P. SWANSON.

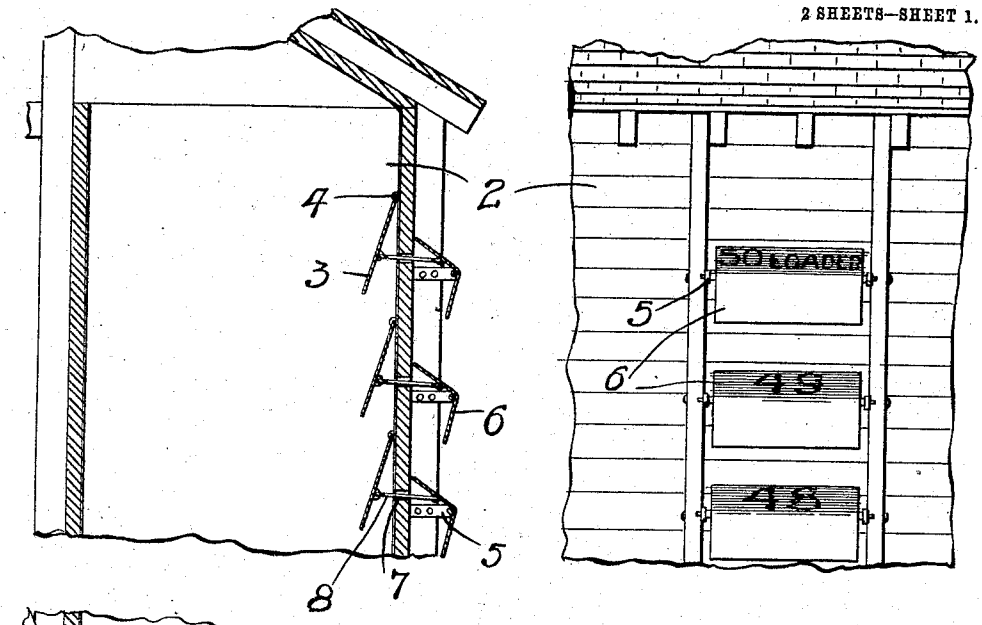
INDICATING DEVICE FOR BINS.

APPLICATION FILED SEPT. 29, 1906.

910,606.

Patented Jan. 26, 1909.

