No. 801,594. PATENTED OCT. 10, 1905.

J. G. JOHNSTON.

PRESSER HEAD.

APPLICATION FILED APR. 10, 1905.

2 SHEETS—SHEET 1.

FIG. 2.

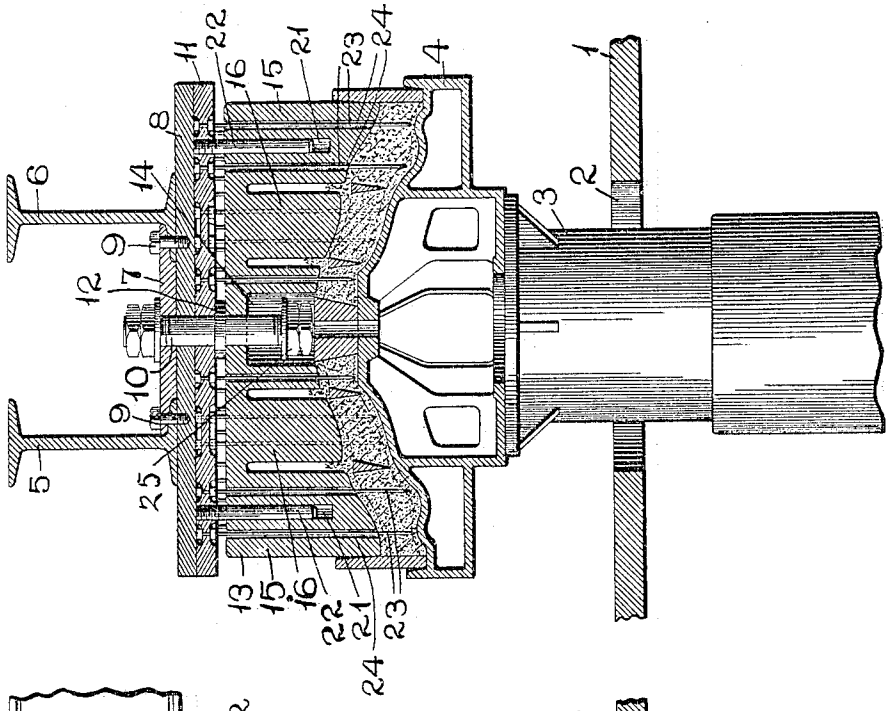
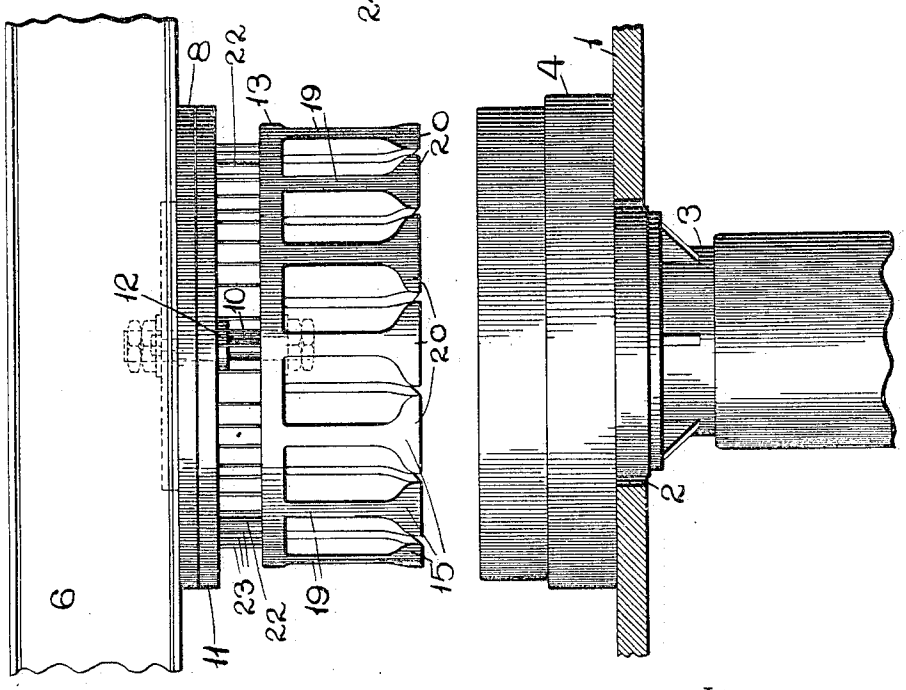


FIG. 1.



