

P. VOIGT & C. KORNMEYER.
 PATTERN AND MATCH PLATE.
 APPLICATION FILED JULY 10, 1909.

965,968.

Patented Aug. 2, 1910.

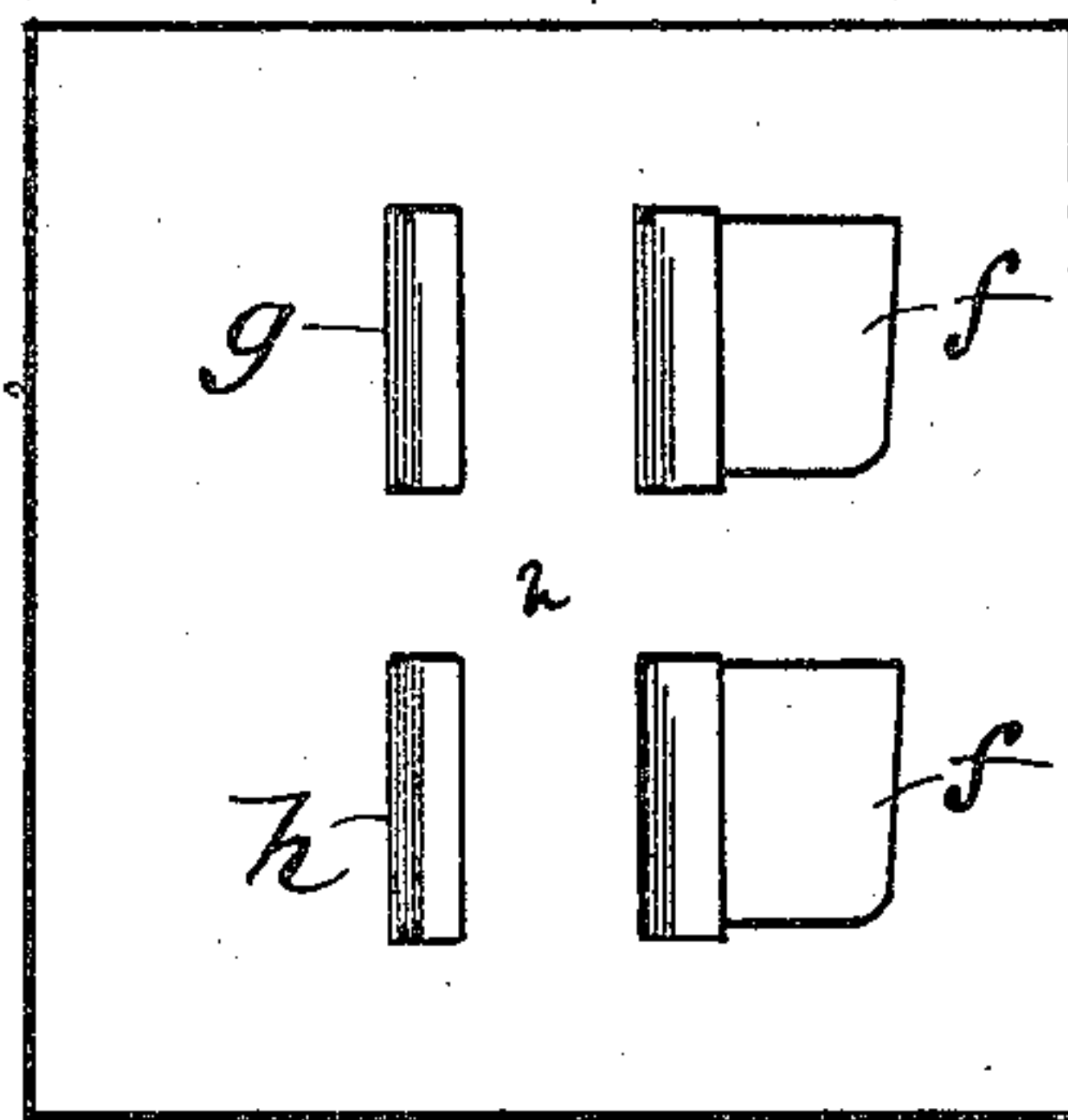
