

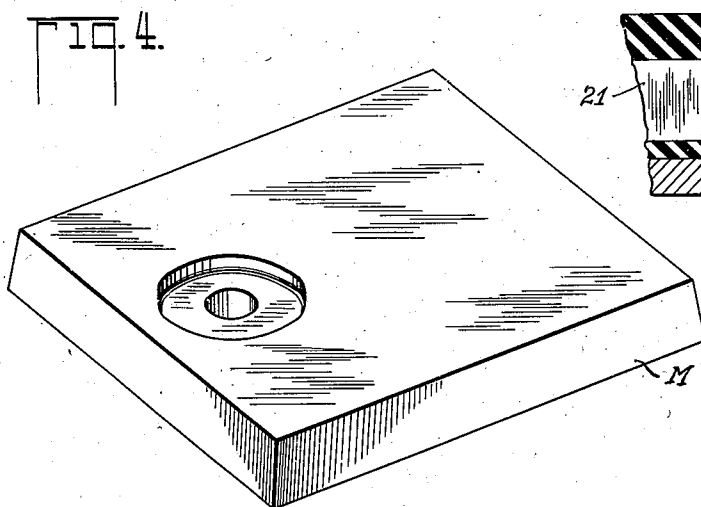
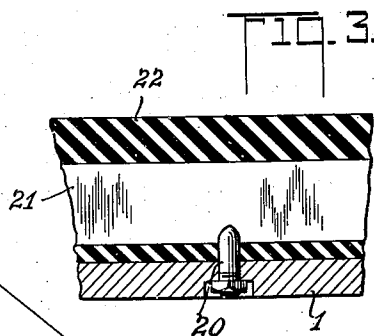
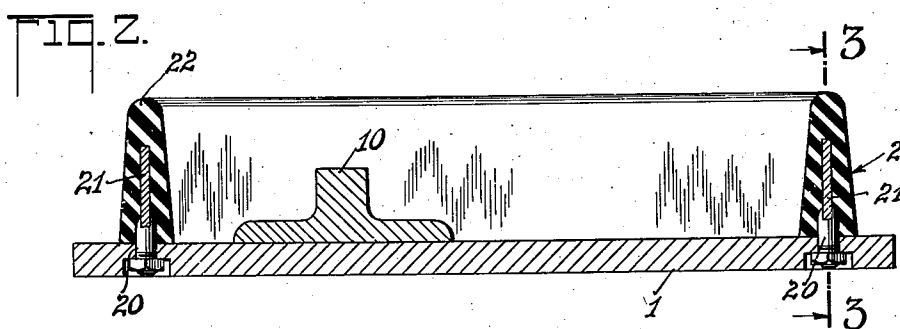
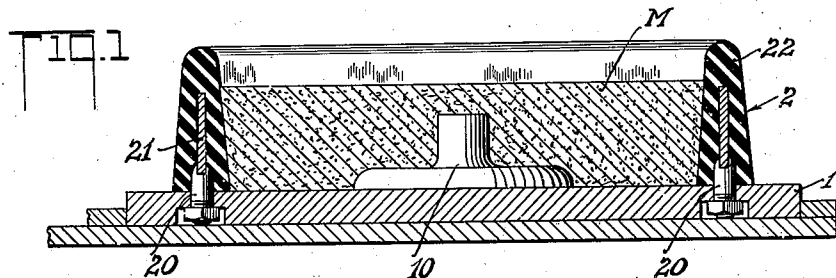
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MOLD FORM

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MOLD FORM

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2 Claims. (Cl. 22—96)

My invention pertains to molding apparatus and is particularly concerned with an improved mold form including integral flask and match plate construction. This application is a continuation in part of my application Serial No. 87,922, for Molding apparatus, filed June 29, 1936.

In the art of preparing cast articles by the use of molds, it has heretofore been the practice to form the mold in a flask and match plate assembly held in registry by pins. In the preparation of molds from material which had to be set either by chemical action or by heat, the match plate was first removed separately from the mold and from its pinned engagement with the flask part, either the cope or the drag. Thereafter, the flask was either left in place while the mold was baked and the metal poured, or the flask was constructed with a combination of hinged and detachable corners so that it could be peeled off laterally from the mold sides either before or after the baking operation. Such procedure required several dissimilar operations and took more time than required by the use of my integral flask and match plate mold form.

In my invention I employ, instead of the conventional separate match plate and flask arrangement, a flask and match plate unit constituting a mold form in which such parts are permanently secured together. The mold may then, in a single operation, be separated from both the flask and the match plate by apparatus such as disclosed in my Patent No. 2,101,677, for Apparatus for producing molds, issued December 18, 1937. To decrease the shearing force necessary to overcome the adhesion of the mold to the sides of the flask, I prefer to give such sides considerable draft and I have found that making the flask walls of hard rubber or similar plastic, instead of metal, decreases the tendency of the mold material to stick to the sides.

