April 12, 1932. L. A. CAMEROTA 1,854,154

FLASK HOPPER

Filed July 18, 1931

FIG. I.

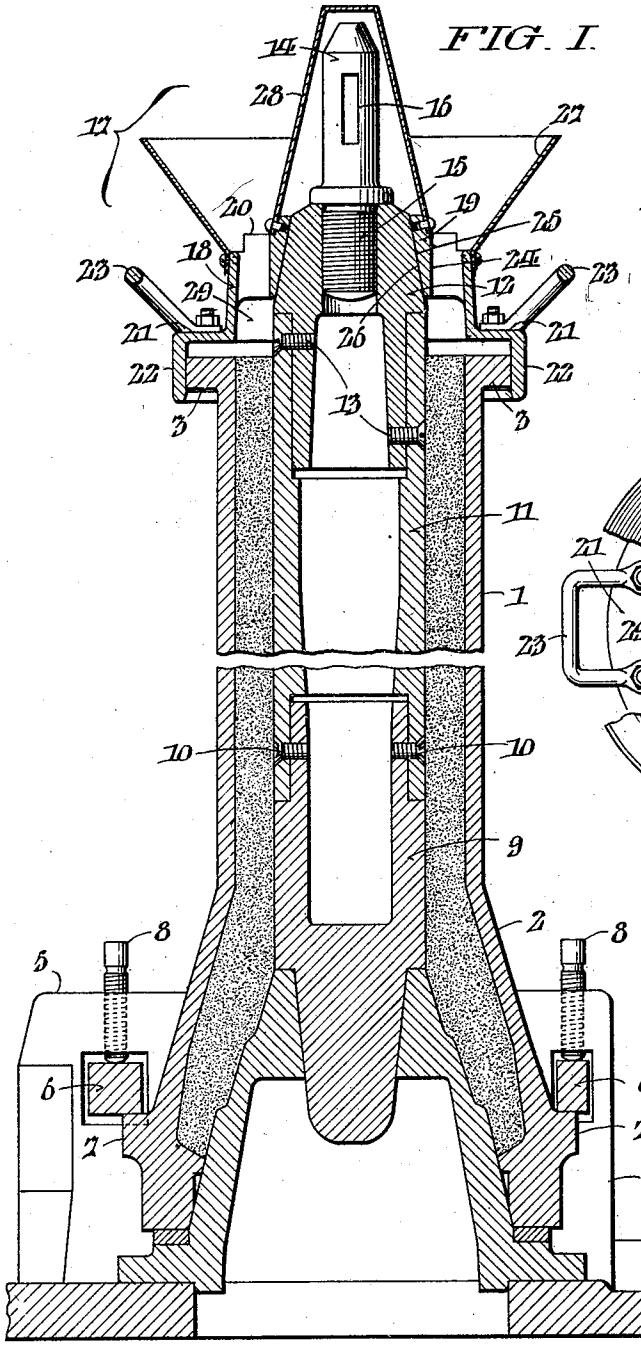
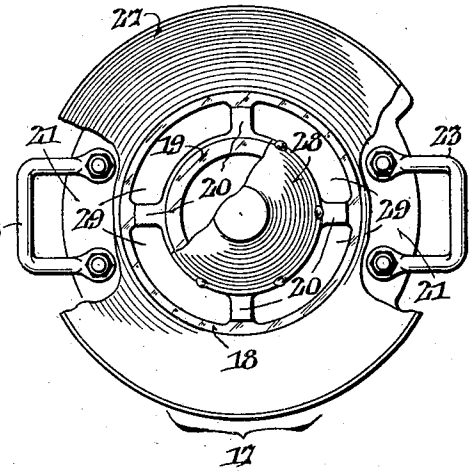


FIG. II.



WITNESSES

John A. Weidler

William Bell Jr.

INVENTOR:

Louis A Camerota

BY Fraley & Paul

ATTORNEYS.

Patented Apr. 12, 1932 1,854,154

UNITED STATES PATENT OFFICE

LOUIS A. CAMEROTA, OF BURLINGTON, NEW JERSEY, ASSIGNOR TO WALTER WOOD, OF PHILADELPHIA, PENNSYLVANIA

FLASK HOPPER

Application filed July 18, 1931. Serial No. 551,627.

This invention relates to flask hoppers, and more particularly to a combined sand hopper and pattern centering device for use in foundry practice. In the manufacture of cast iron pipe with refractory molds it is customary to prepare the mold by standing a cylindrical pipe flask on end, then inserting a body pattern within the flask, then pouring molding sand into the annular space between the flask and body pattern, and thereafter ramming the molding sand to render the mold sufficiently compact. It is particularly important that the body pattern be accurately centered within the flask so that the sand lining which constitutes the mold will assume the shape of a perfect annulus of uniform thickness throughout its length.

The primary object of the present invention is to provide a sand hopper with a centering ring which is adapted to engage, and to center within a flask, a part of the pattern which is subject to little if any wear.

A further object of the invention is to provide a sand hopper with a centering ring having an inner conical surface adapted to fit over a corresponding surface on the pattern, and with an outer casing ring having a downturned annular flange formed to fit the top of a flask, whereby the accurate centering of the pattern is effected by assembling the parts together.

Other objects and advantages characteristic of my invention will become more apparent from the description hereinafter of a preferred embodiment or example thereof, the description having reference to the accompanying drawings. Of the drawings:

Fig. I represents a fragmentary sectional view of a pipe flask and pattern, with a combined sand hopper and pattern centering device of my invention mounted thereon; and,

Fig. II represents a top plan view of the sand hopper and pattern centering device.

