

J. W. BROWN, JR.
 APPARATUS FOR DISCHARGING SAND AND CASTINGS FROM FLASKS.
 APPLICATION FILED MAY 6, 1910.

1,011,735.

Patented Dec. 12, 1911.

3 SHEETS—SHEET 1.

Fig. 1,

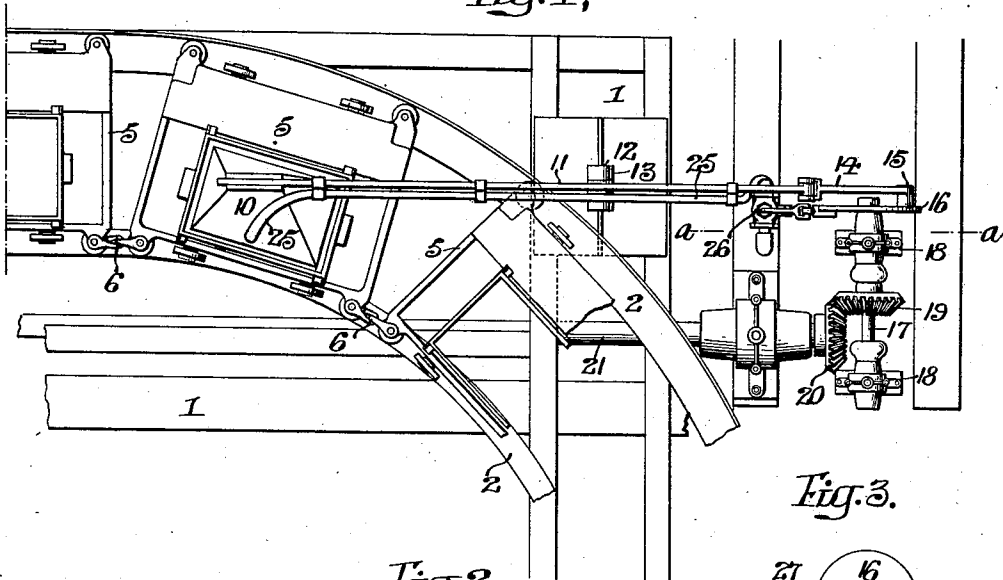


Fig. 2

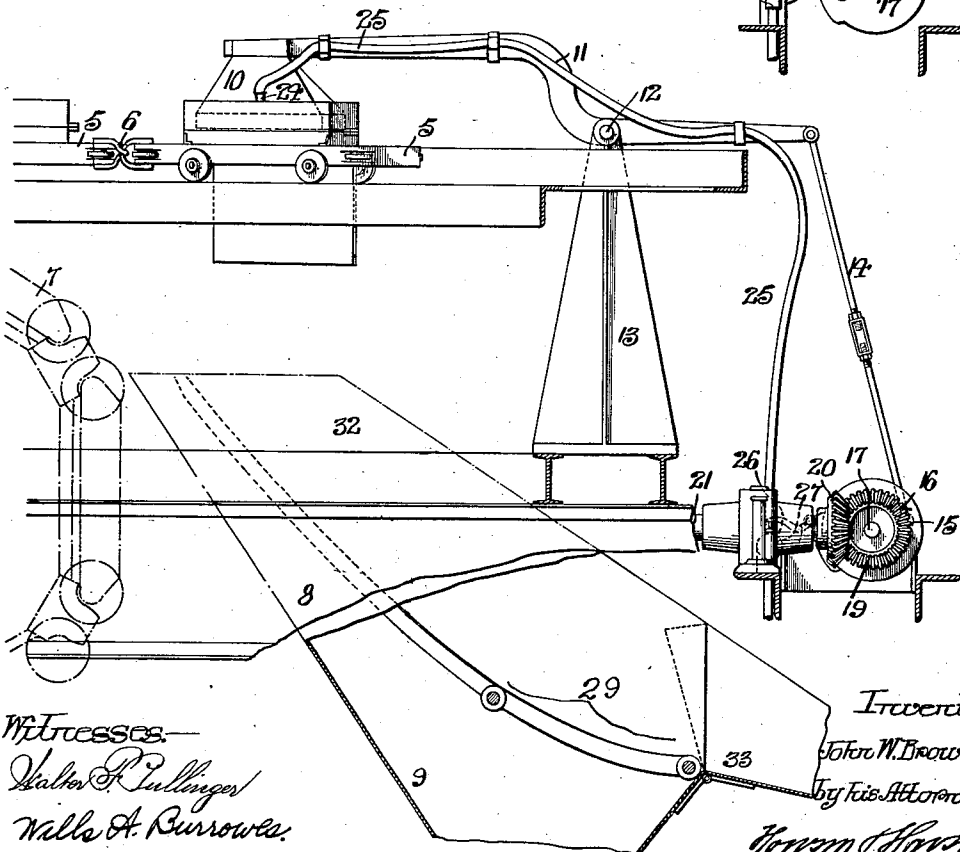


