

(No Model.)

S. J. ADAMS.

GATE FOR MOLDS AND CASTINGS FORMED THEREBY.

No. 477,320.

Patented June 21, 1892.

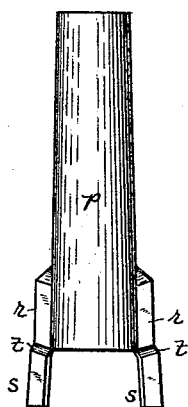


Fig. 4.

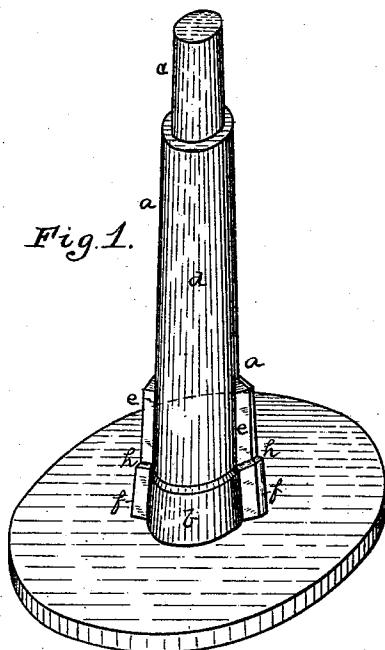


Fig. 1.

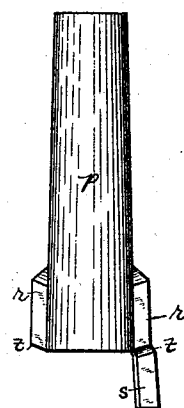


Fig. 5.

Fig. 3.

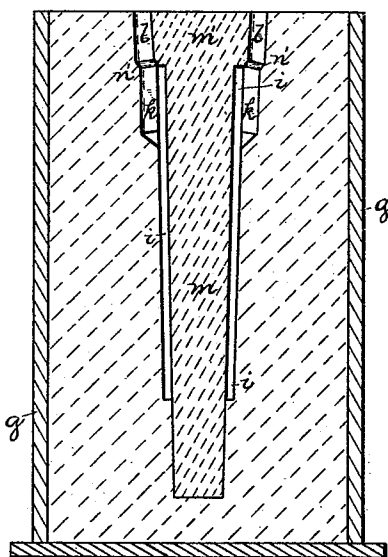
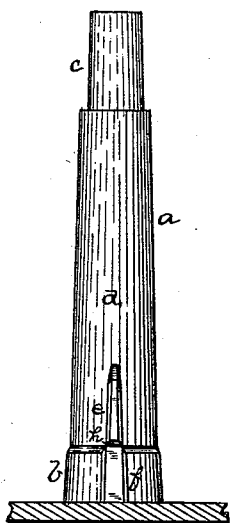
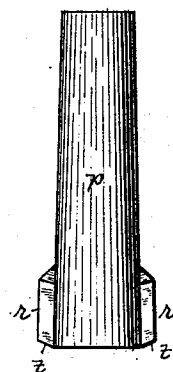


Fig. 2.

Fig. 6.



Witnesses:

J. T. Cooley.
J. G. Hay.

Inventor
Stephen James Adams
By James D. Hay
Attorney

UNITED STATES PATENT OFFICE.

STEPHEN JARVIS ADAMS, OF PITTSBURG, PENNSYLVANIA.

GATE FOR MOLDS AND CASTINGS FORMED THEREBY.

SPECIFICATION forming part of Letters Patent No. 477,320, dated June 21, 1892.

Application filed March 11, 1891. Serial No. 384,554. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN JARVIS ADAMS, a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Gates for Molds and Castings Formed Thereby; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to the runners leading to castings and to the formation of the same, and is specially, though not exclusively, applicable to such castings having wings thereon, such as wagon-boxes having lugs or feathers at the larger end thereof to enter seats formed in the axle-hub to prevent the box from turning. It is a well-known fact that in most cases the bodies of these wagon-boxes are lathe-turned to a certain extent after casting, the upper and the lower ends being turned, the interior of the box being reamed out and the outer surface of the box being turned off, so that the box will be properly centered within the hub.

It has been customary in most of the ordinary wagon-boxes to have the lugs come out flush with the upper edge or end of the wagon-box, and the gate or feeder feeding to the mold-cavity usually communicated with the top edge of the mold-cavity where the cavity was formed in a single or one-part mold. Where, however, the gate communicated with the top edge of the mold-cavity, it left a small fin on such edge, which it was required to turn off in fitting up the casting, and such fin or enlargement on the edge of the casting was liable to catch the tool of the lathe and dull or break the same, and in any case if the lugs came out to the same level with the edge it was also necessary to turn them off, which required great care and more work than desirable. To overcome this difficulty where these castings have been formed in two-part molds, the upper edge of the lug has been formed inclined from the upper edge of the box downwardly toward the outer edge of the lug or feather; but it has not been practicable to cast this form of lug in a single-part mold, and the castings made in the two-part mold are objectionable, as the castings formed therein have certain longitudinal fins on the outer surface thereof, which require the outer surface of the box to be turned off and will dull or break the tools.

A principal object of my invention therefore is to produce such lugged and feathered castings in single-part molds in such manner that the upper end of the lugs may be made tapering from the upper edge or face of the cylindrical casting, so that they will not require any dressing or finishing, and that the gate or runner supplying the metal to the mold-cavity can be broken from the casting without leaving any fin or such mark even with the top edge or face of the casting.

