J. A. SWARTZ & T. P. WHELAN.

LOCOMOTIVE ASH PAN.

APPLICATION FILED NOV. 29, 1907.

907,197.

Patented Dec. 22, 1908.

2 SHEETS—SHEET 1.

Fig. 1.

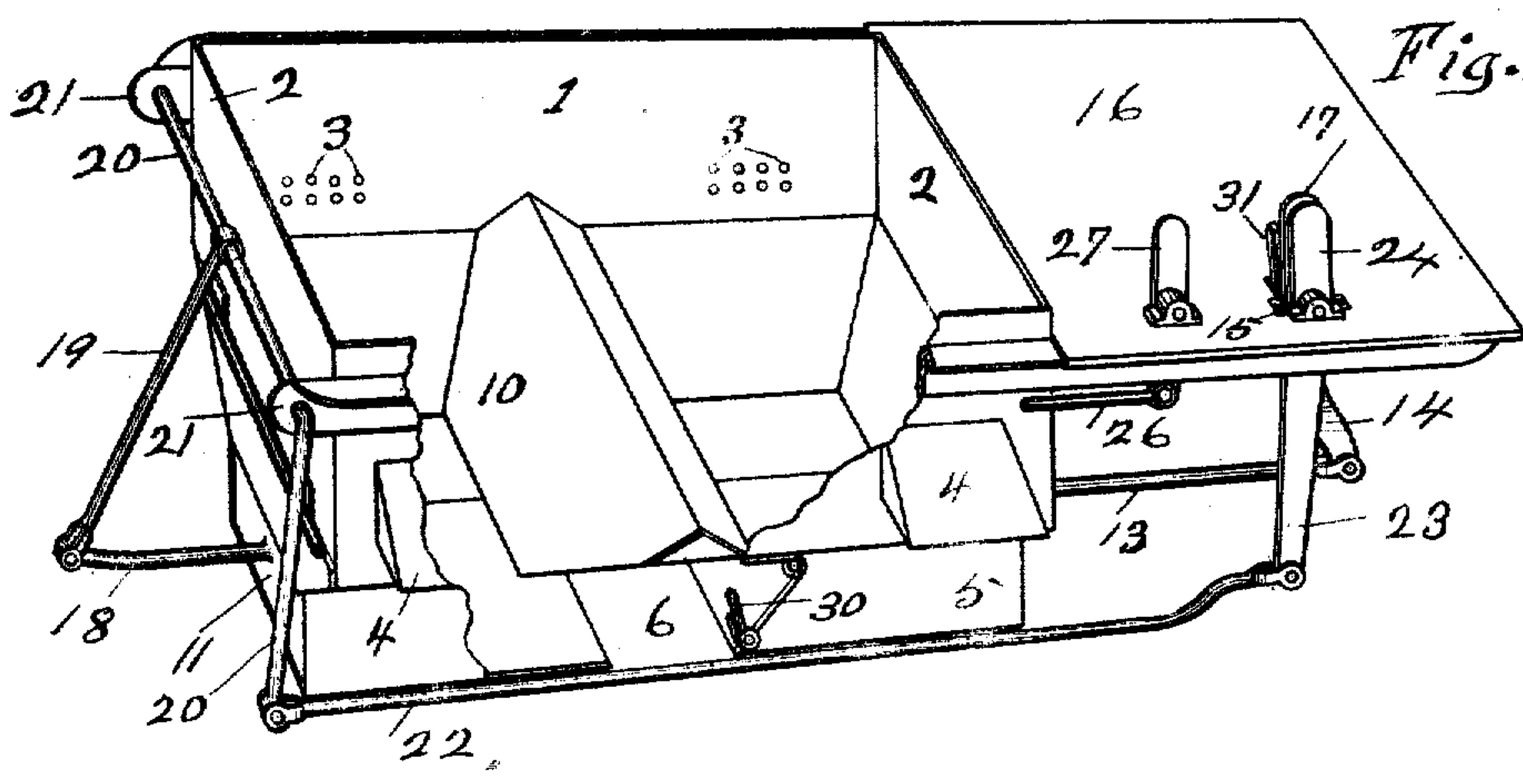


Fig. 2.

