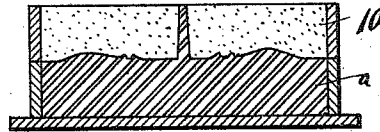
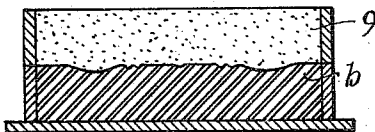
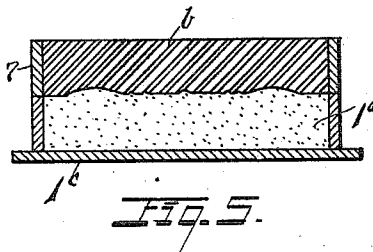
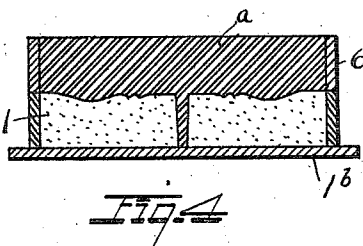
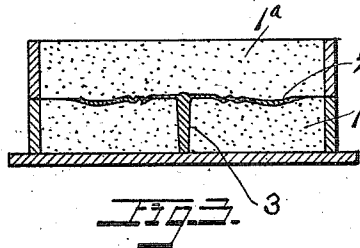
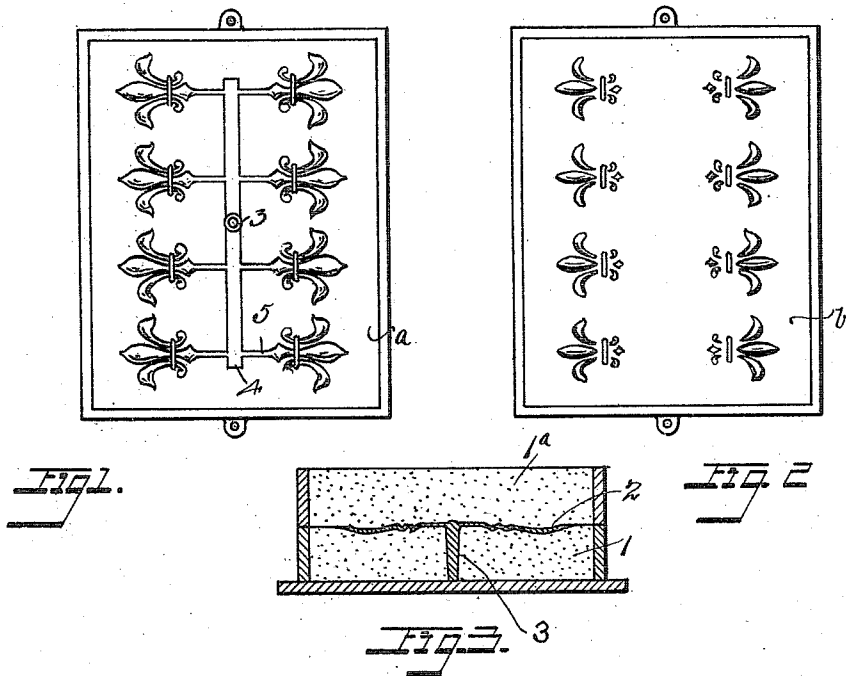


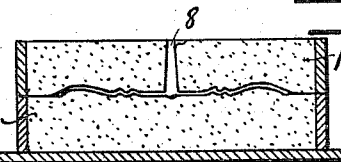
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PATTERN PLATE.
APPLICATION FILED OCT. 15, 1910

985,967.

Patented Mar. 7, 1911.



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PATTERN-PLATE.

985,967.

Specification of Letters Patent.

Patented Mar. 7, 1911.

Application filed October 15, 1910. Serial No. 587,238.

To all whom it may concern:

Be it known that I, JOHN BAYER, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Pattern-Plates, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

My invention relates to pattern plates for use in making molds for the casting of metal, by the use of which pattern plates sand molds may be easily and quickly obtained without the necessity of splitting the flask and withdrawing the pattern, which latter operation is frequently attended with accidents which destroy the sand mold and require its being made over again. By the pattern plates which I here show, the cope and drag of a mold may be quickly made by ramming sand into contact with the pattern plate when held in a suitable flask.

