

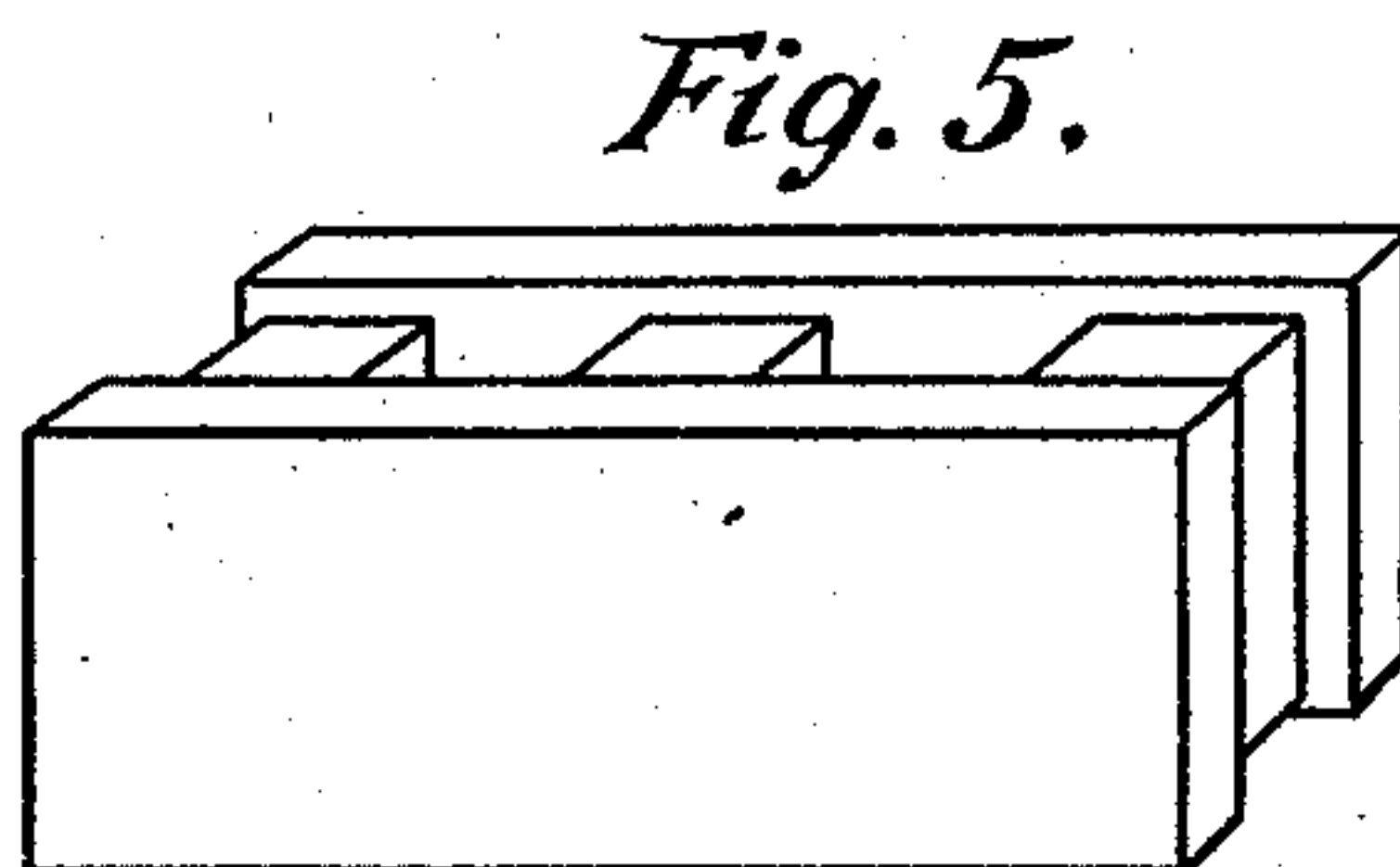
