

(No Model.)

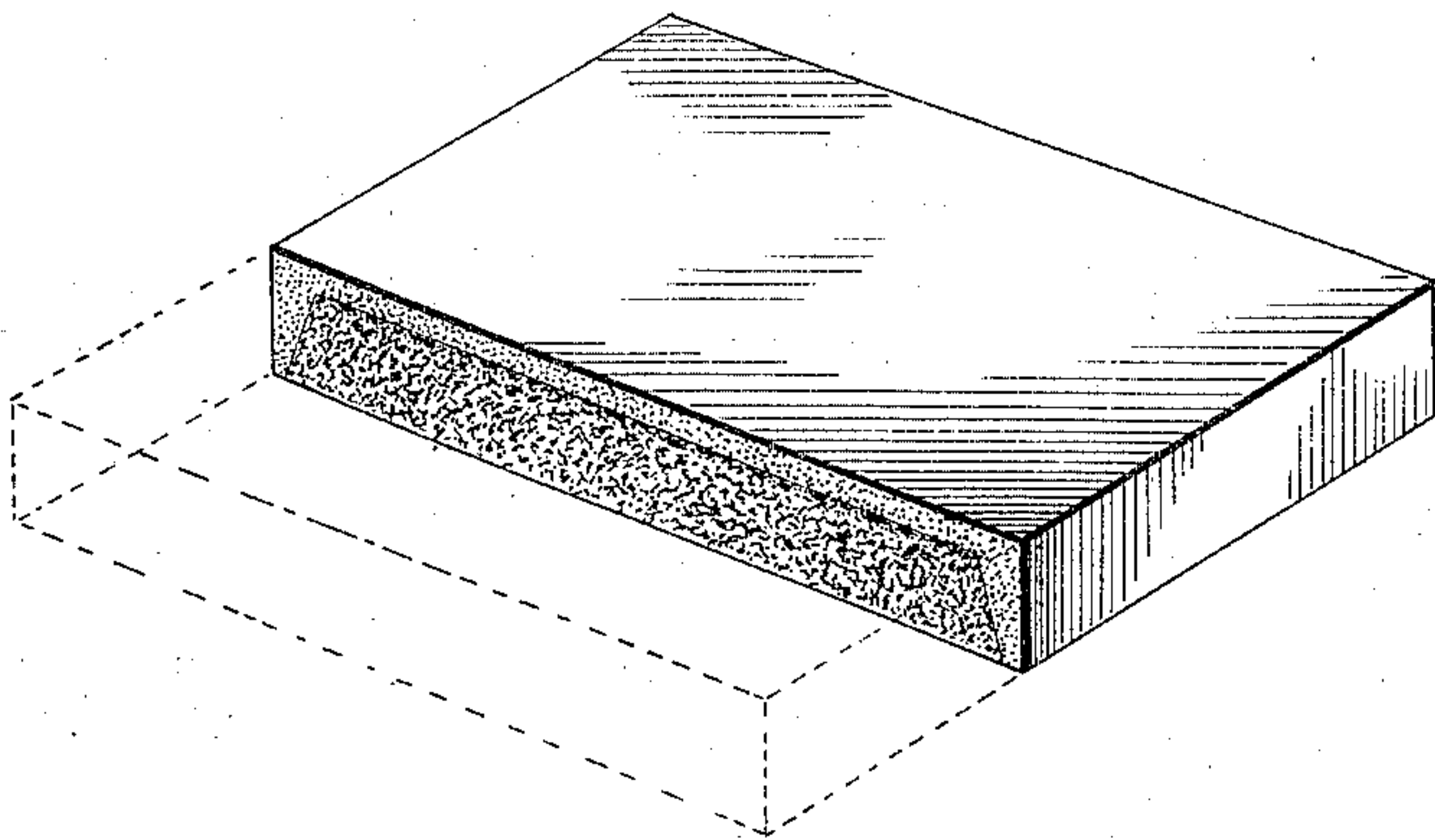
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CONCRETE BLOCK AND METHOD OF MAKING THE SAME.

