Sept. 6, 1927.

1,641,149

G. BERNERT

PNEUMATIC MATERIAL CONVEYER

Filed July 12, 1926

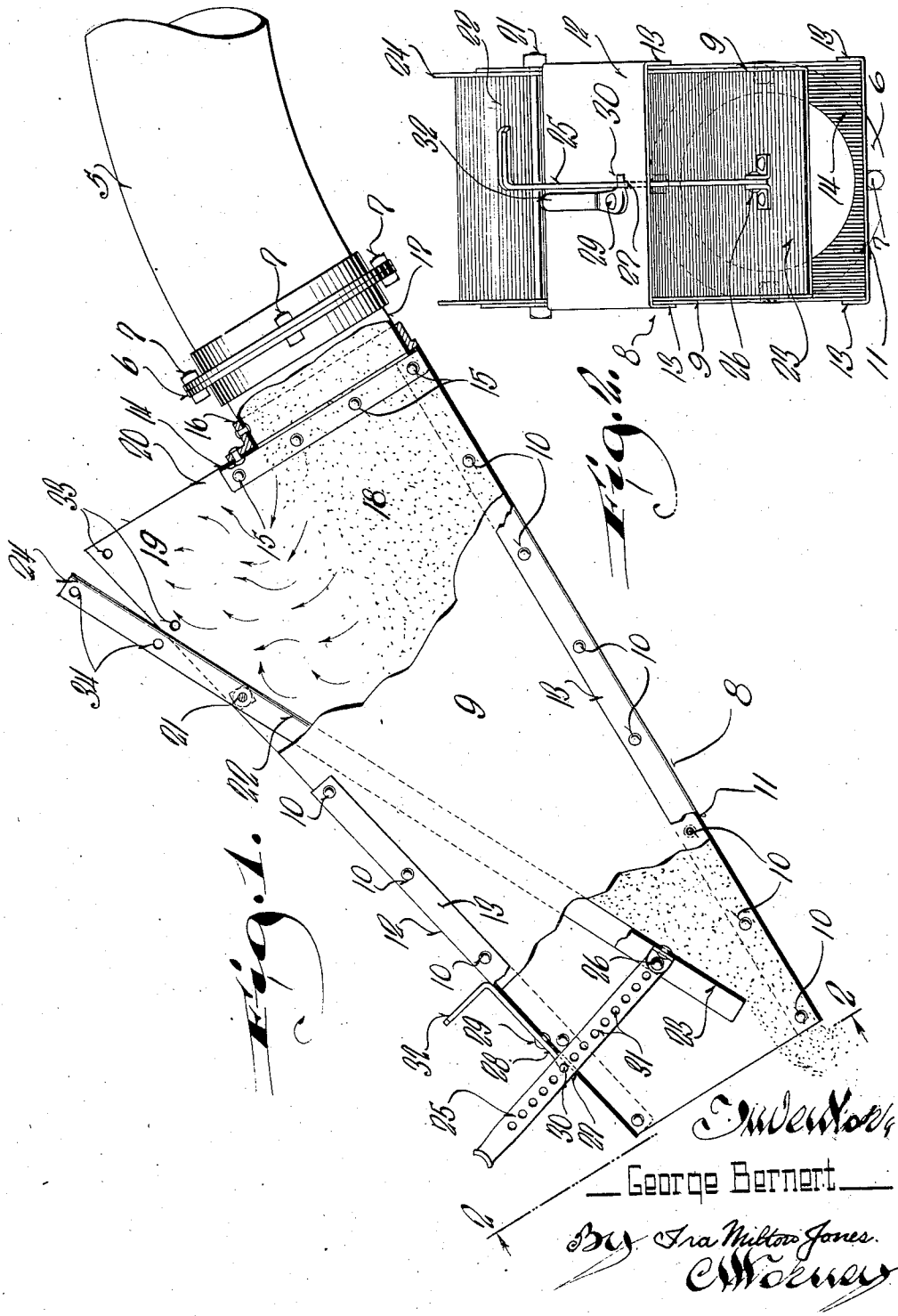


Fig. 1.

Fig. 2.

Inventor,
George Bernert
By Ira Milton Jones.
Attorney

Patented Sept. 6, 1927. 1,641,149

UNITED STATES PATENT OFFICE.

GEORGE BERNERT, OF MILWAUKEE, WISCONSIN.

PNEUMATIC MATERIAL CONVEYER.

Application filed July 12, 1926. Serial No. 121,869.

This invention relates to certain new and useful improvements in pneumatic material conveyers and refers more particularly to a discharge device for the conveying duct.

When grain or other material is discharged from a pneumatic conveyer and it is unnecessary that the material have momentum, it is of importance that the grain be brought under control and with this in mind it is an object of my invention to provide an improved discharge nozzle for the conveying duct whereby the conveying current of air is discharged at an inner point and the material discharged from the outer end.

It is a further object of this invention to provide an improved discharge means for pneumatic grain conveyers which may be readily applied to any conveying duct and which is constructed of sheet metal to be of portable construction.

And a still further object of this invention resides in the provision of an improved grain or other material discharge or conveying duct having means for simultaneously adjusting the grain and the air duct outlets.

With the above and other objects in view which will appear as the description proceeds, my invention resides in the novel construction, combination and arrangement of parts substantially as hereinafter described and more particularly defined by the appended claims, it being understood that such changes in the precise embodiment of the herein disclosed invention may be made as come within the scope of the claims.

