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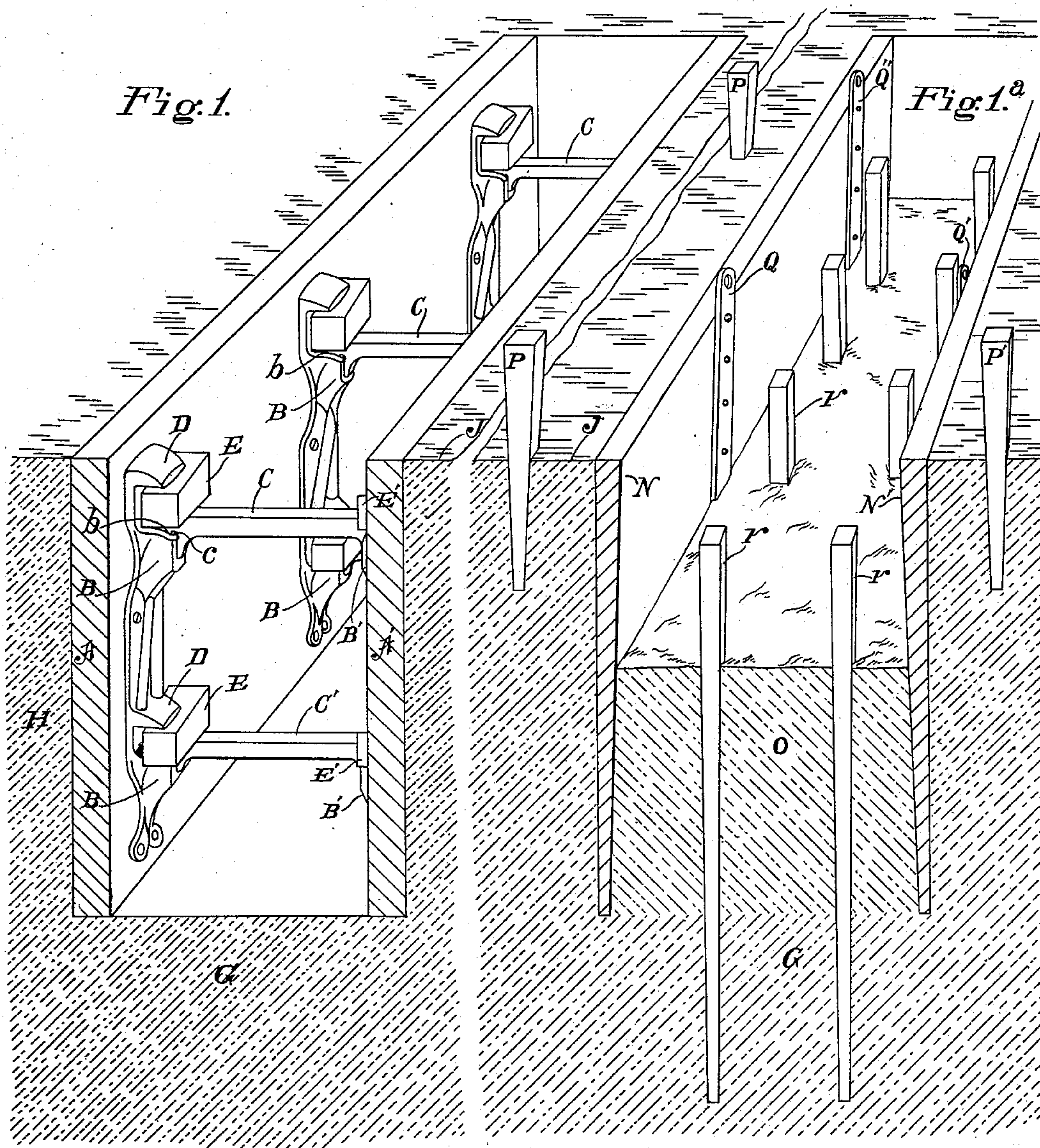
2 Sheets—Sheet 1.

M. A. BAKER.

COLLAPSIBLE AND ADJUSTABLE MOLD PATTERN.

No. 571,060.

Patented Nov. 10, 1896.



Witnesses.

Sergey Kingman.

Alfred J. Townsend.