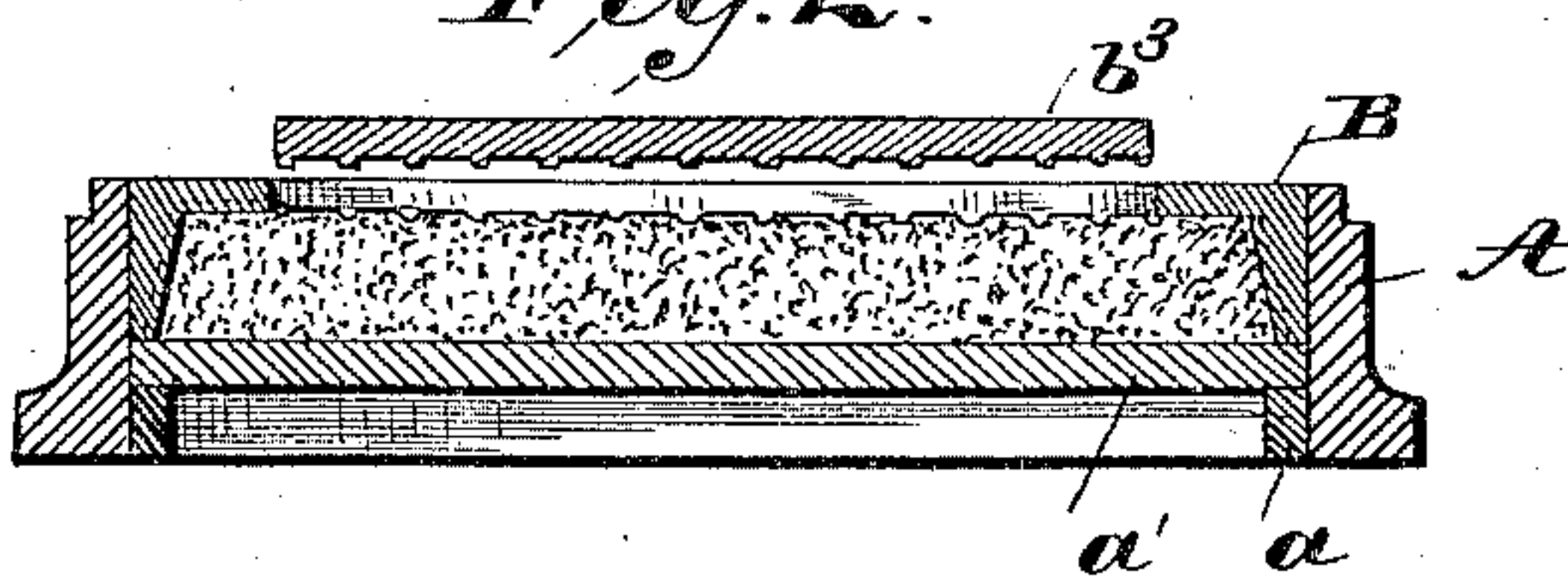
No. 461,890.

Patented Oct. 27, 1891.