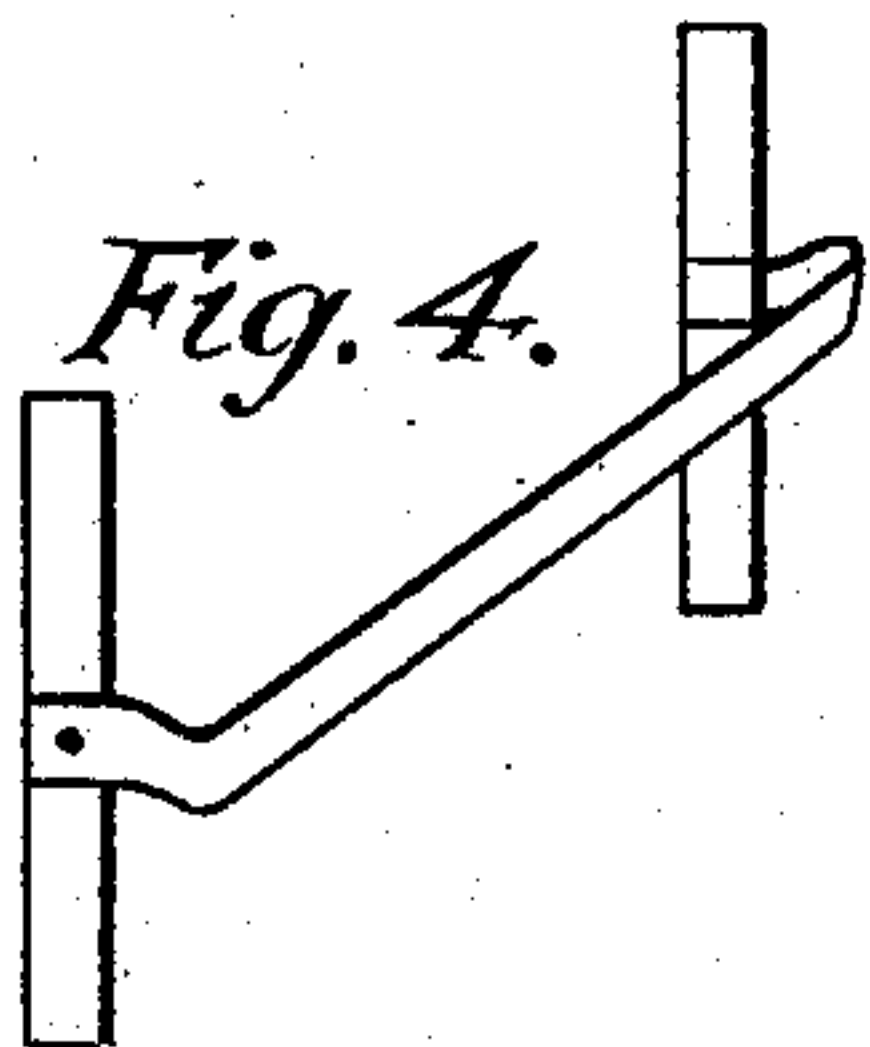
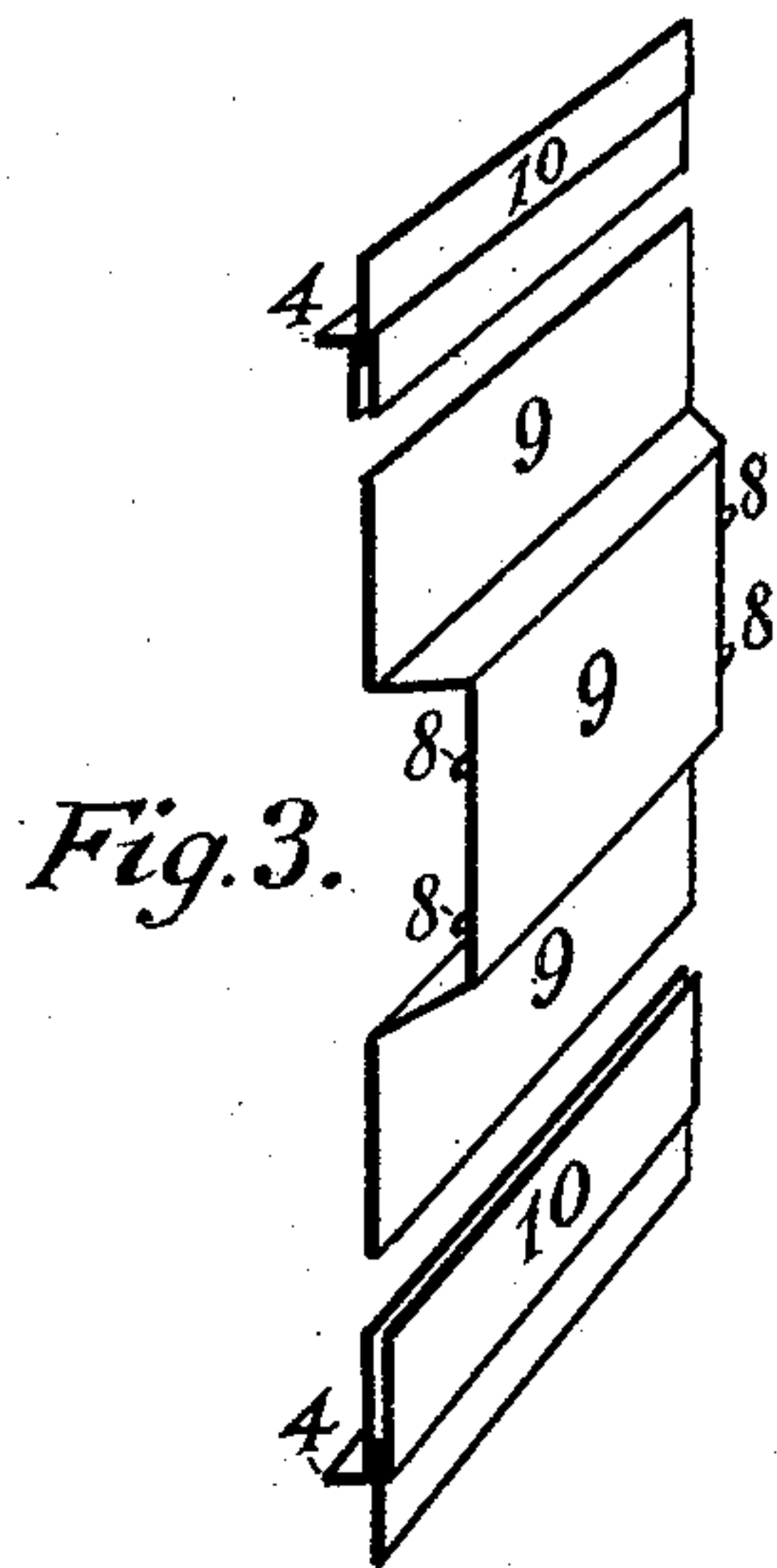
