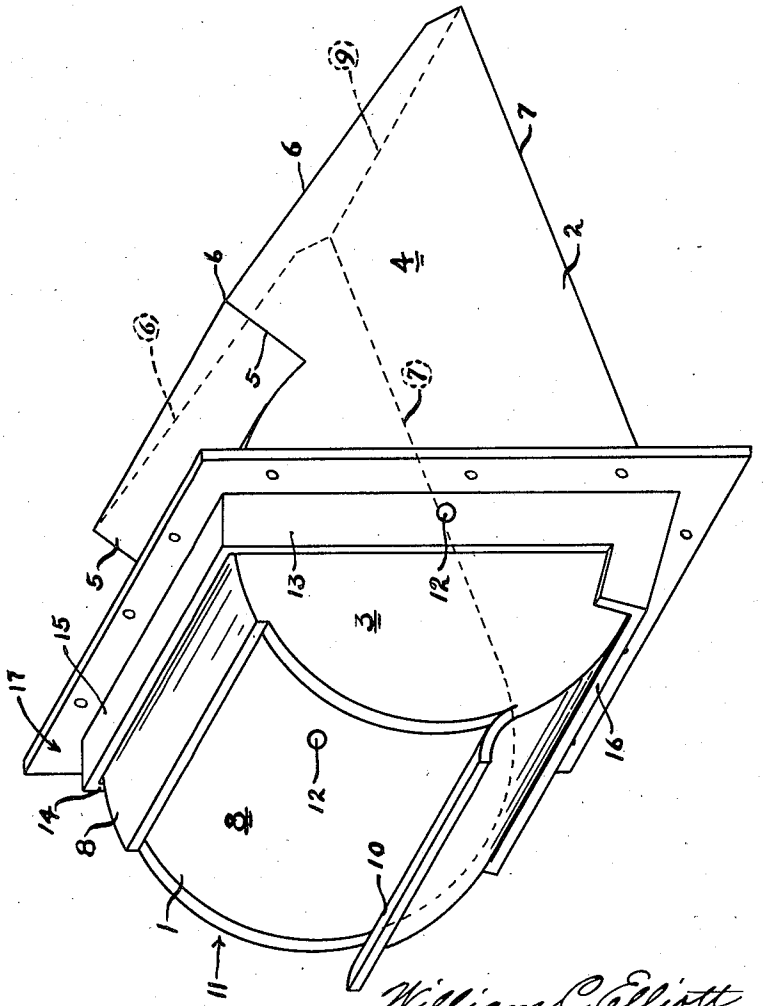
Aug. 4, 1936. W. C. ELLIOTT ET AL 2,049,998

ADJUSTABLE SPOUT FOR GRANULAR MATERIALS

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FIG. 1



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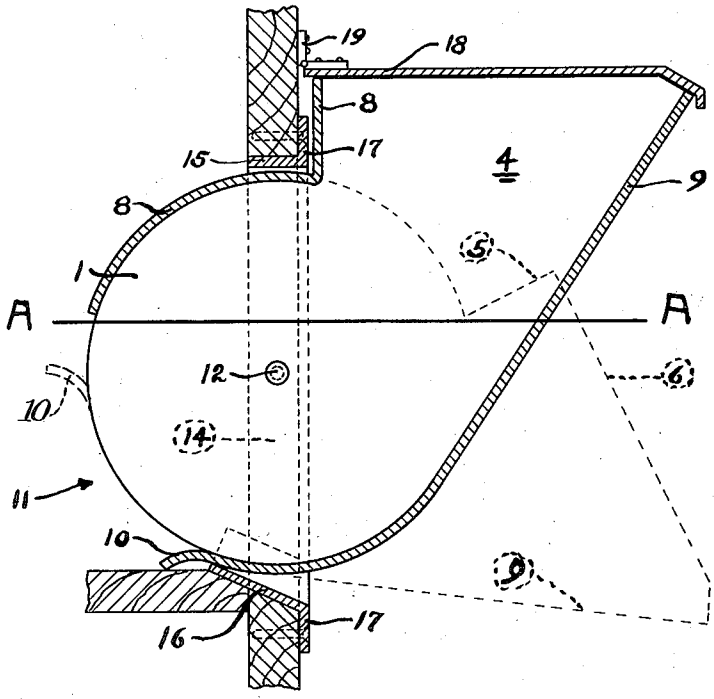


