E. C. COVERT.

INDICATOR FOR STORAGE HOPPERS OR OTHER RECEPTACLES.

APPLICATION FILED FEB. 27, 1918.

1,379,803. Patented May 31, 1921.

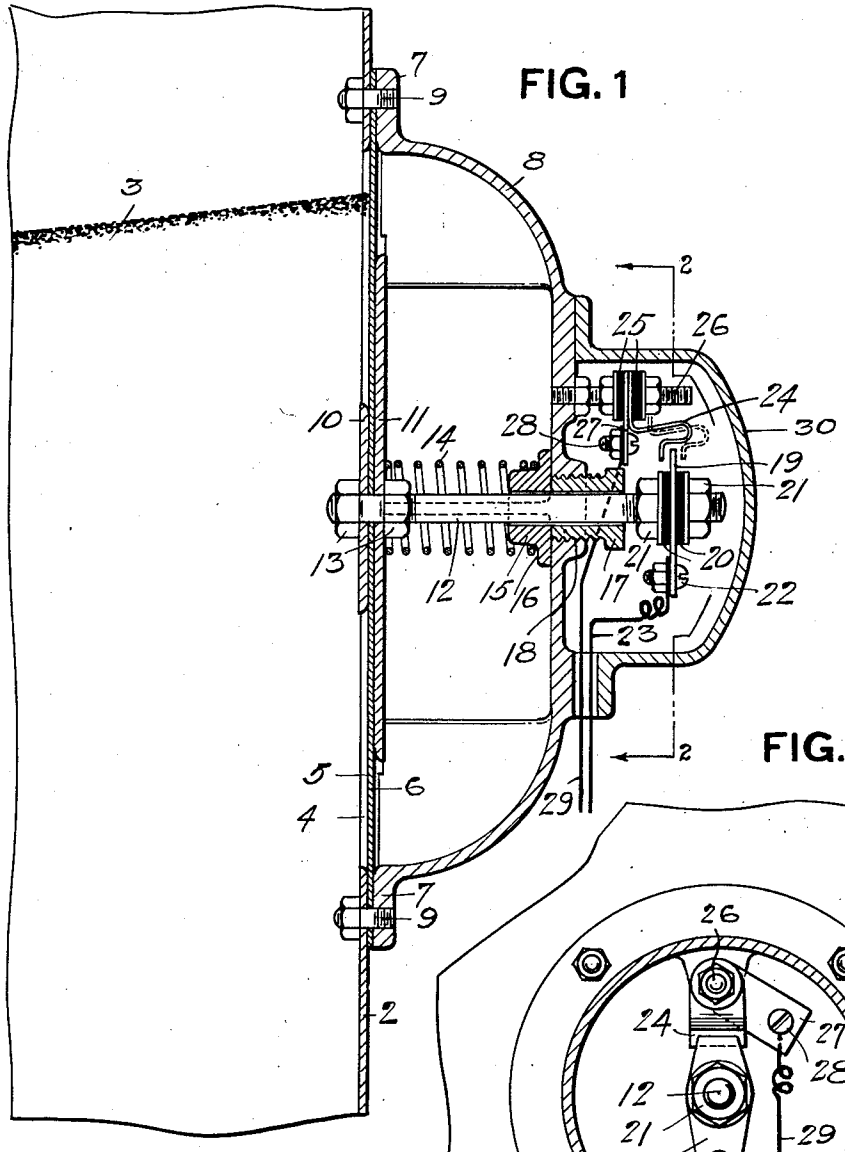


FIG. 1

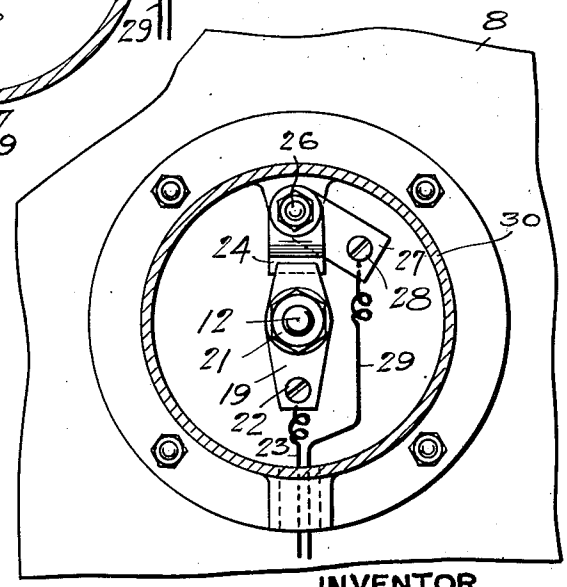


FIG. 2

INVENTOR

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UNITED STATES PATENT OFFICE.