Inventor

Milo A Baker

by
Hazard Townsend
his atty.

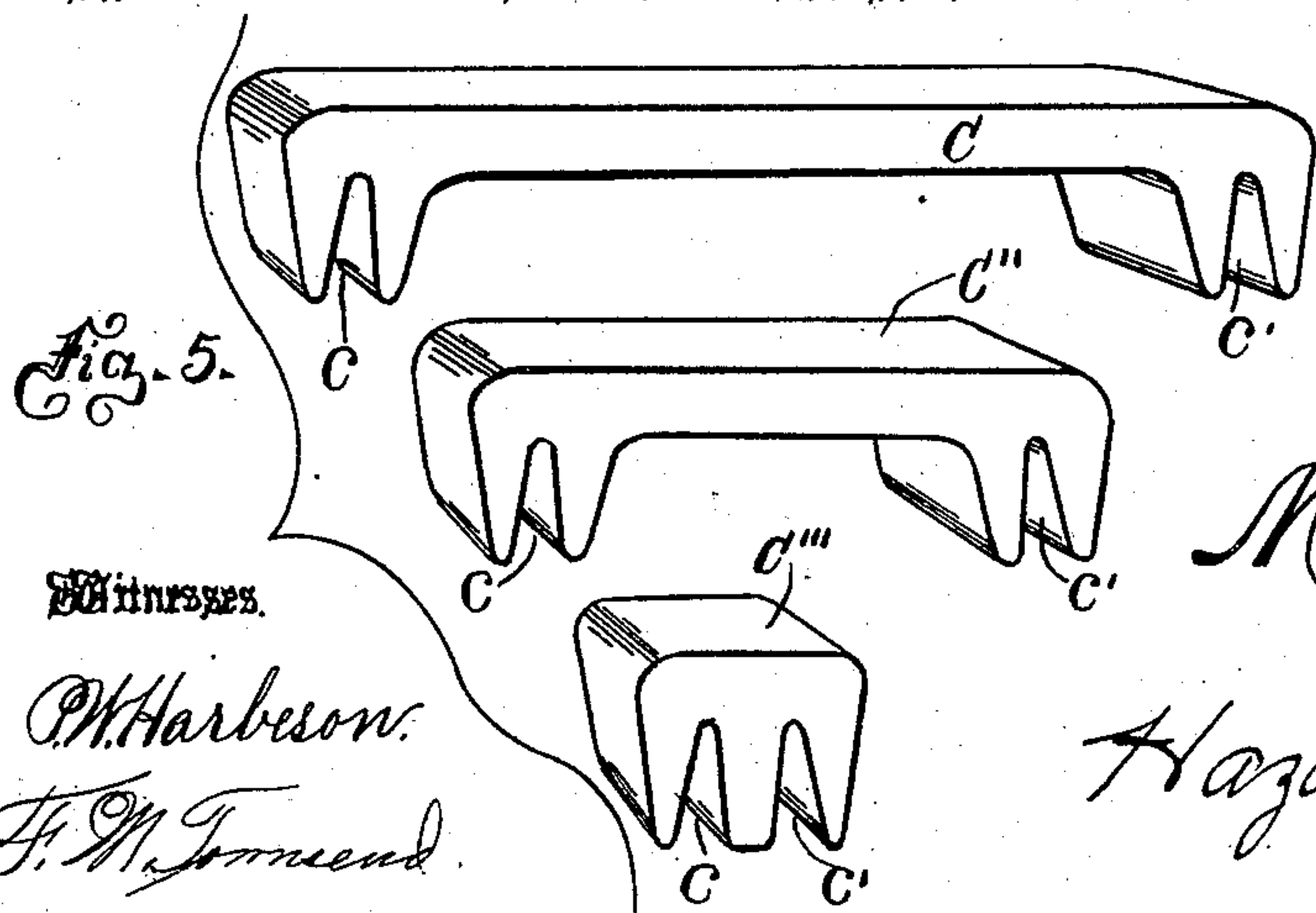
