No. 772,720. PATENTED OCT. 18, 1904.

A. LADWIG.

SKIM GATE FOR MOLDS.

APPLICATION FILED APR. 18, 1904.

NO MODEL.

Fig. 1.

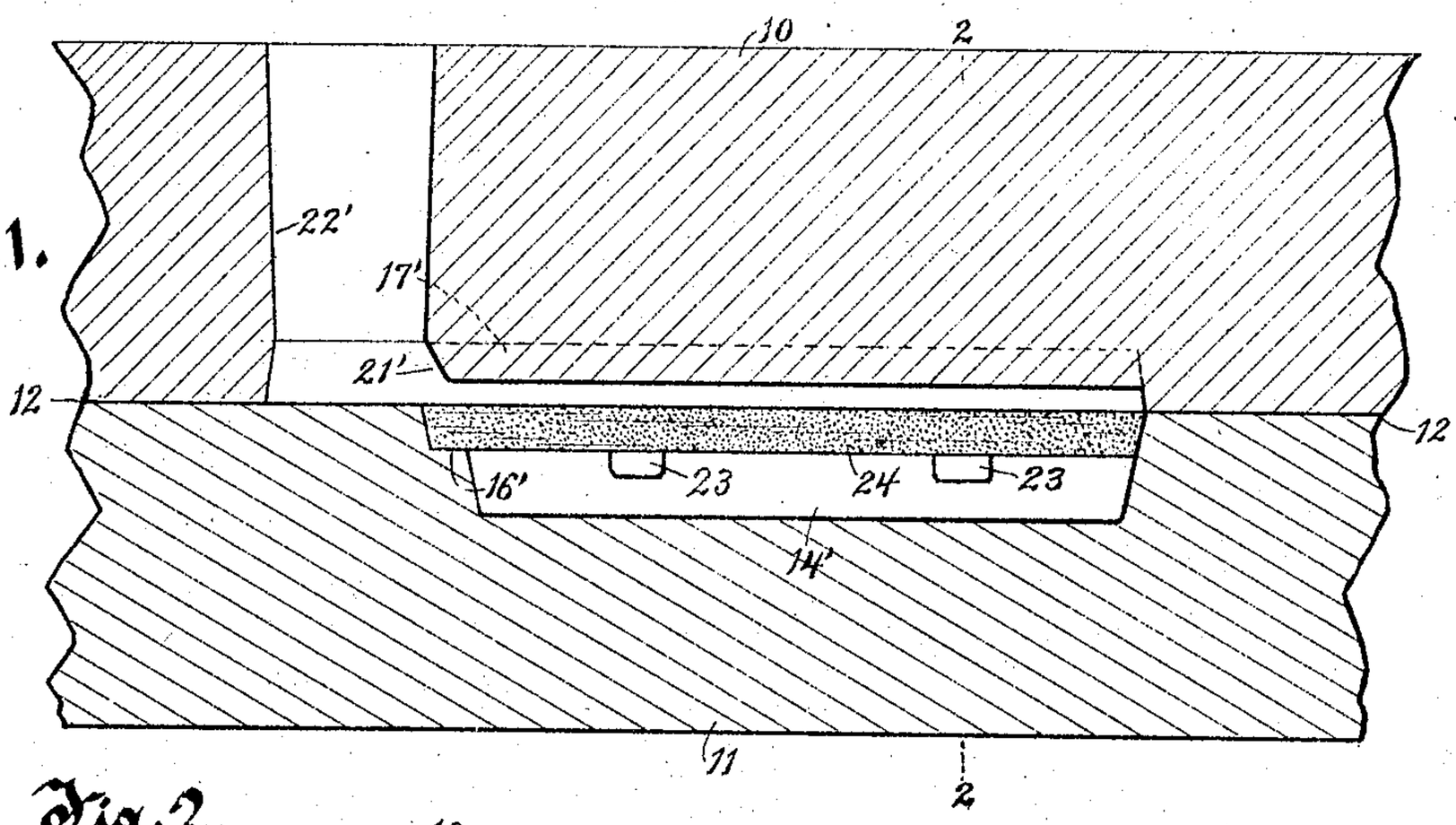

Fig. 2.