EDSON C. COVERT, OF NEW KENSINGTON, PENNSYLVANIA, ASSIGNOR TO HEYL & PATTERSON, INC., OF PITTSBURGH, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

INDICATOR FOR STORAGE-HOPPERS OR OTHER RECEPTACLES.

1,379,803. Specification of Letters Patent. Patented May 31, 1921.

Application filed February 27, 1918. Serial No. 219,530.

To all whom it may concern:

Be it known that I, EDSON C. COVERT, a citizen of the United States, and resident of New Kensington, in the county of Westmoreland and State of Pennsylvania, have invented a new and useful Improvement in Indicators for Storage-Hoppers or other Receptacles; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to an indicator for ascertaining the height of pulverulent materials in storage tanks or other receptacles. It is particularly adapted for use in connection with the storage of pulverized coal, which is so commonly used now for fuel in large boiler units.

The object of my invention is to provide a simple and reliable means for ascertaining the height of pulverulent material and means for indicating when the material has gone below a certain level in the storage tank.

To these ends my invention comprises the novel features hereinafter set forth and claimed.

In the accompanying drawing, Figure 1 is a side elevation in section showing my invention as attached to the side of a storage hopper; and Fig. 2 is a plan view looking toward the hopper.

Referring to the drawings, the numeral 2 designates a portion of one of the walls of a suitable storage tank or other receptacle containing the coal or other pulverulent material 3. The wall 2 is provided wtih the opening 4 and this opening is covered by a flexible disk or diaphragm 5 which may be of any suitable construction. Asbestos cloth provides a suitable material and the diaphragm illustrated is made up of such asbestos cloth 6, which is held at its outer edges between the wall or plate 2, and the flanges 7 on the dished casting or member 8. The studs 9 secure the casting to the wall-plate 2.

Steel plates or washers 10 and 11 support the central portion of the diaphragm and these plates are held in position by the stud or rod 12 with the nuts 13 engaging the inner and outer plate. A spring 14 is interposed between the inner plate 11 and the collar 15 provided with the shoulder 16.

The stud 12 is freely movable longitudinally through the collar 15 and the adjusting screw 17 which is screwed into the opening 18 of the casting 8.

At the outer end of the stud 12 is the electrical contact 19 held between the non-conducting washers 20, said contact being held in place by the nuts 21 on said stud 12.

The contact 19 has the binding-post 22 which secures the wire 23 to said contact. The upper end of the contact 19 is adapted to engage the contact 24 which is held between the insulating washers 25 on the screw 26, said contact 24 contacting with the contact 27 which carries binding-post 28 to which the wire 29 is connected.

A cap incloses these electrical contacts, said cap being secured in any suitable manner to the casting 8.

When my improved device is in use, the adjusting-screw 17 is turned until sufficient tension has been placed on the spring 14 to cause the diaphragm 5, together with the plates 10 and 11, and contact 19, to move inward making electrical contact with 24, which will complete the circuit either to cause a bell to be rung or an electric light to be lighted, or other signal signifying that the hopper is running short of coal and needs replenishing. As long as the coal in the hopper is of sufficient height to bear against the diaphragm, the electrical contact will be broken and there will be no signal. Just as soon, however, as the coal gets below the diaphragm, the spring will act to move the diaphragm outward and so complete the circuit to give the signal that the bin needs replenishing.

While the drawing shows the indicator adjusted to make contact when the coal drops below the diaphragm, it is apparent that this can be reversed to make contact when the diaphragm moves inward, as indicated by the dotted-line position of the contact 24. The device can be adjusted according to the tension of the spring 14 to give warning of the height of the coal approaching any desired level. It has many advantages over the other devices now in use, the common practice being to gage the height of fuel in the hoppers by soundings.

The device is also applicable to screw-conveyers serving any number of hoppers,

and will do away with the common use of overflow tanks which have to be emptied.

What I claim is:

In an indicator of the character described, the combination with a hopper or other receptacle having an opening, a diaphragm covering said opening, a movable rod connected to said diaphragm, a dished member secured to said hopper at said opening, said rod passing through an opening in said dished member, a freely movable collar surrounding said rod, a spring interposed between said diaphragm and said collar, an adjusting screw surrounding said rod and passing through said dished member to engage said collar, an electrical contact carried by said rod, and a stationary electrical contact in the path of said first-named contact.

In testimony whereof I, the said EDSON C. COVERT, have hereunto set my hand.

EDSON C. COVERT.

Witnesses:
JOHN F. WILL,
J. R. KELLER.