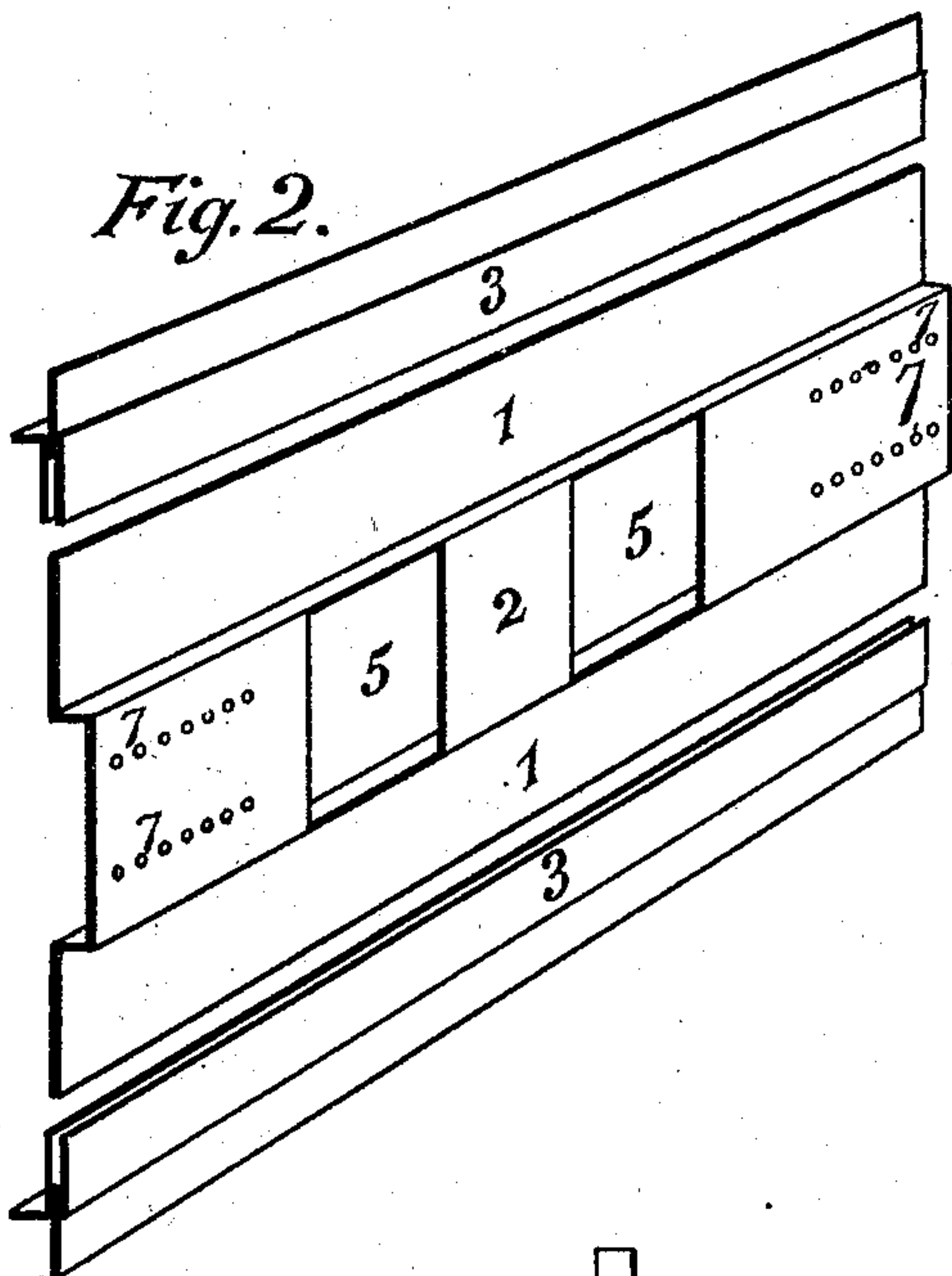