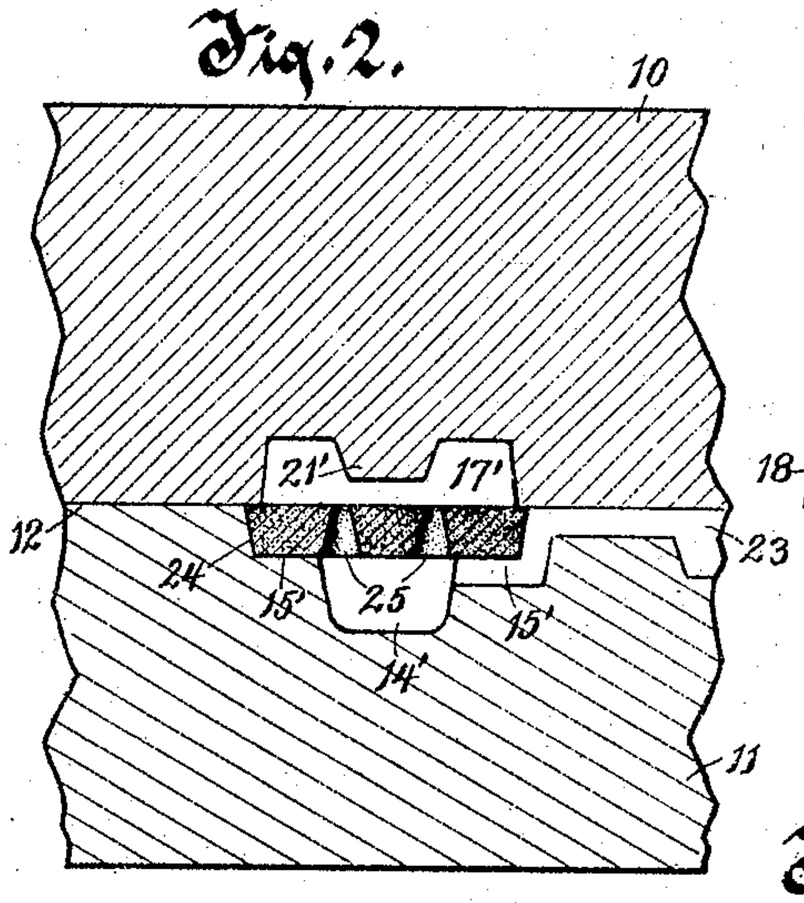

Fig. 3.

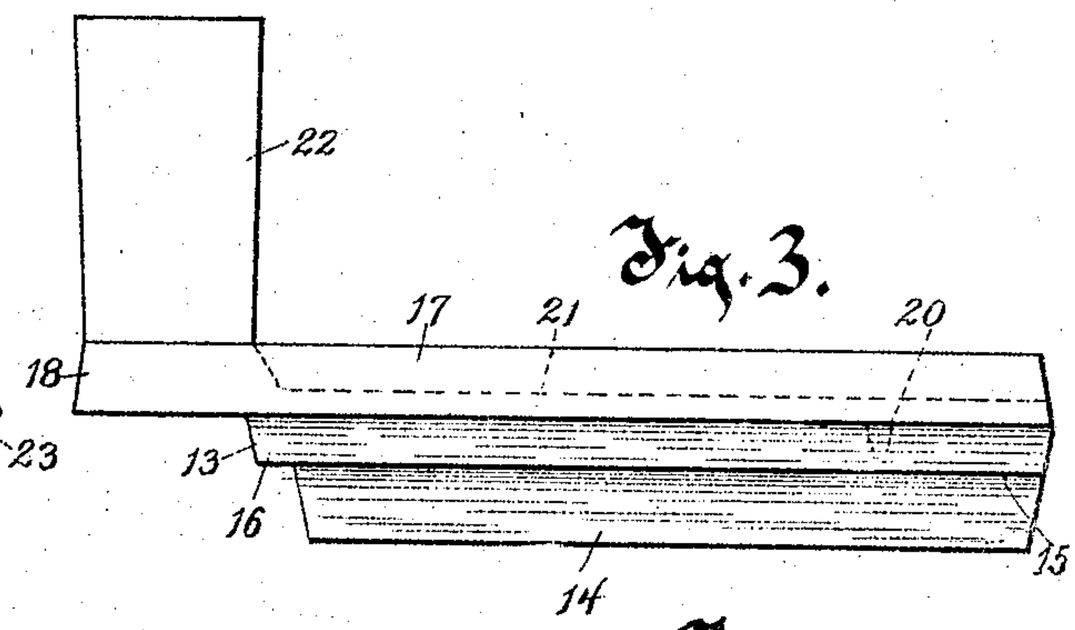

Fig. 4.

