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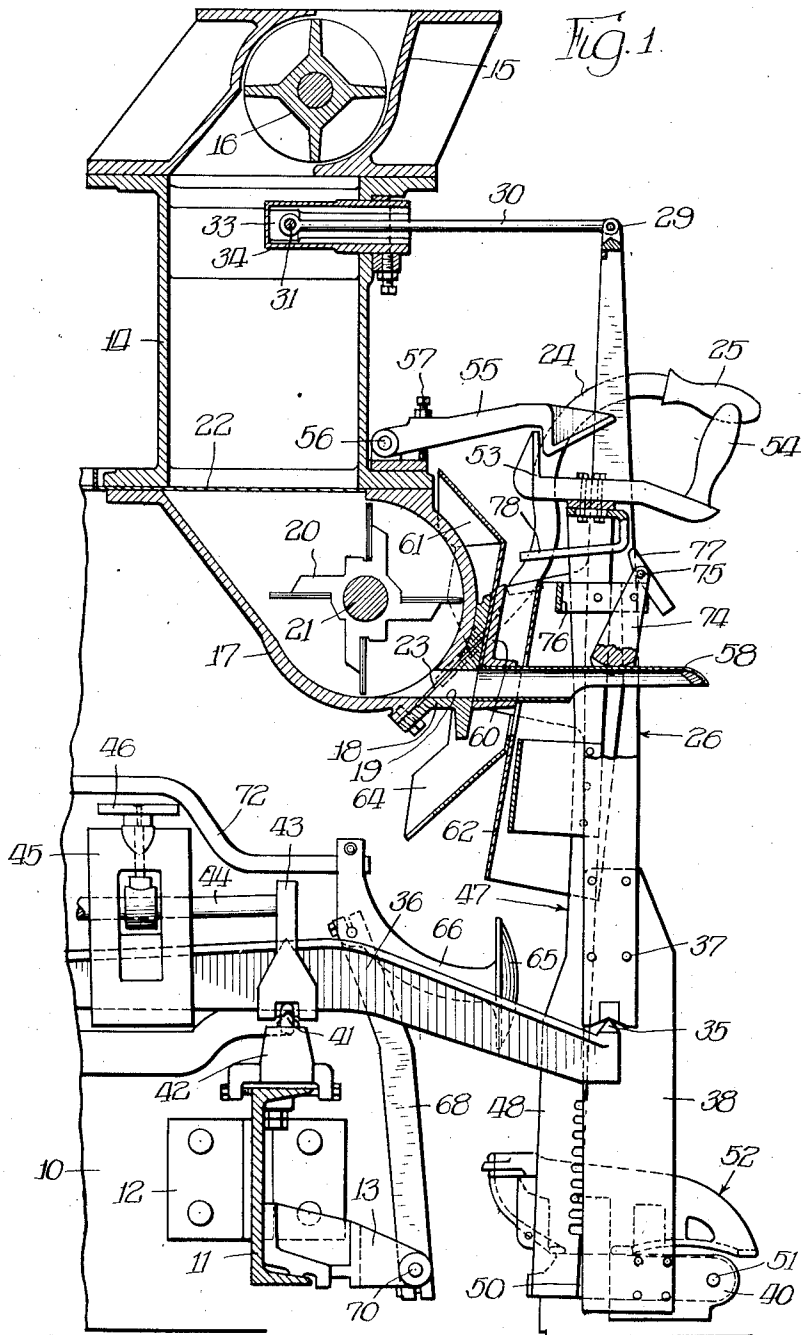
R. A. DITTMAR

