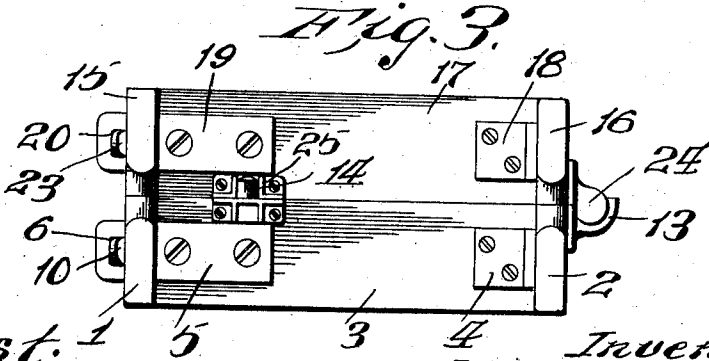
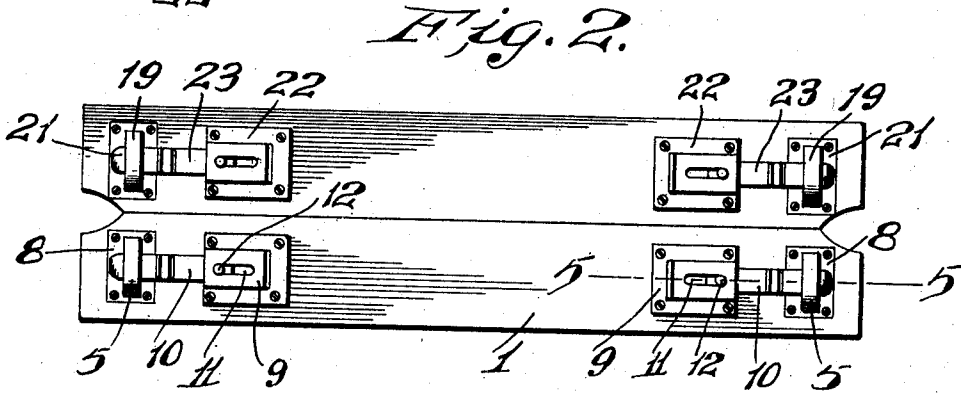
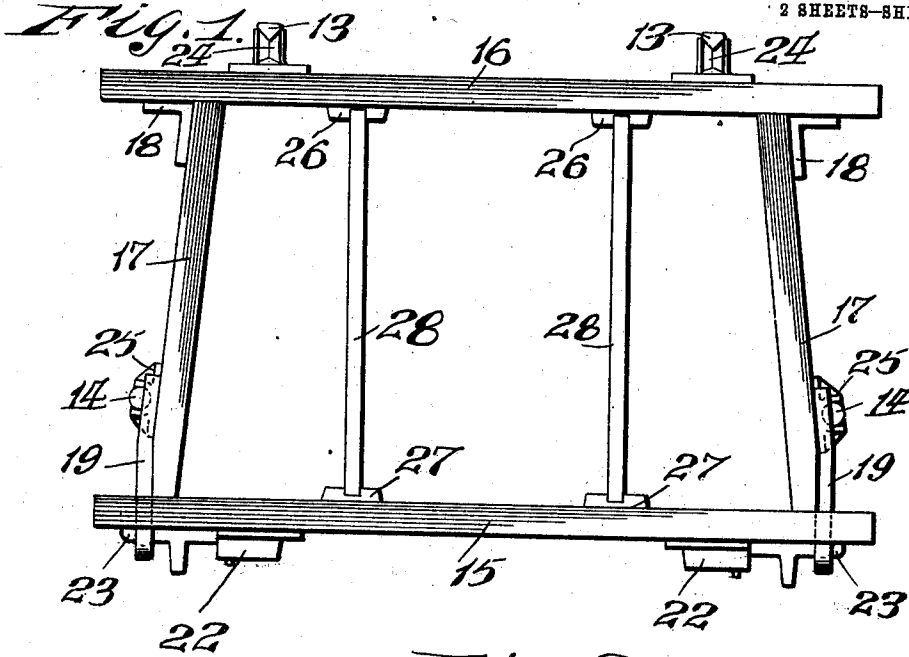


H. J. & T. H. GRAF.
HINGELESS SNAP FLASK.
APPLICATION FILED MAY 19, 1910.

980,511.