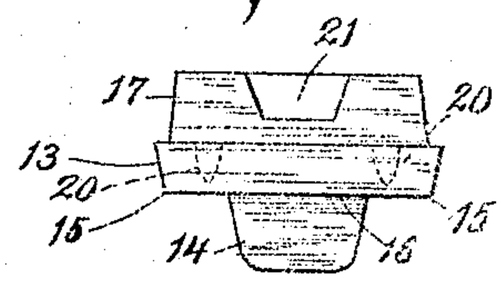

Fig. 6.

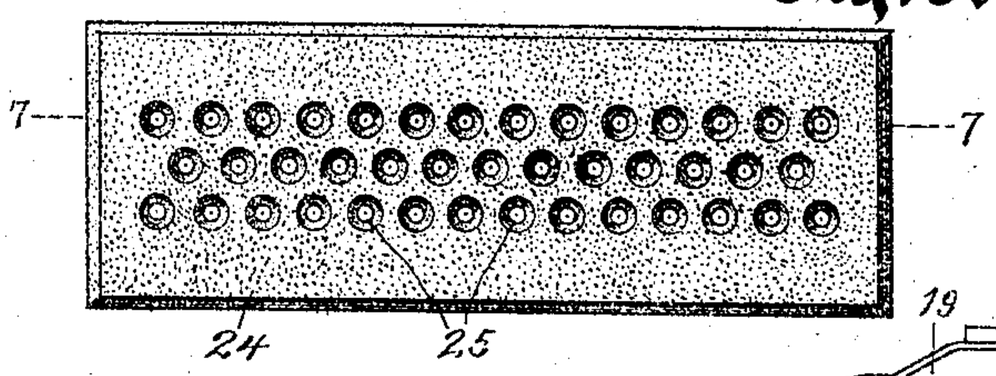

Fig. 5.

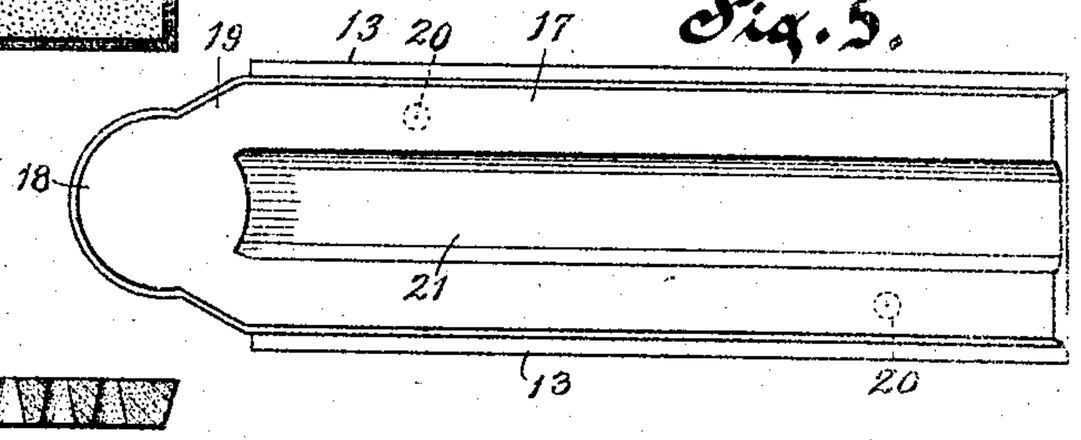

Fig. 7.

Witnesses:
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No. 772,720. Patented October 18, 1904.

UNITED STATES PATENT OFFICE.

AUGUST LADWIG, OF MILWAUKEE, WISCONSIN.

SKIM-GATE FOR MOLDS.

SPECIFICATION forming part of Letters Patent No. 772,720, dated October 18, 1904.

Application filed April 18, 1904. Serial No. 203,539. (No model.)

To all whom it may concern:

Be it known that I, AUGUST LADWIG, residing in Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Skim-Gates for Molds, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

This invention relates to skim-gates for molds, and has for its object to prevent dross or slag from entering the matrix of the mold.

Another object of this invention is to accomplish the above result by the employment of a straining-core of novel construction.

With the above and other objects in view the invention consists in the devices and parts and their equivalents, as hereinafter set forth.