Fig. 3.

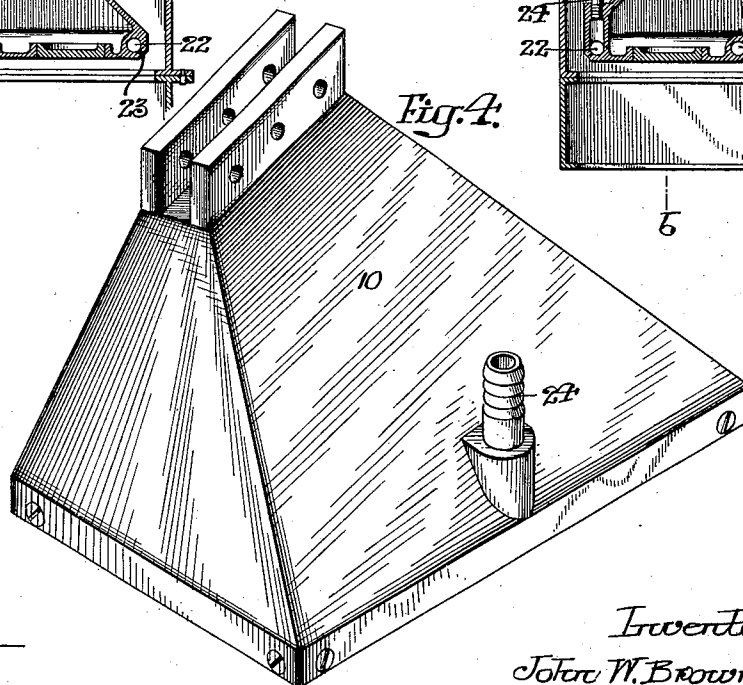
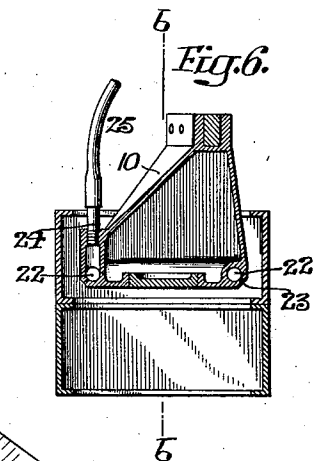
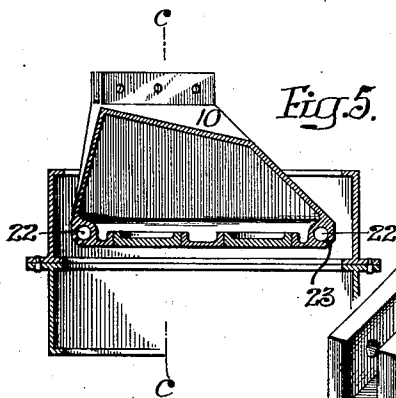
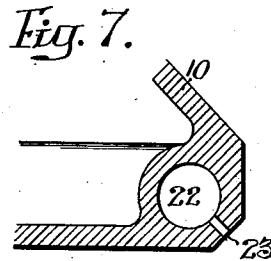
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 3 SHEETS—SHEET 2.