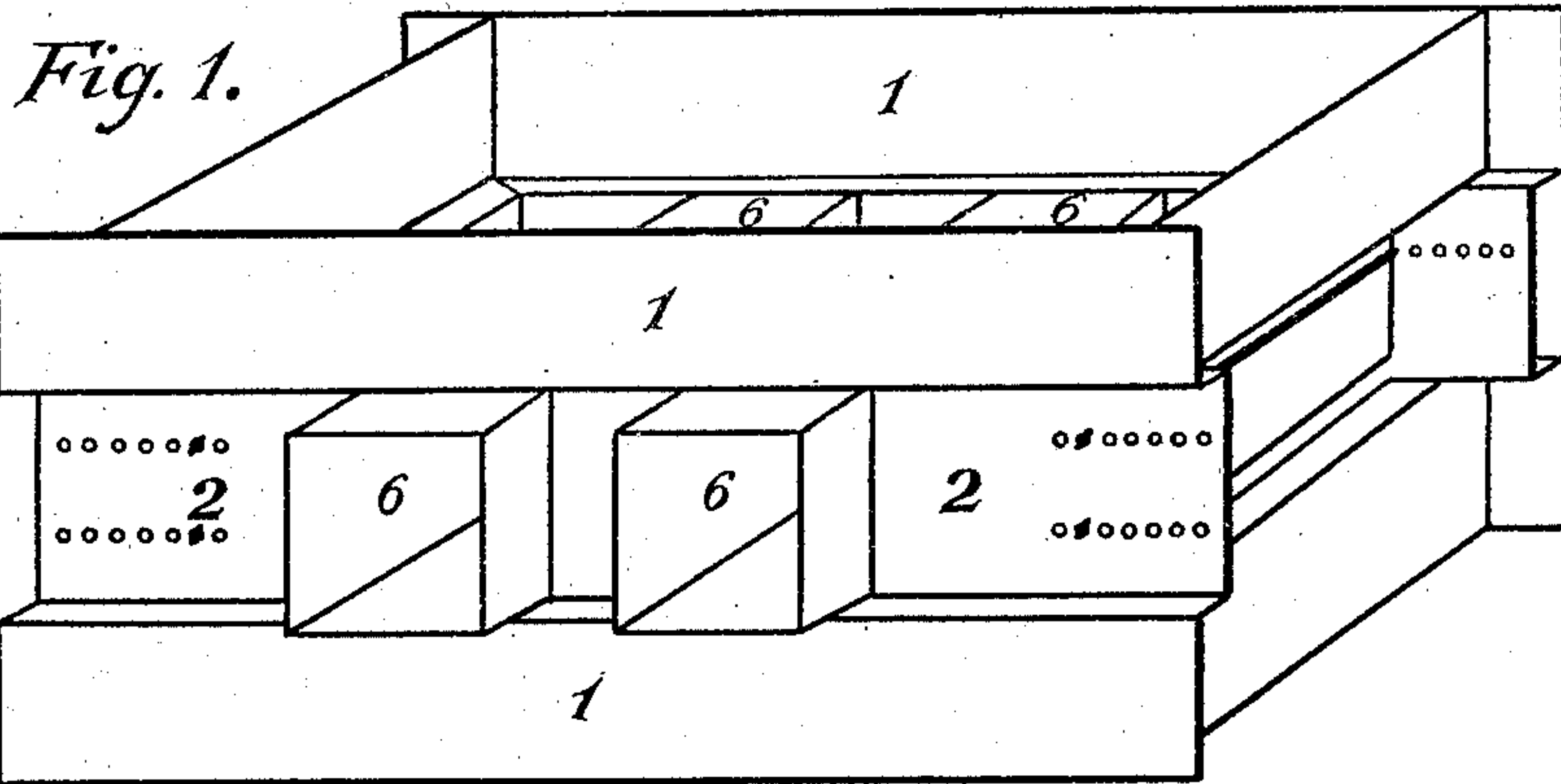
No. 746,476.