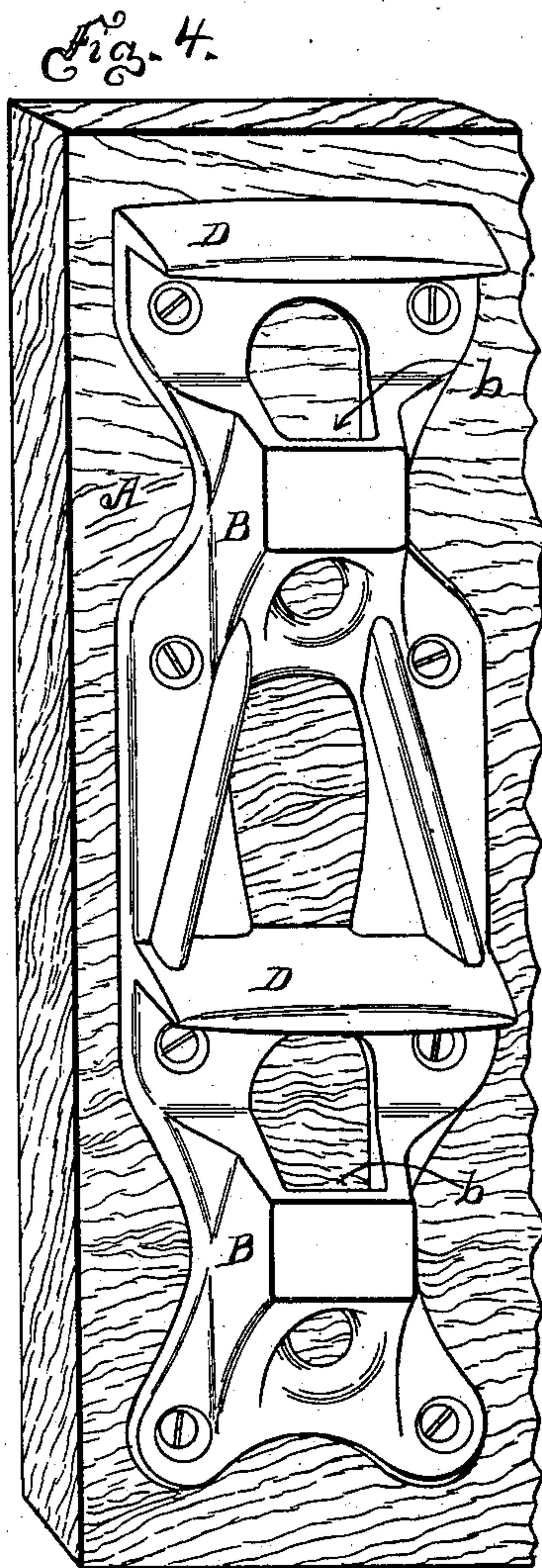
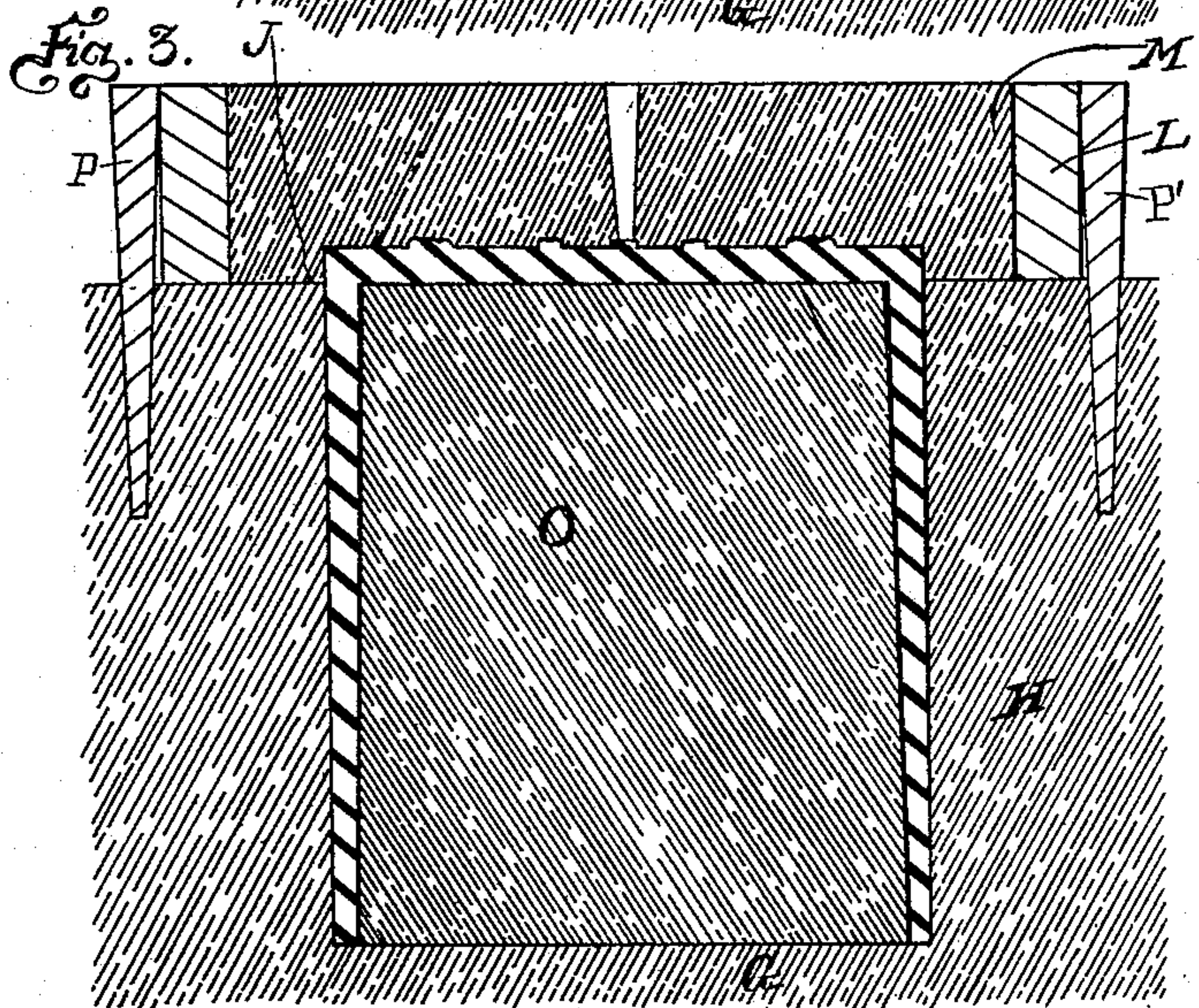