ATTEST.

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2 SHEETS—SHEET 2.

FIG. 3

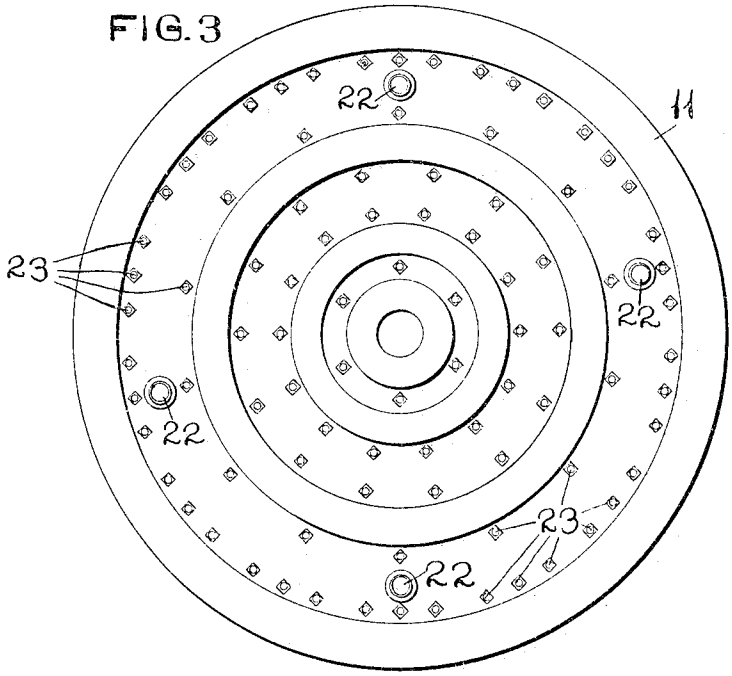
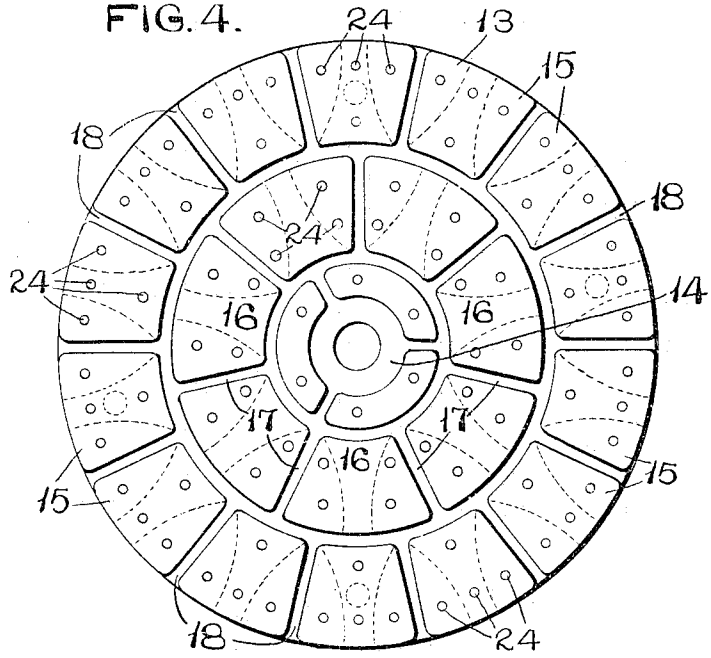


FIG. 4.



ATTEST.

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UNITED STATES PATENT OFFICE.

JOSEPH G. JOHNSTON, OF DETROIT, MICHIGAN, ASSIGNOR TO AMERICAN CAR & FOUNDRY COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF NEW JERSEY.

PRESSER-HEAD.

No. 801,594. Specification of Letters Patent. Patented Oct. 10, 1905.

Application filed April 10, 1905. Serial No. 254,834.