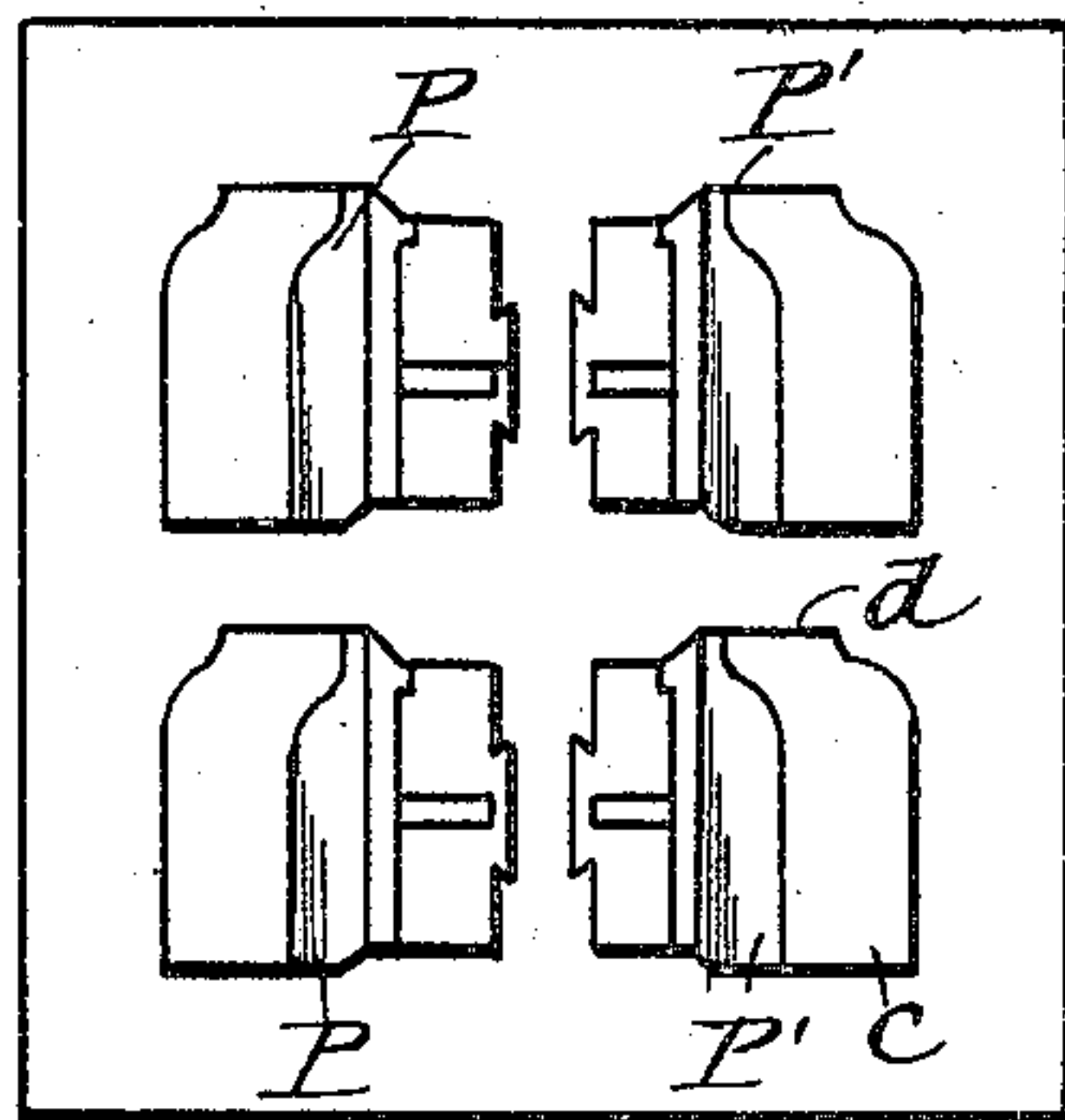
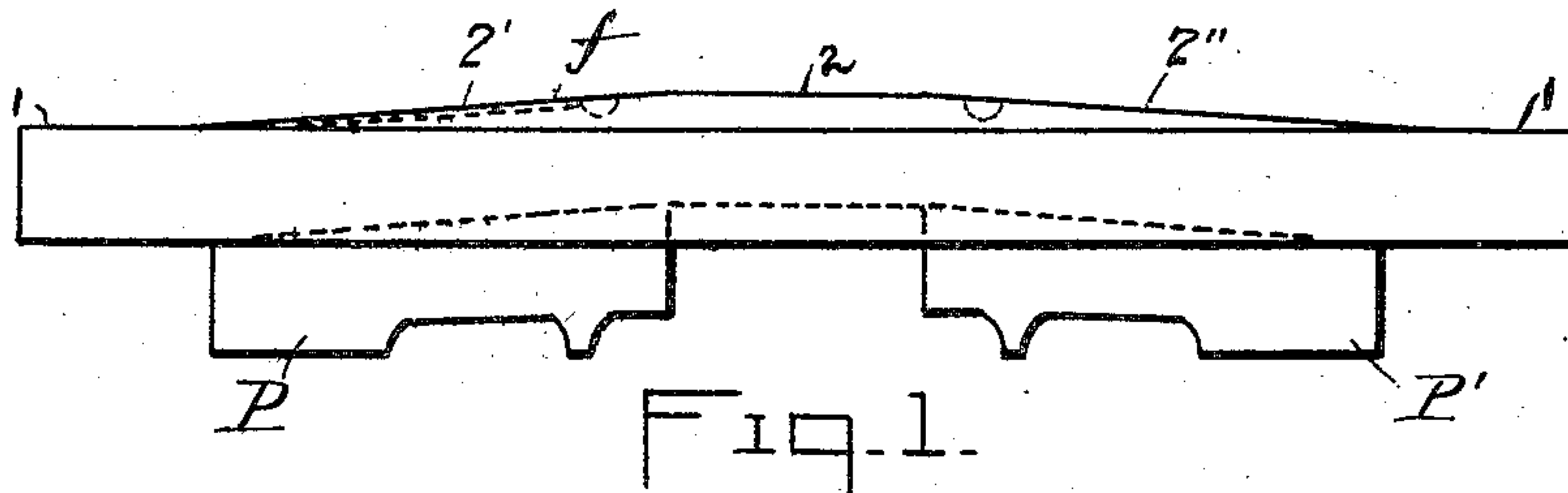