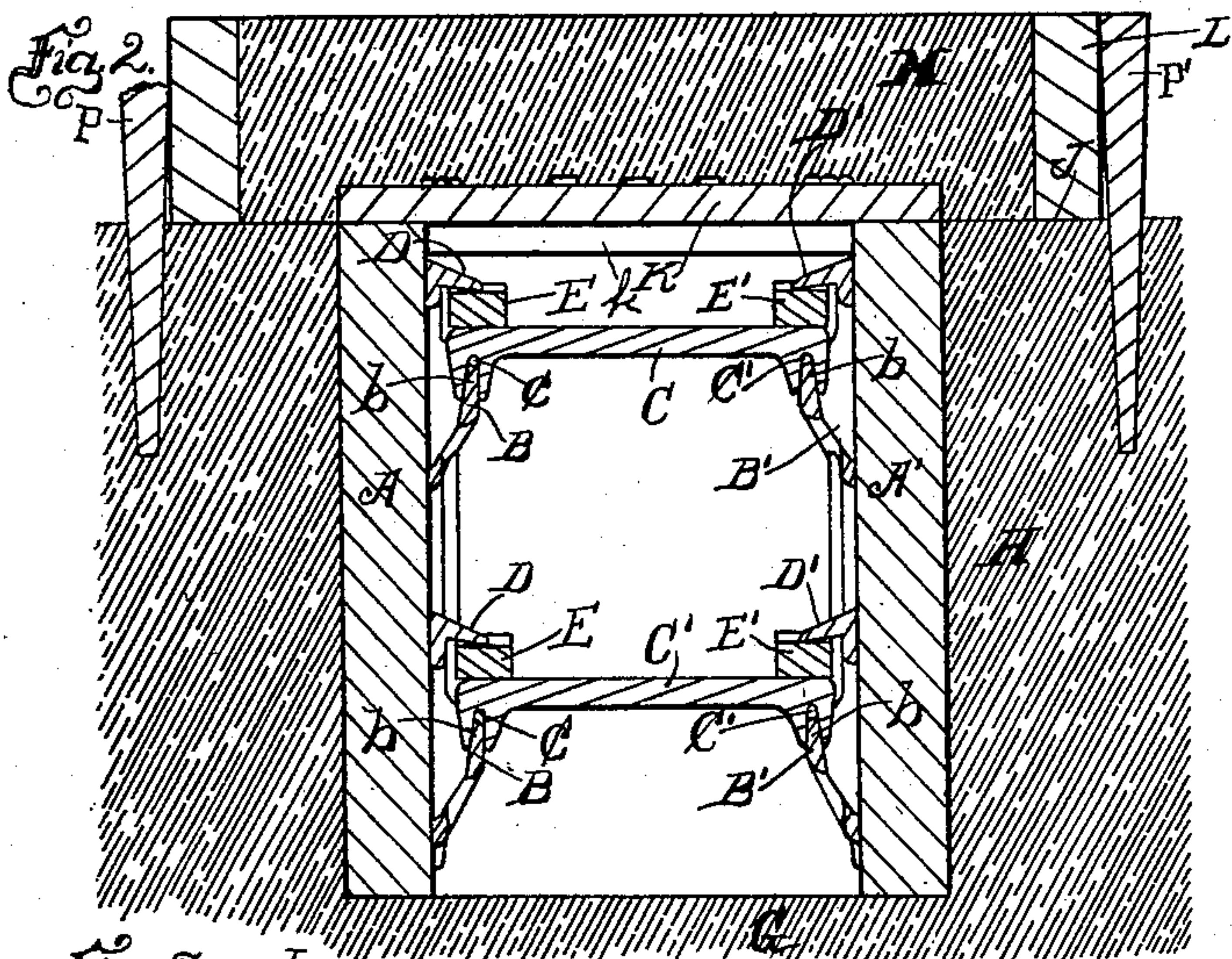
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2 Sheets—Sheet. 2.