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3 SHEETS-SHEET 3.

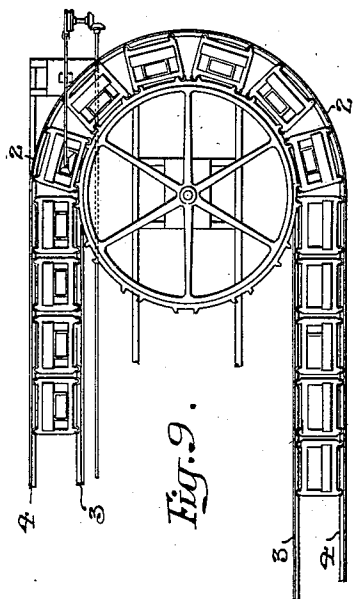


Fig. 9.

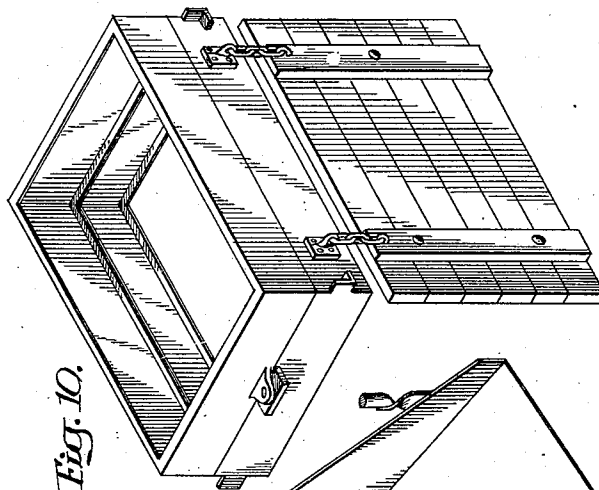


Fig. 10.

