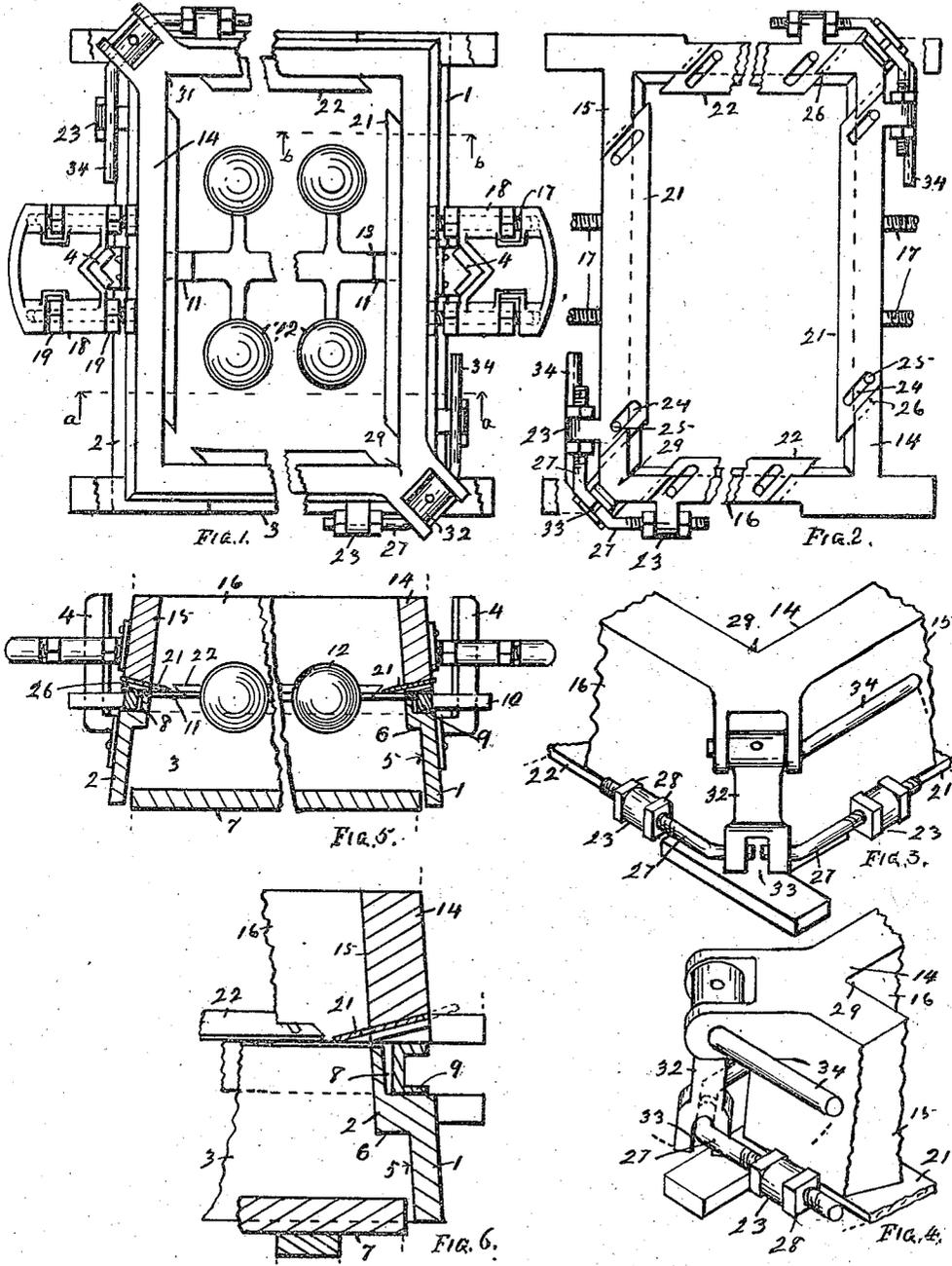


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MOLDING FLASK.  
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Patented Aug. 14, 1917.