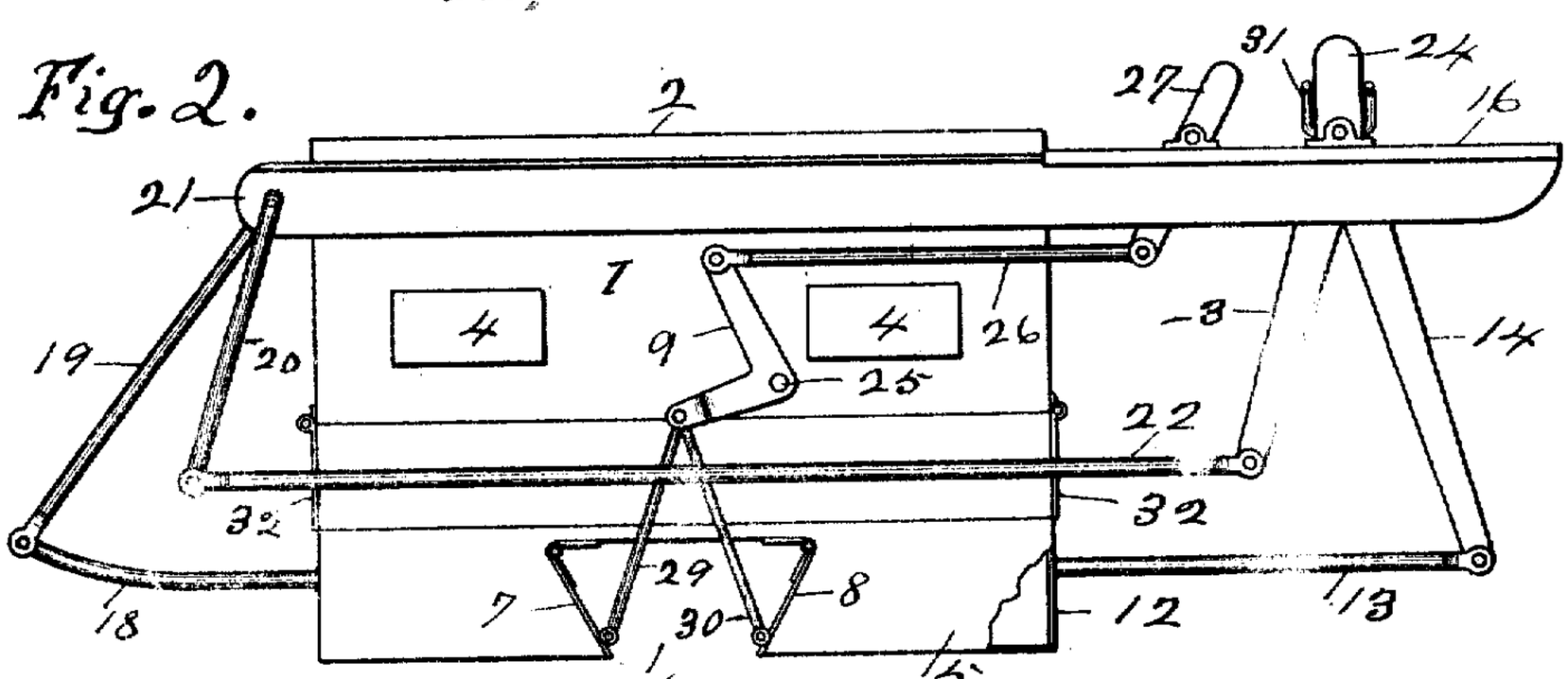


Fig. 3.

