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A. J. RELLINGER

2,150,589

FLASK

Filed April 19, 1938

Fig. 1.

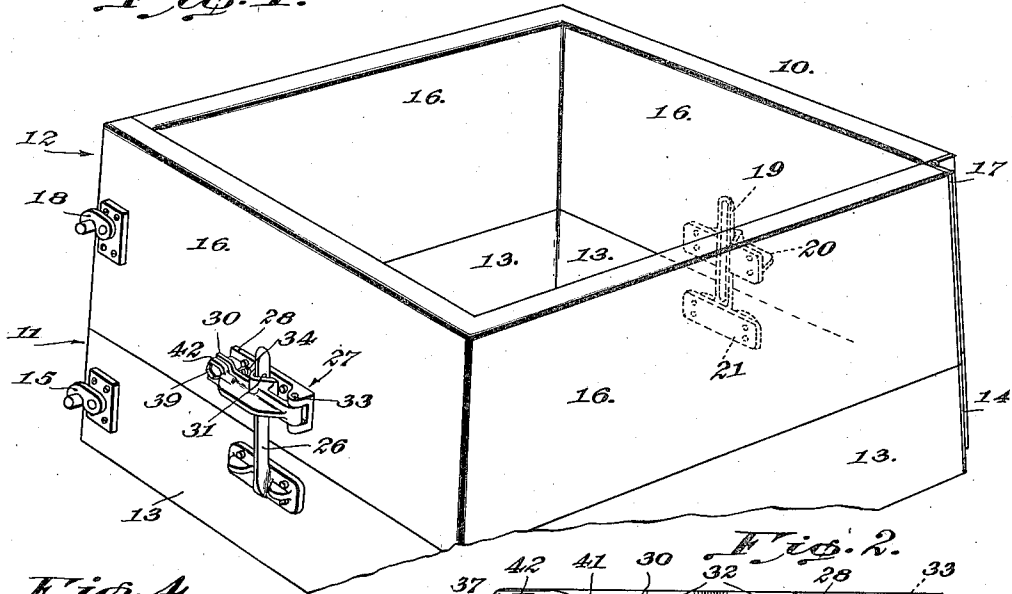


Fig. 4.

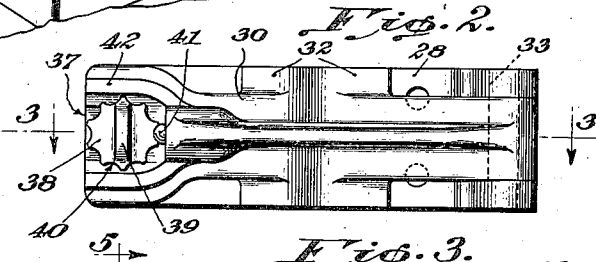
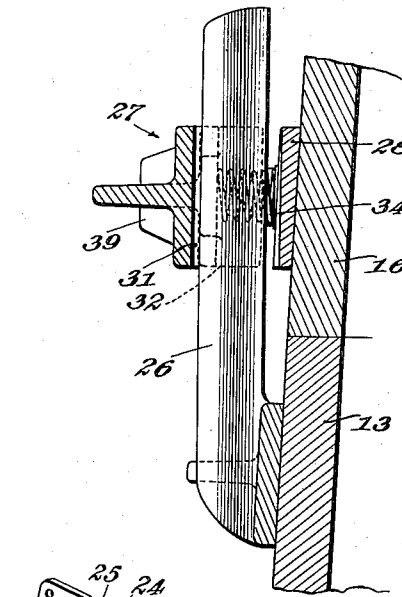


Fig. 3.

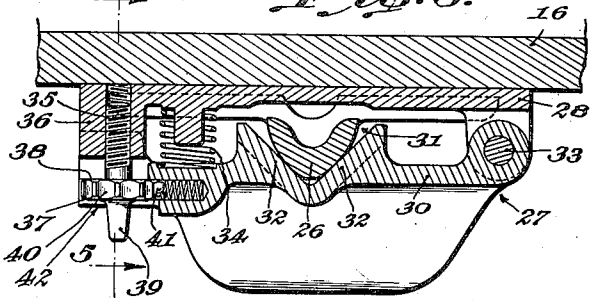
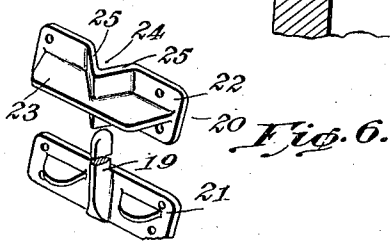
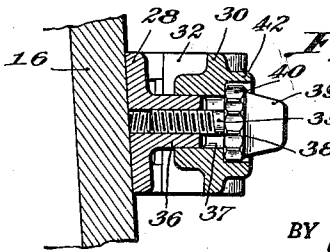


Fig. 5.