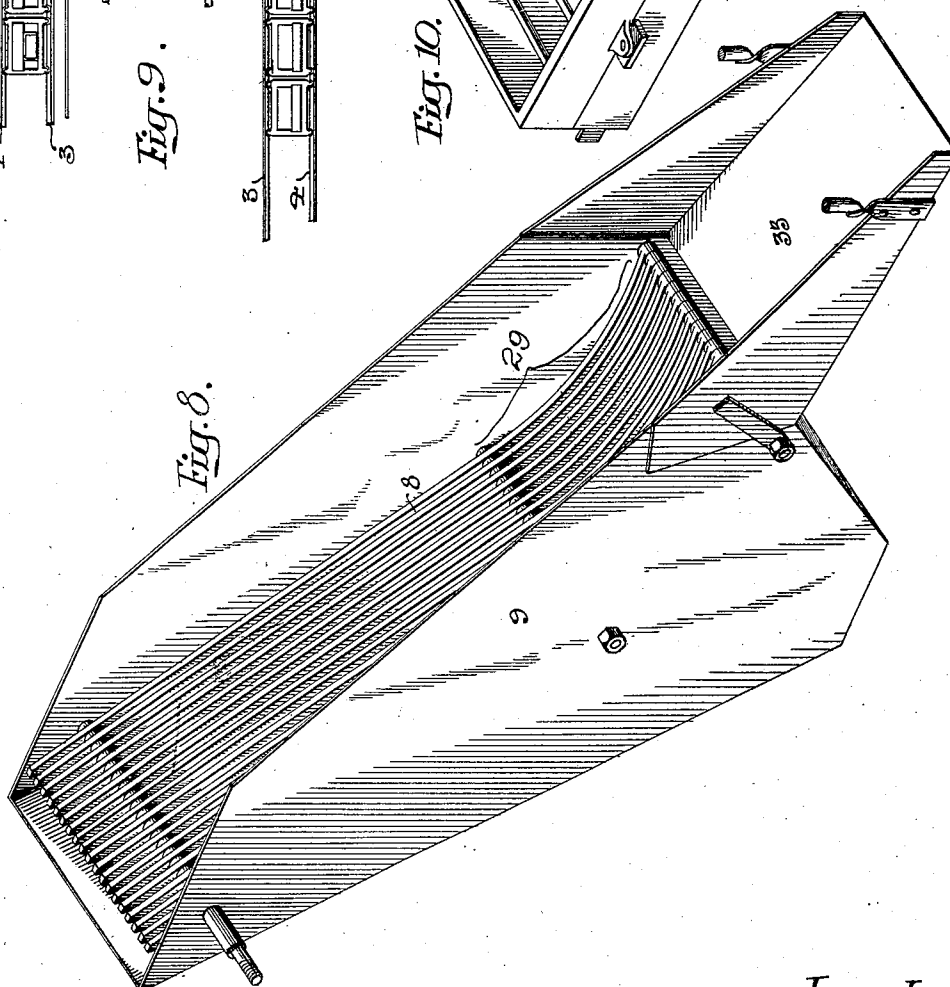


Fig. 8.

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UNITED STATES PATENT OFFICE.

JOHN WILSON BROWN, JR., OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE ENTERPRISE MANUFACTURING COMPANY OF PENNSYLVANIA, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

APPARATUS FOR DISCHARGING SAND AND CASTINGS FROM FLASKS.

1,011,735.

Specification of Letters Patent.

Patented Dec. 12, 1911.

Application filed May 6, 1910. Serial No. 559,775.

To all whom it may concern:

Be it known that I, JOHN WILSON BROWN, Jr., a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Apparatus for Discharging Sand and Castings from Flasks, of which the following is a specification.

My invention relates to certain improvements in the mechanism for discharging sand and casting from the flask of a casting apparatus.

This invention is a detail of the apparatus shown and described in the application for patent of John Wilson Brown, junior, filed on the eighth day of January 1910, under Serial No. 537,076.

The main object of the invention is to provide suitable mechanism for discharging the casting and sand from the flask and for cleansing the flask after the discharge of the sand.

In the accompanying drawings:—Figure 1, is a plan view of sufficient of a continuous casting apparatus to illustrate my invention; Fig. 2, is a side view of Fig. 1, partly in section; Fig. 3, is a sectional view on the line *a—*a**, Fig. 1; Fig. 4, is a perspective view of the knock out plunger; Fig. 5, is a sectional view on the line *b—*b**, Fig. 6; Fig. 6, is a sectional view on the line *c—*c**, Fig. 5; Fig. 7, is an enlarged detail of a part of Fig. 6; Fig. 8, is a perspective view of the screen; Fig. 9, is a diagrammatic plan view of the automatic casting machine, such as illustrated in the above mentioned application; and Fig. 10, is a perspective view of the flask with the bottom board dropped.

1 is the frame of the casting apparatus, 2, 2, are the curved rails connected to the rails 3 and 4. 5, 5 are the flask rings having wheels adapted to said rails 2, 3 and 4, and these rings are connected together by links 6 and form the horizontal conveyer. The rings do not support the flasks on the forward run as they are supported on the vertically arranged traveling conveyer 7. As soon as they leave the conveyer in passing around the curves they settle on the rings and are then carried wholly by said rings of the horizontal conveyer; the said conveyer returning the empty flasks to the molding machine.

As the flasks leave the vertical conveyer which supports the bottom boards, the bottom boards fall; being loosely hinged to the flasks, as shown in Fig. 10, and when the flasks reach the position illustrated in Fig. 2, they are directly above the screen 8 mounted within the hopper 9 and pass under a knock out plunger 10, which is shown in Fig. 2, as in the mid position. This plunger is carried by the long arm of a lever 11 pivoted at 12 to a bearing 13 in the frame of the machine, and the short arm of the lever is connected by a rod 14 to a crank pin 15 on a disk 16 carried by a shaft 17. This shaft is mounted in bearings 18 and has a bevel wheel 19 meshing with a wheel 20 on a driven shaft 21 connected to the driving mechanism of the conveyer so that the plunger will work in unison with the conveyer.