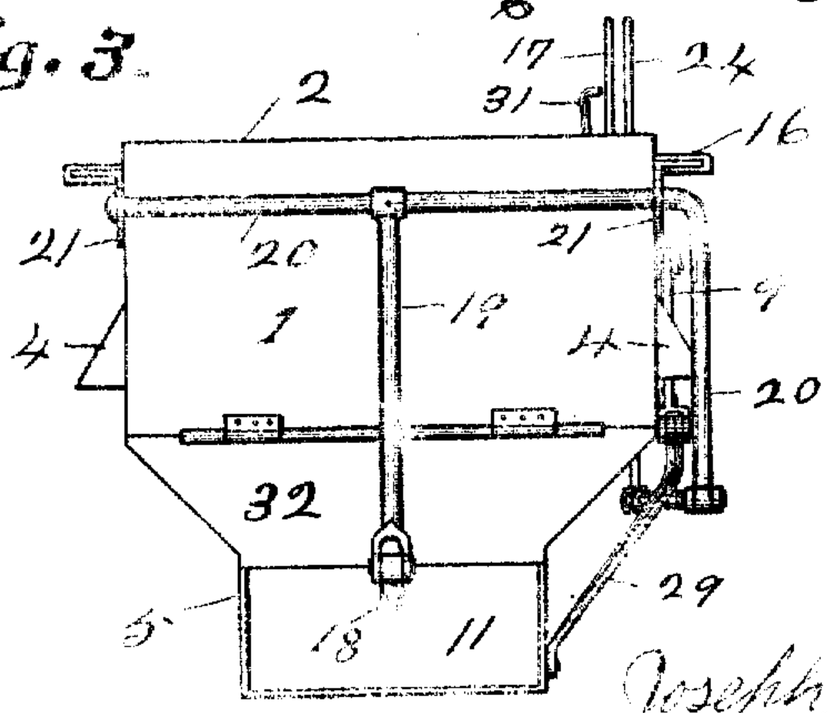
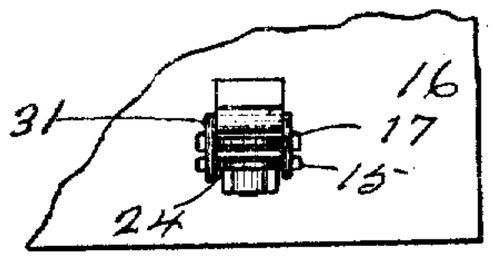


Fig. 4



WITNESSES:

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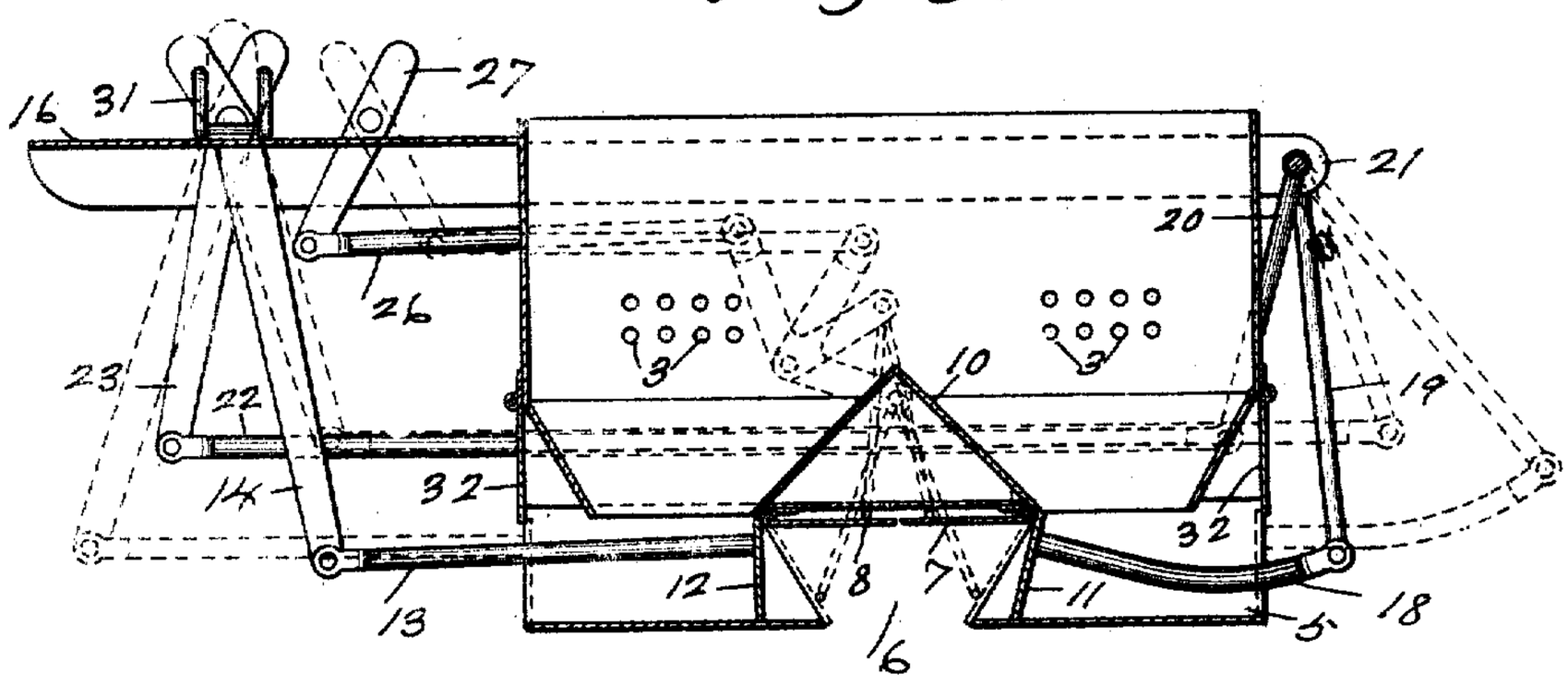
2 SHEETS—SHEET 2.

