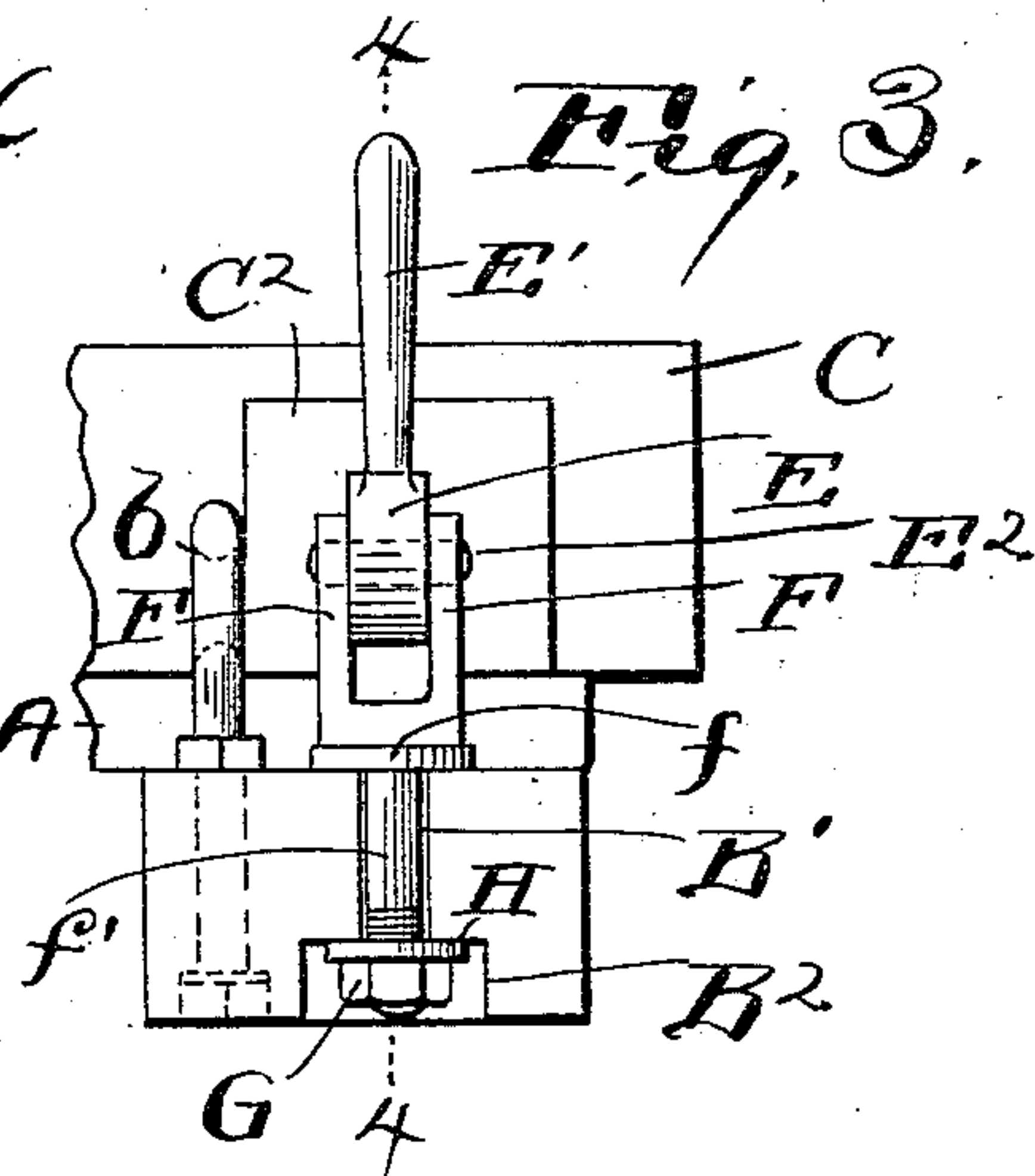