Furthermore, the invention defines a pattern plate or plates made of a composition of such characteristics that the substance does not shrink on cooling, when the pattern plate is first made from the original pattern.

The invention further comprises the elements and combinations thereof set forth in the accompanying claims.

Reference should be had to the drawing, in which—

Figure 1 is a plan view of a pattern plate used to form the drag of a mold; Fig. 2 is a plan view of the same used to form the cope of a mold; Figs. 3, 4 and 5 are sectional elevations through the flask and represent steps in the formation of the pattern plates; Figs. 6 and 7 are sectional elevations through the mold and represent steps in the formation of the sand mold from the pattern plates; and Fig. 8 represents a completed sand mold.

In carrying out my invention, I have shown and will describe the making of a sand mold by use of two pattern plates constructed in accordance with my invention, but it will be obvious that a single pattern plate may be used, when desired, and the use of a single pattern plate will be considered within the scope of this invention.

In the drawing I have shown my pattern plates constructed to form a plurality of castings in a single flask, although it will be obvious that a single casting may be

formed within the flask, where such may be desired.

Furthermore, I have shown my pattern plates for use in the formation of a casting which is substantially uniform in thickness, so that the portions of the finished castings which are raised will be complemented by a corresponding hollow portion upon the underside of the casting, but it will be apparent that castings of unequal thickness may be made with equal facility.

In carrying out the invention, I use the ordinary two-part flask represented in Fig. 3 and place within this flask a pattern represented at 2, with which is joined or assembled a sprue former 3 and runners 4 and 5 like that shown in the view of pattern plate *a* in Fig. 1. This flask is filled with sand according to the well known manner of making a sand mold, and provides the cope 1 and drag 1^a. The cope and drag of the mold are then separated, the cope being inverted upon a new follow board 1^b and a new top frame 6 is placed thereon, as shown in Fig. 4, into which is poured the composition. This composition will then fill the cavities which have previously been formed in the sand, and when hardened the frame 6 and its contents will be removed and will form one of my complete pattern plates marked *a*.

The drag 1^a of the mold is also placed upright upon a suitable follow board 1^c and provided with a new frame 7 (see Fig. 5) into which is put the composition of which I form my pattern plate, and the same is allowed to cool and come into contact with the depressions and elevations of the sand in the cope. When the composition is hard, the top frame is removed and in this manner I secure the second pattern plate *b*, as represented in Fig. 2.

Thus far the description of the process is exactly the same as that contained in my former copending application filed December 29th, 1909, Serial Number 535,492, and has been repeated here solely for the sake of completeness.

The specific object of the present invention is to provide a readily fusible composition which will make sharp castings, yet without appreciable change in volume upon solidification, which shall not shrink on cooling, which shall be so tough as not to be easily broken and at the same time hard enough to resist deformation under any rea-

sonable or ordinary stresses, which shall possess a smooth, dense, wear-resisting surface, and which shall offer a reasonable degree of resistance to heat.

5 In my copending application Serial Number 535,492, filed December 29th, 1909, I have disclosed a composition of matter for making pattern plates together with a method of making a set of pattern plates
10 therefrom and of making sand molds by the use of such plates.

The composition of matter herein disclosed is an improvement upon that disclosed in the former application and consists of the same ingredients with the addition thereto of a suitable quantity of plaster of Paris for the purpose of increasing the resistance of the composition to increases of temperature. I have found a composition
15 including 25% of plaster of Paris to be extremely satisfactory though this proportion can be varied somewhat without sacrificing any of the advantages of my invention. In general, therefore, the composition of matter consists of: Trinidad asphalt 3 parts,
25 plaster of Paris 1 part, though in case the particular grade of Trinidad asphalt used is one that fails to produce a sufficiently smooth surface the addition of plumbago
30 would cure this difficulty as pointed out in my former application. In that case the proportions of ingredients would become substantially: Trinidad asphalt 73 parts, plumbago 2 parts, plaster of Paris 25 parts.