Fig. 5.



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UNITED STATES PATENT OFFICE.

JOSEPH A. SWARTZ, OF FORT WAYNE, INDIANA, AND THOMAS P. WHELAN, OF BELLEVUE, OHIO.

LOCOMOTIVE ASH-PAN.

No. 907,197. Specification of Letters Patent. Patented Dec. 22, 1908.

Application filed November 29, 1907. Serial No. 404,202.

To all whom it may concern:

Be it known that we, JOSEPH A. SWARTZ, a citizen of the United States, residing at Fort Wayne, Allen county, State of Indiana, and THOMAS P. WHELAN, a citizen of the United States, residing at Bellevue, in the county of Huron, in the State of Ohio, have invented certain new and useful Improvements in Locomotive Ash-Pans; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form part of this specification.

Our invention relates to improvements in locomotive ash pans.

The two primary objects of our present invention are to provide simple, efficient and reliable means for: First, relieving the fire-box pan or ash-holding compartment of its contents, without the necessity of the operator working beneath the engine, which is well known to be dangerous to life and limb, and in long runs is a serious loss of time. Second, securely retaining the hot coals, cinders and ashes in the ash holding compartment or pan until they are cold, after which they can be safely discharged upon the track.

Another object is to provide a construction by which all leakage is carried over and discharged outside of the ash pan, thereby avoiding the common difficulty in cold weather of having the ashes water soaked and frozen.

Our invention is especially designed and adapted for locomotive engines of any type or construction, and consists of an ash pan or pit in the usual arrangement beneath the grate bars of the fire box, and having draft openings at its sides, and discharge openings at its ends and center; means for keeping the discharge openings normally closed; means for removing the contents of the ash pan through the said openings; means for operating the said ash discharging means entirely from the engine cab; and means for controlling the said end discharge openings independently of the ash discharging means.

The principal novel feature of our invention resides in the improved means for conveniently discharging the contents of the ash-pan at pleasure, by the manipulation of hand-levers within easy reach of the fireman from his position in the engine cab; the means for preventing leakage into the ash pan to become frozen; and the construction by which the solid products of combustion are retained in their receiving compartment until sufficiently cooled to be safely discharged upon the track.

The object of our invention is accomplished by the mechanism illustrated in the accompanying drawing in which

Figure 1 is a perspective view of our invention partly broken away to show the interior of the pan and the connection of the cleaners with their operating means. Fig. 2 is a side view of the same showing the general arrangement of the operating levers. Fig. 3 is a front end view of the same showing the hinged end-opening closing-plate or door, and the rocking lever which operates the forward ash pan cleaner. Fig. 4 is an enlarged detail plan view of the upper ends of the hand-levers and the means for locking the same. Fig. 5 is a longitudinal central section of our invention with the doors through which the contents of the ash pan are discharged shown in their open position, and dotted in their closed position, and also showing the actuating means for these doors, shown in dotted outline in its normal position. This figure also shows the scrapers and their actuating means in their innermost limit, and shows them in dotted outline in their normal position.