2,064,245

DUST SHIELD

Filed Feb. 14, 1935

2 Sheets-Sheet 1



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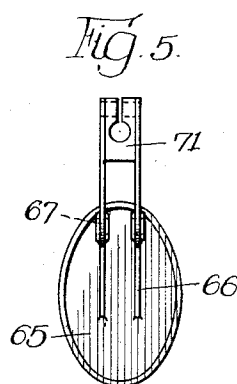
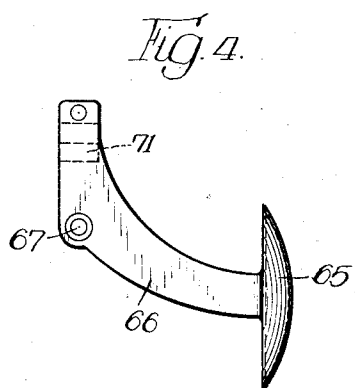
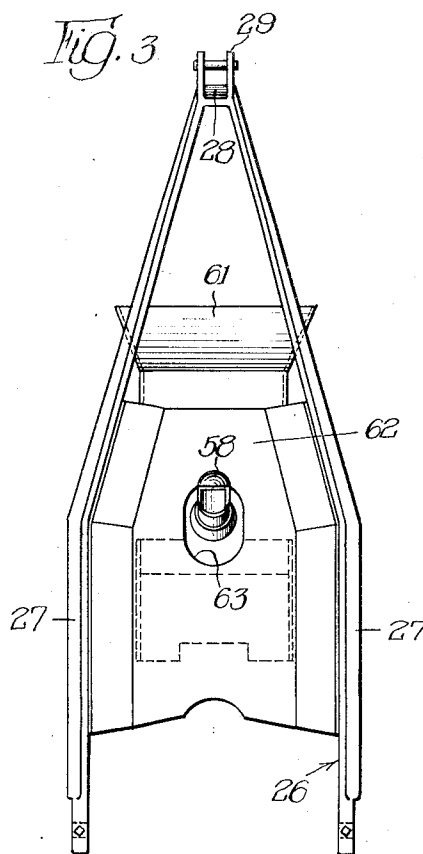
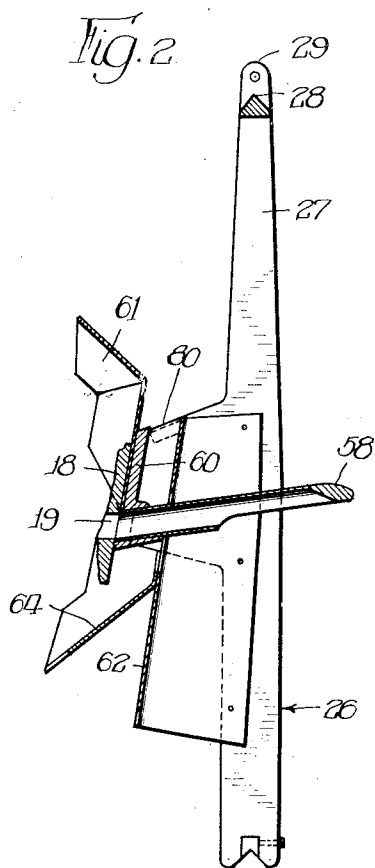
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2 Sheets-Sheet 2



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## UNITED STATES PATENT OFFICE

2,064,245

DUST SHIELD

Richard A. Dittmar, Hudson, N. Y.

Application February 14, 1935, Serial No. 6,573

3 Claims. (Cl. 226—48)

The invention relates to improvements in machines for filling cement bags and has particular reference to equipment for keeping the surface of the bag clean and free of cement dust.

5 The invention has for its object the provision of a shield or dust guard on the weighing frame of a bag filling machine, such as those used in filling cement bags, to protect the rear and the sides of the bag from cement dust which would otherwise be deposited thereon.

10 Another object is to provide equipment of the character described which can readily be applied to machines now in use and which also aid in collecting the material leaking from the valves and from the bag opening so that parts of the machine as well as the surface of the bag are kept clean.

15 With these and other objects in view the invention may consist of certain novel features of construction and operation, as will be more fully described and particularly pointed out in the specification, drawings and claims appended hereto.

