

Oct. 18, 1955

P. A. COFFMAN, JR
BAG OPENING DEVICE

2,720,698

Filed July 28, 1951

2 Sheets-Sheet 1

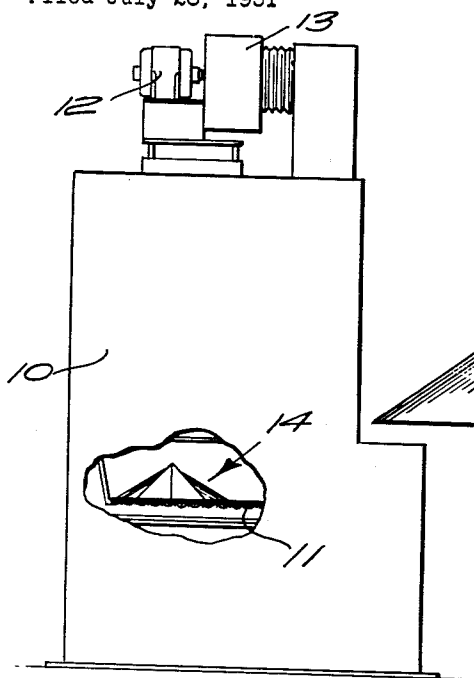


FIG. 1

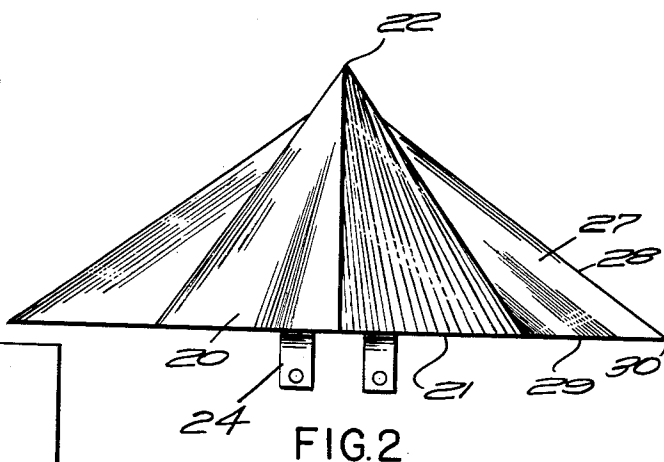


FIG. 2

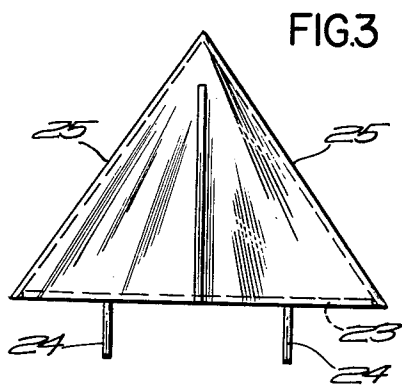


FIG. 3

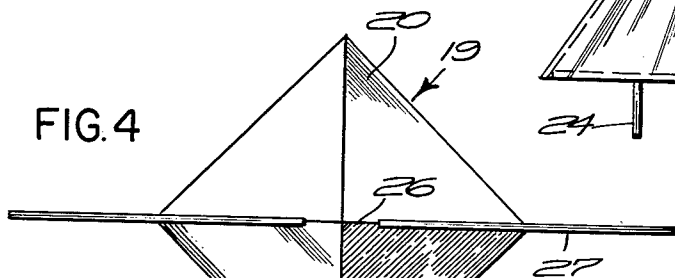


FIG. 4

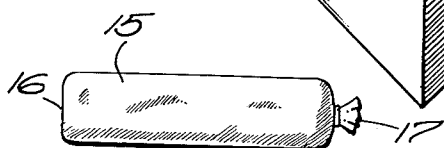


FIG. 5

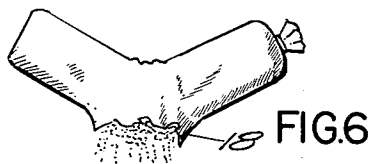


FIG. 6

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2 Sheets-Sheet 2

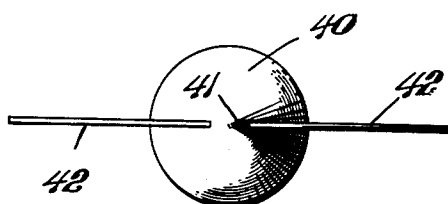


FIG. 7

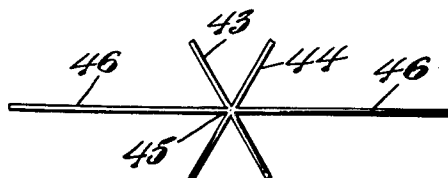


FIG. 8

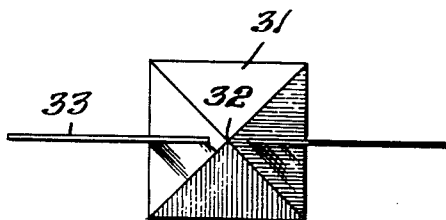


FIG. 9

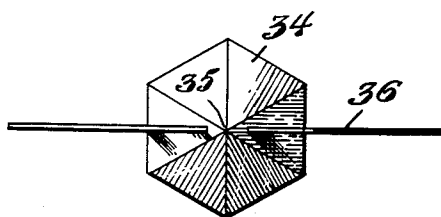


FIG. 10

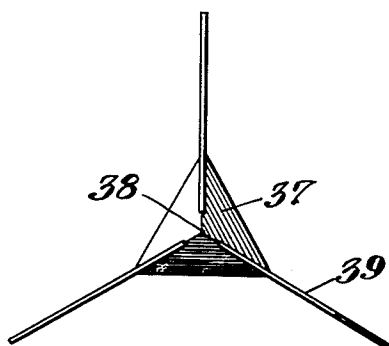


FIG. 11

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1

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BAG OPENING DEVICE

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Application July 28, 1951, Serial No. 239,167

12 Claims. (Cl. 30—296)

This invention relates to a bag opening device of the type used for opening bags of powdered material or bags containing lump material which may be discharged readily from the bag when the bag is slit and the slit opening is turned downwardly.

Where a bag must be slit with a hand implement to open the same, it requires extra handling by the one who handles the instrument. Further, it is usual for the slitting to occur at a point spaced from where the bag is to be discharged and then the bag must be picked up while open, turned over and discharged. This is all time consuming and is frequently a messy operation.

One of the objects of this invention is to provide a device onto which the bag may be dropped while holding the ends of the bag to cause the bag to be slit across at substantially its mid point so that it may be discharged through the center of the bag without removing the hands from the ends of the bag.