It will be understood that the conveyers of this apparatus intermittently move and during the rest the plunger passes into and out of the flask; the flask being clear of the plunger as it is moved forward.

The plunger is slightly less in size than the flask so that while it forces the major portion of the sand out of the flask, it will not become clogged in the flask in the case of any slight shifting of the parts, but, in order to thoroughly cleanse the flask of sand, I form an air passage 22 at the lower corner of the plunger and leading from this passage is a series of jet openings 23 which are at such an angle as to direct a blast of air against the inner walls of the flask.

24 is a nipple to which is attached a flexible pipe 25 leading to the source of air under pressure.

26 is a valve which is actuated by a lever 27 controlled by a cam 28 on the disk 16, as clearly shown in Fig. 3, so that when the cam is acting on the valve it opens the pipe and allows air under pressure to be forced into the annular space 22 and a jet of air will be projected against all sides of the interior of the flask, removing all particles of sand which may lodge on the flask after the plunger has passed through. The cam is so timed that air under pressure is admitted during the upward stroke of the plunger, but it will be understood that it may also be used at any point in the stroke of

the plunger as desired; the object being to entirely cleanse the interior of the flask before it is filled again with sand.

The screen, as illustrated in Fig. 8, is made up of a series of longitudinal bars spaced apart a sufficient distance to allow the sand to pass through, yet the bars are so close together that the smallest casting will not pass through. The bars are shaped as shown, so as to form a depression in front of the chute 29 to retard the movement of the castings as they pass from the screen over the chute 33 to the conveyer or other carrier or receptacle for the castings.

While I have shown my invention located at the point where the horizontal conveyer makes the turn, it will be understood that it may be located on a straight part of the conveyer, as well, but in order to economize in space it is placed at the point indicated.

I claim:—

1. The combination in a casting apparatus, of a flask carrier, flasks thereon, a knock out plunger located normally above the flask carrier, and means for actuating the plunger to force it into the flask and to dislodge the sand and casting.

2. The combination of a flask carrier, flasks thereon, a knock out plunger mounted normally above the flask carrier, means for causing the plunger to enter the flask and force the sand and casting therefrom, with a screen under the flask carrier in line with the plunger so that the sand and casting will fall onto the screen and the sand separated from the casting.

3. The combination in a casting apparatus, of an intermittently moving flask carrier, flasks thereon, a plunger normally located above the path of the flask carrier, a lever carrying the plunger, and means for actuating the lever to reciprocate the plunger, said means being connected to the driving means of the apparatus so that when

the carrier is at rest the plunger will be reciprocated and will enter the flask on the carrier and dislodge the sand and casting therein.

4. The combination of a flask, a knock out plunger, means for actuating the plunger so that it will enter the flask and dislodge the casting and sand, and an air blast apparatus for dislodging the sand remaining in the flask after the plunger has dislodged the casting and the main body of sand.

5. The combination of a flask carrier, flasks thereon, a knock out plunger, an annular air chamber extending around the bottom of the plunger, air nozzles communicating with the chamber, a pipe for admitting air under pressure to the annular chamber, and a valve for automatically controlling the admission of air to said air chamber.

6. The combination in a casting apparatus, of an intermittently moving flask conveyer, a series of flasks thereon, a plunger normally located above the path of the flask conveyer, a lever carrying the said plunger, means for actuating the said lever so that when the conveyer is at rest the plunger will be projected into the flask and dislodge the sand and casting therein, said plunger having an air chamber, and a series of nozzles for directing a blast of air against the inner walls of the flask, means for controlling the flow of air to said chamber so that on the return of the plunger a blast of air will be projected toward the inner walls of the flask and dislodge the sand thereon, and a screen under the carrier.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

JOHN WILSON BROWN, JR.

Witnesses:

WM. E. SHUPE,

WM. A. BARR.