20 In the drawings which illustrate an embodiment of the invention and wherein like reference characters refer to like parts—

Figure 1 is a vertical sectional view showing a conventional bag filling machine equipped with the improvement of the invention;

25 Figure 2 is a detail sectional view showing a modified arrangement of discharge spout and also showing the dust shield of the invention attached to the weighing frame;

Figure 3 is a front elevational view of the structure shown in Figure 2;

30 Figure 4 is a side elevation of the beater or tapping member for the bag; and

Figure 5 is a front view of the member shown in Figure 4.

35 The equipment comprising the invention is particularly useful and finds its greatest application on machines operating on dry pulverized material or material of this nature which is easily disturbed so that the small amount leaking from the valves readily fills the air with dust which is deposited on the parts of the machine and on the surface of the bag being filled. Machines for filling bags with cement fall in this category and therefore this type of machine has been chosen for illustration in the drawings, wherein 10 is one of the side members forming the frame of the machine, having the transverse beam 11 suitably secured thereto as by plates 12 to provide a support for bracket 13. The upper portion of the machine is provided with a

hopper 14 having a feeding conduit 15 connected thereto within which operates the impeller 16 to deliver the material to the hopper. Below the hopper is positioned a semi-circular housing 17 having a casting 18 bolted thereto, providing a tangential discharge opening 19 through which the material is discharged by means of the impeller 20 secured to driving shaft 21. A sliding partition 22 is mounted between the hopper 14 and the housing 17 to act as a valve preventing discharge of the material to the housing. The casting 18, bolted to the housing and providing the discharge opening 19, is also provided with a cut-off slide valve 23 having its outer projecting end fixed to member 24 to which is secured the handle 25 conveniently located so that the operator can easily grasp the same when it is desired to close or open valve 23.

Apparatus for supporting and weighing the bag consists of a main frame designated in its entirety by 26 which is formed of members 27, Figures 2 and 3, converging at their upper ends and uniting at 28 to form spaced ears 29 by means of which the frame is pivotally supported on the end of the rod 30. The rod in turn is pivoted at 31 to support 33 adjustably held within the tubular recess 34 provided by hopper 14. The lower end of the frame is supported on the knife edges 35 provided by the balancing beam 36. The end of each member 27 is recessed to receive the knife edge of its respective balance beam and each member on the inside has secured thereto by the bolts 37 the straps 38, which depend from the members and provide at their lower ends journals 40. The balance beams 36 rest on knife edges 41 provided by the block 42 adjustably secured to the beam 11. The pair of balance beams for supporting the frame 26 are joined by standards 43, which in turn support the rod 44 carrying the counter-balance 45 which is adjustable along the length of the rod by means 46 so that proper counterbalancing of the beam 26 and the parts carried thereby can be secured.

40 Within the frame 26 is positioned a second frame designated in its entirety by 47, for supporting the bag. This frame likewise consists of two frame members 48, which converge and join with each other at their upper end and have secured to their lower ends the horizontal straps 50. Each strap is secured to the end of a member at substantially right angles thereto and is pivotally secured at its outer end to the journals 40 by means of the pivot bar 51. Positioned within the frame 47, at the base thereof,

is a cradle 52 which is vertically adjustable within the frame in order to accommodate bags of varying size. As the frame 47 is fixed to the outside or main frame 26 by means of the pivot bar 51 it will be seen that the cradle 52 on which the bag rests can be tilted when it is desired to discharge the bag. In order, therefore, to hold the frame in a vertical position with the cradle horizontally disposed, there is secured at said upper end a latch 53 having the handle 54. This latch is normally engaged by the latching bracket 55 pivoted at 56 and vertically adjustable by means of the adjusting screw 57.

From the foregoing it will be observed that the main frame 26 and the bag supporting frame 47 carried thereby are movable in a vertical direction as the balance beams 36 rock on their knife edges, and in this manner the said frame performs a weighing operation. When the frame is empty it will assume its uppermost position and the latch 53 will be securely held by latching bracket 55. When the bag placed on the cradle 52 has been filled with its predetermined weight of cement, the balance beam 36 will have rocked to lower the frame and thus locate latch 53 out of contact with the bracket. With the frame in this position the operator by grasping handle 54 can tilt the bag supporting frame 47 on its axle 51, whereupon the bag will slide off the cradle and will be deposited upon a moving conveyor or the like.

