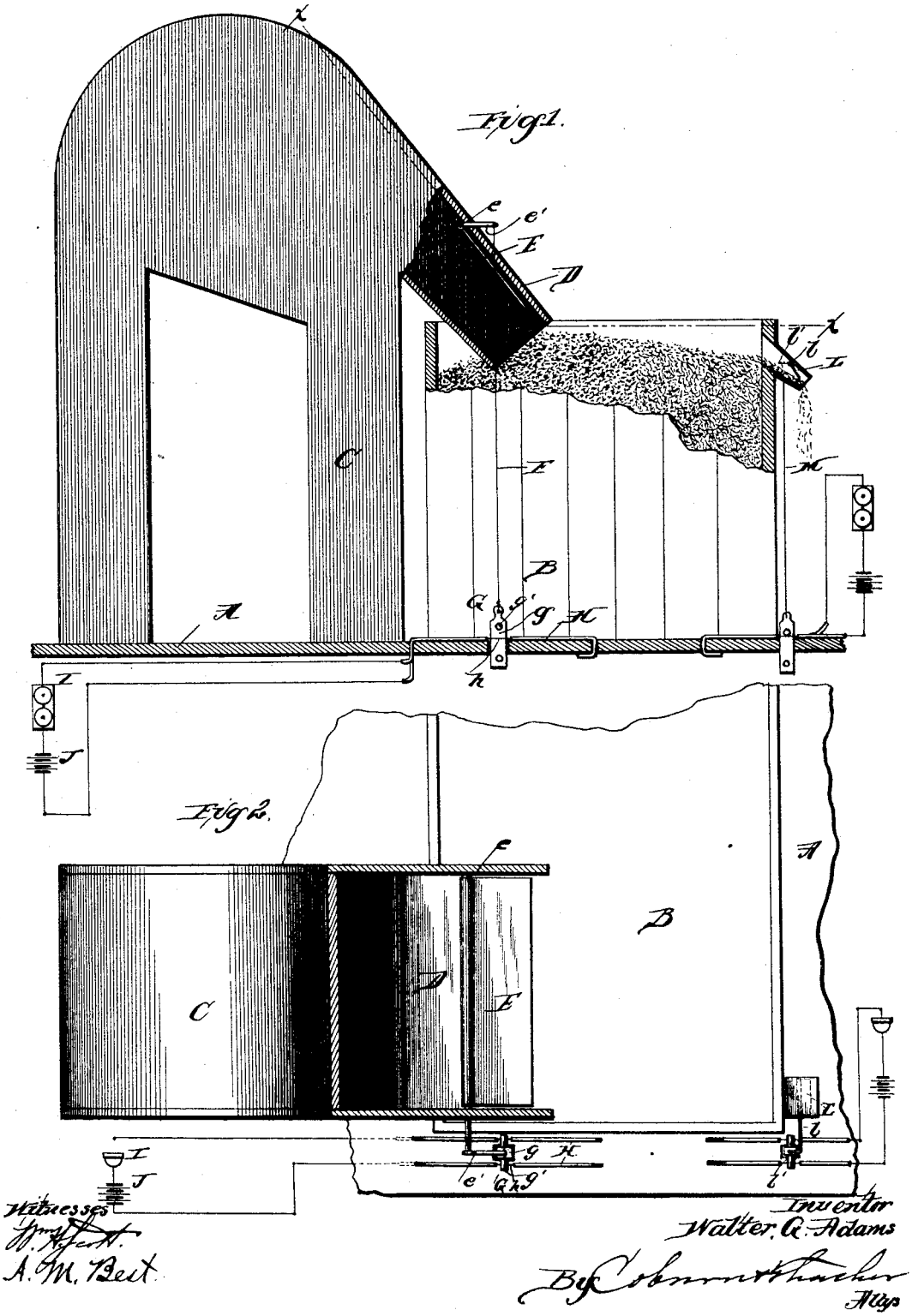
(No Model.)