PATENTED DEC. 8, 1903.

F. L. DYKEMA.
MOLD FOR MAKING ARTIFICIAL STONE.

APPLICATION FILED APR. 13, 1903.

NO MODEL.



WITNESSES:

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FRANK L. DYKEMA, OF GRAND RAPIDS, MICHIGAN.

MOLD FOR MAKING ARTIFICIAL STONE.

SPECIFICATION forming part of Letters Patent No. 746,476, dated December 8, 1903.

Application filed April 13, 1903. Serial No. 152,454. (No model.)

To all whom it may concern:

Be it known that I, FRANK L. DYKEMA, a citizen of the United States, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented new and useful Improvements in Molds for Making Artificial Stone, of which the following is a specification.

This invention relates to molds for making artificial stone from Portland cement or other suitable material.

The improved mold consists of a plurality of sections, one of the sections having an interior inward projection and said sections being united together by a joint permitting of endwise movement of that section having the projection, by virtue of which the mold-sections can be separated with facility from the stone, as will hereinafter more particularly appear. In the present instance a plurality of projections is provided, one projection being recessed to slidably receive another projection, and, as will be hereinafter set forth, I recess one of the projections at its opposite ends to slidably receive two other projections. I wish to state, however, at this point that I do not limit myself to a mold consisting of any particular number of sections, although in the embodiment thereof which I have selected for illustration and which will be definitely set forth in the following description four of such separable sections are provided.

