H. A. FINK.

MAGAZINE FOR BLANKS OF SHEET METAL.

APPLICATION FILED JULY 3, 1919.

1,392,750.

Patented Oct. 4, 1921.

FIG. 1.

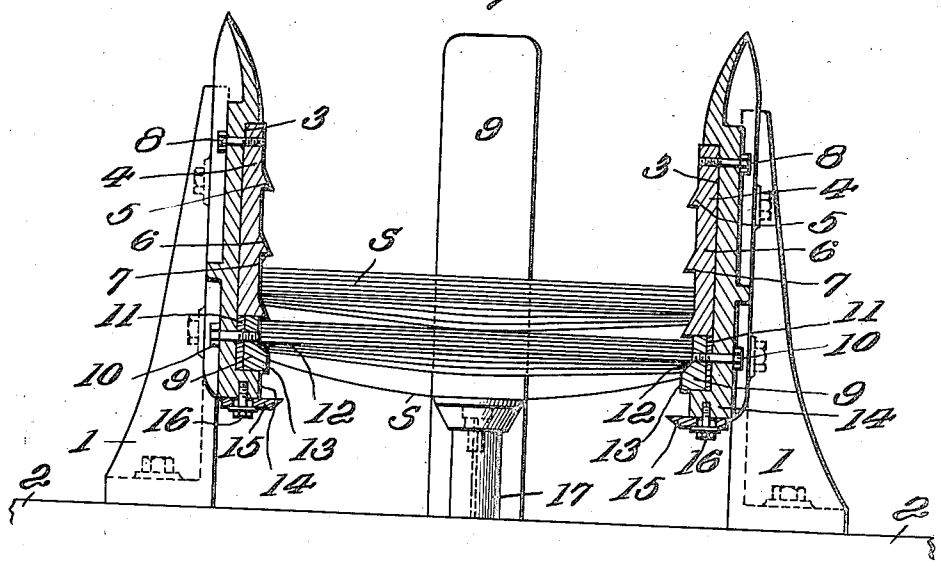


FIG. 2.

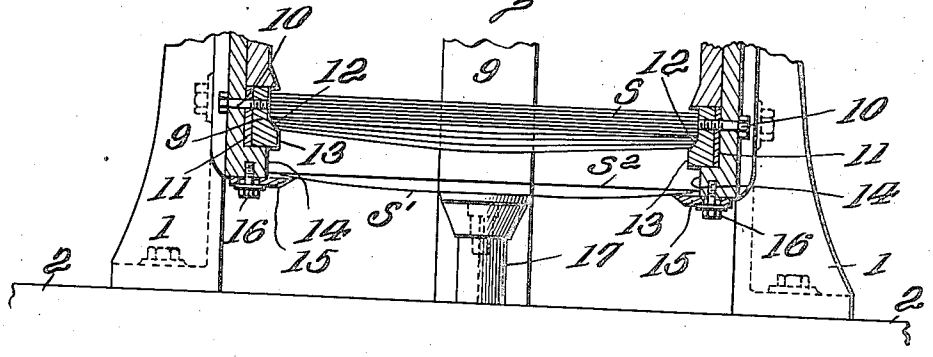
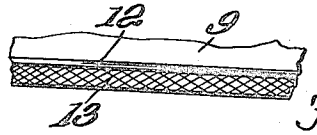


FIG. 3.



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MAGAZINE FOR BLANKS OF SHEET METAL.

1,392,750. Specification of Letters Patent. Patented Oct. 4, 1921.

Application filed July 3, 1919. Serial No. 308,473.

To all whom it may concern:

Be it known that I, HENRY A. FINK, a citizen of the United States, residing at Chicago, in the county of Cook, State of Illinois, have invented certain new and useful Improvements in Magazines for Blanks of Sheet Metal, of which the following is a description, reference being had to the accompanying drawing and to the figures of reference marked thereon.

The invention relates to new and useful improvements in magazines for blanks of sheet metal, and more particularly to a magazine wherein the blanks are withdrawn one at a time from the bottom of the magazine.

An object of the invention is to provide a magazine construction wherein the stacked blanks of sheet metal as they pass downwardly through the magazine are caused to buckle or bend at certain intervals for the purpose of relieving the lowermost blanks in the stack from a portion of the weight of the blanks in the remainder of the stack.