W. G. ADAMS.

SPOUT ALARM FOR GRAIN BINS.

No. 456,667. Patented July 28, 1891.



UNITED STATES PATENT OFFICE.

WALTER G. ADAMS, OF RACINE, WISCONSIN, ASSIGNOR OF ONE-HALF TO THE E. H. PEASE MANUFACTURING COMPANY, OF SAME PLACE.

SPOUT-ALARM FOR GRAIN-BINS.

SPECIFICATION forming part of Letters Patent No. 456,667, dated July 28, 1891.

Application filed December 13, 1889. Serial No. 333,570. (No model.)

To all whom it may concern:

Be it known that I, WALTER G. ADAMS, a citizen of the United States, residing at Racine, in the county of Racine and State of Wisconsin, have invented certain new and useful Improvements in Spout-Alarms for Mills, Elevators, &c., which are fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents an elevation of an elevator-spout and grain-bin embodying my invention and partially broken away; and Fig. 2 a plan section of the same, taken on the broken line *x x*, Fig. 1.

My invention relates to devices for elevating and transferring grain, &c., in mills, elevators, and other like places, the object being to provide an indicator which will surely give an alarm when the discharge of grain through the elevator-spout ceases or when the bin is full or other like conditions.

The invention consists in applying a valve to the spout, which is turned by the flow of grain through the spout, but closes automatically when the stream of grain ceases, thereby setting off an alarm either when the discharge through the spout is stopped or when it begins, according to the circumstances of the case.

I will proceed to describe one mode in which my invention is carried out in a practical way, and will then point out more definitely in the claim the particular improvements which I believe to be new and wish to secure by Letters Patent. In this description reference will be made to the accompanying drawings, but these drawings are only for purposes of illustration, and I have not attempted in them to show an entire building or the entire elevating apparatus of the structure, but only so much as is necessary to an understanding of the present improvement, from which any one familiar with structures of the kind to which this invention appertains will be able, readily, to construct and apply the invention.

In the drawings, A represents any floor of a grain-elevator building, mill, or other like structure, and B a grain-bin located on said floor.

C represents a portion of the elevator truck or shaft, which it will be understood is provided with the usual endless chain of elevator-buckets or other elevating device, and D represents a spout running from the top of the elevating devices into the bin. The elevating devices operate in the usual well-known way to carry up grain and discharge through the spout into the bin. A further description is unnecessary, as these devices are common and well known; but it often happens that for some reason or other the transferring of the grain is stopped and the discharge through the spout ceases. In the ordinary construction of grain-elevators such an occurrence is not readily known. It is the object of my invention to provide means whereby occurrences of this kind may be at once indicated to attendants, though remote from the bins, and I will now describe this indicating device. A valve E is mounted in the spout D a short distance from its mouth, being fastened to a rock-shaft *e*, extending across the upper portion of the spout. This valve, as shown in the spout D, is hung so as to swing downward and close the spout by its own weight. At the same time it is sufficiently light to be easily turned upward by the stream of grain discharged through the spout into the bin without materially interfering with the flow, so that when the elevator is in operation and grain is being discharged through the spout into the bin, the valve will be thrown up into the position shown in Fig. 1 of the drawings and will be held up as long as the flow of grain continues through the spout. If, however, the flow of grain ceases the valve will drop as soon as the spout is free from grain. On one end of the rock-shaft outside of the spout, is a crank-arm *e'*, to which a wire or rod F is attached and drops downward to the floor, where it is connected at its other end to a bridge or circuit-connector G, which consists of a body or block *g*, arranged to move up and down vertically, and provided with a pin *g'*, projecting outward on each side thereof. Along the floor or within the floor are laid two wires H, one of which is connected with an alarm—for instance, an alarm-bell I—which is also connected to an electric battery J, to which one end of the other wire is also connected. These wires at the floor are insulated and are not connected.

