 14 having inner edges 15 facing each other. The strips 14 partially cover the top 16 of the container 2 and are spaced above the end wall upper edges 5 a small distance, for a reason noted below. A bottom wall 17 is joined to the side and end walls along the lower edges thereof closing the bottom 18 of the container. The bottom wall 17 has end flanges 19 extending upwardly externally of the container 2 and suitably joined to the respective end walls 3 and 4, for example, by spot welding. The bottom wall 17 also has side flanges 20 extending upwardly therefrom adjacent

the side walls 8 and 9 on the inner surface 21 thereof, and are secured thereto, in the illustrated example, by sheet metal screws 22.

The side walls 8 and 9 are respectively divided into three laterally spaced apart sections 23, 24 and 25 forming pairs 26 and 27 of respectively opposed vertically and horizontally extending elongated slots. Elongated tubular members 28 are disposed externally of the container 2 and extend adjacent each of the slots 26 and 27 between the side wall lower edges 11 to the side wall upper edges 10. The tubular members 28 are each comprised of an elongated strip 29 curved longitudinally centrally through less than 360 degrees as best illustrated in FIG. 4. The members 28 have spaced apart oppositely outwardly extending mounting legs 30 and 31 forming a longitudinally extending slot 32 providing access into the tubular member and aligned with the respective side wall slots 26 and 27. The members 28 are secured to the outside surface of the respective side wall sections 23–24 and 24–25 by the legs 30 and 31, for example, by spaced apart spot welds 33, and maintain the side wall sections structurally in fixed relation with respect to each other.

A retainer angle 34 is secured to each of the side walls 8 and 9 along the lower edges 11 thereof and has one leg 35 horizontally extending directly beneath the respective tubular members 28 blocking the lower open ends thereof. The other leg 36 of the retainer angles 34 extends upwardly adjacent the side flanges 20 on the inside surface 21 of the respective side walls and receives the screws 22 therethrough forming a rigid assembled structure. The horizontally extending leg 35 of the retainer angles 34 has spaced apart fastener receiving bores 37 extending therethrough for selectively mounting the container on a surface (not shown) in the event that the flush mounting illustrated is not desired.

A flange member 38 extends longitudinally beneath each of the side wall strips 14 presenting a smooth downwardly facing surface 39 for contacting the uppermost sheet 40 of a stack of sheets 41 held in the container 2 for dispensing. The flange members are secured to the strips, for example, by welding at 40'. Flange members 38 each have a lip 42 curved upwardly around the respective strip edges 15 so as to present a smooth upwardly curved outer surface blending into the lower surface 39 to aid in dispensing the uppermost sheet 40 without snagging. The lips 42 are spaced apart a substantial distance across the top 16 of the container 2 defining with the end wall upper edges 5 a dispensing opening 43 which covers the greater portion of the container top area.

The flange members 38, although secured beneath the strips 14, are maintained slightly above the end wall upper edges 5 providing spaces 44 therebetween permitting the uppermost sheet 40 to slide laterally without binding in the event that a lateral force is applied to the sheet during grasping for withdrawal. This reduces the possibility of wrinkling the sheet under such conditions.

A pair of parallel elongated bars 45 and 46 extend between the respective side walls 8 and 9 and have opposite ends 47 extending through the opposed slot pairs 26 and 27 and into the respective tubular members 28 for vertical movement of the bars generally between the bottom wall 17 and the flange members 38. Guide members 48 are located in each of the tubular members 28 beneath and contacting the respective bar ends 47. The guide members 48 are preferably short lengths of cylindrical rod which are slidably received within the tubular members. A vertically extending helical compression spring 48 is contained in each of the tubular members 28. The springs 49 are engaged between the horizontal leg 35 of the respective retainer angle 34 and the guide members 48 for resiliently urging the bars 45 and 46 upwardly, which, in turn, urge the stack 41 upwardly. As noted above,

the uppermost sheet **40** of the stack is urged into sliding contact with the flange members **38**. The bars **45** and **46** extend transversely of the flange member **38** whereby there is no bulge in the center of the stack at the dispensing opening **43**.

Fluish mounting end angles **50** and flush mounting side angles **51** respectively have a vertical leg **52** secured, for example, by spot welding, to the side and end walls **3**, **4**, **8** and **9** adjacent the respective upper edges thereof. The other leg **53** of the respective flush mountaing angles **50** and **51** extends outwardly normal to the respective side and end wals. The legs **53** have spaced apart fastener receiving bores therethrough receiving, in the illustrated example, screws **54** for mounting the container **2** depending through a planar member **55** with the dispensing opening **43** relatively flush therewith.

In operation, the container is loaded merely by urging the stack **41** downwardly through the dispensing opening **43** so as to compress the springs **49** until the upper and lower edges of the uppermost sheet **40** are disposed beneath the flanges **38**. Upon release, the springs **49**, through the bars **45** and **46**, urge the stack upwardly until the uppermost sheet **40** is slidably engaged with the flange members **38**. When a sheet is required to be dispensed, the upper surface of the uppermost sheet is grasped by the hand so as to bend transversely which causes one or both of the upper and lower edge portions thereof to withdraw inwardly from beneath the flange members **38**. Upon continuing to withdraw the sheet upwardly, both sheet edge portions are released and the entire sheet is withdrawn upwardly from the dispensing opening for use. As noted above, if a lateral force is applied when the sheet is being withdrawn, the sheet is free to slip through the space **44** laterally of the dispensing opening, thus limiting any tendency for the sheet to bind or snag as it is withdrawn.