To all whom it may concern:

Be it known that I, JOSEPH G. JOHNSTON, a citizen of the United States, residing at Detroit, Michigan, have invented a certain new and useful Improvement in Presser-Heads, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a view in elevation of a presser-head, showing a molding-flask therebeneath and a portion of a molding-machine ram in position to move the flask into engagement with the head. Fig. 2 is a sectional view through the presser-head and flask, the flask being illustrated as in the position it would assume when the sand has been tamped by the presser-head. Fig. 3 is a plan view of the presser-head plate, and Fig. 4 is a bottom plan view of the presser-head.

This invention relates to a presser-head used in connection with power-actuated molding apparatus—as, for example, in connection with a machine similar to the one illustrated in a prior patent granted to me on February 23, 1904, and numbered 752,780.

It is usual to employ an abutment or presser-head (sometimes called a "press-plate") to tamp or press the sand in a flask when the flask is used in connection with a power-actuated molding apparatus, and it is the purpose of this invention to provide a presser-head which is capable of tamping or pressing the sand in the mold so as to properly form the matrix and in such a manner that the pressing may be accomplished by forcing the mold or flask to a position adjacent to the presser-head.

Another object of my invention is to provide a presser-head which will press upon the sand, but which will not exert pressure on the bars of the cope or drag used as a part of the mold, and I desire by the use of my invention to provide an equal pressure on the sand in the flask.

Another object of my invention is to provide a presser-head which may be caused to register with the cope or drag-bars in the flask in such a manner that the pressure will be exerted on the sand only.

A further object of the invention is to provide means whereby the matrix of the mold may be automatically vented during the pressing action.

Other objects and advantages, as well as the novel details of construction, of this invention will be specifically described hereinafter, it being understood that changes in form, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages thereof.

In order to illustrate the application of my invention, I have shown it as being applied to a power-actuated molding apparatus, and in the drawings, 1 designates the mold-table having therein an opening 2, through which the plunger or follower 3 may project, which follower may be actuated by any suitable power. The flask 4 is designed to rest upon the table in a position to be lifted by the follower into contact with the presser-head carried by any suitable support.

In the drawings I have illustrated the support for the presser-head as comprising two I-beams, (designated by the reference-numerals 5 and 6,) and to the lower flanges of these I-beams is secured a plate 7, supporting a plate 8, which abuts against the bases of the I-beams and which is held in place by fastening devices 9. Projecting through and depending over the plates 7 and 8 is a bolt 10, constituting a pivot for the presser-head. Sleeved on the bolt and free to turn thereon is a plate 11, having a free rotating movement, but held against vertical movement in one direction by the plate 8 and in an opposite direction by the collar 12 on the bolt 10. The shank of the bolt projects downwardly the required distance from the collar 12, and on the projecting portion of the shank is a rotatable and vertically-movable presser-head 13, having a central recess 14 surrounding the bolt and provided with a plurality of projections 15 near its outer edge and a series of projections 16 within the series of projections 15, which are shown as alternating with the projections 15 to form grooves 17, alternating with the grooves 18, formed by the spaced projections 15. The exact arrangement of the projections shown in Fig. 4 need not be followed in all cases, as the shape of the head will depend to a considerable extent upon the contour of the form or shape of the pattern. In the present instance, the presser-head is illustrated as being of proper shape for use in connection with the pattern used