The insulation is broken, however, for short distances just underneath the pin g', so that at this point there are small sections h of uninsulated wire. Now it is evident that when the pin g' is let down so as to be brought in contact with the two wires at the points h, the electric circuit will be completed and the alarm will at once be sounded, but when the pin is lifted from such contact the circuit will be broken and the alarm is not operated. The arrangement of the parts is such that when the stream of grain is flowing through the spout and the valve E is held up, as seen in Fig. 1 of the drawings, the bridge G will be pulled up also and the pin raised from contact with the wires, and this relation of the parts will be continued so long as there is a discharge of grain through the spout; but if from any cause whatever the flow of grain through the spout ceases and the valve drops, as already described, the bridge drops also, the pin drops into contact with the wires, the circuit is closed, and the alarm is at once sounded, so that the attendant is notified immediately that the discharge of grain into the bin has ceased.

The device may also be applied in such a way as to indicate when a bin or other receptacle is full, and this application I have also shown. To accomplish this a spout K, or other discharge device, is let into the extreme upper portion of the bin, so that when the bin is filled up to this point the grain will begin to flow out through this discharge. In this spout is mounted a valve L, like the valve E, being attached to a rock-shaft l, which is provided at one end outside of the discharge with a crank-arm l', and this crank-arm is connected by a rod M or any other suitable connection to a circuit breaker and closer for a battery and alarm circuit, the same as already described; but in this instance the relative position of the crank-arm and the valve is changed, so that when the valve stands in its normal condition, turned down and closing the discharge-opening, it will elevate the circuit-closer, so that the alarm will not be sounded, but as soon as grain begins to flow through this discharge-opening the valve will be raised, as seen in Fig. 1 of the drawings, thereby turning down the crank-arm, closing the circuit, and sounding the alarm, as already described.

In the drawings and the description thereof above, the rock-shaft of the valve is arranged in the upper part of the spout. It is evident, however, that it may be arranged in the lower portion of the spout, if desired, so that the spout will be turned downward by the flow of grain and upward to close the passage. In this case of course the arrangement of the crank-arm and the circuit-breaker must be adapted to the position of the valve, so as to open and close the circuit at the proper time for the indications, as already mentioned, and the weight on the crank-arm must be sufficient to turn the valve upward when released from the action of the stream of grain flowing through the passage in which the valve is located. In case the device is used to indicate that the bin or other receptacle is full, the slight discharge from the bin may be conducted to any other receptacle, or in some cases may be turned back into the receptacle, and, as already stated, this device is not intended simply for use in grain-elevators, but in mills and other places where it may be applicable for indications similar to those already mentioned.

The particular alarm device is also a matter of variation, and the one shown and described is simply for the purpose of making a complete illustration of an operating device. This alarm may be wholly mechanical or may be partly electrical. When the device here shown and described is used, it will be necessary to cover the exposed portions of the wire to protect it from the dust and dirt which are present in all structures like those where this improvement is intended to be used. It will be understood then that the instances herein given are simply for the purpose of illustration without regard to the particular construction and arrangement of the spouts, either for delivery into the bin or discharge therefrom. These may be constructed and arranged in any way suitable for the particular purpose and location of the bins or other receptacles for grain, &c., and the particular construction and arrangement of these and other parts of the structure as a whole do not constitute a part of this invention, for they may be modified to suit circumstances and yet retain the main characteristic of my invention, which is a valve set in a spout or other like device, either for delivering into a receptacle or discharging therefrom, and adapted to be operated or moved by the flow of grain through the said passage, so as to operate the alarm to indicate either the cessation of such flow or the commencement thereof, as the case may be.

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

The bin B, in combination with the elevator-spout D, arranged to discharge into said bin, the swinging valve E, attached to the rock-shaft e, provided with the crank-arm e', the connecting-rod F, the insulated wires H H, connected to a battery and alarm-circuit and having sections h uninsulated, and the circuit breaker and connector G, connected to the crank-arm e', whereby it is operated by the movement of the valve, substantially as and for the purposes specified.

WALTER G. ADAMS.

Witnesses:
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