Witnesses,

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# UNITED STATES PATENT OFFICE.

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MOLDING-FLASK.

1,237,235.

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*To all whom it may concern:*

Be it known that I, FRANK J. BECKER, a citizen of the United States, residing at Hamilton, Ohio, have invented a new and useful Improvement in Molding-Flasks, of which the following is a specification.

My invention relates to molding flasks of the class provided with sand strips and the objects of my improvements are to provide means whereby a pattern frame may or may not be used as desired without changing the relative vertical position of the flask sections or changing the quantity of sand required for the mold and which will also prevent any offset in the plane of the walls of the mold at its parting line, that the jacket may be easily and snugly placed in position thereon; to provide automatic means for preventing the drag section from being forced in a downward direction on the drag cake by means of pressure exerted on the cope section thereon, that the parting surface of the drag cake may be maintained flush with the top of the drag section; to provide means for limiting the depth to which the bottom board may be forced within the drag section under the predetermined pressure thereon, as by a molding machine; to provide adjustable lever mechanism for actuating the sand strips in downwardly convergent planes to avoid breaking the adjacent parting surface of the drag cake, to prevent the loose sand from interfering with their movement and to form a beveled edge on the cope cake for making it less easily broken and more efficient for lifting said cake by means of the sand strips thereunder; to provide means for adjustably securing the sand strips in proper relation to each other to be moved a uniform distance within the flask; to provide means for adjustably securing the lifting ears in predetermined distance relation for securing accurate registration of the flask sections by the sliding engagement of said ears with the flask pins, and to provide rigid and durable construction and assemblage of the various members for securing accuracy, facility of operation and efficiency of action.

These objects together with others to be incorporated in the claims may be attained in the following described manner as illus-

trated in the accompanying drawings, in which:—

Figure 1 is a plan with parts broken away of a molding flask embodying my improvements;—Fig. 2 an inverted plan with parts broken away of the cope section with the sand strips; Figs. 3 and 4 isometrical views of a corner portion of the cope section, showing the adjustable lever mechanism for actuating the adjacent sand strips, and Figs. 5 and 6 vertical sections with parts broken away on the respective lines *a—*a** and *b—*b** of Fig. 1.

In the drawings, 1 represents the drag section of a molding flask formed with downwardly divergent end and side walls 2 and 3 and provided with the usual flask pins 4. The lower inside portion of its end walls are formed with a rabbet or recess 5 to provide shoulders 6 at an intermediate point in their depth, that the portion of the drag cake thereunder may be automatically packed more tightly by the adjacent end portions of the bottom board 7 under the exertion of a molding machine than other portions of the said cake, to form a step for resisting any downward movement of the drag section from pressure of the cope section thereon and for maintaining the parting surface of the mold in fixed relation to the parting edge of the flask. The top outside portion of the walls of said drag section are formed with a rabbet or recess 8 wherein a pattern frame 9 may be supported preferably flush with the top of said section. Said pattern frame is provided with lifting ears 10 and with oppositely disposed lugs 11 which are extended within the flask through open gaps (not shown) formed in the parting edge of the flask and to which the gated patterns 12 may be secured at 13 as by soldering.

The cope section 14 is rigidly formed with downwardly divergent end and side walls 15 and 16 to register with the corresponding walls of the drag section and provided on its ends with pairs of outwardly projecting studs 17 whereon the lifting ears 18 may be adjustably secured in accurate sliding engagement with the flask pins by means of the adjusting nuts 19 and similar lifting ears adjustably secured in like manner on

the pattern frame may be substituted for the ears 10 shown thereon if desired.

The end and side sand strips 21 and 22 each provided near one end with an outwardly projecting boss 23 are formed with parallel oblique ends and with slots 24 parallel with said ends and adapted to movably engage with the depending pins 25. Said strips are movably supported under the corresponding end and side walls of the cope section by means of the lips 26 being extended a short distance under their end portions. The ends of all the sand strips and the oblique slots therein are parallel with lines drawn at an angle of forty five degrees to the direction of the length of the flask.