Referring to the drawings, wherein the embodiment to which allusion has been made is fully illustrated, Figure 1 shows in perspective the mold set up and ready for use. Fig. 2 shows in perspective and from the inner side that side piece of the mold which is in front or toward the eye of the observer in Fig. 1 and shows also the top and bottom extensions for this side piece. Fig. 3 shows in perspective and also from the inside one of the pieces which form the ends in Fig. 1 and also shows top and bottom extensions for such end piece. Fig. 4 is a spring-clamp designed to hold the parts in position. Fig. 5 shows in perspective the complete stone as it would be formed in the mold shown by Fig. 1. Similar characters refer to similar parts in the different views.

The complete stone formed in the mold,

Fig. 1, would be set into the wall lying upon that edge which is in front or toward the observer in Fig. 1, and the surface which in Fig. 1 forms the top of the mold would in the wall form either the front or rear face of the stone, preferably the front face; but to avoid confusion I shall in this description speak of the stone with reference to its position as shown in Fig. 1 and refer to the various faces by the names which would be appropriate while the stone is lying in that position instead of by the names which would be appropriate after the stone is set in the wall.

1 1 are what may be conveniently termed the "side pieces" of the mold. These, as well as other parts, are made from any desired material; but I have found a moderately-thin sheet metal satisfactory, it being easily stamped into the required shape and being sufficiently stiff and rigid for the desired use, or such side pieces may be constructed from cast metal. Each of these side pieces has its central portion 2 recessed or sunken, as particularly shown in Fig. 2. This recess or groove may be of any desired size or shape; but in the form shown in the drawings I have used a substantially square shoulder, and it is evident that this construction will produce within the mold an inward projection to form in the stone a channel or groove or recess of corresponding shape and running longitudinally of the stone. The height of these side pieces, and correspondingly the height of the stone, may be increased or diminished by using the side extensions 3 3. These are made of similar material, and one part of them is made of a double thickness, adapted to slip on over and thus engage with the side pieces 1 1. These extensions, acting in this manner as wings, will increase the height of the side pieces and the capacity of the mold and correspondingly the height of the stone. They may be used upon either top or bottom, or both, according to the resulting shape which is desired. I have found it desirable in using this sheet metal to strengthen these wings or extensions by ribs which run lengthwise of the same and lie upon the outside of the mold and are indicated by 4 4 in Figs. 2 and 3.

Through the side pieces 1 1 I make one or more openings of suitable size and shape,

(shown in Fig. 2 by 5 5.) These are adapted to closely and removably receive the cores, which in Fig. 1 are shown in position and which are numbered 6 6. These cores are long enough to extend through the mold from one side to the other, and I find it practicable and convenient to make them of the same like sheet metal of which the remainder of the mold is constructed.

Suitable means are provided for locking and holding the side pieces 1 1 and the end pieces 9, hereinafter more particularly described, in the desired relative positions. In the form of the device shown in the drawings I have accomplished this by a series of holes in the side pieces and by engaging lugs in the end pieces. The holes or series of holes in the side pieces are shown in the drawings by 7 7, located at any desired place upon the side pieces, and they are of suitable size and shape to engage the corresponding lugs 8 8 upon the end pieces, and thus permit one or both of the end pieces to be adjusted to and from the other. When this form of locking engagement is used, it is important that the engaging lugs should project slightly beyond the plane of the side pieces, so that after the stone is set the side pieces may be sprung out of this positive engagement without being moved away any substantial distance laterally from the stone, thus permitting its substantial motion in being removed from the stone to be longitudinal.

9 9 are the end pieces of the mold, one of which is shown in Fig. 3. Said end piece also is depressed or channeled through its central portion, so as to produce within the mold an inward projection to form a corresponding channel in the stone, and it is provided, as above stated, with lugs 8 8, adapted to engage with the holes 7 7 in the side pieces. The end pieces are also provided with extension-wings 10 10, also shown in Fig. 3, for the purpose of increasing the height of the mold and of the stone in order to correspond with the similar wings used in connection with the side pieces.