To these ends my invention consists, generally stated, in a mold for wagon-boxes or other similar tubular articles having a mold-cavity, a feather-cavity, and a gate or runner cavity above the feather-cavity of a greater width and thickness than the feather-cavity and communicating therewith by abrupt angles, so that along the edge of the feather or other part of the casting formed in the mold there will be an angle, which will leave a weak place, and the metal can be broken off at that point, leaving the feather or body of the casting extending at whatever incline or angle to the main body is desired.

It also consists in improvements in the pattern for forming the mold and the casting formed in the mold, as will be hereinafter more particularly described and claimed.

To enable others skilled in the art to make and use my invention, I will describe the same more fully, referring to the accompanying drawings, in which—

Figure 1 is a perspective view of the pattern employed for forming the mold. Fig. 2 is a longitudinal section of the mold formed by the pattern having the core therein. Fig. 3 is a side view of the pattern. Fig. 4 is a view of the casting made. Fig. 5 is a view of the castings as formed in the mold, showing the feeder broken off from one plug and extending down from the other; and Fig. 6 is a view of the finished casting.

Like letters of reference indicate like parts in each figure.

I will describe my invention specially in connection with a wagon-box, to which it is specially applicable, its application to other castings depending, of course, on the shape of the casting to be made.

The pattern *a* has the head *b* for forming the core-seat or print for the head of the core and the extension *c* for forming the core-seat

for the lower or small end of the core. The body *d* of the pattern forms the mold-cavity, and it is provided with feather or lug patterns *e e*, said lug-patterns being of any suitable shape. Extending up from the lug-patterns are the gate or runner patterns *f*, which extend up longitudinally of the head-pattern *b*, so as to form the gate for feeding the metal to the mold-cavity and the riser-gate through which the air and gas may escape from the mold and the metal rise during casting. Such pattern is employed in the usual way in forming single-part molds, one or more of such patterns being secured to a pattern-plate and extending up within a flask, as at *g*, and the sand being compacted within the mold, so as to form a cavity corresponding with the pattern *a*.

It will be noticed that the gate-patterns *f* are connected to the lug-patterns by what might be termed an "angle-joint" *h*—that is to say, that there are abrupt angles at the points of juncture on the three sides of the lug between the same and the gate-pattern—and that the gate-pattern is of greater width and thickness than the lug-pattern at the point of jointure therewith, so that in the casting formed there will be a runner-casting of greater width and thickness than the lug and connected thereto by angle-joints, as herein-after described.

The mold-cavity formed by the pattern corresponds to the same, having the main mold-cavity *i*, the lug-cavities *k*, and the gates or runners *l*, and the core *m* fits within the mold-cavity its core-head *m'* forming the upper edge or face of the mold-cavity, while, as said head *m'* is cylindrical, it forms the inner wall of the pouring-gate *l*. The core extends through the mold-cavity and is centered on the lower end thereof. As the mold is so constructed it will be seen that it has a main mold-cavity, a feather or lug cavity, and a gate or runner cavity above the feather or lug cavity and of greater depth and width than the same and connected to such feather or lug cavity by angle-joints, as at *n'*. In the casting of the metal in such mold the metal enters through one or the other of the gate or runner cavities and flows through the same and through the lug-cavity communicating therewith into the main mold-cavity, filling such main mold-cavity and entering into the opposite lug-cavity and the opposite runner-cavity, either rising in the same where the mold is poured from above or descending into the same where the metal enters the mold from below. When the casting is formed and removed from the sand, it will be found that it has a main body *p*, a lug or lugs *r*, a gate or runner casting *s*, extending up from each lug, and that such gate or runner casting is connected to the lug by an angle-joint *t*, while the gate or runner casting is of greater width and thickness than the lug. It will also be noticed that the angle *t* between the gate or

runner casting *s* and the lug *r* extends around three sides of the lug, while the opposite side of the lug forms part of the box, and that such gate or runner casting extends above the box and is otherwise unsupported. The angle-joint *t* between the gate or runner casting and the lug therefore forms a weak place along which the gate or runner casting can be broken from the lug, and such casting can be knocked off either by hand or will break from the lugs in the turning-barrel, breaking off along the angle-joint *t*, as that is the weakest point between the lug or gate and runner casting. This angle-joint *t* can be made at an incline downwardly from the upper face of the casting, and therefore, when so formed, as the top edge of the lug extends at a downward incline from the top edge or face of the main casting, when such face of the main casting is dressed off it will not be necessary to turn the face of the lugs and the lugs will not extend up above the top edge or face of the casting, the turning of such lugs being therefore avoided.

It will be seen from the above description that the principle on which the casting and the gate or runner casting are formed is that the gate or runner casting shall be of greater thickness and width than the lug or feather, or that part of the casting with which it connects, and the weak line along which the same shall break is formed by the abrupt angle necessary to connect the feather or other part with the gate-casting, of greater thickness and width, as distinguished from the ordinary way heretofore practiced, in which the ordinary runner-casting has been made of smaller diameter at the point where it is to be broken off, so as to leave the weak point for breaking.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A mold for forming wagon-boxes and like articles having feathers or lugs thereon, having a main mold-cavity, a feather or lug cavity extending along the same, and a gate or runner cavity above the feather-cavity and of greater width and thickness than the feather-cavity, said gate or runner cavity communicating with the feather-cavity by abrupt angles, substantially as and for the purposes set forth.

2. In tubular castings having feathers or lugs thereon, the combination, with the main casting having a feather or lug formed thereon at one end thereof, of a gate or runner casting extending above the lug and of greater width and thickness than the lug, said gate or runner casting connecting with the lug by abrupt angles, substantially as and for the purposes set forth.

In testimony whereof I, the said STEPHEN JARVIS ADAMS, have hereunto set my hand.

STEPHEN JARVIS ADAMS.

Witnesses:

JAMES I. KAY,
J. N. COOKE.