M. A. BAKER.
COLLAPSIBLE AND ADJUSTABLE MOLD PATTERN.

No. 571,060.

Patented Nov. 10, 1896.



Witnesses.

W. H. Harbison.
J. M. Townsend.

Inventor.

M. A. Baker.

By

Hazard & Townsend,
His Attys.

UNITED STATES PATENT OFFICE.

MILO A. BAKER, OF LOS ANGELES, CALIFORNIA.

COLLAPSIBLE AND ADJUSTABLE MOLD-PATTERN.

SPECIFICATION forming part of Letters Patent No. 571,060, dated November 10, 1896.

Application filed January 17, 1895. Serial No. 535,214. (No model.)

To all whom it may concern:

Be it known that I, MILO ARNETT BAKER, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Collapsible and Adjustable Mold-Pattern, of which the following is a specification.

My invention relates to patterns for use in iron-foundries in preparing the molds for large castings, such as large columns and various other large castings of similar shapes with all or a part of the sides or faces plain or ornamental.

One object of my invention is to provide a pattern for such work which can be used many more times than the patterns now in use for that purpose and which can always be kept straight.

Another object is to provide an adjustable pattern for such work which can be adjusted to form molds of different widths and in which this can be done conveniently and at small expense by the use of sets of separators or stays of different lengths, which separators or stays are comparatively inexpensive and can be easily adjusted and removed in making the change from the wide to the narrow pattern, and vice versa. One of my adjustable patterns will take the place and do the work of the numerous solid box-patterns for columns and like large work which now take up so much valuable shop-room in the pattern-lofts of foundries.

Another object is to provide a pattern for such work which when stored will remain straight and flat and not become warped when not in use.

Another object is to enable the molder to make the column-casting perfectly square; also to allow the pattern to be easily removed from the sand and leave the corners of the mold sharp and true; also to provide a pattern for such work which will not break up the parting-joint, as with the solid pattern.

It is very necessary, in order to make a practical collapsible pattern, that the means by which the cheek-pieces of the pattern are connected be so constructed that they can be easily removed after the mold has been made.