It will be observed that the particular form of the molds and the central projection thereon, which is shown in the drawings, permits the various parts of the mold to be removed with facility after the stone is set by giving to each a longitudinal or sliding motion upon the stone instead of withdrawing the same laterally or outward away from the stone. This result is accomplished because the projections upon the pieces which I have called the "end" pieces are recessed or cut way at each end (see Fig. 3) and are not as long as the upper and lower portions of these end pieces. The projection is thus cut away at each end of the end pieces for a distance equal to the depth of the projection upon the side pieces, so that while a close contact is insured between the side piece and the end piece and all parts of the contact line, yet the side pieces will, as soon as the positive engagement is re-

moved, have a sliding movement in the recesses formed in the end pieces by cutting away the ends of the central projections in the end pieces. Fig. 1 of the drawings clearly shows that the central projection in the end pieces is thus cut away, as it must necessarily be, to make room for contact with the central projection on the side pieces, as shown in Fig. 1. Fig. 3 also shows this central projection thus cut away at its ends. In the form of construction which I have shown in the drawings this central projection is thus cut away at each end of each end piece, thus forming the described sliding joint at each of the four corners. It is apparent, however, that if a joint of this character exists at any one of the four points, permitting one piece to be removed by the described sliding motion, the others can thereafter be successively removed by the same motion. It is another form of expressing this construction to say that I cut in the end of the end piece a recess in shape registering with the shape of the projection upon the side piece, so as to permit a close-sliding fit between the two.

I have shown and described the interior projections upon the side pieces as extending throughout their length. By this I mean that the interior projection should extend throughout the length in which it is intended to be in contact with the contained stone, since obviously that portion of the interior projection on the side pieces which does not come in contact with the contained stone might, except for convenience of construction, be omitted.

While the cores may be of any desired form or size, I have found it desirable to make them of approximately the same thickness as the thickness of the interior projection, the cores thus being substantially continuations of the projections. This is the feature which gives to the block a characteristic form—viz., a double wall connected only by ties and each tie being independent of any other tie. Each molded block has separate parallel walls, each wall having an outer and inner side substantially parallel and the two walls being connected by ties not in contact with each other or with any adjacent block.

The method of using and operating this mold is as follows: I first set up the complete mold in the form shown in Fig. 1 and spring the clamp shown in Fig. 4 over the side pieces at the ends or in any other suitable manner clamp the parts of the mold together. I set the end pieces at such a distance from each other as is necessary to make a stone of the predetermined length. I then place the mold upon any suitable surface, which may serve as a bottom plate, and pour into the mold from the top the cement mixture. I find it most desirable, both for convenience in filling the mold and for the perfection of the stone if cement is used, to have the mixture of a consistency which will flow readily and will not require any tamping in order to force it into all parts of the mold. When the mold

is full, the top surface of its contents can be made perfectly smooth by troweling or a similar operation, or by adding cement of the proper consistency this top surface can be molded or worked into a rough face or put in any desired form. In this condition the mold and its contents are then allowed to stand until the stone is sufficiently set, so that the mold can be removed. This time will vary according to the amount of moisture in the mixture, and the builder may vary from either extreme, according to his judgment. When the mixture is sufficiently set, I remove the cores by pulling them out at the side of the mold, and then on removing the clamp and all positive engagement any one of the portions of the mold, which is constructed so as to have the described sliding fit in the adjacent portion, may by a light tapping upon the end be loosened from the contained stone and then may be moved longitudinally, while when the different portions of the mold are in such contact that longitudinal motion is not permitted it will be necessary for the stone to become much more thoroughly set before the parts of the mold can be removed than is the case with my construction. I am thus enabled to save a large part of the time during which the molds would otherwise be required to be in use and am thus enabled to make the given number of stone in the given time with a much smaller number of molds. The resulting stone, as shown in Fig. 5, is channeled or recessed upon four sides and is especially adapted for building a hollow wall in that when the stones are set one upon another each forms a portion of the front and rear double wall, the two parts being tied together by suitable ties, but each of these ties being separated upon all sides from any other tie in any other stone, so that there is and can be no continuous connection between the front and rear parts of the hollow wall. In this manner the special advantages of the hollow wall are best obtained.