A further object of the invention is to provide a magazine in which blanks of sheet metal are stacked and having retaining means at the lower part thereof to retain the stack as the lowermost blank is withdrawn, with auxiliary retaining means for insuring the separation and retention of the uppermost sheet if two sheets should be withdrawn past the retaining means.

These and other objects will in part be obvious and will in part be hereinafter more fully disclosed.

In the drawings, which show by way of illustration one embodiment of the invention:—

Figure 1 is a cross sectional view through a magazine embodying my improvements, and showing a portion of the means for withdrawing the sheets one at a time from the bottom of the magazine;

Fig. 2 is a sectional view through the bottom portion of the magazine showing the manner in which the auxiliary retainers operate to separate two sheets, and

Fig. 3 is a face view of a section of one of the retaining plates.

The invention consists broadly in a magazine which is especially adapted for storing blanks of sheet metal which are withdrawn from the magazine one at a time and fed to an operating mechanism. The magazine consists of suitable standards and side plates between which the sheets are stacked. At each side of the magazine there is a face plate, and these face plates are located so as to be a distance apart slightly greater than the width or length of the blank which is placed in said magazine. At intervals along the face plates, and directly opposed to each other, are inwardly projecting lugs, the upper faces of which are inclined and the lower faces of which are substantially horizontal. These lugs are shaped and proportioned relative to the length or width of the blanks so that any one blank in passing the lugs will be buckled or bent. This buckling or bending of the blanks of sheet metal as they pass the opposed lugs retards the downward movement of the stack and relieves the lowermost blanks in the stack from the greater portion of the weight of the stack, thus facilitating the withdrawal of the blanks one at a time from the stack.

The blanks are held in the stack at the lower end thereof by opposed inclined faces which terminate at their lower ends in knurled vertical faces which assist in the separation of the blanks so that only one will be withdrawn at a time from the stack. At some distance below these knurled faces are auxiliary retainers, and the magazine is cut back or recessed directly above the auxiliary retainers so as to permit a sheet or blank to straighten out. If two sheets are withdrawn from the magazine, and pass the knurled vertical faces, these auxiliary retainers engage the lowermost sheet, further bending the same, and the uppermost of the two sheets will straighten out as it is not under the influence of the suckers, and thus the two sheets will be separated and only one withdrawn by the auxiliary retainers.

Referring more in detail to the drawings, I have shown my improved magazine as consisting of brackets 1—1, which are mounted on a suitable sheet supporting table 2. The brackets are spaced from each other a suitable distance, depending upon the size of the blanks to be stored in the magazine. The brackets are provided with recesses 3 in which fit face plates 4. The face plates on opposite sides of the magazine are similar

in construction. Each face plate is provided with a plurality of inwardly projecting lugs 5. These lugs are similar in shape, and the lugs on the face plates are directly opposed to each other. Each lug has a downwardly inclined face 6 and a substantially horizontal face 7. The face plates are secured to the brackets by suitable bolts 8—8. A suitable guide 9 may be provided for guiding the stack as it passes down between the face plates.

At the lower end of the face plates 3 are retaining plates 9 which are held in the recesses by suitable bolts 10. Shims 11 may be placed in rear of these retaining plates 9 for adjusting the same relative to the supporting brackets therefor. These retaining plates are set in the lower parts of the recesses 3. Each retaining plate 9 has an inclined face 12 terminating in a vertical face 13 which is knurled. The inclined faces 12 are opposed to each other, and likewise the vertical knurled faces 13. The vertical faces 13 are disposed at some distance inside of the lowermost vertical wall 14 of the magazine. Directly below this vertical face 14 is an auxiliary retainer 15 which is adjustably secured to the magazine by means of a bolt 16.

The sheets of metal are indicated at S in the drawings, and said sheets are withdrawn from the magazine one at a time by vertically reciprocating suckers 17. As clearly shown in Fig. 1 of the drawings, the distance between the inner surfaces of the face plates 4 is substantially that of the length or width of the blanks which are stored in the magazine and, therefore, the distance of the inclined faces 6—6 at the extreme lower ends thereof is less than the length or width of the sheets.