To secure proper delivery of the cement to the bag a discharge spout 58 is associated with the discharge opening 18. The spout is fixedly carried by bracket 60 which is integral with member 27 of the main frame, as shown in Figure 2. The bracket is of course movable and has a close sliding fit with the face of the casting 18 on the housing 17 and which provides the discharge opening 19. For purposes which will be later explained the bracket 60 carries the guard 61 which is likewise movable with respect to the housing. In the operation of the machine the cement issuing from the discharge opening 19 and being delivered by spout 58 to the bag is gradually cut off by movement of bracket 60 with respect to the casting on the housing 17. The bracket carries the discharge spout with it, which is ultimately located below and entirely out of alignment with the discharge opening. When the parts assume this position the proper weight of cement has been delivered to the bag. The operator then closes the slide valve 23 through actuation of handle 25 and removes the bag from the cradle 52 as has been described.

During operation of the machine as above described considerable cement leaks out through the various valves and is discharged into the air in the vicinity of the bags being filled. Considerable cement issues from the bag valve formed by the bracket 60, sliding on the face of the casting 18 and this is particularly so when the openings are out of alignment and after the bag has been filled but before the operator closes the cut-off slide 23. Also some cement issues from the opening in the bag through which projects the discharge spout 58. The material leaking from the valves and that which is expelled from the opening in the bag is ultimately deposited on the surface of the bag and unless the bags are cleaned, which requires a separate operation, they are delivered to the purchaser in a dusty condition. The invention aims to maintain the surface of the bag, and particularly the rear of the bag presented toward the machine,

clean and free of cement dust, and contemplates the provision of a dust shield indicated in its entirety by 62 carried by the main frame 26 in the vicinity of the valves to protect the bag. As better shown in Figures 2 and 3, the shield is arcuate in horizontal cross section and extends for a portion of the length of the frame 26 above and below the discharge spout 58, the frame having an opening 63 for accommodating the spout. Also the shield has secured to its rear a chute 64 which is positioned below the discharge spout and is adapted to catch the cement leaking from the bag valve and also that discharged rearwardly from the opening in the bag and deposit the same to the rear of the weighing frame.

Machines such as above described are provided with a member for beating or tapping the bag to settle the material as the same is delivered thereto. The machine as shown in Figure 1 is a conventional bag filling machine and in order to equip the same with the dust shield of the invention, it was necessary to modify the construction of the beater for the bag. The member, Figures 4 and 5, for engaging the bag consists of an oval shaped disc 65 having its convex face presented to the bag and a pair of spaced supports 66 suitably secured to the rear side of said member. The supports are apertured at 67 for pivotal securement to the lever 68, which in turn is pivoted at 70 to bracket 13. The supports 66 are likewise provided with a connection 71 by which the same are fixedly secured to the oscillating rod 72. As this rod oscillates back and forth, being actuated by any suitable means not shown, the disc 65 will be given a beating or tapping motion intermittently striking the side of the bag and thus settling the material being delivered thereto.

The discharge spout 58 is inserted within an opening in the cement bag prior to the filling operation and in order to hold the bag in position on the spout a bag lock 74 is provided having teeth on its underside for securely holding the bag to the spout and being pivoted at 75 to spaced arms integral with a yoke member 76 fixedly secured to members 27 of the frame 26. The yoke member is positioned to locate the lock above and substantially centrally of the length of the spout 58. The lock 74 is automatically released when the frame 47 is tilted to discharge a bag therefrom by means of lever 77 pivoted to said lock. The end of the lever projects upwardly into the path of the bracket 78 fixed to the upper end of the frame 47. When the frame is tilted the upper end moves outwardly, engaging the lever 77 and releasing the lock. However, return of the frame to its original upright position does not apply the bag lock since the lever 77 merely pivots in a counter-clockwise direction.