2 SHEETS—SHEET 1.



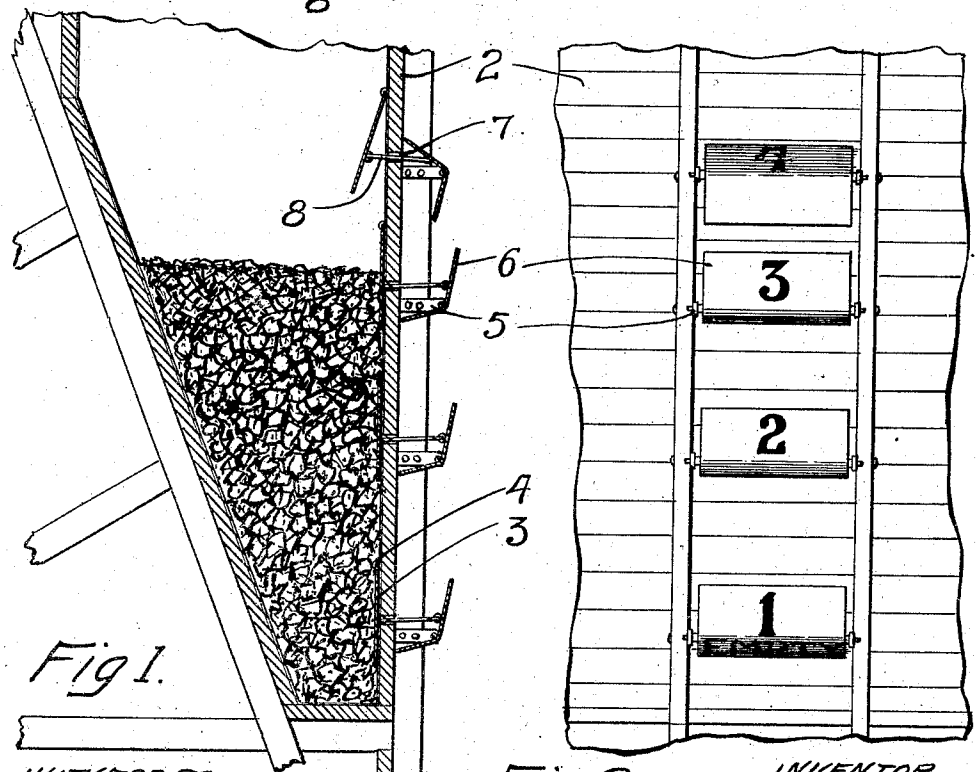


Fig 1.

Fig 2

WITNESSES

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INVENTOR

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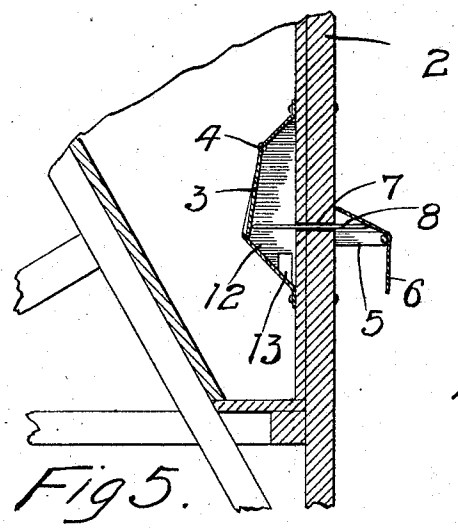


Fig 5.

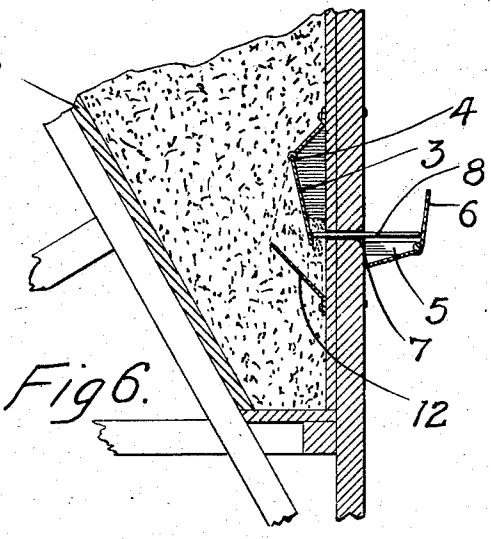


Fig 6.

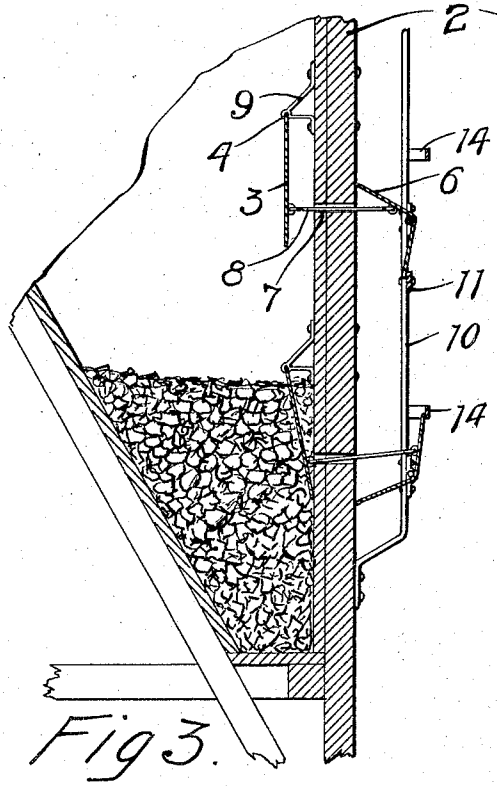


Fig 3.