As a result, as the stack passes down through the magazine, all of the sheets which are in contact with the inclined faces 6 of the lugs 5 will be slightly buckled or bent, the amount of bend or buckle in the sheet increasing until the sheet snaps away from the lower edges of the inclined faces 6—6, and as it snaps away from these lower edges it will straighten out by reason of the horizontal faces 7 directly below the inclined faces. This buckling or bending of the sheets at points along the length of the stack of sheets or blanks serves to retard the downward movement of the stack of sheets or blanks and thus takes the greater portion of the weight of the stack off from the lowermost sheets. The sheets at the lower end of the stack, as they engage the inclined faces 12, will be bent or buckled, but these inclined faces extend toward the center of the stack a greater distance than the inclined faces 6 and, therefore, the stack of blanks or sheets will not pass the inclined faces 12 by reason of the weight of the stack.

The suckers 17 due to their reciprocating movement engage the lowermost sheet or blank in the stack and pull the same down, bending the sheet or blank to a greater extent, and causing the side edges of the sheet to slip off from the inclined faces 12 onto the vertical knurled faces 13. If two sheets should stick together, by reason of the suction effect of one sheet on the other, these knurled faces 13 are pretty sure to cause the two sheets withdrawn from the inclined faces 12—12 to separate, for the reason that said knurled faces offer a retarding friction to the withdrawing of the sheets, and this will hold back the sheet or blank directly above the lowermost sheet or blank. If, however, two sheets are pulled past the knurled vertical faces 13 by the suckers, they will be carried against the auxiliary retainers 15 and as these auxiliary retainers 15 extend a much greater distance toward the center of the magazine than the vertical knurled faces 13 the lowermost sheet will be bent even to a greater extent in order to pass said auxiliary retainers.

In Fig. 2 of the drawings, I have shown a sheet S′ which will be bent to a greater extent than when caused to pass the vertical knurled faces 13, and a sheet S^2 which was pulled by the sucker past said vertical faces. The space directly beneath the vertical face 13 is of greater width or length of the blanks or sheets and, therefore, as shown in the drawings, the sheet or blank S^2 has straightened out and has been completely released from the sheet S. This is due in part to the releasing of the sheet S^2 from the bending action thereon caused by the vertical faces 13, and in part by the greater bending of the sheet S′ in order to carry it by these auxiliary retainers. After the sheet has passed the auxiliary retainers, it will be carried down onto the table 2, where suitable mechanism engages the sheet and moves the same sidewise or endwise, as desired, to the devices which are to operate upon the same.

From the above, it will be apparent that my invention consists broadly in two features: First, the construction of the magazine which relieves the lowermost sheets from the excessive weight of the stack of blanks or sheets, so that the lowermost sheet will be withdrawn from the magazine against a substantially uniform retarding friction regardless of the number of sheets or blanks contained in the stack; and second, the auxiliary retaining devices which insures the final withdrawing of only one sheet of the stack and the placing of the same on the feeding-in table 2. It will also be obvious that the retarding friction

against which the sheets are withdrawn from the magazine may be varied by adjusting the retaining plates 9 at the lower part of the magazine by inserting or removing the shims from the rear thereof.

It is obvious that minor changes in the details of construction and the arrangement of the parts may be made without departing from the spirit of the invention as set forth in the appended claims.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent is:—

1. The combination of a magazine, in which sheets of metal may be stacked, and devices for withdrawing the sheets one at a time from the bottom of the stack, said magazine having means at the lower end thereof for supporting the stacked sheets adjacent the bottom of the magazine and permitting the same to be withdrawn therefrom, and means intermediate the upper and lower ends of the magazine for bending certain of the sheets as the stacked sheets pass thereby, whereby the lowermost sheets of the stack are in part relieved from the weight of the stacked sheets.

2. The combination of a magazine, in which sheets of metal may be stacked, and devices for withdrawing the sheets one at a time from the bottom of said magazine, said magazine having means for supporting the stacked sheets adjacent the bottom thereof and permitting the sheets to be withdrawn from the bottom of the magazine, and opposed inwardly projecting lugs intermediate the upper and lower ends of the magazine for bending certain of the sheets as the stacked sheets pass thereby, whereby the lowermost sheets of the stack are in part relieved from the weight of the stacked sheets.