Patented Jan. 3, 1911.

2 SHEETS—SHEET 1.



Attest:
H. G. Fletcher.
E. L. Wallace.

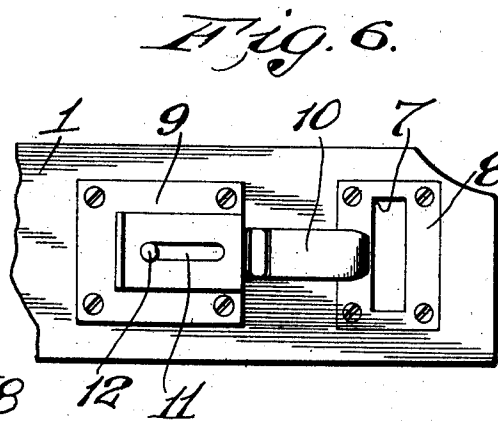
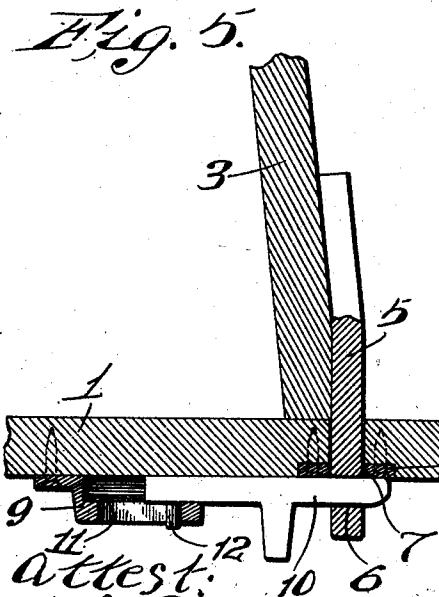
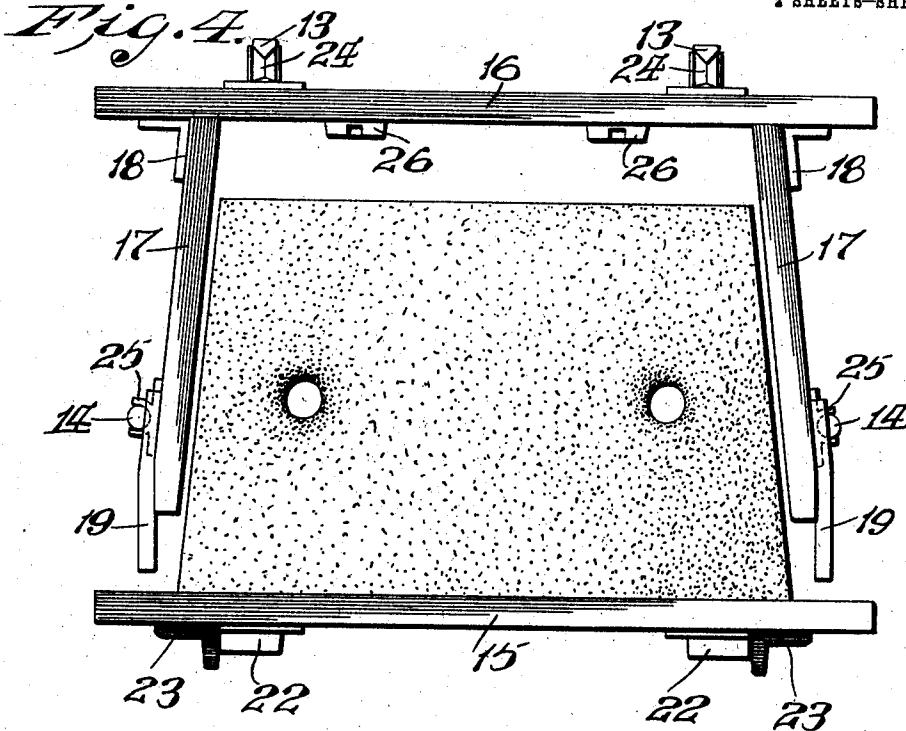
Inventors.
Henry J. Graf.
Theodore H. Graf.
By Higdon Longmire attys.