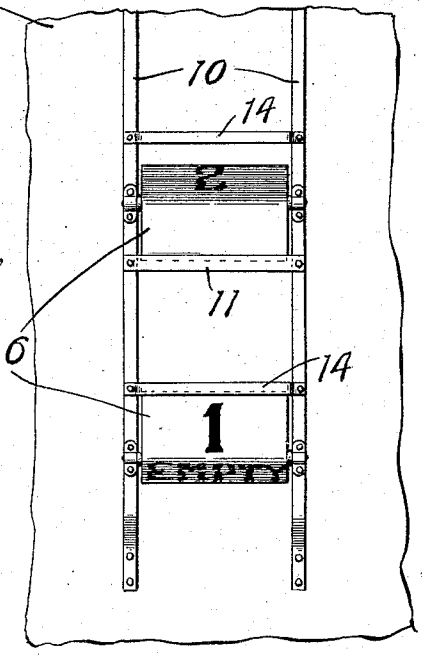


Fig 4.

WITNESSES

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UNITED STATES PATENT OFFICE.

PETER SWANSON, OF SOUDAN, MINNESOTA.

INDICATING DEVICE FOR BINS.

No. 910,606. Specification of Letters Patent. Patented Jan. 26, 1909.

Application filed September 29, 1906. Serial No. 336,660.

To all whom it may concern:

Be it known that I, PETER SWANSON, of Soudan, St. Louis county, Minnesota, have invented certain new and useful Improvements in Indicating Devices for Bins, of which the following is a specification.

The object of my invention is to provide means whereby a person not only can determine at a glance whether a bin is loaded or empty but can also determine the approximate height of the material in the bin. In this respect my present invention is an improvement over the apparatus shown and described in Letters Patent of the United States, No. 805,102, issued to me November 21,1905.

The invention consists generally in a series of indicating devices arranged one above another and numbered or suitably marked, the lower indicator bearing also the word "Empty" which will be exposed to view when the bin is discharged of its contents, and the upper indicator bearing the word "Loaded" which will be visible only when the bin is full, the position of the intermediate indicators determining the level of the load in the bin.

In the accompanying drawings, forming part of this specification, Figure 1 is a vertical sectional view of an ore bin with my invention applied thereto. Fig. 2 is a front view of the same. Fig. 3 is a vertical section illustrating a modification in the construction of the device. Fig. 4 is a front view of the device shown in Fig. 3. Fig. 5 illustrates the application of the invention to a grain bin, showing the position of the indicator when the bin is empty. Fig. 6 is a view of the same apparatus showing the position of the indicator when the bin is loaded.

In the drawing, 2 represents a coal bin of the ordinary type and 3 a series of plates pivotally supported at 4 on the inner wall of the bin and extending one above another from the bottom to the top. A bin of this type gradually decreases in cross sectional area from the top toward the bottom and I prefer to vary the distance between the plates according to the reduction in the area of the bin. For instance, assuming that the bin in Fig. 1 has a capacity of 50 tons, I will provide 50 plates one above another on the inner wall and arrange them so that the spaces will each represent a ton and the distances between the plates will accordingly be changed with the variation in the cross sectional area of the bin. For bins of greater or less capacity the number of plates will be changed accordingly. On the outer wall opposite the hinge plates I provide bars 5 arranged in pairs and hinge angle plates 6 thereon, the upper portion of each plate being of greater weight than its lower portion and normally tending to swing in by gravity and contact with the wall of the bin, and when in such position any marks or figures on the upper portion of the plate cannot be seen by a person standing on the ground. The lower or blank portion of the plate will, however, be visible. Holes 7 are provided in the bin walls and rods 8 are inserted therethrough and contact at their ends with the plates 3 and the upper portion of the plates 6. The rods 8 may be pivotally connected at their ends to the swinging plates or may have merely a loose contact therewith as preferred. The upper portion of each plate 6 is preferably numbered, beginning at the bottom of the bin with number one and so on consecutively to the top. If there are 50 of these plates then the one at the top will bear the numeral 50 which will be visible when the upper portion of the plate is swung outwardly or when the bin is loaded, but will be invisible when the level of the load in the bin is below the plate.