In the accompanying drawing, I have illustrated one complete example of the physical embodiment of my invention constructed according to the best mode I have so far devised for the practical application of the principles thereof, and in which:

Figure 1 is a side view of a grain or other material discharge nozzle embodying my invention, parts thereof being in side elevation and parts thereof broken away and in section to illustrate structural details, and

Figure 2 is an end elevational view thereof taken on the plane of the line 2—2 of Figure 1.

Referring now more particularly to the accompanying drawing, the numeral 5 designates the conveying duct of a pneumatic conveying apparatus of conventional construction, including a blower and means for feeding the grain or other material to be conveyed into the duct 5 to be conveyed therethrough by the pressure current of air created therein by the blower. The conveying mechanism proper forms no part of this invention and for one type of device, attention is invited to Letters Patent No. 1,498,776 issued to me the 24th day of June, 1924.

My improved device is removably secured to the discharge end of the duct 5 by means of mating flanges or collars 6 and bolts or other means 7 and consists of an approximately rectangular shaped receptacle 8 preferably formed from sheet metal having its sides 9 wider at their inner ends and riveted or otherwise secured, as at 10, to the bottom and top thereof designated 11 and 12, respectively. The top and bottom have their side marginal edges flanged, as at 13, to overlie the adjacent marginal edges of the sides to receive the rivets 10.

The major portion of the inner or receiving end of the receptacle is closed by a wall 14, the side marginal edges of which are flanged inwardly to engage the side walls and receive rivets or other means 15 for securing the same thereto and an annular ring or collar member 16 is fixed to the end wall to receive a nipple or duct 17 on the outer end of which one of the rings or flanges 6 is secured. The outer or discharge end of the nozzle is open so that the grain and conveying current of air designated, as 18 and 19, respectively, discharge outwardly therethrough with the exception of such air as may escape through an opening 20 provided above the end wall.

The top 12 terminates inwardly of the inner end and pivoted, as at 21, adjacent the outer marginal edges of the sides 9 and medially of the inner end of the top 12 and the opening 20, is an elongated valve member 22 of a width equal to the distance between the sides 9 and of a length substantially equal to the length of the discharge nozzle. The portion 23 of the member 22 outwardly of the pivot 21 forms a valve for adjusting the cross sectional area of the grain or other material discharge opening and the portion 24 of the member 22 rearwardly of the pivot 24 forms a valve for increasing and decreasing the cross-sectional area of the discharge opening 20.

A perforated bar or lever 25 is pivoted, as at 26, to the member 22 adjacent its upper

end and passes through a slot or opening 27 in the top 12. A latch member 28 is medially pivoted, as at 29, to the top 12 and has one end 30 arranged for engagement in any one of the plurality of apertures 31 in the lever 25, its other end being bent upwardly, as at 32, for convenience in engaging and disengaging the end 30 with the apertures of the lever. In this manner, the adjustment of the member 22 may be quickly made as will be readily evident.

The side walls 9 are provided with sets of aligned apertures 33 which correspond with apertures 34 in the side flanges of the member 22 so that the pivot 21 may be shifted to vary the cross-sectional areas of the material and air discharge openings.

In use, the discharge nozzle is normally inclined downwardly as illustrated in the drawing and the member 22 is so adjusted that the material 18 accumulates in its outer end falling outwardly between the end 23 of the member 22 and the bottom 11, as indicated, the conveying current of air being released outwardly through the opening 20. The apertures 33 and 34 and the latch member 28 permit the ready adjustment of the member 22 to control the speed at which the material 18 is discharged from the nozzle, as the area of one opening is decreased as the other is increased.

From the foregoing description taken in connection with the accompanying drawing it will be readily evident to those skilled in the art to which an invention of this character appertains that I have provided an improved attachment for the conveying duct of a pneumatic conveyer which will readily permit of the controlled discharge of material such as grain or the like from the duct and its separation from the conveying current of air.

What I claim as my invention is:

1. In an appliance of the character described, a discharge member for pneumatic conveying devices having a material outlet and an air outlet, and means for adjusting the areas of said outlets.

2. In an appliance of the character described, a discharge member for pneumatic conveying devices having a material outlet and an air outlet, and means for simultaneously adjusting the areas of said outlets.

3. In an appliance of the character described, a discharge member for pneumatic conveying devices having a material outlet and an air outlet, means for adjusting the areas of said outlets, and means whereby the area of one outlet is decreased as the area of the other is increased.

4. In an appliance of the character described, a discharge member for penumatic conveying devices and having a material outlet and an air outlet, valve means extending from the air outlet to the material outlet, and means for adjusting the valve means to govern the area of the material outlet.

5. In an appliance of the character described, a housing having a material discharge opening in its lower end and an air discharge opening in its uppermost portion, and cooperating means operable to decrease the area of one opening and increase the area of the other.

6. In an appliance of the character described, a housing having a material discharge opening in its lower end and an air discharge opening in its uppermost portion, a valve member, means medially pivoting the valve member in the housing whereby one end controls the area of one opening and the other end the area of the other opening, and means for moving said member on its pivot to adjust the areas of said openings.

7. In an appliance of the character described, a housing having a material discharge opening in its lower end and an air discharge opening in its uppermost portion, a valve member, means medially pivoting the valve member in the housing whereby one end controls the area of one opening and the other end the area of the other opening, means for moving said member on its pivot to adjust the areas of said openings, and means for securing the valve member in adjusted position.

8. In an appliance of the character described, a discharge member for pneumatic conveying devices having a material inlet and outlet connected by a material passage through said member, an air outlet leading from said member and communicating with the material passageway adjacent the material inlet, and means for adjusting the area of said outlets.

In testimony whereof I affix my signature.

GEORGE BERNERT.