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UNITED STATES PATENT OFFICE.

HENRY J. GRAF AND THEODORE H. GRAF, OF LOUISVILLE, KENTUCKY.

HINGELESS SNAP-FLASK.

980,511.

Specification of Letters Patent.

Patented Jan. 3, 1911.

Application filed May 19, 1910. Serial No. 562,130.

To all whom it may concern:

Be it known that we, HENRY J. GRAF and THEODORE H. GRAF, citizens of the United States, and residents of Louisville, Jefferson
5 county, Kentucky, have invented certain new and useful Improvements in Hingeless Snap-Flasks, of which the following is a specification containing a full, clear, and exact
10 description, reference being had to the accompanying drawings, forming a part hereof.

Our invention relates to improvements in hingeless snap flasks, the object of our invention being to construct a flask that may
15 be used either as a snap flask or a "roll up" flask as required to adapt a single flask for making castings of various sizes and forms.

A further object of our invention is to construct a flask in which the end members
20 of the cope and drag are fixed to one of the sides of the cope and drag and arranged at angles other than right angles and arranged to be detachably secured to the remaining side members of the cope and drag as re-
25 quired to form molds, the ends of which taper so that the cope and drag may be separated and drawn apart rather than employing hinged end members for the cope and drag as is ordinary.

For the above purposes my invention consists in certain novel features of construction and arrangement of parts as will be hereinafter more fully described, pointed out in the claims and illustrated by the accompanying
35 drawings, in which:

Figure 1 is a plan of the complete flask; Fig. 2 is a front elevation of the complete flask; Fig. 3 is an end elevation of the complete flask; Fig. 4 is a plan of the complete
40 flask showing a mold therein, the flask being partly separated; Fig. 5 is an enlarged, detail, sectional plan taken on the line 5—5 of Fig. 2 illustrating one of the locking bolts for securing the flask members together; and
45 Fig. 6 is an enlarged, front elevation of the locking means in an open position.

Referring by numerals to the accompanying drawings: 1 designates the front section of the drag, 2 the back section of the drag
50 and 3 the end sections which are rigidly secured to the inside face of the back section 2 by the angle irons 4, and as shown in Fig. 3, the members 3 are secured at angles relative the back section other than right angles.

Carried by each of the sections 3 at their forward ends is a metallic bar 5 having an

aperture 6 formed through its free end to be inserted through openings 7 formed in the front section of the drag, which openings 7 are each surrounded by a metallic escutcheon
60 plate 8.

Fixed on the forward face of the front section of the drag are the housings 9 arranged to support the draw bolts 10, which draw bolts are designed to be inserted
65 through the openings 6 formed in the ends of the bars 5. Formed in each of the housings 9 is a slot 11 and projecting laterally from each of the bolts 10 is a pin 12, which traverses the slots 11 as required to prevent
70 losing of the bolts 10 from the housings.

Projecting laterally from the back section 2 is a hinge member 13 and arranged on the side members 3 are the guide pins 14.

15 designates the front section of the cope and 16 the back section of the cope.

17 designates the end members of the cope arranged to parallel the end members 3 of the drag and are secured to the back section 16 by the angle plates 18.

Secured to each of the end members 17 are the locking bars 19 having openings 20 in their free ends and which are the exact counterparts of the locking bars 5 secured to the drag.

21 designates escutcheons embracing openings formed in the front section which vertically aline with the escutcheons 8 of the drag.