The grate-bars are not shown as their relative arrangement is well understood. The ash pan 1 has an upright flange 2 on its upper edge which fits snugly inside of the mud ring of well understood construction, and thereby prevents the entrance of any leakage whatever into the ash pan. The sides of the pan are provided with a plurality of draft openings 3 which are preferably protected by the lateral shields or hoods 4. The bottom of the pan 1 has a contracted portion 5 having parallel sides and open at both ends, and has a transverse discharge opening 6 midway of its ends. The inner end openings of the portion 5 are normally closed by the hinged doors 7 and 8.

To the sides of the pan and midway of its length is rigidly fixed the transverse ash hood or shield 10, having a tapering upper face, and of sufficient width to properly cover the discharge opening 6. This shield 10 divides the contents of the pan in its dis-

charge into substantially equal parts, where the operator is relieved of the labor of moving so heavy a mass as where the undivided contents are discharged in the same direction by the same means. The sloping sides of the shield also materially aid gravity and the efforts of the operator in discharging the contents.

A pair of scrapers 11 and 12, identical in construction are adapted to normally tightly close the opposite outer openings into the said portion 5 beneath the ash shield 10. These scrapers are adapted for a reciprocating movement independent of each other to and fro over the bottom of the pan on the respective sides of the said transverse opening 6 to discharge the contents of the pan through the said center and end openings.

The means for operating these scrapers may be described as follows: To the outer face of the rear scraper 12 is rigidly fixed one end of the horizontal rod 13 whose outer end is pivotally connected to the lower end of the curved upright hand-lever 14 which passes upwardly through a suitable opening 15 in the floor 16 of the engine cab, not shown, and is pivotally mounted in suitable bearings therein. The upper end 17 of the lever 14 is arranged within convenient reach of the fireman.

To the outer face of the companion scraper 11 is rigidly fixed the inner end of the rod 18 whose outer end is pivotally connected to the lower end of the rod 19 whose upper end is integral with or fixed to the rocking lever-rod 20 pivotally mounted in suitable bearings 21 on the sides of the pan near the upper edge thereof. One extended end of the lever-rod 20 is downwardly bent to substantially a right angle and has its lower end pivotally connected to the horizontal connecting rod 22 whose rear end is pivotally connected to the lower end of the hand-lever 23 pivotally mounted in suitable bearings on the floor of the engine cab, and has a proper operating handle 24 adjacent to its companion lever 17 and also within easy reach of the fireman.

Each end of the ash pan 1 may be provided with a pendent hinged door 32 adjacent to and directly above the respective scrapers 11 and 12, to prevent any clogging of the scrapers by clinkers of unusual size in the manner hereafter described.

The means for opening and closing the hinged doors 7 and 8 may be described as follows: At a suitable point on one side of the ash pan 1 above the transverse discharge opening 6 is pivotally mounted a bell-crank lever 9 on the pivot 25. To the upper arm of this lever 9 is pivotally connected the forward end of the rod 26 whose rear end is pivotally connected to the lower end of the vertical hand-lever 27 which extends upward through a suitable opening in the cab floor 16 within convenient reach of the operator, and is pivotally mounted therein. To the other arm of the lever 9 are pivotally connected the upper ends of the oblique rods 29 and 30 whose lower ends are pivotally connected to the lower edge of the doors 7 and 8 respectively, Fig. 2, whereby when the operator pulls the hand-lever 27 backward the doors 7 and 8 will be opened, and they are closed by returning the lever 27 to its normal position as shown.

The levers 17 and 24 are firmly secured in their normal position by means of the wire loop keeper 31 pivotally mounted in a suitable bearing, and which may readily be adjusted in a horizontal position to engage the said levers.

By this construction the fireman can readily and conveniently remove the contents of the ash pan from his usual position in the engine cab by first opening the doors 7 and 8 by means of the hand-lever 27, and then operating the scrapers 11 and 12 by means of the respective hand levers 24 and 17, after which these scrapers are returned to their normal position, and the doors 7 and 8 are closed by means of the hand-lever 27. The ash pan will thus be so tightly closed that while sufficient draft is provided for through the openings 3, no fire or hot products of combustion can escape therefrom in use.