Fig. 2.

Fig. 3.

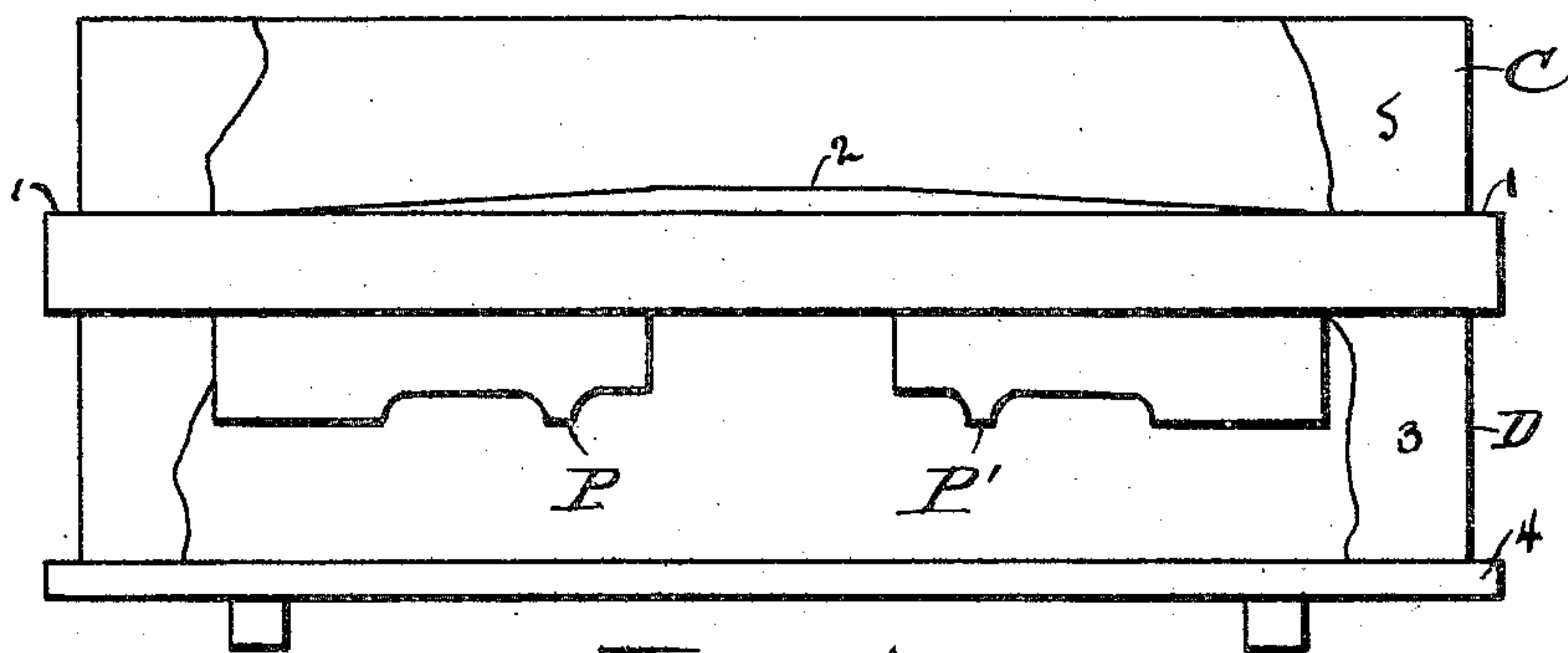


Fig. 4.

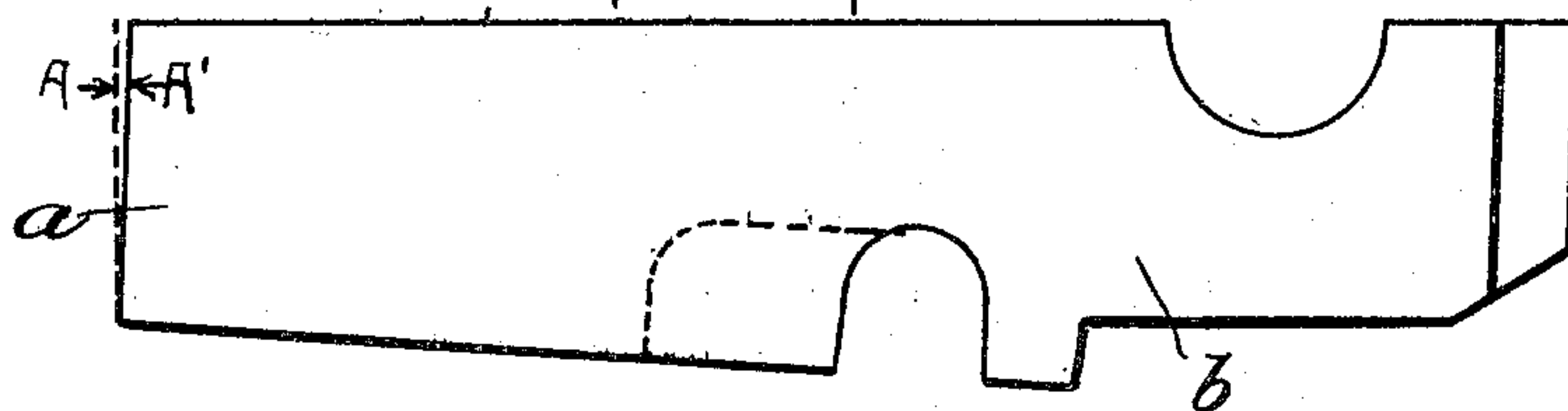


Fig. 5.

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PATTERN AND MATCH PLATE.

965,968.

Specification of Letters Patent.

Patented Aug. 2, 1910.

Application filed July 10, 1909. Serial No. 506,871.