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UNITED STATES PATENT OFFICE

2,150,589

FLASK

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6 Claims. (Cl. 22—110)

The present invention relates to improvements in flasks such as those employed in the production of sand molds in foundries and is particularly concerned with improving the devices by means of which proper alignment of the "cope" and "drag" may be obtained and maintained during molding of the sand and manual separation of the "cope" and "drag".

An object of the invention is the provision of a readily adjustable novel guide which may be manipulated readily by the workman in establishing proper alignment between the "cope" and "drag" and in regulably controlling the degree of friction between guide pins carried by the "drag" and the guides which are mounted upon the "cope", the latter being important and effected coincidental with adjusting the guide for the purpose of maintaining the "cope" in proper position during initial movement thereof away from the "drag".

A further object of the invention is the provision of a novel form of adjustable guide wherein both adjustment and complete separation of the guide from the guide pin and flask may be accomplished with comparative ease.

It is also an object of the present invention to provide a guide so constructed that parts thereof may be replaced with ease when necessary.

Other objects will be in part apparent and in part pointed out hereinafter.

In the drawing:

Fig. 1 is a perspective view illustrating the application of the present invention.

Fig. 2 is an elevational view of the adjustable guide.

Fig. 3 is a sectional elevational view taken along the line 3—3 of Fig. 2.

Fig. 4 is a vertical sectional elevational view of the guide and guide pin attached to a flask.

Fig. 5 is a sectional elevational view taken along the line 5—5 of Fig. 3.

Fig. 6 is a detail perspective view of the non-adjustable guide and guide pin which are employed at the end of the flask opposite that shown in Fig. 1.

The flask 10 may well be of conventional form as illustrated (Fig. 1) and include a "drag" 11 upon which the "cope" 12 is mounted, both being suitably tapered to facilitate removal thereof from the finished mold (not shown). The "drag" 11 includes pairs of rigidly connected side walls 13, each pair being hinged together by a hinge 14 at one corner and separably connected at the corner diagonally opposite the hinge by a latch 15. The "cope" 12 is similarly formed, including pairs of side walls 16, a hinge 17 and latch 18. As shown, the flask is rectangular in contour and its side walls taper slightly, for reasons pointed out heretofore.

Accurate alignment of the "cope" and "drag"

during molding of the sand therein about the form is absolutely essential and it is also extremely important to avoid excessive lateral movement of the "cope" as it is separated from the "drag" following the sand molding operation. To this end the present invention provides for the employment of a permanently fixed vertical guide pin 19 on a wall 13 of the "drag" adjacent the hinge, said guide pin being slidingly received in a permanent rigid guide 20 which is attached to the "cope" 12. The guide pin 19 may well be substantially V-shape in cross section, the walls thereof being disposed at approximately 90° to each other or any other more desirable angle. The apex of the angle faces away from the flask. Attaching flanges 21 or fingers are cast upon the lower end of the pin. This pin 19, when the "cope" and "drag" are assembled with a form (not shown) projects upwardly through an opening in the form carrying plate (not shown) and the guide 20, the latter including attaching fingers 22, a reinforcing hand piece 23 and a guide opening 24 which consists of right angle walls 25 or flanges which slidingly engage the corresponding guide pin. Presumably the pin and guide and the corresponding walls of the "cope" and "drag" are so assembled that said walls are properly aligned. Those walls of the "cope" and "drag" opposite those carrying the permanent guide and pin are provided with the adjustable unit.

This adjustable unit includes a guide pin 26 which is permanently fixed to the "drag" and corresponds in all details to the aforementioned guide pin 19. In fact they are readily interchangeable if necessary. The guide 27 however, is adjustable and may be taken apart with facility for the replacement of broken parts, for example.

The specific construction illustrated consists of a base plate 28 which is rigidly attached to the "cope" immediately above and in alignment with the guide pin. A shallow channel 29 or guideway in the outer face of the base plate accommodates the inner free edges of the guide pin. An arm 30 which includes a guideway 31 formed by a pair of right angularly disposed walls 32 or flanges is pivoted at one end to the base by a vertical hinge pin 33. The base plate 28 and arm 30 are spaced apart horizontally to permit free passage of the guide pin 26 therebetween. A coil expansion spring 34 or its equivalent is positioned between the base plate and arm, preferably adjacent the separable ends thereof for the obvious purpose of exerting outward pressure upon said arm.

The base plate and arm have their separable ends adjustably connected by a screw 35 which is threaded into a boss 36 formed on the base plate 28 and extends outwardly through an opening 37 in the arm 30. The head of the screw is in

the form of a disk 38 and finger piece 39, the former being provided in its periphery with recesses 40 which engage a spring pressed ball 41 or detent. Thus the screw is releasably held in any adjusted position. The ball or detent is carried by the arm 30. A guard flange 42 is cast upon the arm in position to partially encircle the periphery of the disk.