Another object of the invention is to provide a slitting device which will be strong and durable and will withstand the dropping of bags upon it.

More specifically, an object of the invention is to provide fins which will guide the slitting along the direction desired.

With these and other objects in view, the invention consists of certain novel features of construction, as will be more fully described and particularly pointed out in the appended claims.

In the accompanying drawings:

Figure 1 shows a part of a loading device broken away to show my invention in place;

Figure 2 is a side view of the device;

Figure 3 is an end view of the device;

Figure 4 is a plan view of the device;

Figure 5 is an elevation indicating the bag which is to be opened;

Figure 6 is a similar view of a bag after it has been slit by the opening device; and

Figures 7, 8, 9, 10 and 11 are plan views similar to Figure 4 but showing different modified shapes of bag opening device.

In proceeding with this invention, I provide an upstanding member pointed at its top from opposite sides of which there radiate fins of blade-like structure. The member is provided with a sufficiently sharp point so that when a bag is dropped upon it, it will puncture the bag and the fins will act like blades to further slit the bag in a desired direction, usually across the bag, so that the ends of the bag may be grasped and lifted to discharge the material at the pyramid where it is punctured so that the material may drop through a screen into the location desired.

With reference to the drawings, 10 designates generally a compartment provided with a screen 11 over the hopper or mouth into which the contents of a bag is to be discharged. A motor 12 driving a blower 13 may serve to exhaust any dust which may be located in the compartment 10.