In addition to its numeral the lower indicator plate of the series bears also the word "Empty" which is painted or otherwise marked on the lower half of the plate. The upper plate of the series will bear in addition to the numeral the word "Loaded" on its upper portion, and the word will be invisible except when the bin is full and the plate is swung outwardly by the pressure of the bin contents. The indicator plates between the upper and the lower plates will also as heretofore stated, bear numerals consecutively arranged which will be invisible except when the level of the material in the bin is above the indicator. A person standing on the ground therefore need only glance at the bin to ascertain whether it is loaded or empty, or if partially filled, up to what level. Thus, referring to Figs. 1 and 2, the material being above the three lower indicator plates, the numbers on each will be visible, the pressure of the material forcing the plates 3 against the wall and pressing the indicator plates to

a position where the numbers on the upper portions can be read from below. The indicator plates above the level of the material will show blanks, their numbers not being visible until their operating plates are actuated by the pressure of the bin contents.

In Figs. 3 and 4 I have shown a slight modification which consists in providing brackets 9 on the inner walls of the bin whereon the indicating plates are hung. This manner of supporting the plate 3 may be preferred where the bin is used for a heavy ore so that advantage can be taken of the force of gravity to aid the indicator plate in swinging the plate 3 to a vertical position when released from the pressure of the ore. This construction also allows me to reduce the size and weight of the indicator plate. I may also, as shown in Fig. 3, provide brackets 10 near each indicating plate and connect the same by cross bars or braces 11 and 14 which engage the lower and upper end of each indicator for the purpose of limiting its outward movement. The indicator plates may be pivotally supported on these brackets and to a considerable extent will be guarded and protected thereby.

In Figs. 5 and 6, I have shown a housing 12 for use within a grain bin corresponding substantially to the one described in my former patent above referred to except that the openings 13 for the discharge of the grain are in the sides instead of the bottom. The indicator plates are mounted in substantially the same way as those shown in Figs. 1 and 2, and in all the forms shown the upper ends of the plates contact with the wall of the bin when the marks are in position to be invisible from the ground. This construction reduces the travel of the indicator plates considerably over the construction shown in my former patent, and thereby the operation of the plates within the bin will be considerably facilitated.

This invention is applicable to any type of bin for containing grain, coal or ore, for the purpose of indicating not only whether the bin is loaded or empty, but the level of the material in the bin, if partially filled.

I claim as my invention:—

The combination, with a bin, of a series of indicating devices mounted thereon one above another, and comprising pivoted angle plates, the upper portion of each plate being heavier than its lower portion and tending by gravity to tilt the lower portion or flange of each plate to a point where it will be visible from below, the upper portion of the upper plate bearing marks or letters representing the word "Loaded" and the lower portion of the lower plate bearing marks or characters representing the word "Empty," and all the indicating plates being numbered consecutively from the bottom upward, plates hinged at their upper ends on the inside of the bin and means for transmitting the movement of said upper flanges to said plates, the weight of the upper flanges normally holding them in contact with the wall of the bin, and the plates within the bin out of contact with said wall, and the pressure of the material causing the said indicating plates to swing on their pivots to expose the numbers thereon and the word "Loaded" on the upper indicating plate, whereby a person at a glance can determine whether the bin is full or empty and if partially full to what level.

In witness whereof, I have hereunto set my hand this 21st day of September 1906.

PETER SWANSON.

Witnesses:

JOHN E. DENNIS,

J. H. JEFFREY.