22 designates housings and 23 draw bolts carried by the housings, which draw bolts are arranged to be inserted through the openings formed in the locking bars 19 to secure the members of the cope together. Projecting rearwardly and downwardly
95 from the back section 16 of the cope is a hinge member 24 arranged to cooperate with the hinge member 13 on the drag when it is desired to employ the flask as a "roll up" flask. Arranged to coact with the guide pins
100 14 are the guides 25.

To adapt the flask to make large molds or extremely deep "lifts," lugs 26 and 27 are secured to the inside faces of the front and back sections of the cope and bars 28 are
105 arranged to be secured between said lugs, which bars reinforce the mold as required to prevent mis-shaping when the cope is either lifted or rolled up from the drag.

To persons familiar with the art to which
110 our invention belongs, it is known that the present flasks have their end and side mem-

bers hingedly connected so that they may be readily drawn from the mold. In our present form of flask these hinges are dispensed with and the end members of the
 5 cope and drag are secured to the back sections of the cope and drag at an angle other than a right angle so that when it is desired to withdraw the back section and the end
 10 members from the mold it is not necessary to open a hinged flask. The hinges commonly employed in snap flasks are apt to become loosened by wear and a loose hinge is apt to cause mis-shapen molds.

In the practical operation it is obvious
 15 that our flask may be employed either as a snap flask for light work or a "roll up" flask for heavier work and for the reason that the flask members are readily separable, after a mold has been formed, the flask
 20 may again be employed for the formation of a second mold. In setting up the flask the front section of the drag is placed on the ordinary platform (not shown) and the back, with the attached end members, is
 25 then placed in position on the platform with the locking bars 5 inserted through the openings 7 of the front section, the locking bars 10 are then drawn downwardly through the openings formed in the locking bars 5, thus
 30 the members of the drag are securely locked in working positions. The members of the cope are then locked together in the same manner as the drag members and placed on top of the drag after the molder has formed
 35 the sand mold in the drag. The molder then completes the formation of the mold in the cope. If it be desired then to remove the flask from the mold all of the draw bolts are moved to unlocking positions. It is ob-
 40 vious then that the back and end members of the flask may be readily drawn laterally by reason of the arrangement of the end members of the flask, at an angle other than a right angle, said members may be drawn
 45 from the mold without the employment of hinges as is ordinary.

We claim:

1. A hingeless snap flask having the end members secured to one of the side members
 50 at angles other than right angles, and means for detachably securing the end members to the remaining side members.

2. In a hingeless snap flask, a cope and

drag having their end members securely fastened to one of their side members at
 55 angles other than right angles, and means for detachably securing the end members to the remaining side members.

3. In a hingeless snap flask, a cope and drag having their end members securely
 60 fastened to one of their side members at angles other than right angles, means for detachably securing the end members to the remaining side members, and separable hinge connections between the cope and
 65 drag.

4. In a hingeless snap flask, a cope and drag having their end members securely fastened to one of their side members at
 70 angles other than right angles, means for detachably securing the end members to the remaining side members, separable hinge connections between the cope and drag, and guides arranged on the end members for holding the cope and drag in vertical align-
 75 ment relative each other.

5. In a hingeless snap flask, a cope and drag having their end members secured to one of the side members, the end members having their outer ends spaced farther
 80 apart than their inner ends, locking members carried by said end members and locking members carried by the remaining side members whereby said end members may be detachably secured to the side member.
 85

6. In a hingeless snap flask, a cope and drag having their end members secured to one of the side members, the outer free ends of the end members being spaced farther
 90 apart than the inner ends, locking bars carried by the free ends of said end members, means carried by the remaining side members coacting with said locking bars for detachably securing the end members to said
 95 last mentioned side members, and means for separably, hingedly connecting the cope and drag.

In testimony whereof, we have signed our names to this specification, in presence of two subscribing witnesses.

HENRY J. GRAF.
 THEODORE H. GRAF.

Witnesses:

WM. H. JOHNSTON,
 C. J. GRANING.