FIG. 2

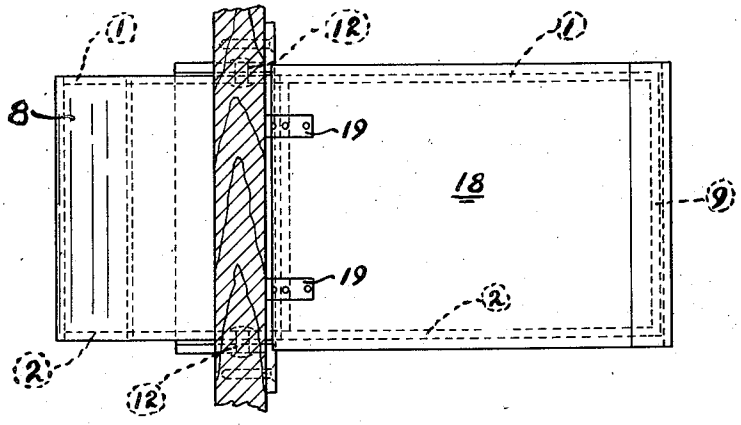


FIG. 3

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ADJUSTABLE SPOUT FOR GRANULAR MATERIALS

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Application February 9, 1935, Serial No. 5,790

2 Claims. (Cl. 221—144)

Our invention relates to spouts for discharging granular or flocculent materials from bins, hoppers, and the like, and more particularly to spouts for this purpose which are adjustable as to flow.

The prime object of the invention is to construct a spout for the purposes described which is not only adjustable as to flow but which may be easily closed against the flow of material without waste of the material and which when closed will permit the sampling of material from the bottom of the bin in which the material is contained.

So far as these inventors know or have been able to ascertain the only means now used for controlling the flow of such materials from a bin consists substantially of a gate of blade-like form actuated manually through transverse grooves in a flow pipe to cut off the flow of material. With many commodities, for instance, shelled corn, foreign objects such as corn cobs, sticks, and the like, inadvertently reach the bin with the commodity and when attempt is made to shut off the flow of the commodity by the usual gate in many instances it is found difficult or impossible to close the gate. With other commodities such as threshed oats the commodity itself is of such a nature that it becomes wedged in the groove in which the gate acts and prevents closure of the gate. With the present gated spouts it is impossible to take a sample of the commodity in the spout without starting the flow of the commodity which causes considerable loss.

Our device is so designed that the commodity may at all times be sampled without loss and at no time will any type of commodity, or extraneous matter in the commodity, prevent positive closing of the flow.

Other objects of the invention are to provide a device of the class described which is new, novel, practical and of utility; which may be easily and quickly installed in a filled bin with very little loss or escape of material; the cost of manufacture and installation of which will not be prohibitive; the operation of which will be simple; which may be installed in bins with its outlet end exposed to the elements without danger of injury to any portion of the commodity; which is adapted for installation either in the wall of a bin adjacent its floor line or in the wall of a usual down pipe; which will be durable; and, which will be efficient in accomplishing all the purposes for which it is intended.

With these and other objects in view as will more fully appear hereinbelow, our invention consists in the construction, novel features, and combination of parts hereinafter more fully described, pointed out in the claims hereto appended, and illustrated in the accompanying two-sheet drawings, of which,

Figure 1 is a perspective view of the device in a partial open position;

Figure 2 is a sectional elevational view of the device installed in a bin wall, and shown in a closed position, and showing in dotted lines its position when open; and,

Figure 3 is a top view of the device installed.

Like characters of reference designate like parts in all the figures.

It is understood that various changes in the form, proportion, size, shape, weight and other details of construction, within the scope of our claims may be resorted to without departing from the spirit or broad principle of our invention and without sacrificing any of the advantages thereof; and it is also understood that the drawings are to be interpreted as being illustrative and not restrictive.

The inventive idea involved is capable of receiving a variety of mechanical expressions one of which, for the purpose of illustrating the invention, is shown in the accompanying drawings wherein:—

The reference numerals 1 and 2 represent two parallel spaced walls each consisting substantially of a half disc portion 3 integral with a spout portion 4. At the upper termination of the half disc portion 3 each wall has a portion 5 substantially perpendicular to the half disc edge and at the lower termination of the half disc its edge is continued upwardly and outwardly to terminate substantially even vertically with the upper edge of the portion 5 with spaced relation thereto. The upper edge of the portion 4 is indicated by the reference numerals 6, and the upwardly and outwardly extending portion thereof is indicated by the reference numerals 7.

The elements 1 and 2 are rigidly connected in spaced relation by a roof member 8 which is welded or otherwise rigidly attached to the upper portion of the half disc portion 3 and is bent contiguous with the edges of the perpendicular portions 5; and also by a bottom member 9 which is also rigidly attached between the members 1 and 2 by welding or the like and continues from the lower portion of the half disc portion 3 upwardly and outwardly contiguous with the edges 7 of the sides to their uppermost edge. The lowermost end of the bottom member 9 is curved slightly away from the half disc por-

tions 3 and forms a lip as indicated by the reference numerals 10. An intake aperture 11 is left between the portion 10 of the bottom member 9 and the lowermost edge of the top member 8. The above construction has been described as being welded joints but it is understood that any desired type of construction such as die cutting and pressing and the like may be resorted to if found practical.