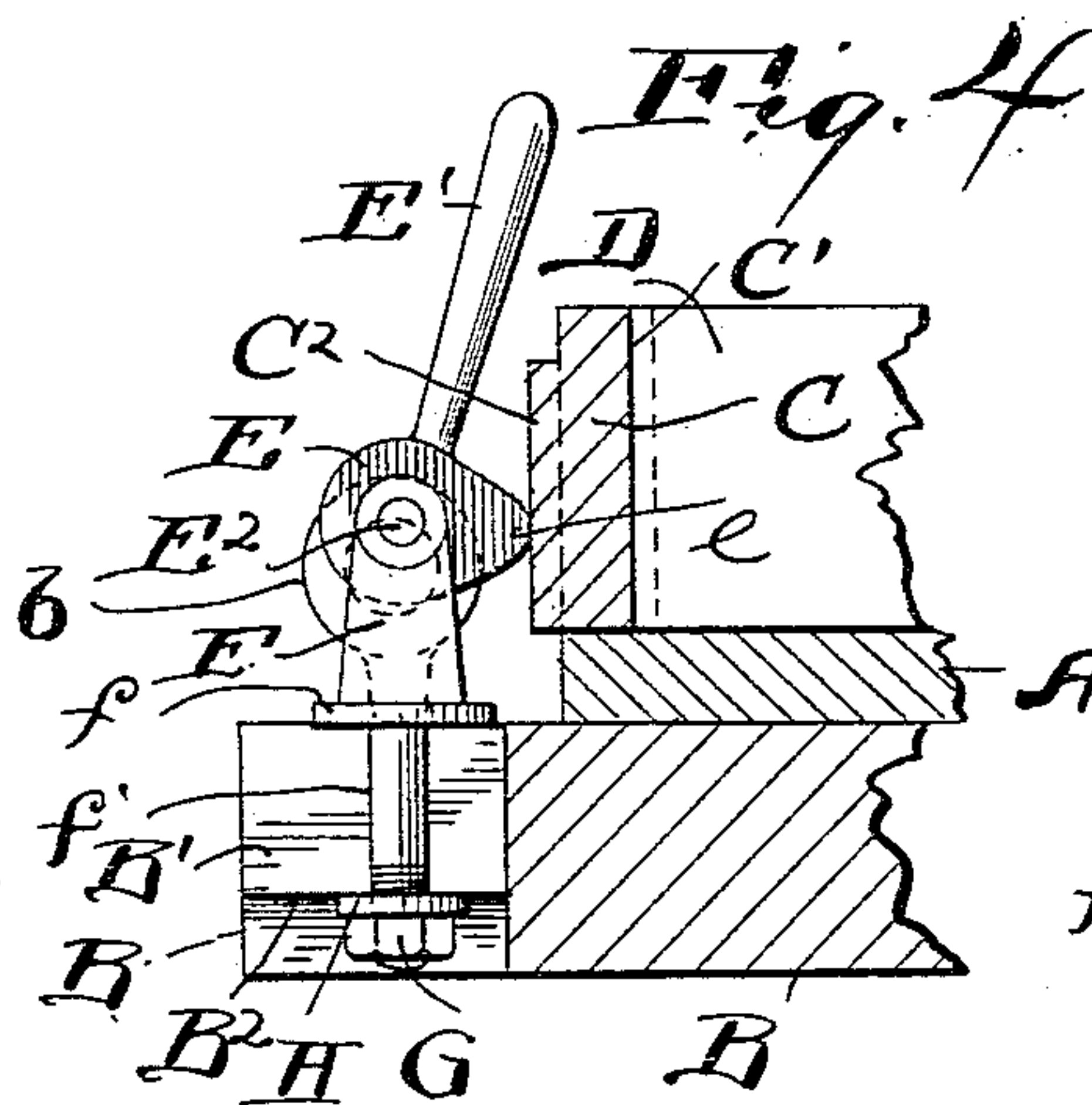
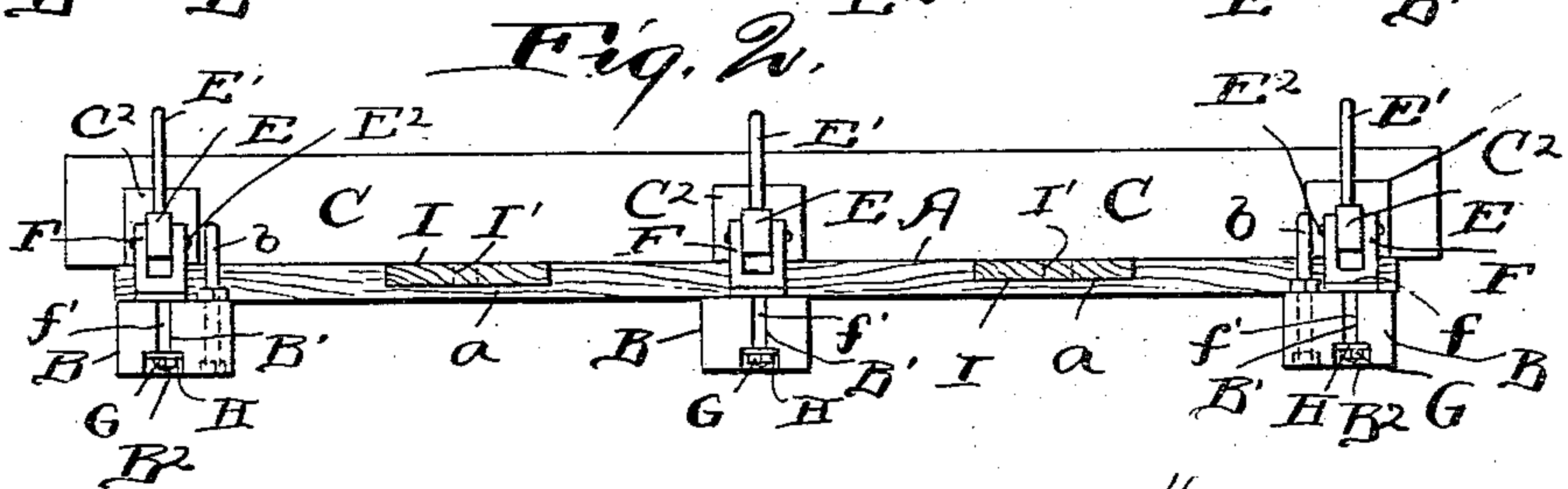
