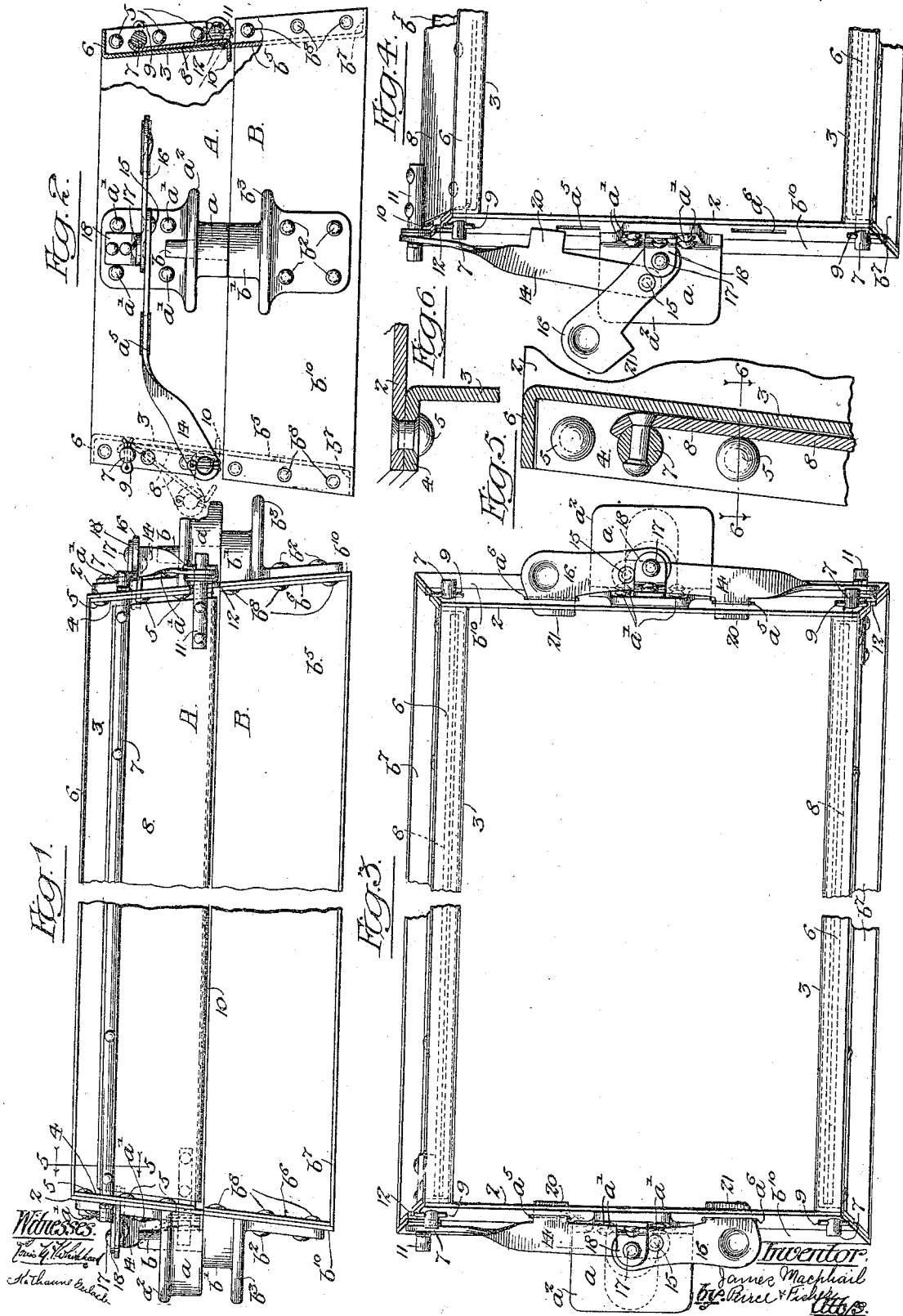


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 FLASK FOR SAND MOLDS.
 APPLICATION FILED MAY 22, 1907.

952,678.

Patented Mar. 22, 1910.



UNITED STATES PATENT OFFICE.

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Specification of Letters Patent. Patented Mar. 22, 1910.

Application filed May 22, 1907. Serial No. 374,990.

