To all whom it may concern:

Be it known that I, WILLIAM E. STINE, a citizen of the United States, residing at Padroni, in the county of Logan and State of Colorado, have invented certain new and useful Improvements in Alarms for Grain-Bins; and I do declare the following to be a full, clear, and exact description of the invention, and such manner and form as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in alarms for grain bins and the like to indicate when the same have become nearly filled with grain.

The object of the invention is to provide a device of this character which can be attached to the outlet of each grain spout into the bin or other receptacle which will sound an alarm when the grain has reached a height adjacent said spout.

A further object is to provide an alarm which is operated by a number of propeller blades, said blades being automatically moved beneath the outlet spout so that the same are actuated by the flow of grain.

With the foregoing and other objects in view, the invention resides in the novel features of construction, combination and arrangement of parts which will hereinafter be more particularly described and claimed.

In the accompanying drawings wherein similar reference characters designate like parts throughout the several views:

Fig. 1 is a vertical section through the upper end of a grain bin showing an alarm constructed in accordance with my invention attached to the inlet spout thereof, said alarm appearing in side elevation;

Fig. 2 is a view similar to Fig. 1, but showing the position of the parts of the alarm when they are active;

Fig. 3 is an elevation taken at right angles to Fig. 1; and

Fig. 4 is a vertical section on the plane of the line 4—4 of Fig. 1.

While this invention is designed primarily to be used on grain bins where it is attached to the outlet end of each spout which runs into the top thereof, yet it may also be used in connection with any receptacles which are designed to receive grain or similar materials. In the drawings E designates the upper portion of a grain bin into which one or more spouts or chutes S extend so that grain may be deposited therein.

To the lower end of each chute S is attached a short spout-like member 1, said member being preferably the shape of the chute S and so attached thereto that all grain passes therethrough on its entrance to the bin. While any preferred means may be employed for attaching the member 1 to the end of the spout S, I secure a pair of ears 2 to the opposite sides of the member 35 into which substantially U-shaped catch members 3 connected to said spout are disposed, thereby permitting the member 1 to be readily attached or detached to or from said spout. The member 1 carries adjacent its lower end the alarm and means for moving the same into operative position there-beneath so that grain dropping therefrom may operate said alarm.

The alarm comprises a plurality of, preferably four, propeller blades 4 which project from and are secured to a shaft 5. The sides of the blades preferably are extended laterally to form side flanges 6 so that the force of the grain which drops from the spout S more effectively operates said propeller. The opposite ends of the shaft 5 are journaled in depending arms 7 which extend from the free ends of the long arms 8 of right angular or other suitable shaped levers 9, said levers being pivoted at the ends of their short arms 10 to the opposite sides of the member 1 as at 11.

One end of the shaft 5 has an eccentric 12 fixed thereto which operates a striker 13, the clapper on one end of which is designed to strike a bell or other sounding device 14. The other end of the striker is bent laterally to form an attaching foot which is secured to a laterally extending short arm 15, said arm 15 being provided on one of the arms 7.

As shown in the drawings, the eccentric 12 is so shaped that when rotated it forces the striker away from the sounding device gradually, and then, when a predetermined point is reached, said striker is allowed to quickly return to its active position in engagement with the sounding device, this return movement being occasioned by the spring action of said striker. In order to facilitate the operation of said striker 13, an operating finger 16 is secured thereto for engagement by the eccentric. From this description it will be seen that when the propeller formed by the blades 4 and the shaft 5 is rotated in the proper direction, the eccentric 12 will actuate the striker 13 which
in turn acts upon the sounding device in the form of the bell 14, thereby sounding an alarm.

The propeller is ordinarily actuated by the flow of grain from the member 1 when the quantity of grain within the elevator has been raised above the desired height. Means for moving the alarm carried by the hanger formed of the levers 9 beneath the spout consists of a hanger or bracket 17 which carries a deflector plate 18, the latter extending downwardly below the alarm so that it is actuated by the rising of the grain before the same reaches said alarm. The hanger 17 comprises a pair of right angular or other suitable shaped levers pivoted by their short arms 19 to the member 1 at points spaced above the pivots 11, the long arms 20 of the levers having attaching arms 21 formed integrally therewith to which the plate 18 is secured. Links 22 connect the short arms 10 and the long arms 20 of the levers of each side of the hangers so that operation of the plate 18 may readily move the alarm.