Referring to the accompanying drawings, in which like characters of reference indicate the same parts in the several views, Figure 1 is a vertical transverse section of a molder's flask employing a skim-gate in accordance with this invention. Fig. 2 is a similar view thereof, taken on a plane at right angles to that of Fig. 1 on the line 2 2 of Fig. 1. Fig. 3 is a side elevation of the drag, cope, and ingate patterns in their proper relation to each other. Fig. 4 is an end elevation thereof with the ingate-pattern removed. Fig. 5 is a plan view thereof with the ingate-pattern removed. Fig. 6 is a bottom plan view of the skim-gate core; and Fig. 7 is a longitudinal sectional view thereof, taken on the line 7 7 of Fig. 6.

In the views, 10 represents the cope, and 11 the drag, of a molder's flask, the parting-line between the sand of the cope and drag being represented by the line 12.

The drag-pattern, as shown in Figs. 3, 4, and 5, comprises a rectangular flat core-print pattern 13 with downwardly-beveled edges and a channel-pattern 14, secured to the under side thereof and extending from one end of the core-pattern to near the other end thereof and having its sides and ends tapering toward its bottom, which is rounded. The channel-pattern 14 extends along the center line of the core-print pattern 13 and is considerably narrower than the core-print pattern, leaving the edges of said core-print pattern extending beyond the channel-pattern to form opposite projecting side shoulders 15 of the side edges of the core-print pattern, and the channel-pattern being shorter than the core-print pattern a corresponding projecting end shoulder 16 is produced by the end of the core-print pattern.

The cope-pattern consists of the gate-pattern 17, which is approximately rectangular in shape, but has at one end a projecting circular portion 18 with inclined edges 19, connecting it with the edges of the main portion of the gate-pattern, and this gate-pattern is provided with upwardly-beveled edges throughout its contour and has its flat bottom in close contact with the flat top of the core-print pattern and is secured in proper position thereon by dowel-pins 20 on the bottom of the gate-pattern, fitting in corresponding sockets in the top of the core-print pattern. The gate-pattern 17 is provided in its upper surface with a groove 21, which extends longitudinally of the gate-core from the circular portion 18 thereof to the other end of said gate-core, and this groove 21 is provided with upwardly-beveled edges.

The ingate-core 22 is of the usual shape, being slightly conical with a downward taper and being adapted to fit upon the rounded portion 18 of the gate-pattern.

The impression produced in the sand of the drag and cope by the drag and cope patterns, respectively, forms a channel 14′ in the sand of the drag with a core-seat thereabove consisting of shoulders 15′ along the side edges of the channel and the shoulder 16′ at the end of the channel, and immediately thereabove in the sand of the cope is produced the gate 17′, extending from the ingate 22′ over the entire core-seat, with the exception of the extreme side edges of the core-seat, which are slightly wider than the gate. The gate 17′ has a depending flange 21′, formed in its upper wall by the groove 21 of the gate-pattern and which extends from the ingate 22′ to the end of the gate 17′.

By means other than the patterns above described one or more gates 23 are produced in the drag-sand leading from the channel 14 to

the matrix of the mold, (not shown,) and these gates may lead from one side of the channel 14′ only or may lead from both sides thereof.

A core 24, formed of clay or oil-sand or any other suitable material, of the same shape and size as the core-print pattern is provided with rows of downwardly-flaring perforations 25. This core is fitted upon the core-seat, as shown in Figs. 1 and 2, the gates 23 being shaped to avoid it and being closed from the channel 14′ to the parting-line 12 by the surface of said core.

When the flask is closed and metal is introduced through the ingate 22′, it flows over the core 24 and passing through the perforations 25 thereof drops into the channel 14′ therebeneath. The metal being admitted to the gate 17′ faster than it passes down through the perforations 25 of the core rises in the gate 17′, and all dross or slag therein being lighter than the pure metal will rise in the gate 17′ on either side of the depending flange 21′ and leave only the pure metal to pass through the openings 25. The depending flange 21′, extending down to near the upper ends of the openings 25, prevents the impurities locating directly above the openings 25, and so keeps these openings free from such impurities. The depending flange 21′ separates the pair of parallel feed-passages on its sides, which carry the fresh metal direct from the ingate 22′ to the farther end of the core and feed all of the openings of the core 24 alike. These feed-passages are sufficiently high to contain all of the impurities and still allow for free passage of the metal therethrough. The depending flange 21′ by extending down below the level of the flowing impurities prevents said impurities locating directly above the openings of the core-plate, where they might be sucked down therethrough; and, further, said depending flange by standing close to the core-plate and above the openings keeps within the feed-passages and away from the openings of the core-plate such large solid impurities as would be liable to stop up the said openings.