At substantially the rotative axial center of each side wall is provided a trunnion 12 preferably consisting of rivets which pivotally mount the spout above described to opposite sides 13 and 14 of a substantially square frame. The sides 13 and 14 of the frame are held rigidly in spaced relation by upper and lower cross-members 15 and 16 respectively. The frame above described is provided with a flange 17 which is also substantially square and which at all points is perpendicular to the relative sides or ends of the frame. It will be noted in Figs. 1 and 2 that the lower member 16 of the frame extends slightly upwardly instead of lying exactly perpendicular to the flange 17.

The device is installed by cutting a square hole in the side of the bin or the side of a down spout inserting the frame into the aperture and attaching the flange 17 to the adjacent surface of the bin or down pipe by screws, nails, or the like.

In Figs. 2 and 3 is illustrated a lid 18 connected by hinges 19 to the wall of the bin for closing the outlet end of the spout when it is in its uppermost or closed position. The lid is recommended only where the outlet end of the spout is presented to the elements and in Fig. 1 the lid is not shown.

In operation the spout when in a closed position remains substantially in the position illustrated in Fig. 2 with the aperture 11 pointing downwardly and with the commodity normally standing in the spout at a level substantially equal to the line A—A of Fig. 2. Downward pressure upon the outer edge of the spout causes it to assume a position illustrated in dotted lines in Fig. 2 at the same time the aperture 11 and lip 10 are moved upwardly. When in this position the grain is released to flow outwardly through the spout.

It may be seen that with this device there is no possibility of any of the commodity or any foreign element therein preventing the closing of the device and that it does not have to be closed against the pressure of a flowing fluid as is now necessary with the gate type spout. It may be seen that this is true because the portion of the roof member 8 enters the path of the flowing commodity and travels in a direction with it rather than perpendicular with it and that the portion 10 also travels in the direction of the flowing commodity. When in use in connection with some commodities it may be found desirable to eliminate the curved portion 10 of the bottom member 9 in order to assure positive and easy closing.

Because of the fact that the commodity at all times stands in the spout it is easy to take a sample from the spout by hand without waste and this sample will represent the exact commodity last run through the spout.

In grain elevators particularly, at the present time much waste is occasioned yearly from sampling due to the fact that when a customer wants a sample of what he is buying, possibly for seed purposes, it is necessary to open the chute and before the chute can be opened and again closed a considerable amount of the commodity has escaped. The purchaser usually takes a hand full or two for examination and after making his decision throws it on the floor. The value of the material is then reduced to what is known as sweepings and is usually sold mixed with other commodities at a reduced price. With the present invention the sample may be taken and returned to the spout without waste. Another advantage of the present invention is the quickness with which the flow may be cut off. Much waste is now occasioned by over-running containers due to the fact that the present gates can not be immediately closed.

From the foregoing description it may be seen that our device will function as described and will accomplish all of the objects set forth hereinabove as well as others.

It is obvious that the device as described hereinabove is substantially a form of a pipe elbow having parallel flat sides and that instead of being flat sided the pivoted portion of the device could be made tubular with equal results.

Obviously, the invention is susceptible of embodiment in forms other than that which is illustrated in the accompanying drawings and described herein, and applicable for uses and purposes other than as detailed, and we therefore consider as our own all such modifications and adaptations and other uses of the form of the device herein described as fairly fall within the scope of our claims.

Having thus described our invention, what is claimed and desired to be secured by Letters Patent, is:

1. In an adjustable spout for granular materials, the combination with a reservoir or duct for such materials, said reservoir having a lateral discharge-opening in a side wall, of a flanged frame including two side members and a top and bottom member adapted to be attached to the wall and bound the opening, and a spout element pivotally mounted within the frame, including: a substantially cylindrical closed ended portion the ends of which are respectively mounted pivotally upon the side members, one side of said portion being open and lying within the reservoir, the other side of said portion being open and communicating with a spout portion extending outwardly from the frame exteriorly of the reservoir, the inner opening of the cylindrical portion adapted to lie below the level of the upper lip end of the spout portion when the spout portion is moved to its limit upwardly, and said opening adapted to lie above the lip end when said end is moved to its limit downwardly.

2. Organization as described in claim 1 in which the lower edge of the inner opening is provided with an inwardly projecting lip.

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