Rods 27 adjustably secured to the bosses 23 of adjacent end and side sand strips by means of the adjusting nuts 28 are formed with intermediate bends and terminate in alinement outside of the corresponding opposite corners 29 and 31 of the cope section. Legs 32 hinged on said respective opposite corners of the cope section depend therefrom and each terminates in an open slot 33 in movable engagement with the end portion of the adjacent rods 27. Crank arms 34 secured to the respective legs are extended parallel with the adjacent end walls of the cope section and terminate near the corresponding lifting ears thereon. Said arms serve to move the legs and the rods 27 with the sand strips in parallel oblique directions a predetermined distance within the flask for lifting the cope cake by means of the cope section.

The lateral inclination of the sand strips avoids the interference of the loose sand with their movement, prevents them from disturbing the parting surface of the drag cake and forms a beveled edge on the cope cake which permits it to be replaced in accurate position on the drag cake and is less liable to crumble when the jacket is being placed in position on the mold.

In operation, the drag section being placed in inverted position on the match with the patterns and filled with sand, the bottom board may be forced partially therein under the exertion of a molding machine or otherwise to the extent limited only by the greater resistance of the end portions of the drag cake against the shoulders formed on the end walls. The excessively packed end portions of the drag cake serves to form steps to prevent the drag section from being pressed in a downward direction by the cope member when supported thereon, that its relative position to the parting line may be maintained. After turning the drag section with the drag cake to rest on the bottom board and the cope section is placed thereon, the sand strips may be moved with their inside edges close to the parting sur-

face of the drag cake and the cope cake completed in the usual manner. Said strips serve to lift the cope cake from the drag cake and after the removal of the patterns, to return it in accurate position thereon, when they may be returned beyond the walls of the mold for the removal of both the cope and drag members therefrom in the usual manner.

After the removal of the flask the walls of the mold will remain in the same inclined planes and without any offset at the parting line whether a pattern supporting frame has been employed or not that the usual jacket may be easily and snugly fitted around the mold for covering the parting line thereof. The relative position of the sand strips and the limit of their movement may be accurately adjusted by means of the nuts on the rods connected therewith, and together with the proper adjustment of the lifting ears on the cope section and also of similar ears on the pattern frame in relation to the flask pins, precision and accuracy may be secured and maintained in the operation of the flask for producing castings of perfect form and true to the patterns used.

Having fully described my improvements, what I claim as my invention and desire to secure by Letters Patent of the United States is:—

1. A molding flask section provided with sand strips, and actuating lever mechanism supported thereon and adjustably secured to said strips.

2. A molding flask section having its parting edge formed on the outside with a rabbet wherein a pattern frame may be supported, and having portions of the opposite edge of said section formed on the inside with a rabbet for the insertion of a bottom board therein for the purpose specified.

3. A molding flask section comprising sand strips supported under its respective walls and movable at oblique angles in downwardly convergent planes, and actuating connections therewith supported on said section.

4. A molding flask section rectangular in form having sand strips supported under its respective walls, said strips being movable at oblique angles in downwardly convergent planes, and actuating connections supported on said section and adjustably secured to said strips.

5. A molding flask section in form the frustum of a pyramid, sand strips supported under its respective walls and movable at oblique angles in downwardly convergent planes, and actuating lever mechanisms supported on opposite portions of said section and adjustably secured to the strips adjacent thereto.

6. A molding flask section rigidly con-

5 constructed and in form the frustum of a pyramid, sand strips supported under its respective walls and movable at oblique angles in downwardly convergent planes, and actuating lever connections supported on opposite corners of said section and adjustably secured to the respective strips adjacent thereto.