To connect the cheek-pieces by means which would require the screwing and unscrewing of bolts would be objectionable for the reason

that the space between the cheeks for forming molds for narrow castings would not admit of the screwing and unscrewing of the bolts, and the steam from the heated sand would be liable to rust the bolts, so that it would be almost impossible to remove them without injuring the mold, even in case there were room for the workmen to handle the bolts. Another object of my invention is to overcome this difficulty by providing cheek-piece-connecting devices, which are secured in place by wedges which can be easily inserted and removed even when there is only a very slight space between the cheek-pieces. My newly-invented means for detachably connecting the cheek-pieces together are so constructed that when fitted in place they will invariably hold the cheek-pieces in the exact relative positions which they must occupy in order to make a perfect pattern.

The accompanying drawings illustrate my invention.

Figure 1 is a perspective view, partly in section, showing a section of my collapsible pattern in position in the sand for forming the mold. Fig. 1^a is a detail sectional view showing the tapering sides in place and a portion of the green sand core rammed between them. Fig. 2 is a cross-section of the mold with the pattern, cope, and the face-plate in place. Fig. 3 is a cross-section showing the parts of the mold in place with a casting therein. Fig. 4 is a perspective view of a fragment of one cheek-piece of the pattern and shows the separator-stay brackets and seats. Fig. 5 shows separator-stays of three different lengths.

My newly-invented collapsible pattern consists in the combination of the cheek-pieces A A' and means for detachably connecting the cheek-pieces together with a space between them, substantially as shown.

B B represent separator-stay brackets secured to the inner face of the cheek-piece A and provided with stay-seats *b b*.

B' B' represent like brackets provided with like seats and secured to the inner face of the cheek-piece A'.

C C' represent separator-stays of equal length arranged to attach to and detach from such brackets.

D D and D' D' represent wedge-bearings

arranged between the stay-seats *b* and the upper edges of the check-pieces, respectively, for holding wedges *E E* and *E' E'*, which secure the separator-stays *C* and *C'* in place upon the brackets.

The separator-stays *C C'* are each provided at the opposite ends with recesses *c c'*, respectively, which recesses interchangeably fit the stay-rests *b* upon each of the brackets *B B B'*, the stay-seats being all of the same size and shape.

In practical use the cheek-pieces *A A'* of the pattern are connected at the desired distance apart by placing the separator-stays *C C'* in position on the brackets with the stay-seats seated in the recesses *c c'*, respectively, at the ends of the separator-stays. The wedge *E* is then placed between the shoulder or bearing *D* and the end of the separator-stay *C*, and the wedge *E'* is placed between the shoulder *D'* and the other end of the separator-stay, and when the wedges are in place they are driven home. The several wedges are set, and thus the separator-stays are all firmly fixed in place on the brackets or catches which are mounted on the cheek-pieces, and the cheek-pieces are thus rigidly held together.

The bracket seats or catches *b* for holding the stays are preferably tapering in cross-section at the place where they fit into the recesses in the ends of the separator-stays, and the stay seat or catch receiving recesses *c c'* are likewise preferably tapering, but preferably come to a narrower point than the cross-section of the stay seat or catch *b*, so that the stay seat or catch *b* will not enter to the full depth of the recess, thus always always allowing the stay and the catch or stay-seat *b* to firmly wedge together, so that there will be no looseness and the pattern will be perfectly rigid.

The stay seats and catches may be made straight, but if they are made straight they should be accurately fitted to each other.

I will here point out the distinction between my invention and the foundry-flask shown in Letters Patent of the United States No. 418,170, issued to J. M. Cornell December 31, 1889. One important distinction is that my invention is for a different purpose and the requirements to be met by my appliance are very different from those to be met by a foundry-flask. The said foundry-flask is collapsible, but is not collapsible while in use. My pattern is and must be collapsible while in use. Otherwise it is of no value. The fastening-wedges in my collapsible pattern can be readily removed while the pattern is in the sand and the mold partly formed and without breaking the sand and without any injury to that part of the mold which the pattern has formed. This is not true of the Cornell appliance. The Cornell flask is not adapted, nor intended for use as a pattern. In my pattern the wedge-bearings are ar-