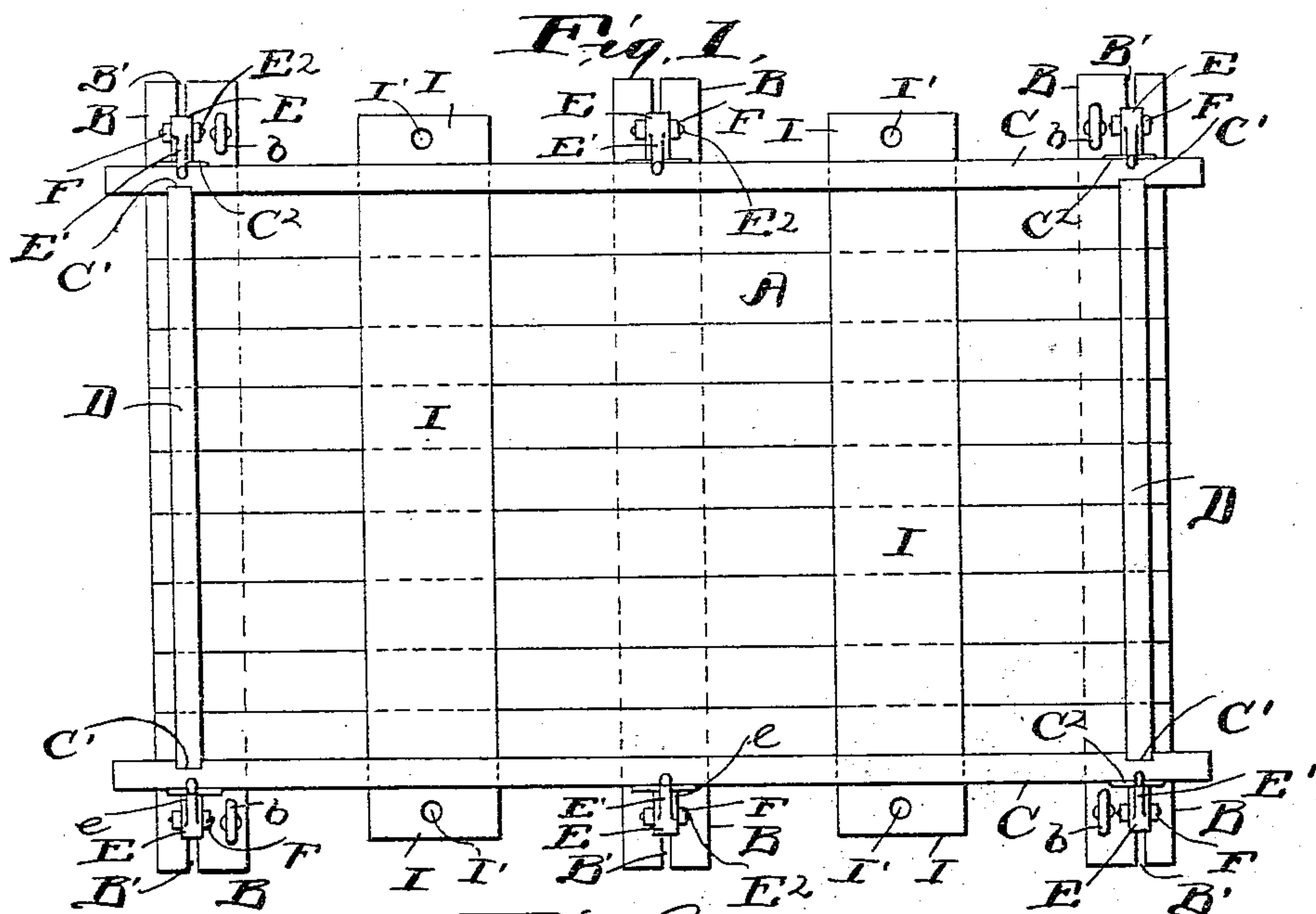