To all whom it may concern:

Be it known that I, JAMES MACPHAIL, a citizen of the United States, residing at Davenport, in the county of Scott and State of Iowa, have invented certain new and useful Improvements in Flasks for Sand Molds, of which I do declare the following to be a full, clear, and exact description, reference being had to the accompanying drawing, forming part of this specification.

My present invention while applicable in part to sand molds generally, is more particularly directed to the improvement of that class of sand molds in which provision is made whereby the accidental dropping of the molds from the flask, while the latter is being handled, may be avoided. An example of this type of sand mold is illustrated in Letters Patent No. 842,322, granted to me January 29, 1907.

My invention consists in the features of improvement hereinafter described, illustrated in the accompanying drawing and particularly pointed out in the claims at the end of this specification.

Figure 1 is a view in side elevation of a sand mold embodying my invention. Fig. 2 is an end view. Fig. 3 is a plan view. Fig. 4 is a plan view of an end portion of my improved flask showing the sand supports in open or inoperative position. Fig. 5 is a view in vertical section on line 5—5 of Fig. 1. Fig. 6 is a view in horizontal section on line 6—6 of Fig. 5.

My invention is shown as applied to a two-part taper flask that comprises a cope A and a drag B adapted to be alined by means of vertical pins or studs *b* that project upwardly from the brackets *b'* that are riveted as at *b*² to the end walls of the drag B. The brackets *b'* are preferably castings having outwardly projecting portions *b*³ which serve as lifting handles. The pins or studs *b* are adapted to enter holes formed in the brackets *a* that comprise castings riveted as at *a'* to the end walls of the cope A, and the projecting portions *a*² of these brackets serve as lifting handles.

The cope A is formed of metal end plates 2 and metal side plates 3. The side plates 3 are formed at their ends with outwardly turned flanges 4 that are riveted as at 5 to the end plates 2. The side plates 3 are also formed at their upper edges with outwardly turned flanges 6 that serve to strengthen

and give rigidity to the side walls of the flask.

Through the outwardly turned flanges 4 of the side plates 3 and through the abutting portions of the end plates 2 are formed holes through which pass the ends of the journal rods 7 to which are fixed the side sand supports 8 and, preferably, cotter pins 9 are passed through the outer ends of the rods 7 to hold these rods against lateral movement.

The lower edges of the side sand supports 8 are formed with the inwardly turned or projecting portions 10 adapted to pass through slits or openings formed at the bottom of the side plates 3 of the cope. To one of the lower corners of each of the sand supports 8 is attached a projecting stud or rod 11 that extends through a cut-away space 12 formed in the outwardly turned flange 4 and in the adjacent portion of the end plate 2 of the cope. Over this stud or rod 11 is set one end of a connecting bar 14 that extends upwardly and toward the center of the end plate of the cope, being bent a quarter of a turn, as shown in Figs. 2, 3 and 4, and the inner end of this connecting bar 14 is pivoted as at 15 to a shifting lever 16. The shifting lever 16 has its inner end pivotally connected as at 17 to a bracket or projection 18 that extends outwardly from the bracket *a*. The connection between the connecting rod 14 and the shifting lever 16 is such that when the shifting lever is turned to the open or inoperative position seen in Fig. 4, the connecting rod serves to move and hold the side sand support to which it is attached out of the long slot or opening at the base of the corresponding side wall 3 of the cope A; but when the shifting lever 16 is turned to the closed position shown in Figs. 2 and 3 of the drawing, the pivot pin 15 at the inner end of the connecting rod passes across the dead center or pivot point of the shifting lever, and the shifting lever thus serves to hold the side sand support 8 in closed or locked position, with the projecting part 10 at the lower end of the side sand support 8 extending beyond the inner face of the side wall of the flask so as to engage with the sand mold therein. There is a connecting rod and a shifting lever for each of the side sand supports 8, one of these connecting rods and one of these shifting levers being located at each end of the cope A.

As shown, each end wall 2 of the cope is provided with one or more slots a^5 and a^6 through which may extend end sand supports 20 and 21 (in suitable number) that are connected with the side sand supports, the purpose of these end sand supports being to more effectively hold the sand mold within the flask. As shown, one of the end sand supports 20 is formed integral with the connecting bar 14 and the other of these end sand supports 21 is shown as formed integral with the shifting lever 16, the sand support 20 being arranged to pass through the hole a^5 , and the end sand support 21 being arranged to pass through the hole a^6 in the corresponding end plate 2 of the cope; and, when the sand supports 21 and 22 are in closed or operative position, they will project beyond the inner face of the end wall of the flask and in position to engage the sand mold.