By pivoting the hangers as hereinbefore mentioned and providing a plate 18 considerably heavier than the alarm, the latter is normally held out of operative position to one side of the line of travel of the grain which flows from the member 1, said plate 18 hanging substantially vertically. When, however, the grain in the bin is raised beyond a predetermined point, the further entrance of grain through the spout forces the plate laterally as shown in Fig. 2, thus moving the propeller blades 4 beneath the member 1. When the propeller has assumed this position it will be rotated by the action of the grain upon the blades 4, thus causing the cam to rotate and operate the bell. The alarm will continue to sound so long as the flow of grain through the spout S continues, or until the mass of grain in the bin has been lessened so as to allow the plate 18 to assume its normal vertical position. When the plate is permitted to move back into this position, its weight causes the alarm to move from beneath the member 1 to one side thereof as shown in Fig. 1. Thus it will be seen that the action of this improved alarm is entirely automatic and that said alarm will be operated any time the quantity of grain in the bin reaches a predetermined point, by positioning the alarm at various distances above the bottom of the bin or by increasing or diminishing the length of the plate 18.

I claim:

1. The combination with an inlet spout, of an alarm normally disposed out of the path of flow of materials through said spout, and means for automatically moving said alarm beneath the end of the spout to cause the same to be directly actuated by the flow of materials, and for returning the same to its normal position.

2. The combination with a receptacle having an inlet spout, of an alarm normally disposed out of the path of flow of materials through said spout, and means operable by the weight of the excess materials in said receptacle to move said alarm beneath the end of the spout to cause the same to be directly actuated by the flow of materials therethrough.

3. The combination with an inlet spout; of a hanger, a propeller rotatably mounted in said hanger, an alarm carried by the hanger and operated by said propeller, and means for moving said propeller beneath said spout, said propeller being actuated by the passage of grain therethrough.

4. The combination with an inlet spout; of a hanger pivoted to said spout, a shaft carried thereby, propeller blades extending from said shaft, an eccentric on one end of said shaft, a sounding device, a striker for actuating said sounding device, a finger extending from said striker for engagement by said eccentric, and means for moving said propeller beneath said spout.

5. The combination with a receptacle having an inlet spout, of an alarm normally disposed out of the path of flow of materials through said spout, and a deflector plate connected to said alarm, said plate being movably laterally by the weight of the excess materials in said receptacle to dispose the alarm beneath the end of the spout to be directly actuated by the flow of material therefrom.

6. The combination with an inlet spout; of a propeller hanger, a propeller carried thereby, an alarm, an eccentric carried by the last named hanger, and a connection between said hangers whereby movement of said plate in one direction will carry the propeller beneath said spout, said propeller being operated by the passage of grain therethrough.

7. The combination with an inlet spout; of a propeller hanger comprising a pair of levers pivoted to the spout, depending arms extending from the free ends of said levers, a shaft carried by said arms, propeller blades on the shaft, an eccentric on one end of the shaft, a laterally extending short arm on one end of said depending arms, a sounding device on one of said depending arms, a striker fixed to said short arm to be actuated by said eccentric, and means connected with said hanger for moving said propeller beneath said spout.

8. The combination with an inlet spout; of a propeller hanger comprising a pair of levers pivoted to the spout, depending arms extending from the free ends of said levers, a shaft carried by said arms, propeller blades on the shaft, an eccentric on one end of the shaft, a laterally extending short arm on one end of said depending arms, a sounding device on one of said depending arms, a striker fixed to said short arm to be actuated by said eccentric, and means connected with said hanger for moving said propeller beneath said spout.
of the shaft, a sounding device on one of said depending arms, a striker carried by one of said depending arms to be actuated by said eccentric, an additional hanger comprising a pair of levers pivoted to the spout above the first mentioned levers, arms extending from said levers, a deflector plate carried by said last mentioned arms, and a connection between said hangers, said plate being adapted to move the first mentioned hanger laterally to dispose said propeller blades beneath said spout. In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

WILLIAM E. STINE.

Witnesses:
D. O. HARRIS,
D. A. ROGERS.