In the drawings, there is shown at 1 a unitary cylindrical flask used for casting iron pipe by centrifugal process. The flask is provided with a lower expanded end 2 which corresponds to the bell end of the pipe, and an upper flanged end 3 which corresponds to the bead end of the pipe. A portion of the vibrating platform of a jolt machine is shown at 4, the jolt machine being employed for the purpose of ramming the molding sand into a compact mold. A suitable seat 5 is provided for securing the lower end of the flask 1 to the table 4 of the jolt machine. Associated with this seat 5 there are shown clamping bars 6 which bear upon a flange 7 near the extreme lower end of the flask 1, and screws 8 which engage the clamping ring 6 and hold the same against the flange 7. Within the lower end of the flask 1 a head pattern 9 is inserted. Fitting upon the top of the head pattern 9 and secured thereto by screws 10, there is shown a body pattern 11 which may be made up of several sections. At the top end of the flask 1 a body pattern head 12 is fitted within the upper end of the body pattern 11 and secured thereto by screws 13.

The body pattern head 12 is provided with a gudgeon 14 having a screw threaded end 15 engaging a correspondingly threaded opening in the body pattern head 12. By inserting a key within the slot 16 of the gudgeon 14, the complete pattern may be conveniently raised and lowered by suitable hoisting apparatus.

The combined sand hopper and pattern centering device is comprehensively designated at 17. As shown in Fig. II, this device is in the form of a spider having an outer casing 18 and an inner hub portion or centering ring 19 joined together by equally spaced ribs 20. The outer casing ring 18 is formed with a horizontally extending flat portion 21 and a depending annular flange 22 which fits over the upper flanged end 3 of the flask 1. Bolted to the horizontal portion 21 of the outer casing 18 there are two handles 23 which are diametrically opposite each other and which serve as a means by which the sand hopper may be raised, lowered, or revolved about the top of the flask. The centering ring 19 has an outer cylindrical surface 24 and an inner tapered surface 25 which is of conical shape complementary to a corresponding surface 26 on the body pattern head 12.

Secured to the top edge of the outer casing 18 there is a sand hopper top portion

27 which, together with a hood 28 secured to the top of the centering ring 19, forms a funnel leading down to the space 29 between the outer casing 18, and the centering ring 19.

In preparing the sand lining of a flask, the flask is first vertically erected upon the table 4 of the jolt machine and clamped thereto. Subsequently the body pattern 11, its head pattern 9, and the body pattern head 12, are assembled together within the flask 1. The lower end of the pattern is thus centered within the corresponding end of the flask, but the upper end of the pattern is free to move from side to side. Thereupon the combined sand hopper and pattern centering device is lowered over the top of the body pattern and fitted onto the flanged end 3 of the flask. While the horizontal portion 19 of the outer casing 18 descends towards the top of the flask 1 and is still clear thereof, the inner conical surface 25 of the centering ring 19 engages the corresponding conical surface 26 of the body pattern head 12 and causes the body pattern head to assume a position concentric with the flask 1.

The mold is formed by pouring molding sand into the funnel shaped top of the sand hopper, the sand falling through the openings 29 between the ribs 20, the outer casing ring 18, and the head portion 19 of the spider. During the sand pouring operation the jolt machine is actuated to ram the sand into a compact mold.

It will be particularly noted that the conical surface 24 of the body pattern is a surface which is not ordinarily subject to wear, and which, therefore, can be kept true. By providing a centering ring of the character described, the operation of preparing the sand mold is considerably simplified, inasmuch as the fitting of the sand hopper upon the end of the flask automatically centers the body pattern therein.

While I have described one example or embodiment of my invention, the particular form of the sand hopper and pattern centering device may obviously be varied without departing from the spirit of my invention as defined in the claims hereto annexed.

Having thus described my invention, I claim:

1. A combined hopper and pattern centering device comprising an outer casing formed to fit upon the top of a flask, a centering ring having an inner tapered surface adapted to engage a corresponding pattern surface, and ribs joining said outer casing and centering ring.

2. A combined hopper and pattern centering device comprising an outer casing formed to fit upon the top of a flask, a centering ring connected therewith and having an inner tapered surface adapted to engage a corresponding pattern surface, and a funnel leading to the space between said outer casing and centering ring.

3. A combined hopper and pattern centering device comprising a spider having an outer casing with a flask fitting flange and having a hub portion formed with an inner conical surface to engage a corresponding pattern surface, and a funnel leading to the space between said outer casing and hub portion.

4. A combined hopper and pattern centering device comprising a spider having an annular outer casing with a flask fitting flange, and having a hub portion formed with an inner conical surface to engage a corresponding pattern surface, and a funnel including a hood on said hub portion leading to the space between said outer casing and hub portion.

5. In combination a vertically disposed flask, a cylindrical pattern having its lower end centered at the bottom of said flask and having its upper end projecting above the top of the flask and there provided with a conical surface; and a combined hopper and centering device for the upper end of said pattern comprising a casing fitted to the top of the flask to be concentric therewith, a centering ring having an inner surface complementary to the conical surface of said pattern, ribs joining said outer casing and centering ring, and a funnel leading to the space between said outer casing and centering ring.

In testimony whereof, I have hereunto signed my name at Florence, New Jersey, this 15th day of July, 1931.

LOUIS A. CAMEROTA.