By providing both side and end sand supports, a much more effective retention of the sand mold within the flask is secured and, by connecting the side sand supports with the end sand supports, they can be quickly and simultaneously shifted either into or out of operative position. By forming the side walls 3 of the cope with the end flanges, as shown, not only am I enabled to produce a very strong cope, but, by this means, provision is made for pivotally supporting the upper ends of the side sand supports in such manner that these supports may not be struck or broken in handling. That is to say, the flanges of the side plates and the projecting portions of the end plates form a recess or chamber for the side sand supports and their pivot rods.

The drag B has its side walls formed of plates b^5 having at their ends flanges b^6 and a bottom flange b^7 , the end flanges b^6 being riveted as at b^8 to the extreme end portions of the end plates b^{10} of the drag. By this construction an exceedingly strong and rigid drag is secured.

From the foregoing description it will be seen that when the cope A is set upon the bed or table of the molding machine to receive its charge of sand, the side and end sand supports will be shifted to closed position, this being effected by turning the two shifting levers 16 from the open position shown in Fig. 4 to the closed position shown in Fig. 3, and, when in such position, the side and end sand supports will project beyond the inner face of the cope wall and these supports will be securely locked against danger of accidental displacement while the sand is being rammed into the cope.

When it is desired to lift the cope, the molder will grasp the projecting portions a^2 of the brackets a at the ends of the cope and the sand supports, being in operative

position, will prevent the dropping of the mold from the cope. When the cope has been set in position upon the drag, the molder will turn the shifting levers 16 to the position shown in Fig. 4, thereby shifting the end and side sand supports to open or inoperative position, so that the cope may be readily lifted from the mold.

It is manifest that the precise details of construction above set out may be varied without departing from the spirit of the invention, and that features of the invention may be employed without its adoption as an entirety.

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

1. A flask for sand molds having its walls formed of metal plates, the side walls having outwardly turned flanges at their ends and united to the end walls, side sand supports pivotally mounted between the end flanges of the side plates, said side plates having slots or openings through which said sand supports extend and means for shifting said side supports through said slots or openings into and out of operative position.

2. In a flask for sand molds, sand supports pivoted at the sides and movable sand supports at the ends of the flask said sand supports being mounted upon the outer face of the flask and the latter having slots through which said sand supports extend, and means for projecting said supports beyond the inner face of the flask and for withdrawing said sand supports from operative position when the flask is to be lifted from the mold.

3. In a flask for sand molds, pivoted sand supports at the sides and sand supports at the ends of the flask and means connecting said side and end sand supports whereby they may be shifted into and out of operative position.

4. A flask for sand molds comprising a movable side sand support, a pivoted end sand support adapted to pass through the end wall of the flask and a connecting bar uniting said side sand support to said end sand support.

5. A flask for sand molds comprising a pivoted side sand support, a connecting bar attached at its outer end to said side sand support for positively moving it into and out of operative position, and a pivoted shifting lever mounted upon the end of the flask and attached to the inner end of said connecting bar.

6. A flask for sand molds comprising pivoted side sand supports having projections at their lower ends adapted to extend beyond the inner face of the flask, end sand supports mounted upon the end walls of the flask and adapted to be projected through

said walls, connections between said side sand supports and said end sand supports whereby they may be simultaneously shifted into and out of operative position.

5 7. A flask for sand molds comprising a pivoted side sand support, a connecting bar attached to said support whereby it may be positively moved into and out of operative position and a pivoted lever pivoted to said
10 connecting bar between the fulcrum of said lever and its free end, whereby, when said lever is in closed position, it will serve to lock said side sand support.

8. A flask for sand molds having its walls

formed of separate plates of wrought metal, 15 the side walls having outturned flanges at their ends united to the end walls, and sand supports arranged outside of said side walls and having pivot pieces engaging journal bearings or openings in the outwardly 20 turned flanges of the side walls, said sand supports having inturned lips arranged to project beyond the inner faces of said side walls.

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Witnesses:

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