The described construction permits the use of relatively short container height while handling a large sheet capacity. Further, the construction is relatively simple and may be economically carried out on a production line basis.

Although one form of this invention has been illustrated and described, it is not to be limited thereto except as so far as such limitations are included in the following claims.

What I claim and desire to secure by Letters Patent is:

1. A sheet dispenser comprising:

(a) a rectangular container having a pair of spaced apart oppositely disposed upwardly extending end walls with upper and lower and side edges, a pair of spaced apart oppositely disposed upwardly extending side walls having upper and lower and side edges, said side walls being joined to said end walls along said respective side edges forming corners on said container,

(b) said side walls extending horizontally inwardly of said container at said side wall upper edges forming straight opposed parallel transversely extending strips having inner edges, said strips partially covering the top of said container and being spaced above said end wall upper edges, a bottom wall joined to said side and end walls along said lower edges and closing the bottom of said container,

(c) said side walls being respectively divided into three laterally spaced apart sections forming pairs of respectively opposed vertically and horizontally extending elongated slots, elongated tubular members disposed externally of said container and extending adjacent each of said slots from said side wall lower edges to said side wall upper edges, said tubular members each being comprised of an elongated strip curved longitudinally centrally through less than 360 degrees and having spaced apart oppositely outwardly extending mounting legs forming a longitudinally extending slot providing access into the tubular member and aligned with said respective side wall slots, said tubular members being closed at the lower ends thereof and secured to said side walls by said legs,

(d) a pair of parallel bars extending between said side walls and respectively having opposite ends extending through said opposite pairs of side wall slots and into said respective tubular members for vertical movement in said container, and,

(e) vertically extending helical compression springs in said respective tubular members, said springs engaging said bars for resiliently urging said bars upwardly to retain a stack of sheets of varying height between said bars and said strips.

2. A sheet dispenser comprising:

(a) a container having a pair of spaced apart oppositely disposed upwardly extending side walls with upper and lower edges, said side walls extending horizontally inwardly of said container at said upper edges forming opposed strip members, said strip members extending across and partially covering the top of said container,

(b) said side walls being respectively divided into laterally spaced apart sections forming at least one pair of opposed vertically extending elongated slots, elongated tubular members disposed externally of said container and adjacent each of said slots, said tubular members each having spaced apart oppositely outwardly extending mounting legs forming a longitudinally extending slot providing access into the tubular member and aligned with said respective side wall slots, said tubular members being secured to said side walls by said legs and maintaining said side wall sections in fixed relation with respect to each other,

(c) means for closing the lower ends of said tubular members, a bar extending between said side walls and having opposite ends extending through said opposed side wall slots and into said respective tubular members for vertical movement in said container, vertically extending helical compression springs in said respective tubular members, said springs engaging said closing means and operably engaging said bar ends for resiliently urging said bar upwardly to retain a stack of sheets of varying height between said bar and said strip members, said bar urging the top sheet of said stack into slidable contact with said strip members,

(d) said container being rectangular and including a pair of oppositely disposed end walls having upper edges, and

(e) said strip members being positioned adjacent said end walls and spaced above said end wall upper edges whereupon an uppermost sheet may slide laterally between said end wall upper edges and a strip member.

3. The dispenser as set forth in claim **2** including:

(a) flush mounting angles respectively having one leg thereof secured to said side and end walls adjacent upper edges thereof,

(b) the other leg of said respective flush mounting angles extending outwardly normal to said respective side and end walls, said latter legs having faster receiving bores therethrough for mounting said container on a planar member in a depending position.

4. A sheet dispenser comprising:

(a) a container having a pair of spaced apart oppositely disposed upwardly extending side walls with upper and lower edges, said side walls extending horizontally inwardly of said container at said upper edges forming opposed strip members, said strip members extending across and partially covering the top of said container,

(b) said container having a pair of oppositely disposed end walls having upper edges and cooperating with the side walls to define a rectangular sheet receiving

compartment, said end wall upper edges being arranged with the strip members positioned adjacent to and spaced thereabove whereby an uppermost sheet in said compartment may slide laterally between said end wall upper edges and a strip member,

(c) said side walls being respectively divided into laterally spaced apart sections forming at least one pair of opposed vertically extending elongated slots, elongated tubular portions disposed externally of said container and adjacent each of said slots with the interior of said tubular portions having communication through said slots with the paper receiving compartment,

(d) a bar extending between said side walls and having opposite ends extending through said opposed side wall slots and into said respective tubular portion interiors for vertically movement in said container,

(e) vertically extending helical compression springs in said respective tubular portions, said springs operatively engaging said bar ends for resiliently urging said bar upwardly to retain a stack of sheets of varying height between said bar and said strip members and urge the top sheet of said stack into slidable contact with said strip members.

References Cited by the Examiner

UNITED STATES PATENTS

769,963	9/1904	Sexton	221—52
1,293,291	2/1919	Albig	221—52
1,902,239	3/1933	Holdgrafer	312—71
2,083,843	6/1937	Hicks	312—71
2,253,742	8/1941	West et al.	221—52
2,468,115	4/1949	Saul	312—71

ROBERT B. REEVES, *Primary Examiner.*

WALTER SOBIN, *Examiner.*