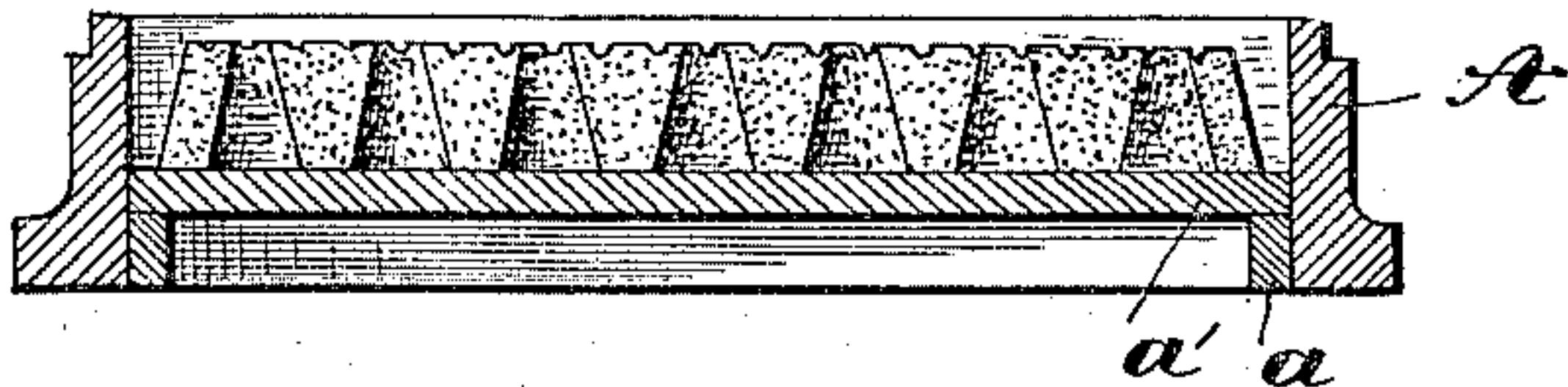
*Fig. 1.*



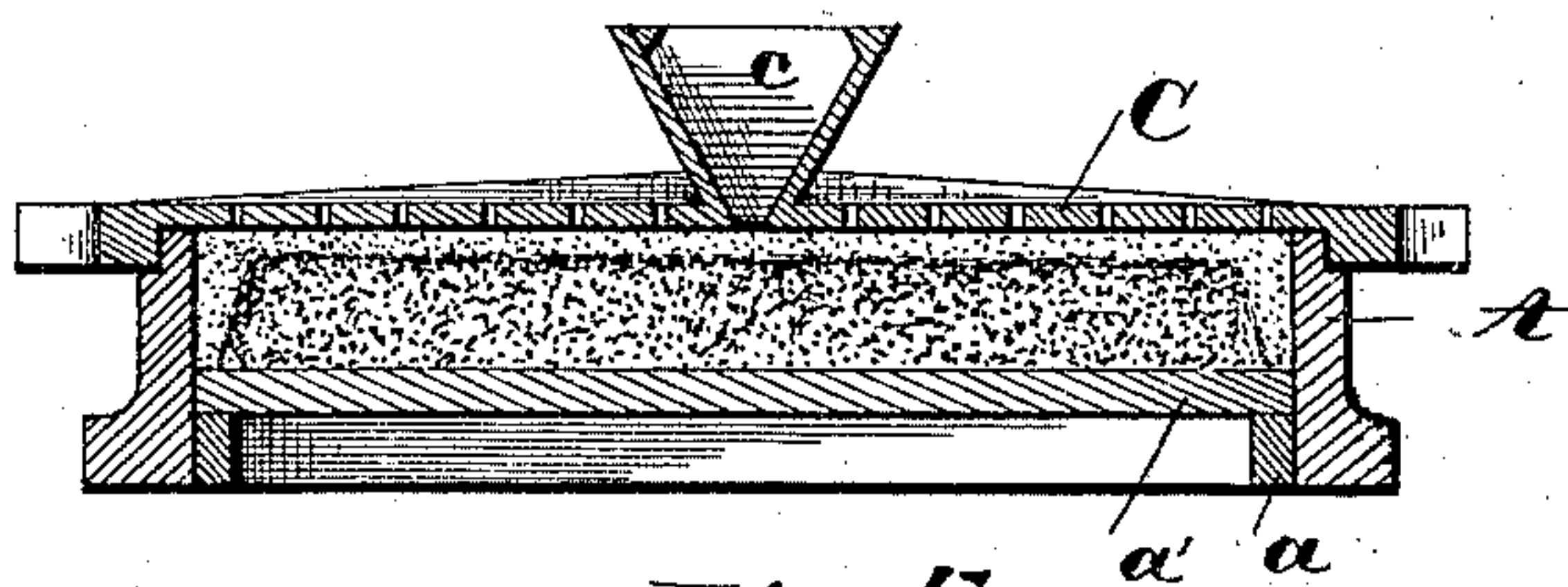
*Fig. 2.*



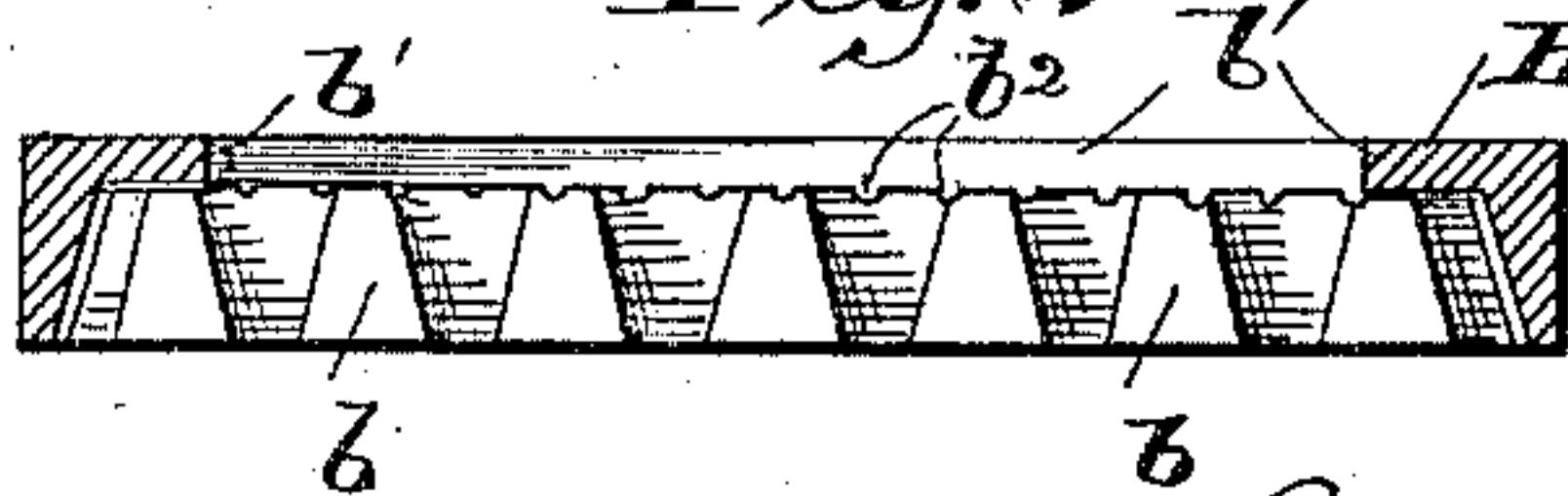
*Fig. 3.*



*Fig. 4.*



*Fig. 5.*



Witnesses

*E. Walker*

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Inventor

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# UNITED STATES PATENT OFFICE.

GEORGE RICHARDSON, OF WASHINGTON, DISTRICT OF COLUMBIA.

## CONCRETE BLOCK AND METHOD OF MAKING THE SAME.

SPECIFICATION forming part of Letters Patent No. 461,890, dated October 27, 1891.

Application filed October 16, 1889. Serial No. 327,156. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE RICHARDSON, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Concrete Blocks and Processes of Making the Same; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to tiles, bricks, paving and building blocks, or similar blocks composed of concrete or a mixture of sand and cement of two or more grades or qualities, and also to the process of making the same; and its object is to so combine or unite the different grades or layers in a mold of any desired shape that they will form a single homogeneous mass with the portion subjected to wear of a finer quality of cement mixture than the interior of the block.

In order that my improved process and the construction of the block may be more clearly understood, I have illustrated in the accompanying drawings one form of mold which I have used with practical success.