The seating of the core on the shoulders 15′ provides a strong support therefor without liability of the core scraping loose sand into the channel 14′ to be carried into the matrix of the mold with the metal.

The gates 23 leading from the channel 14′ to the matrix of the mold may, if desired, be produced by suitable patterns therefor, but being entirely on the surface of the drag-sand they are preferably merely cut by means of the ordinary trowel. The edge of the core serves as a wall for the gates, rendering a tubular construction thereof unnecessary, and thereby avoiding the necessity for employing a horn-gate or the like with the consequent infirm walls of the gates.

Only the pure metal which passes through the core-perforations 25 enters the channel 14′, and consequently the metal fed therefrom by the gates 23 to the matrix of the mold will be free of impurities and result in a high-quality homogeneous casting.

The perforated core-plate prevents any solid impurities contained in the metal passing to the matrix of the mold, and thereby constitutes a strainer for the metal, and the perforations thereof being flaring with their smaller ends uppermost prevent a solid body lodging therein should it succeed in entering the upper end, the lower part of the channel 14′ being depended upon to collect such solid bodies as may pass through the contracted upper ends of the perforations.

While the skim-gate of this invention is here shown and described as adapted to be located so that the top surface of the core is flush with the parting-line between the cope and the drag, it is obvious that this particular relation is not necessary to the successful operation of the invention, and therefore I do not wish to be limited in this respect, and, furthermore, other obvious changes may be made in the details of the construction and arrangement of parts without departing from the spirit and scope of this invention.

What I claim as my invention is—

1. In a skim-gate for molds, a gate, a perforated core therefor through the perforations of which the pure metal may pass, shoulders supporting the core, and a channel connecting said perforations with the matrix of the mold.

2. In a skim-gate for molds, a gate adapted to collect impurities of the metal, a perforated core closing the bottom thereof, shoulders supporting the core, and a channel connecting the perforations of the plate with the matrix of the mold.

3. In a skim-gate for molds, a gate adapted to collect the impurities of the metal and having a perforated bottom through which the pure metal may pass, the perforations of the bottom being flaring in the direction of flow of the metal therethrough, and a channel for conveying the pure metal from the perforated bottom of the gate to the matrix of the mold.

4. In a skim-gate for molds, a gate adapted to collect the impurities from the metal, a perforated core forming the bottom thereof, a channel located beneath the perforated core to receive the pure metal passing through the perforations of the perforated core, and a gate connecting the channel with the matrix of the mold and being formed by a groove closed by said core.

5. In a skim-gate for molds, a gate adapted to collect impurities of the metal, a perforated core forming the bottom of the gate, a flange depending from the top wall of the gate and located above the perforations in the core, and a channel for conducting the metal from the perforations of the core to the matrix of the mold.

6. In a skim-gate for molds, a channel hav-

ing shoulders, a perforated core seated upon the shoulders of the channel, and a gate located above the perforated core and adapted to collect the impurities of the metal, said channel having connection with the matrix of the mold.

7. In a skim-gate for molds, a channel having shoulders, a perforated core seated upon the shoulders of the channel, a gate located above the perforated core and adapted to collect the impurities of the metal, and a gate leading from the channel around the edge of the perforated core to the matrix of the mold.

8. In a skim-gate for molds, a channel having shoulders, a perforated core seated upon the shoulders of the channel, a gate located above the perforated core and adapted to collect the impurities of the metal, a depending flange on the upper wall of the gate and located above the perforations of the core, and a gate connecting the channel with the matrix of the mold.

9. In a skim-gate for molds, a mold-flask having a channel provided with shoulders formed in the drag, a perforated core seated upon said shoulders, a gate formed in the cope above the perforated core, and a gate leading from the channel to the matrix of the mold.

10. In a skim-gate for molds, a mold-flask having a shouldered channel formed in its drag, a perforated core seated upon the shoulders, a gate formed in the drag around the edge of the perforated core and extending from the channel to the matrix of the mold, and a gate formed in the cope above the perforated core and provided with a depending flange located above the perforations of the core.

11. In a skim-gate for molds, a mold-flask having a shouldered channel in its drag, a core seated upon the shoulders of the channel and provided with downwardly-flaring perforations therethrough, a gate in the drag extending from the channel around the edge of the perforated core to the matrix of the mold, a skim-gate formed in the cope directly above the perforated core, a flange depending from the upper wall of said skim-gate above the perforations of the core, and an ingate connecting with said skim-gate.

In testimony whereof I affix my signature in presence of two witnesses.

AUGUST LADWIG.

Witnesses:

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