It is apparent that with the same mold stones can be built of varying height and length, according to the adjustment of the end pieces and the use of the wing extensions, and I am thus able with one mold or set of molds in the same dies to meet all the ordinary variations required in building. If, however, it is desired to vary the depth of the stone from front to rear, as shown in Fig. 1, this can be accomplished by using end pieces of varying length.

It is apparent that the form of the mold and of the resulting stone could be varied in many particulars from the particular form shown in the drawings without departing from the invention.

The mold which I have described can be constructed very cheaply by the use of suitable dies or by casting from patterns, and it thus becomes practicable for the builder to have a sufficient number of molds, so that he can have a large number in use at the same time,

and thus, although each individual stone may require considerable time for setting, a sufficient number can be continually going through the process of manufacture to make the use of the mold a cheap and practicable method of manufacturing artificial stone from cement and cement mixtures.

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

1. A mold consisting of a plurality of sections, one of the sections having an interior inward projection, and said sections being united together by a joint permitting endwise movement of that section having the projection.

2. A mold consisting of a plurality of sections having interior inward projections, one projection being recessed to slidably receive another projection.

3. A mold consisting of a plurality of sections each having an inward projection, one projection having recesses at its opposite ends to slidably receive two other projections.

4. A mold consisting of four separable sections, two or more of which have interior projections throughout their full length of contact with the stone, and one or more of which has a recess registering with the interior projection upon an adjacent section, whereby a sliding fit between said two adjacent sections is made, and the sections may be removed from the stone by a sliding or longitudinal motion, all substantially as described.

5. A mold consisting of four sections, two of which, placed opposite each other, have interior projections throughout their full length of contact with the stone, and the other two of which have in their ends recesses registering with such interior projections, thereby making at each corner a sliding fit between the adjacent parts and permitting the parts of the mold to be removed from the contained stone by sliding or longitudinal motion, substantially as described.

6. A mold consisting of four separable sections, each provided with an inward projection on its inner face throughout its entire length of contact with the contained stone, one or more of said sections having a recess registering with the inward projection upon the adjacent section, thereby making a sliding fit between the two parts and permitting certain sections to be removed from the stone by a longitudinal motion, substantially as described.

7. A mold consisting of four separable sections, two or more of which have interior projections throughout their full length of contact with the stone, and one or more of which has a recess registering with the interior projection upon the adjacent section, whereby a sliding fit between the two adjacent sections is made, and the pieces may be removed from the stone by a sliding or longitudinal motion, and a removable core

intersecting such inward projections, substantially as described.

8. A mold consisting of four sections, two of which placed opposite each other have interior projections throughout their full length of contact with the stone, and the other two of which have in their ends recesses registering with such interior projections, thereby making at each corner a sliding fit between the adjacent parts and permitting the parts of the mold to be removed from the contained stone by sliding or longitudinal motion, and a removable core intersecting such inward projections, all substantially as described.

9. A mold consisting of four separable sections, each provided with an inward projection on its inner face throughout its entire length of contact with the contained stone, one or more of said sections carrying a recess registering with the inward projection upon the adjacent section, thereby making a sliding fit between the two parts and permitting the sections to be removed from the stone by a longitudinal motion, and a removable core intersecting such inward projections, all substantially as described.

10. A mold having four separable sections, each carrying throughout its entire length of contact with the stone a central projection

toward the center of the mold, and a removable core intersecting the inward projections, being of substantially the same width as the core, whereby there is produced a molded block with separate, parallel walls, each wall having an outer and inner side, substantially parallel, and the two walls connected by ties not in contact with each other or with any adjacent block, all substantially as described.

11. A mold having sides carrying throughout their length of contact with the stone a central projection toward the center of the mold, ends carrying throughout such length similar projections, said sides and ends being adjustably connected with each other, and cores passing through the mold.

12. A mold having sides carrying throughout their length a central projection toward the center of the mold, and ends carrying similar projections, said sides and ends being adjustably connected with each other.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

FRANK L. DYKEMA.

Witnesses:

A. C. DENISON,
MARY S. TOOKER.