in molding car-wheels. Each projection preferably consists of a web 19, having an enlarged free end, as at 20, so that a wider space is provided between the webs than between the free ends of the several projections. The reason for this is that it is desired to provide a contacting surface for the sand, which will evenly press the sand in the flask and which will permit the superfluous sand to pass between the projections and into the spaces formed by the webs, and thereby permit the excess of sand to find a ready escape from the flask. The presser-head 13 is provided with a plurality of elongated recesses 21 for the reception of guiding-dowels 22, which are rigid with the plate 11 and which permit a vertical movement of the presser-head 13 independently of any movement of the plate 11, but which necessitate a rotation of the plate 11 when the presser-head 13 is rotated, and vice versa. Depending from the plate 11 are a plurality of venting-pins, (designated by the numeral 23,) and these venting-pins are adapted to project through openings 24, extending through the entire thickness of the head 13. When the presser-head is not being used, the lower portion thereof will extend slightly beyond the points of these venting-pins, so as to protect them and protect the operator from injury thereby; but when the mold is being tamped the contact of the sand with the presser-head, due to the actuating-follower, will force the head 13 from a position illustrated in Fig. 1 to a position illustrated in Fig. 2, so as to cause the pins to be introduced into the sand a sufficient distance to vent the mold. When the follower recedes, the flask will be deposited upon the table 1, while the follower may continue downwardly through the opening 2, so as not to interfere with the proper rotation of the table 1, it being understood that in power-actuated molding-machines circular tables are generally employed, so that they may be rotated to bring the flasks opposite suitable carriers, so as to be conveyed to a suitable fluid-metal supply—as, for example, a cupola-furnace.

In practicing my invention the operations incident thereto may be briefly stated as follows: A pattern is first placed on the circular table 1 over one of the openings 2 therein. A flask with bars is placed over the pattern. The flask is then filled with sand. The sand is distributed over the flask evenly by a sweep. The pattern, flask, and sand are raised by the follower until the sand contacts with the presser-plate and a perfect mold is formed. In view of the fact that the presser-plate is cut away to relieve the pressure over the bars in the flask and is recessed, so that the sand on top of the bars may pass in between the webs of the projections, the sand on top of the bars will find an easy escape therefrom. In actual practice the contour of the face of the presser-head does not wholly conform to the shape of the pattern, but is of such shape that varying degrees of hardness of the mold may be produced as is required in different parts of the mold. The presser-plate, it will be noted, is held in position by the pivot, which admits of a rotary movement to bring the grooves or recesses over the bars in the flask. There is a particular advantage in this in that by using the rotary presser-head it is not necessary to place the flask over the pattern so that the bars will register with the grooves; but the flask may be placed over the pattern in any position and by merely turning the presser-head into alining position, even during the movement of the follower, the parts may be easily and conveniently caused to register. By employing the venting-pins in connection with the presser-head the mold may be vented at the same time the sand is pressed. During the operation the pattern, with the flask and sand, is lifted until the sand contacts with the presser-plate, and as the upward movement of the follower continues the presser-plate will be forced up against the plate 11, and the depth at which the vent-wires are introduced into the mold will be dependent upon the distance of the upward travel of the presser-head guided by the dowels 22.

It will be observed that the presser-plate forms a protecting-hood for the vent-wires when the presser-plate is not being used, and the advantage of this is that the pins are not only prevented from being bent, but are guided through the openings in the presser-head in a manner which will be clear by reference to Fig. 2. The vertical movement of the presser-head is limited at two points. The upward movement is limited by the plate 11, and the downward movement is limited by the stop (illustrated as nuts) 25.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of a support, a plate carried by said support, a rotatable sand-pressing device carried by said plate, and means carried by said plate for venting a mold when the sand is pressed in the flask thereof; substantially as described.

2. The combination with a molding-machine table and a flask-lifting follower, of a freely-rotatable presser-head in line with the follower and having sand-pressing projections; substantially as described.

3. The combination with a molding-machine table, of a freely-rotatable presser-head in line with the table, a backing-plate above the presser-head, venting-pins projecting through openings in the presser-head and movable therewith, the points of said pins being normally covered by said presser-head, said presser-head having a vertical movement to uncover the points of the venting-pins; substantially as described.

4. The combination with a molding-ma-

chine table, of a presser-head above the table and having free rotary movement, and projections carried by said head and spaced apart to form grooves, the free movement of the presser-head permitting actuation thereof to permit the grooves to aline with the bars in the cope or drag of the mold on said table; substantially as described.

5. The combination with a molding-machine, of a presser-head above the table of the molding-machine and having projections, said presser-head being freely rotatable to permit the projections to aline with the sand in the spaces between the drag or cope of the mold on the molding-machine table; substantially as described.

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 7th day of April, 1905.

JOSEPH G. JOHNSTON.

Witnesses:
PERCY M. FRASER,
JAMES B. HICKEY.