2

The device which is the subject of this invention may be in several forms. In Figures 1-4 it is designated generally 14 and is positioned upon the screen 11 so that a man may walk into this compartment 10 on the screen 11 and drop a bag onto the device 14 so as to open it. The bag which is to be handled is designated generally 15 and a man may grasp one end 16 in one hand and another end 17 in the other hand and while still holding these ends may drop the same upon the device 14 to rupture and open the bag, such as shown at 18 in Figure 6. The device which I have utilized is formed of metal and is in the shape of a pyramid designated generally 19 having equal sides 20 extending upwardly from a base 21 to form a sharp point 22. The stock is carried inwardly to provide a base 23, from which arms 24 extend downwardly for attachment to the screen 11 by bending these arms or otherwise fastening them to the rods of the screen.

Corners of the pyramid are designated 25 and from opposite corners 26 there are provided fins 27 which are of generally triangular shape having a long side 28, a base 29 extending to a point 30. These fins are of blade-like form and after a bag is dropped upon the point 22 to rupture the bag, these fins serve to further slit the bag along a guided direction so that if the bag, as shown at 15 in Figure 5, is held so that the fins extend along the line laterally or across the bag and the bag is then dropped upon the point 22 with this line in the plane of the fins, then the bag will be ruptured laterally across it so that a man holding the ends 16 and 17 may merely swing these ends up about the unbroken opposite side of the bag so that the contents will be discharged along the surface of the pyramid sides 20 to slide along these sides down through the screen 11 into the location desired. Any dust which may rise from the contents of the bag will be sucked out by the blower 13.

Various modified forms of an opening device may be provided, which I have illustrated in Figures 7 to 11, inclusive. In Figure 9 a pyramid is used as in Figures 1 to 4, in which there are four equal sides 31 coming to a point 32. Fins 33, however, are formed to radiate from the middle of opposite sides rather than from the corners, as shown in Figures 1 to 4. In Figure 10 I have shown six sides 34 coming to a point 35 with fins 36 extending from two opposite sides in a manner similar to that shown in Figure 9.

In Figure 11 I have provided three sides 37 coming to a point 38 with fins 39 radiating from the corners formed by the junction of the sides 37 and in this case three of these fins are provided to direct the opening in three directions rather than directly across the bag as heretofore.

In some cases instead of providing flat sides, the member may be conical shaped as at 40 having a point 41 with opposite fins 42 radiating from the central axis in opposite directions therefrom.

In Figure 8 I have illustrated a member made up entirely of sheet stock, there being two members 43 and 44 in substantially crossing relation coming to a point 45 at the upper ends, while other members 46 which are radiating fins also come to this same point and are extended therefrom so as to direct the opening of the bag along the lines of these fins.

From the above, it will be apparent that the invention may take various forms, all of which are operative for the desired results.

I claim:

1. In a hopper having a support, a bag opener mounted on said support, said bag opener comprising a multi-sided pyramidal member having an upstanding point, at least two radial fins attached to said member, said

3

3 fins having oblique cutting edges radiating downwardly approximately from said point.

2. A bag opener as in claim 1 wherein the member has a plurality of flat sides of triangular shape, one vertex of each side being common with each other.

3. A bag opener as in claim 1 wherein the member has a plurality of flat sides of triangular shape, one vertex of each side being common with each other, the adjacent edges of the vertex of each side being joined to another side to form corners, and fins radiating from said corners.

4. A bag opener as in claim 1 wherein the member has a plurality of flat sides of triangular shape, one vertex of each side being common with each other and fins radiating from the centers of two of the flat sides.

5. A bag opener as in claim 1 wherein the fins radiate from the central axis thereof passing through the said point.

6. A bag opener as in claim 1 wherein the member is circular in cross section.

7. A bag opener as in claim 1 wherein the member is conical.

8. A bag opener as in claim 1 wherein the member has three flat sides of triangular shape, one vertex of each side being common with each other.

9. A bag opener as in claim 1 wherein the member

4

has four flat sides of triangular shape, one vertex of each side being common with each other.

10. A bag opener as in claim 1 wherein the member has six flat sides of triangular shape, one vertex of each side being common with each other.

11. A bag opener as in claim 1 wherein the cross section of the member is in the shape of a cross.

12. A bag opener as in claim 1 wherein the member has a plurality of flat sides of triangular shape, one vertex of each side being common with each other, the adjacent edges of the vertex of each side being joined to another side to form corners and the fins being generally triangular and radiating from said corners of the pyramid.

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