By adjusting the screw, the frictional engagement between the guide pins and guides is increased or decreased to meet the specific requirements of the workman and any particular operating conditions. This of course functions to bring about a slight relative lateral shifting of the "cope" and "drag" such as may be necessary on account of warpage or some other distortion of the walls or portions thereof.

While a more or less specific construction has been described in the foregoing, it is understood that numerous modifications may be resorted to within the spirit of the invention as claimed.

I claim:

1. In a flask comprising a cope, a drag positioned for cooperation therewith, the cope and drag each comprising pairs of walls hinged together at a common point and means releasably connecting the walls at a point opposite the hinge, guide means for aligning the cope and drag including a guide pin and cooperating guide rigidly attached to the drag and cope respectively in proximity to the hinge and a guide pin fixed to and extending upwardly from that wall of the drag opposite the other guide pin, the improvement which comprises a guide for receiving the last named guide pin consisting of a base plate attached to the cope, an arm movably attached to the base plate and having a vertical guideway to receive said last named pin, spring means normally urging the arm away from the base plate and manually operable means for adjusting the position of said arm inwardly towards the base plate.
2. In a flask comprising a cope, a drag positioned for cooperation therewith, the cope and drag each comprising pairs of walls hinged together at a common point and means releasably connecting the walls at a point opposite the hinge, guide means for aligning the cope and drag including a guide pin and cooperating guide rigidly attached to the drag and cope respectively in proximity to the hinge and a guide pin fixed to and extending upwardly from that wall of the drag opposite the other guide pin, the improvement which comprises a guide for receiving the last named guide pin consisting of a base plate attached to the cope, an arm pivoted at one end to the base plate and having substantially medially thereof a vertical guideway to receive the guide pin, means separably connecting the free end of the arm and said base plate and spring means normally urging the arm away from the base plate.
3. In a flask comprising a cope, a drag positioned for cooperation therewith, the cope and drag each comprising pairs of walls hinged together at a common point and means releasably connecting the walls at a point opposite the hinge, guide means for aligning the cope and drag including a guide pin and cooperating guide rigidly attached to the drag and cope respectively in proximity to the hinge and a guide pin fixed to and extending upwardly from that wall of the

drag opposite the other guide pin, the improvement which comprises a guide for receiving the last named guide pin consisting of a base plate attached to the cope, an arm pivoted at one end to an end of the base plate, means adjustably connecting the base plate and free end of the arm, an expansion coil spring adjacent the free end of the arm normally urging the latter away from said base plate, and a pin guide provided on the arm inwardly from said spring.

4. In a flask comprising a cope, a drag positioned for cooperation therewith, the cope and drag each comprising pairs of walls hinged together at a common point and means releasably connecting the walls at a point opposite the hinge, guide means for aligning the cope and drag including a guide pin and cooperating guide rigidly attached to the drag and cope respectively in proximity to the hinge and a guide pin fixed to and extending upwardly from that wall of the drag opposite the other guide pin, the improvement which comprises a guide for receiving the last named guide pin consisting of a base plate attached to the cope, an arm pivoted at one end to an end of the base plate, a screw extending outwardly from the other end of the base plate and adjustably connecting it to the arm, means including a spring pressed detent for locking the screw in any adjusted position, spring means normally urging the arm outwardly into engagement with said screw and a pair of vertical flanges disposed at an angle to each other and forming a guideway for said pin.

5. In a flask comprising a cope, a drag positioned for cooperation therewith, the cope and drag each comprising pairs of walls hinged together at a common point and means releasably connecting the walls at a point opposite the hinge, guide means for aligning the cope and drag including a guide pin and cooperating guide rigidly attached to the drag and cope respectively in proximity to the hinge and a guide pin fixed to and extending upwardly from that wall of the drag opposite the other guide pin, the improvement which comprises a guide for receiving the last named guide pin consisting of a base plate attached to the cope, an arm pivoted at one end to an end of the base plate, a screw extending outwardly from the other end of the base plate and adjustably connecting it to the arm, said screw including a disk-like base having an annular series of recesses in its periphery, a spring pressed detent carried by said arm and engageable with the recesses one at a time, yielding means normally urging the arm outwardly into engagement with the screw and pin guiding means provided substantially medially of the arm.

6. A pin guide for a flask comprising a base plate, an arm pivoted at one end to an end of the base plate for horizontal swinging movement, said arm having a furcated free end, a screw extending outwardly from the base plate and normally into the furcation, said screw including a disk-like base having an annular series of recesses in its periphery, said base interconnecting the screw and arm, a spring pressed detent carried by the arm and engageable with the recesses one at a time, yielding means normally urging the arm outwardly into engagement with the screw base, and vertical pin guiding means provided on the inner side of said arm.

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