ranged above the stay-seats and the wedges drive horizontally, thus enabling the workmen to remove them with ease and without injury to that part of the mold which has been formed at the time it becomes necessary to remove the pattern. With the Cornell flask the wedge-bearings are at the sides of the stay-seats and the wedges drive vertically, and their removal while the mold is partially or wholly formed is not possible nor intended, and without any oblique engaging faces on the seats or stays and with wedges arranged in this manner, that is, to drive vertically, my collapsible pattern would be impracticable. The Cornell stay-seats are not oblique to the sides of the flask, while the stay-seats of my pattern are oblique to the cheek-pieces of the pattern. The Cornell stay-seats are not oblique, and are therefore not adapted to the adjustment which I accomplish by the oblique seats and the oblique walls of the recesses *c c'*, which wedge upon the stay-seats.

While I regard the oblique arrangement as an important feature of my invention, I do not regard my invention as being wholly limited by that feature.

I am not aware that there has heretofore been produced any collapsible pattern by which the objects hereinbefore stated can be accomplished.

I will now describe the manner of using my invention. First, the cheek-pieces *A A'* of the pattern are connected together, as hereinbefore suggested, by separator-stays which are of such length as to hold the cheek-pieces at the right distance apart to make a mold for a column of the desired width. The bed *G* having been leveled and prepared in the ordinary manner, the pattern is placed in position on the level bed and the sand *H* is rammed all around the pattern up to the parting-line *J* in the ordinary way. Then the face-plate *K* is put on the pattern and the cope-box *L* is placed on the joint and rammed full of sand *M*. Then the cope-box is rolled over and the face-plate *K* is drawn out of the cope. The wedges *E E'* are then withdrawn, thus releasing the separator-stays *C C'*, which are then all removed from the catches *b*, thus leaving the cheek-pieces *A A'* free to be drawn from the sides of the mold and removed separately. They are then carefully removed separately, and then the tapering sides *N N'* are placed in the hole out of which the collapsed pattern came, and then the green sand core *O* is rammed therein between the tapering sides up to as high as the joint or parting-line *J*, as shown in Fig. 3. Then the tapering sides *N N'* are drawn out, the cope is placed in position, and the mold is ready for casting.

The cheek-pieces are made of desired lengths and widths, and the separator-brackets are applied at suitable intervals, so as to allow the use of a sufficient number of separator-stays to give the desired strength and

rigidity to the pattern. In the drawings I have shown two brackets formed in a single casting; but they can be made single, if desired, and three or more may be made in a single casting for wide cheek-pieces.

When not in use, the cheek-pieces are fastened together by the shortest stays, such as C''', (shown in Fig. 5,) so that the pattern is very narrow and takes up but little room. The pattern can then be stowed away without any danger of warping out of shape, for both sides of each cheek-piece are equally exposed to the action of the air. The separator-stays are simple and cheap castings and occupy but little room.

The brackets or other suitable separator-stay catches must be applied to the cheek-pieces exactly, so that the separator-stays will hold the cheek-pieces in exact position to form a true pattern.

In the drawings, P P' indicate stakes driven into the sand to guide the cope-flask into its original position when replaced for forming the casting.

Q Q' Q'' indicate the draw-straps, which are fastened to the inner faces of the tapering sides to enable the molder to withdraw them from the mold without splitting the pattern.

O indicates the green sand core, and r indicates the green-sand-core stakes ordinarily

used for stiffening such core to prevent it from moving while pouring.

k indicates cleats on the under side of the face-plate K to fit between the cheeks and center the face and hold it in true position.

I am aware that collapsible patterns for cylindrical castings have been patented, but my invention is to be distinguished from such patterns.

I am not aware that any pattern has heretofore been made which is adapted to form a straight-sided mold regardless of draft, so that large iron columns of square, oblong, or acute-angle cross-section can be readily molded.

Now, having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

A collapsible mold-former consisting of cheek-pieces; stay-brackets provided with tapering stay-seats and respectively secured to the cheek-pieces; the wedge-bearings secured to the cheek-pieces; the separator-stays provided with the tapering recesses fitted upon the stay-seats; and the wedges respectively arranged between the wedge-bearings and the stays to hold the stays in place.

M. A. BAKER.

Witnesses:

JAMES R. TOWNSEND,
ALFRED I. TOWNSEND.