In case either of the scrapers should accidentally become clogged by a fused mass of unusual size and too large for ready passage through the discharge opening 6 or through the opening left by the scrapers when they are pushed forward in the operation of cleaning, the operator by opening one of the doors 32 can either break up the fused mass or remove it.

It is thus evident that our invention relieves the fireman of the dangerous operation of working beneath the engine in removing the contents of the ash pan; that it securely retains all fire and hot products of combustion until it is desired to remove them without interfering with the draft thereof; and that all leakage of water from the boiler is carried over and discharged outside of the pan.

We do not desire to be understood as limiting ourselves to any precise detail of construction or arrangement of any of the operating parts as they may obviously be indefinitely varied without departing from the spirit and scope of our invention.

Having thus described our invention and the manner of employing the same what we desire to secure by Letters Patent is:

1. A locomotive ash pan having a discharge opening in its bottom midway of its ends; a transverse bridge or shield fixed above the discharge opening and spaced from the bottom of the ash pan, thereby forming lateral openings in communication

with the central discharge opening; means for closing access to the said opening upon both sides thereof; means for opening and closing the last mentioned means from the engine cab; ash discharging means adapted to move in opposite directions in discharging the contents of the pan, and arranged upon opposite sides of the central discharge opening; and means for operating the said discharging means from the engine cab.

2. A locomotive ash pan having a central discharge opening in its bottom approximately midway of its ends; a transverse shield bridging the said opening and spaced from the bottom of the pan at its opposite sides to provide lateral openings in communication with the said central opening; means for normally closing the said lateral openings; means for opening and closing the said closing means; ash-discharging means located upon opposite sides of the central discharge opening, and adapted to move toward said central opening respectively in functionating; and means for independently actuating the said ash-discharging means from the operator's normal position.

3. In a locomotive ash-pan having draft openings therefor, and provided with a centrally arranged bottom discharge opening, and provided with lateral openings at the opposite sides of the pan communicating with the said discharge opening; a transverse shield having laterally inclined sides and adapted to bridge the said discharge opening, the opposite sides of the said shield being spaced from the bottom of the pan; means for normally closing the said lateral openings; pivotally mounted and lever actuated means for opening and closing the last mentioned closing means simultaneously; means arranged upon opposite sides of the said discharge opening for discharging the contents of the pan through the said lateral openings; and means for independently actuating the said discharging means from the operator's normal position.

4. A locomotive ash pan having a laterally contracted bottom provided with a transverse discharge opening midway of its ends and provided with lateral openings at each side of the shield communicating with the discharge opening; a hood or shield fixed above the said openings and spaced from the bottom of the pan; means for controlling access to the said lateral openings; oppositely movable scrapers in coöperative relation with the respective lateral openings; means for independently actuating the respective scrapers from the engine cab; and means for controlling the access to the discharge opening from the engine cab.

5. A locomotive ash-pan having a discharge opening in the bottom thereof approximately midway of its ends, and provided at or near its upper edge with a lateral flange adapted to prevent leakage into the same in use; a transverse shield bridging the discharge opening and spaced above the bottom of the pan, thereby forming lateral openings beneath the respective sides of the shield communicating with the discharge opening; means for opening and closing these lateral openings from the operator's normal position; oppositely actuated means for discharging the contents of the pan through the said respective lateral openings; and lever mechanism for operating the said discharging means.

6. The combination of a locomotive ash pan having a lengthwise-central discharge opening, and a lateral flange at or near its upper edge to prevent leakage thereto from the mud-ring; a shield fixed in the pan above the said opening in such relation as to provide opposite lateral openings communicating with the said central opening; means for normally closing the said lateral openings; means arranged upon opposite sides of the central discharge opening for discharging the contents of the pan through the said lateral openings; and means for actuating the said discharging means from the operator's normal position.

Signed by us at Fort Wayne, Allen county, State of Indiana, this 27th day of November, A. D. 1907.

JOSEPH A. SWARTZ.
THOMAS P. WHELAN.

Witnesses:
AUGUSTA VIBERG,
AUGUSTE SPIEGEL.