35 Such a composition of matter is found to possess the following properties: It is fusible at a rather high temperature to a viscous consistency; it will make a good sharp casting though without appreciable change in
40 volume upon solidification; it will not shrink perceptibly upon cooling; when cold it is solid, and so tough as not to be easily broken and at the same time hard enough to resist deformation under any reasonable or
45 ordinary stress; it possesses a smooth, dense, wear resisting surface which forms a clear cut mold and can be used over and over without blunting and rounding off sharp corners; it is unaffected by any such reason-
50 able and ordinary degrees of temperature as devices of this class are subjected to; it is rather light for its bulk and easily handled; small breaks and fractures can easily be repaired by a process of soldering
55 with the same material, and it can be remelted and used over and over again. To manufacture the said composition of matter, I first melt the asphalt by the application of heat and then add the other ingredients in the proportions indicated, stirring
60 until a homogeneous mixture is obtained. The top frame may be completely filled with the mixture, or preferably I fill the frame to a depth of two or three inches and allow the
65 same to cool. This course saves time in

cooling and also saves mixture since the remainder of the frame can be filled with plaster of Paris, cement, or other cheap filling substance. In forming the single molds
70 by the use of the pattern plates, the pattern plate *b* shown in Fig. 2 is surmounted by a frame, and sand is poured within the flask top, as represented in Fig. 6. The sand will be
75 compacted in any well known manner, and then the sand mold removed from contact with the pattern plate *b*, thereby producing the drag of a sand mold, which is the exact duplicate of the original drag 1^a. The pattern
80 plate *a*, as shown in Fig. 7, will likewise be surmounted by a frame which will be filled with sand and compacted, after which the frame may be removed from the pattern plate, whereby there will be formed
85 the cope of a sand mold, which is the exact duplicate of original cope 1. The cope 10 and drag 9, the formation of which have just been described, will then be assembled, as shown in Fig. 8, whereupon the metal
90 may be poured through the sprue 8 in a manner well known in the art.

By the use of the pattern plates I have here described, a sand mold may be quickly made. Furthermore, the sand mold may be made without danger of spoiling the mold,
95 which is always incident when a mold is made directly from the pattern, because considerable experience and deftness are required to successfully draw the pattern from the mold. Furthermore, the original master
100 pattern may be preserved and not subjected to the frequent use and consequent wear which would be the case if it were the only pattern used.

According to the above process I obtain two composition castings each of which bears
105 on its face side an exact reproduction of that half of the original pattern which was on the farther side of the parting line in the original sand mold. These castings receive in the art the technical name of "match-
110 plates". At the same time it will be seen that each comprises a plate carrying a part of a pattern on its face and I have, in this application given them the name of "pattern plate". At the same time it will be ob-
115 vious that, if desired, the original sand mold could have been closed up in the usual manner and the composition poured therein so as to form an exact reproduction of that
120 pattern all in one piece. This is a step frequently taken with brass or aluminum for the purpose of obtaining a permanent "master pattern". I have used the term "pattern plate" with the intention of covering
125 such a composition pattern as well as the composition "match plates" more specifically described.

Having thus described my invention, what I claim is:

1. A composition of matter adapted for 130

the manufacture of patterns and match plates, said composition of matter containing asphalt and plaster of Paris.

5 2. A composition of matter adapted for the manufacture of patterns and match plates said composition of matter containing asphalt and plaster of Paris in substantially the proportions described.

10 3. A composition of matter adapted for the manufacture of patterns and match plates, said composition of matter containing asphalt and plaster of Paris in the proportions of three to one by weight.

15 4. A composition of matter adapted for the manufacture of patterns and match plates, said composition of matter containing asphalt and plaster of Paris with an admixture of plumbago.

5. A composition of matter adapted for the manufacture of patterns and match plates, said composition of matter containing asphalt, plaster of Paris, and plumbago in substantially the proportions described. 20

6. A composition of matter adapted for the manufacture of patterns and match plates, said composition of matter consisting of asphalt 73 parts by weight; plaster of Paris, 25 parts by weight; plumbago, 2 parts by weight. 25

In testimony whereof, I hereunto affix my signature in the presence of two witnesses. 30

JOHN BAYER.

Witnesses:

HAROLD E. SMITH,
BRENNAN B. WEST.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