3. The combination of a magazine, in which sheets of metal may be stacked, and devices for withdrawing the sheets one at a time from said magazine, said magazine having means for supporting the stacked sheets adjacent the bottom thereof and permitting the sheets to be withdrawn from the bottom of the magazine, and opposed inwardly projecting lugs intermediate the upper and lower ends of the magazine for bending certain of the sheets as the stacked sheets pass thereby, whereby the lowermost sheets of the stack are in part relieved from the weight of the stacked sheets, said lugs having downwardly inclined upper faces and horizontally disposed lower faces.

4. A magazine for stacked sheets of metal having side plates, the inner faces of which are of slightly greater distance apart than the distance between the edges of the sheet lying adjacent the respective side plates, a plurality of opposed vertically spaced inwardly projecting lugs located between the upper and lower ends of the magazine and having downwardly inclined faces, the distance between which at their lower ends is less than the distance between the edges of the sheets adjacent the respective lugs whereby the sheets as they pass said lugs will be bent.

5. A magazine for stacked sheets of metal having side plates, the inner faces of which are of slightly greater distance apart than the distance between the edges of the sheet lying adjacent the respective side plates, opposed inwardly projecting lugs having downwardly inclined faces, the distance between which at their lower ends is less than the distance between the edges of the sheets adjacent the respective lugs whereby the sheets as they pass said lugs will be bent, said magazine having at its lower end retaining plates formed with downwardly inclined faces, the distance between said faces at the lower ends thereof being considerably shorter than the distance between the edges of the sheet adjacent the respective retaining plates whereby the stack may be supported by said retaining plates.

6. A magazine for stacked sheets of metal having side plates, the inner faces of which are of slightly greater distance apart than the distance between the edges of the sheet lying adjacent the respective side plates, opposed inwardly projecting lugs having downwardly inclined faces, the distance between which at their lower ends is less than the distance between the edges of the sheets adjacent the respective lugs whereby the sheets as they pass said lugs will be bent, said magazine having at its lower end retaining plates formed with downwardly inclined faces, the distance between said faces at the lower ends thereof being considerably shorter than the distance between the edges of the sheet adjacent the respective retaining plates, said retaining plates having vertical knurled surfaces directly below the inclined faces formed thereon.

7. A magazine for stacked sheets of metal having side plates, the inner faces of which are of slightly greater distance apart than the distance between the edges of the sheet lying adjacent the respective side plates, opposed inwardly projecting lugs having downwardly inclined faces, the distance between which at their lower ends is less than the distance between the edges of the sheets adjacent the respective lugs whereby the sheets as they pass said lugs will be bent, said magazine having at its lower end retaining plates formed with downwardly inclined faces, the distance between said faces at the lower ends thereof being considerably shorter than the distance between the edges of the sheet adjacent the

respective retaining plates whereby the stack may be supported by said retaining plates, said retaining plates having vertical knurled surfaces directly below the inclined faces formed thereon, said magazine having auxiliary retaining fingers disposed at some distance below the retaining plates, the distance between the extreme inner ends of said retaining fingers being less than the distance between said retaining plates, said magazine having recesses above the retaining plates, the inner walls of which are a greater distance apart than the distance between the edges of the sheet adjacent said respective walls.

8. A magazine for stacked sheets of metal having supporting brackets, retaining plates carried thereby at the lower end of the magazine, said retaining plates having opposed inclined faces terminating in vertical knurled faces, and auxiliary retaining plates spaced some distance below said knurled faces, said magazine having recesses directly above said retaining plates, the inner walls of which are a greater distance apart than the distance between the edges of the sheet adjacent the respective walls.

9. A magazine having means at the lower end thereof for supporting stacked sheets of metal and permitting said sheets to be withdrawn therefrom, auxiliary retaining plates located at some distance below said supporting means and extending a greater distance toward the center of the magazine, said magazine having recesses directly above the said auxiliary retaining plates of sufficient depth to permit a sheet to straighten out.

In testimony whereof I affix my signature in the presence of two witnesses.

HENRY A. FINK.

Witnesses:
WILLIAM J. SCHARMER,
DAVID T. SULLIVAN.