Figure 1 represents a vertical cross-sectional perspective of my improved block. Fig. 2 shows a cross-section of a mold and lining for molding the interior of the block. Fig. 3 is a vertical section of a mold with the lining removed, showing the interior or coarse grade of the block in elevation. Fig. 4 is a vertical section of a mold, showing the two grades of concrete mixture therein and the mold provided with a cover-plate. Fig. 5 represents a section of the lining.

In carrying out my invention any suitable mold may be used without departing from the principle thereof; but I prefer to employ a mold substantially like the one shown in the drawings, in which A indicates the mold proper, which consists of a casing open at top and bottom and of any desired shape, according to the shape of block desired. At the bottom of the mold is an inwardly-projecting rib *a*, upon which rests a removable plate *a'*, forming the bottom of the mold. Resting upon this plate is a lining B, also open at top and bottom and of greater thickness at the top than at the bottom, the inner surface of

which is provided with dovetailed ribs or projections *b*, increasing in width toward the bottom, and at the top of the lining B is an inwardly-projecting flange *b'* also formed with ribs *b''* on its under side, and fitting within the space between the flange is a movable plate *b'''*, provided with ribs on its under side, though I may dispense with this plate, if desired. To the top of the mold is secured a removable perforated cover-plate C, having a funnel-shaped mouth *c*.