To all whom it may concern:

Be it known that we, PHILIP VOIGT and CHRISTIAN KORNMEYER, citizens of the United States, residing at Houston, in the county of Harris and State of Texas, have invented certain new and useful Improvements in Pattern and Match Plates, of which the following is a specification.

Our invention relates to new and useful improvements in match boards to be used in the process of casting.

The object of the invention is to provide a match board of the character described upon which a plurality of segmental patterns may be secured in the manner and for the purpose hereinafter described.

The device is used particularly in the process of casting segments for car wheel chills. These segments, at present, are usually cast separately and by reason of their beveled edge, as will be shown more accurately hereinafter, skilled and costly labor is required in withdrawing the patterns from the sand, preparatory to making the chill castings and the cost of production thus augmented.

By the use of our match board, unskilled labor may be employed and the cost thus decreased and it is to be further noticed that as by the method now in common use, only one pattern is withdrawn at a time and by the use of our match board several may be withdrawn together, the rapidity of production of the castings is increased. It has been demonstrated that by the use of our method the production may be easily tripled in quantity and the cost, at the same time, be greatly reduced.

Another meritorious feature of our device resides in the method of securing the patterns to the board whereby the usual warping of the patterns is obviated.

With the above and other objects in view our invention has particular relation to certain novel features of construction, use and arrangement of parts an example of which is given in this specification and illustrated in the drawings, wherein:—

Figure 1 is an end view of the match board with the patterns attached. Fig. 2 is a bottom plan view of the match board with the segment patterns secured thereto. Fig. 3 is a top plan view of said board. Fig. 4 is an end elevation of said board in position in a flask set. Fig. 5 is a bottom edge view of a segment casting.

Referring now more particularly to the drawings, wherein like numerals of reference designate similar parts in each of the figures, the numeral 1 refers to the flat marginal portion of the board entirely surrounding the raised central portion 2 which projects above the marginal portion and is hollowed out beneath as indicated by the dotted lines in Fig. 1. The elevated portion 2 is flat on top, or in other words has a flattened apex, and its sides 2' and 2'' slope each way from the longitudinal line of the apex to the flat marginal sides. It is to be observed that the entire match board is of a uniform thickness throughout, the planes of the corresponding portions of the upper and under sides thereof being parallel. A match board is thus formed with a flat supporting margin and a central raised portion with uniform sloping sides upon which the patterns P and P' may be secured.

The segments of the chills to be cast will be exact duplicates of the patterns as is obvious, and in practice, about ninety of the segmental castings are placed side by side and as the inner side, indicated by the letter *a* is thinner than the outer portion at *b* and as the corresponding portions of each casting are equal in thickness to each other, when a sufficient number of the segmental castings are placed side by side they will form a complete circle, or mold within which the outer or chilled portion of the car wheel may be cast. It is obvious that the mold thus formed will not be in an exact circle but rather will be a polygon of as many sides as there are casting segments, thus making it necessary to mill the outer surface of the car wheel chill to a smooth circular surface. In placing these castings in the form of a mold, as described above, that portion represented by the letter *c*, Fig. 2, is the bottom and *d* the top of the mold. It is further desirable that the side *e*, Fig. 5, be depressed, slightly, except around the margin thereof so that it will fit up closely against the side of the adjacent casting and form a perfect joint. This depression in the casting is provided for by carving out a similar intaglio depression *f* in the side of the match board complementary to the place where the segmental pattern of the casting in which the impression is desired, is placed. Semi-cylindrical depressions *g* and *h* are also provided in the upper side of the match board as similar shaped depressions are de-

sired in the segmental castings to be molded. These depressions are shown in detail in Fig. 3.

Fig. 5 shows a bottom plan view of one of the segmental patterns whose outer half, denominated by *b*, is provided with the indentations, shown in this figure and also in Fig. 1, of a nature found to be practical in securing the castings together in a complete mold although any desired provision for securing the castings together may be used. As the chilled portion of the wheels is to be round it is evident that the inner edge of each pattern and casting must be slightly beveled so that when they are placed together side by side in the form of a complete chill they will form a substantially round mold. In molding these segmental castings a plurality of these patterns *P* and *P'* are secured to the sloping sides of the match board, as shown in Fig. 1. The patterns secured to the board are then buried in the sand of the molding flask. This portion of the mold thus formed is known as the drag side of the mold *D* and the opposite side as the cope side, *C*.