An important object of my invention, therefore, is to provide a match plate and flask part assembly which will enable a mold part to be withdrawn therefrom in a single operation.

A further object is to increase the accuracy of the casting by keeping the flask part, either cope or drag, and match plate in fixed relation so that although the mold parts for a complete mold may be formed in different flask parts or at different times the relationship between parts of each mold section and the relationship of complementary mold sections and corresponding parts thereof may be accurately maintained at all times.

Still another object is to obtain such advan-

tages of speed and accuracy without appreciably increasing the danger of distorting or breaking a soft or fragile mold.

Other objects will be understood from the following description and the accompanying illustration of a preferred type and construction of mold form unit, the inventive characteristics of which are specifically set forth in the claims.

Fig. 1 is a transverse section through the mold form unit, including an integrally joined flask and match plate, filled with mold material.

Fig. 2 is a longitudinal section through the empty flask and match plate unit.

Fig. 3 is a fragmentary detail section lengthwise of the wall on line 3—3 of Fig. 2.

Fig. 4 is a perspective view of the set mold after its removal from the flask and match plate unit.

My mold form, including flask and match plate, is particularly useful when employed with molding material of the type which may be set, either by chemical action, as in the gypsum base mold, for example, or by heat, as in the case of a sand mold incorporating a heat hardening binder, for example. In either case it is preferable not to remove either the flask or the match plate until the mold material is somewhat set, though perhaps before the mold is baked, and then it is most convenient and quickest if the mold is separated from both in a single operation.

To facilitate the molding process in this manner, I provide a mold form including a match plate 1 having upstanding from its mold contacting face a pattern 10 which is the shape of the desired casting or part of it. A simple shape in conjunction with a drag is illustrated, which would have an identical counterpart on the pattern of the cope for the complementary mold section. The same match plate would ordinarily not be used with the cope, however, for its pattern would form a sprue, a runner and a gate for the cavity.

In order to form the match plate 1 and a flask part, shown as the drag 2, as a single unitary mold form, I provide apertures about the margin of the match plate to receive pins 20 projecting downward from the flask part 2. These pins are then secured in what may be termed permanent fashion, to make the flask part and match plate integral all during use thereof, the joint therebetween being water tight. The pins 20 beneath the match plate may be riveted over or welded in place, but it is sufficient if they are secured, as shown, by nuts threaded thereon. The latter method enables the match plate to be

separated from the flask for storage and the wall to be attached in the same manner to another match plate. Preferably, the pin ends are countersunk into the bottom of the match plate so that it is left smooth to facilitate handling.

5 The wall of the drag 2 may be wholly of metal. It is preferred, however, that it be at least faced on its inner wall with a plastic which has a low coefficient of friction with the mold material and
10 which has a minimum tendency to adhere thereto. I have found that hard rubber is advantageous in this respect where a gypsum base mold composition is used. To assist further in
15 freeing the mold quickly from the flask the inner walls may be flared outwardly from the match plate.

As a specific illustration of a suitable flask wall I have illustrated one having a stiff rectangular frame or backbone 21 which is preferably made
20 of metal and is integral with the bolts 20 passing through the match plate. This frame or backbone is then faced on its inner side with a plastic composition, that is a non-metallic material capable of being molded to produce a hard
25 surfaced, substantially rigid article, such as hard rubber, or is completely embedded therein as at 22. The inner wall of the mold may be flared, as stated, and the outer walls are preferably convergent so that the outer and inner walls meet in a narrow edge suitable for liquid-tight sealed engagement with a cover.

In this mold form is placed, as shown in Fig. 1, mold material which I prefer to be of the gypsum base type. After the mold M has set in the form it is withdrawn from the flask and match plate unit in a single operation, resulting in a wholly unconfined mold as shown in Fig. 4. 5

As my invention I claim:

1. In a mold form of the permanent type for making gypsum base molds, a rigid flask rim having for its inner surface a hard plastic with less tendency than metal to adhere to the gypsum base mold material, and the coefficient of friction between such plastic and such gypsum base mold material being substantially less than that between metal and such mold material. 10

2. A composite mold form of the permanent type for making gypsum base molds, comprising a generally planar, metal-surfaced base plate constituting a mold parting surface, a positive, 20 mold cavity pattern fixed upon said base plate, a flask rim of hard rubber having less tendency than metal to adhere to the gypsum base mold material, encircling said mold cavity pattern and upstanding from said base plate, a rigid backbone embedded completely within said flask rim, and means securing said backbone to said base plate. 25

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