10 7. A molding flask comprising a cope section rectangular in form, sand strips supported under its respective walls and movable in pairs at an oblique angle and in downwardly convergent planes, and actuating lever connections supported on respective opposite portions of said section and adjustably secured to the respective strips of the said pairs adjacent thereto.

15 8. A molding flask section rigidly constructed and in form the frustum of a pyramid, sand strips supported under its respective walls and movable in pairs in opposite directions at an angle to the length of said section, and actuating connections supported on said section and adjustably secured to the respective strips of the pair of strips adjacent thereto.

20 9. A molding flask comprising a drag section rectangular in form and having slanting walls formed with an inside portion of their thickness extended above the outside portion thereof to form a thin parting edge adapted to be inserted through a pattern frame.

25 10. A molding flask comprising a drag section having its walls formed with an upward extension of the inside portion of their thickness to form a thin parting edge, and with a downward extension of the outside portion beyond the inside portion of certain of its walls to provide a recess on the inside surface thereof wherein projections may be formed on the drag cake, for the purpose specified.

30 11. A molding flask section having its walls formed with a rabbet around the outside of its parting edge to receive a pattern frame.

35 12. A molding flask section having the inner portion of the parting edge of its walls extended beyond the outer portion thereof for projecting within a pattern frame.

40 13. A molding flask comprising a drag section having its walls constructed and arranged with a ledge for supporting a pattern frame flush with its top surface.

45 14. A molding flask section in form the frustum of a pyramid, having the parting edge of its walls formed with a rabbet in their outside surface, and the opposite edges of certain of said walls being formed with a rabbet in the inside surface.

50 15. A molding flask comprising a cope section, sand strips supported thereunder and movable in downwardly convergent

planes, and lever mechanism for actuating said strips.

16. A molding flask comprising a rigidly constructed cope section having downwardly divergent walls, sand strips supported under the respective walls, and adjustable lever connections for actuating the strips. 70

17. A molding flask comprising a cope section in form the frustum of a pyramid, sand strips supported under certain of its walls, and actuating lever mechanism adjustably secured to the strips. 75

18. In a molding flask the combination with a rectangular cope section, of sand strips supported under its respective walls, and actuating means therefor supported on opposite corners of said section and adjustably connected to the strips adjacent thereto. 80

19. A molding flask comprising a rectangular cope section, sand strips supported under its respective walls and movable in downwardly convergent planes, and separate lever mechanism supported on opposite corners of said section for actuating the strips adjacent thereto. 85

20. A molding flask comprising a cope section, sand strips secured thereunder and movable in planes inclined at an angle to the horizontal plane of said section, and lever mechanism secured to said section for actuating said strips. 90

21. A molding flask comprising a plurality of cooperating sections, flask pins secured on one of said sections, pairs of threaded studs projecting adjacent thereto from one of the other said sections, lifting ears on the respective pairs of studs, and adjusting units on the studs for maintaining the ears thereon in proper distance relations to the associated section and also in proper sliding engagement with the pins. 95

22. A molding flask section, studs projecting from opposite walls thereof, lifting ears on the studs, and means for moving and maintaining said ears thereon in predetermined distance relation to each other. 100

23. A molding flask section comprising studs projecting from opposite walls thereof, lifting ears on the studs, and adjusting nuts on the studs for maintaining the ears thereon in predetermined distance relations to the corresponding walls and also to each other. 105

24. A molding flask comprising a drag section rectangular in form and having the lower edge of its opposite walls formed on the inside with a rabbet, and a bottom board adapted to be removably inserted therein. 110

25. A molding flask comprising a rigidly constructed drag section in form the frustum of a pyramid, having the lower edge of certain of its walls recessed on the inside, and a bottom board movable within said recessed portion of the section and whereon the mold cake may be supported. 115

26. A molding flask comprising a drag section formed with an inclined wall having the outside portion of its lower edge formed with an extension beyond the inside portion thereof to provide a recess wherein a step may be formed on the contiguous wall of the drag cake by the movement under pressure of the bottom board therein, for the purpose specified.

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Witnesses:

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