After placing the lining B in the mold A, as shown in Fig. 2, I prepare two separate mixtures of sand and cement, the coarser of which I place in the mold A inside the lining B and pack the same therein until the spaces between the ribs or projections *b* are filled and the mass is firm enough to retain its shape, when the plate *b''* is pressed down on the mass to form the roughened upper surface. I then remove the lining B and the plate *b'''*, when the coarse mixture will appear, as shown in Fig. 3, with the dovetail grooves and ribs on its beveled sides and short ribs and grooves on its upper surface corresponding to the projections on the mold, and before the mixture has time to set I fill the cavity or space left by the lining B with the finer quality of the mixture, which enters the grooves in the coarse interior mixture and firmly unites therewith. The cover-plate C is then placed on the mold and firmly clamped thereto, after which the mold and contents are subjected to a vertically and horizontally reciprocating motion on a machine provided for the purpose for a sufficient length of time to force or drive out all the air-spaces and superfluous water from the mixture. This jarring motion also serves to more thoroughly unite the two grades of mixtures. After the cover is removed and before the cement has set I sprinkle or cover the mixture in the mold with a dry mixture of cement and sand to take up any surplus water that may still remain in the mixture, after which the upper surface of the mixture is rubbed with a smoothing-board or trowel, which gives a smoother and harder surface to the block than if this dry coating was not used.

After the mixture has set in the mold it is removed and subjected to any desired hardening-bath to more thoroughly harden the



same; but I prefer to subject it to the action of cool carbonic-acid gas and watery vapor.

In case it is desired to furnish blocks of colors other than that of the natural color of the mixture, I add the coloring matter to the mixture while the same is being prepared.

The mixture I prefer to use for paving-block is composed of equal parts of sand and cement for the outer coating and one part of cement to three parts of sand for the interior of the block; but these proportions may be greatly varied, as well as the ingredients, without departing from the principle of my invention. For instance, for the interior of the block I may use cement, sand, and gravel, or cement and fine gravel or broken stone.

After the concrete mixtures have set it will be found that they have so thoroughly united that it will be impossible to separate them, and the block will not be affected by change of temperature, as is often the case with blocks composed of different grades of material molded with one layer above the other.

In case it is desired to furnish a colored block of uniform quality I mold the interior of the block in the manner above described and apply the coloring-matter to the mixture which is to form the coating.

Having thus described my invention, what I claim is—

1. A concrete block composed of two or more grades or mixtures, one of which has a roughened surface formed by the mold and the other mixture united therewith before said mixtures have set, substantially as and for the purposes described.

2. A concrete block composed of two or more grades or mixtures, one of which is formed with dovetailed grooved surfaces and the other mixture forming the coating united

therewith before the mixtures have set, substantially as and for the purposes described.

3. The method herein described of making concrete blocks, which consists in placing in the mold a lining, filling the space within the same with a coarse concrete mixture, removing said lining, and filling the space formed by the lining with a fine concrete mixture, substantially as and for the purposes described.

4. The method herein described of making concrete blocks, which consists in placing in the mold a lining, substantially as described, having a rib on its inner side, filling the space within the same with coarse concrete, removing the lining and filling the space formed thereby with a fine concrete mixture, and finally subjecting the mold and contents to a jarring motion to firmly unite the two mixtures before they have set, substantially as and for the purposes described.

5. The method herein described of making concrete blocks, which consists in placing in the mold a lining having ribs on its inner side, filling the space within the same with a coarse concrete, removing the lining and filling the space formed thereby with a fine concrete mixture, subjecting the mold and contents to a jarring motion, to firmly unite the two mixtures before they have set, and finally subjecting the block to the action of carbonic-acid gas and water or the vapors thereof, substantially as and for the purposes described.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE RICHARDSON.

Witnesses:

E. T. WALKER,

F. W. RITTER, Jr.