That portion of the cope side of the board directly opposite each pattern should have exactly the impression which is desired to be given to the cope side of the mold in which the segmental castings are formed to the end that the cope side of the mold will be formed in the sand on that side of the board, so that when the board and patterns are removed and the flasks placed together a complete and perfect mold will be formed.

By referring to Fig. 5 and the reference characters *A—A'* it will be seen that the edges of the segments which are to form the inside of the chill are beveled, the amount of the bevel, or back draft, being indicated by the dotted line. It is obvious that these segment patterns cannot be placed on a flat board as in that case the depression formed by them in the sand would be marred by the bevel in withdrawing the patterns and an imperfect mold thus formed. The chief object of this kind of match board is to obviate this marring of the molds and to that end we have designed it in the manner described. The board in all of its parts must be uniform in thickness so that when the two flasks are placed together a perfect joint will be formed. Either side of the raised portion 2 of the board slopes from the margin 1 at an angle equal to the inside edge of the segment pattern but the top or flattened apex of portion 2 is flat and lies in a plane parallel to the margin 1 but elevated thereabove. The patterns are secured to the sloped sides of the raised portion in such a manner that the back draft will be taken up, in other words, so that the line of the inner edge *a* of the segment patterns will be vertical. By means of this arrange-

ment when the match board and its appendent patterns are withdrawn from the flask, the inner edge of the segment pattern will travel in a vertical line and the molds will thus be unimpaired.

In practice the match board is placed on the flasks 3 and the same inverted. The flask is then filled with sand which is tamped closely around the patterns and a bottom 4 placed thereon. The entire flask is then turned right side up and another flask 5 placed thereon. This is filled with sand which is closely tamped upon the match board and the cope mold thus formed. The flask 5 is then removed the match board and patterns withdrawn and flask 5 replaced. When the board and patterns are removed the cope mold of flask 5 and the drag mold of flask 3 fit closely together and the complete mold thus formed. The molten metal is then poured into the mold at a suitable gate in the usual way and the complete casting thus formed. Formerly these cast segments were made by placing separate wooden patterns in a flask and tamping the flask full of sand which necessitated dampening the sand around the patterns in order to make it adhere more closely together when the patterns were being withdrawn. These patterns thus became damp and consequently warped and were rendered useless. By the process now in common use it is also necessary to drive a draw spike into the patterns for drawing the same. The jar attendant upon driving this spike as is obvious, caused the mold and castings to be thicker than the patterns. These two defects, to wit, the warping of the patterns and the enlargement of the molds are thus obviated by our match board and in addition our process lessens the cost and increases the production of castings as above set forth.

We claim—

1. In a device of the character described a match board including a flat marginal portion and a central raised portion having sloping sides for the purposes set forth.

2. In a device of the character described a match board including a flat marginal portion and an elevated surface lying in a plane parallel with the first mentioned surface and sloping sides connecting the two surfaces.

3. In a device of the character described a match board including a flat marginal portion, a central elevated portion and sloping sides between said marginal and said elevated portions, said sloping sides being adapted to carry patterns underneath and having their upper portions configured to correspond with the desired configuration of the upper side of the casting to be formed.

4. A match board having a flat marginal portion and a central portion with sloping sides whose under faces are designed to

carry a plurality of patterns and the complementary portions of whose upper faces bear intaglio representations of one side of the casting to be formed.

- 5 5. In a device of the character described a match board including a marginal supporting portion, a central elevated portion and sloping sides between said marginal and
10 ing adapted to carry patterns underneath and having their upper portions configured

to correspond with the desired configuration of the upper side of the casting to be formed.

In testimony whereof we have hereto set our hands this the 5th day of July A. D. 15 1909.

PHILIP VOIGT.
CHRISTIAN KORNMAYER.

In the presence of—
WM. A. CATHEY,
E. C. GUY.