The present shield or dust guard can be readily applied to the weighing frame of bag filling machines without requiring any change in their construction. The shield is positioned on the frame so as to engage with the side of the bag presented toward the machine and to cover that portion of the surface of the bag which is subjected to the greatest amount of cement dust. The addition to the shield of the rearwardly extending chute 64 serves to collect considerable of the dust discharged from the valves and to deliver the same to the rear of the frame so that the vibrating structure and the vibrating disc are also kept clean and free of cement dust. To also prevent the cement from being depos-

ited on the top of the bag a cover 80, Figure 2, joins the respective sides of the bracket 60 and covers the space between the top of the shield 62 and the rear of the bracket. This cover and also the guard 61 prevents the cement from travelling in an upward direction and acts as deflecting means to direct the dust toward the chute 64 for its ultimate discharge to the rear of the weighing frame.

Figure 2 shows the application of the dust shield of the invention to a weighing machine where the tilting frame 47 and the attached cradle for supporting the bag are omitted. In the operation of these machines the operator removes the bag from the discharge spout by hand. To facilitate the removal of the bag the discharge spout is tilted upwardly at an angle of approximately seven and one-half degrees from the horizontal. The natural movements of the operator in removing a bag from the spout is in an upward direction and by tilting the spout upward, as shown, the operation does not tend to cause opening of the bag valve. The bag lock is also omitted along with the tilting frame. However, the dust shield and guard are constructed similar to that shown in Figure 1 and have the same position with respect to the bag valve and other parts of the machine.

The invention is not to be limited to or by details of construction of the particular embodiment thereof illustrated by the drawings, as various other forms of the device will of course be apparent to those skilled in the art without departing from the spirit of the invention or the scope of the claims.

What is claimed is:

1. In a device of the character described, in combination, a bag filling machine including a housing having a tangential discharge opening, an impeller operating therein, a weighing frame supported for vertical movement, a discharge spout carried by said frame and having association with the tangential opening in the housing, whereby cement is delivered to the spout when the parts are in alignment and is cut off when the same are out of alignment, a dust shield secured to said frame and located to the rear of the bag, said shield extending for a distance above and below the discharge spout to thereby cover the rear surface of the bag for

the entire upper portion thereof, whereby said shield protects the surface thereof from the cement dust discharged into the air during the filling operation, and a guard secured to the discharge spout and located adjacent the housing, said guard being directed upwardly and rearwardly to deflect the cement dust downwardly.

2. In a device of the character described, in combination, a bag filling machine having a weighing frame, a discharge spout carried by the frame for delivering material to a bag, a valve for cutting off the supply of material to said discharge spout, a dust shield secured to said frame and located between the bag and said valve, said shield having an opening through which the discharge spout projects, said shield extending for a distance above the discharge spout and for a greater distance below the discharge spout to thereby cover the rear surface of the bag for the entire upper portion of the same, whereby said shield protects the rear surfaces of the bag and keeps them clean and free of dust, a guard also carried by said frame and associated with said valve, said guard extending upwardly and rearwardly to deflect cement dust downwardly, and a downwardly directed member secured to the rear of said shield for collecting the cement dust and discharging the same rearwardly of the shield.

3. In a device of the character described, in combination, a bag filling machine including a housing having a tangential discharge opening, an impeller operating therein, a weighing frame supported for vertical movement, a discharge spout carried by said frame and having one end associated with the tangential opening of the housing to provide a valve for admitting and cutting off the supply of material from the housing, said spout being directed upwardly at approximately seven and one-half degrees from the horizontal to prevent opening of the valve during the operation of removing the bag from the discharge spout, a dust shield secured to said frame and adapted to engage the rear surface of the bag being filled, said shield being located between said bag and said valve and having an opening through which the discharge spout projects, whereby said shield maintains the rear surface of the bag clean and free of dust.

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