E. SMALLWOOD.

APPARATUS FOR MAKING CEMENT FLAGS OR ARTIFICIAL STONE.

No. 555,345.

Patented Feb. 25, 1896.



Witnesses.
E. B. Gilchrist
C. J. Adams

Inventor,
Edward Smallwood

By M. D. Seggett & Co.
his attorneys.

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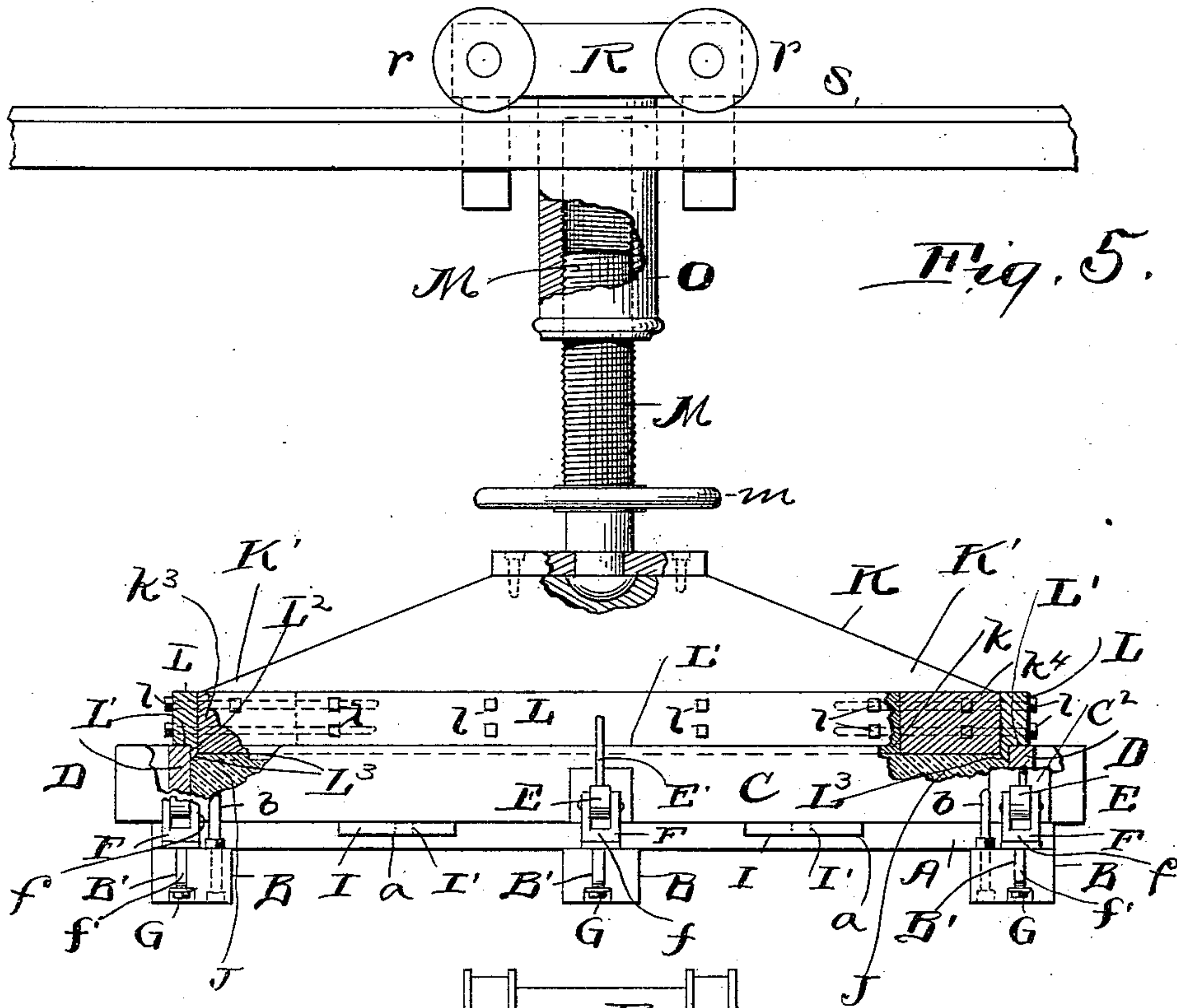


Fig. 5.

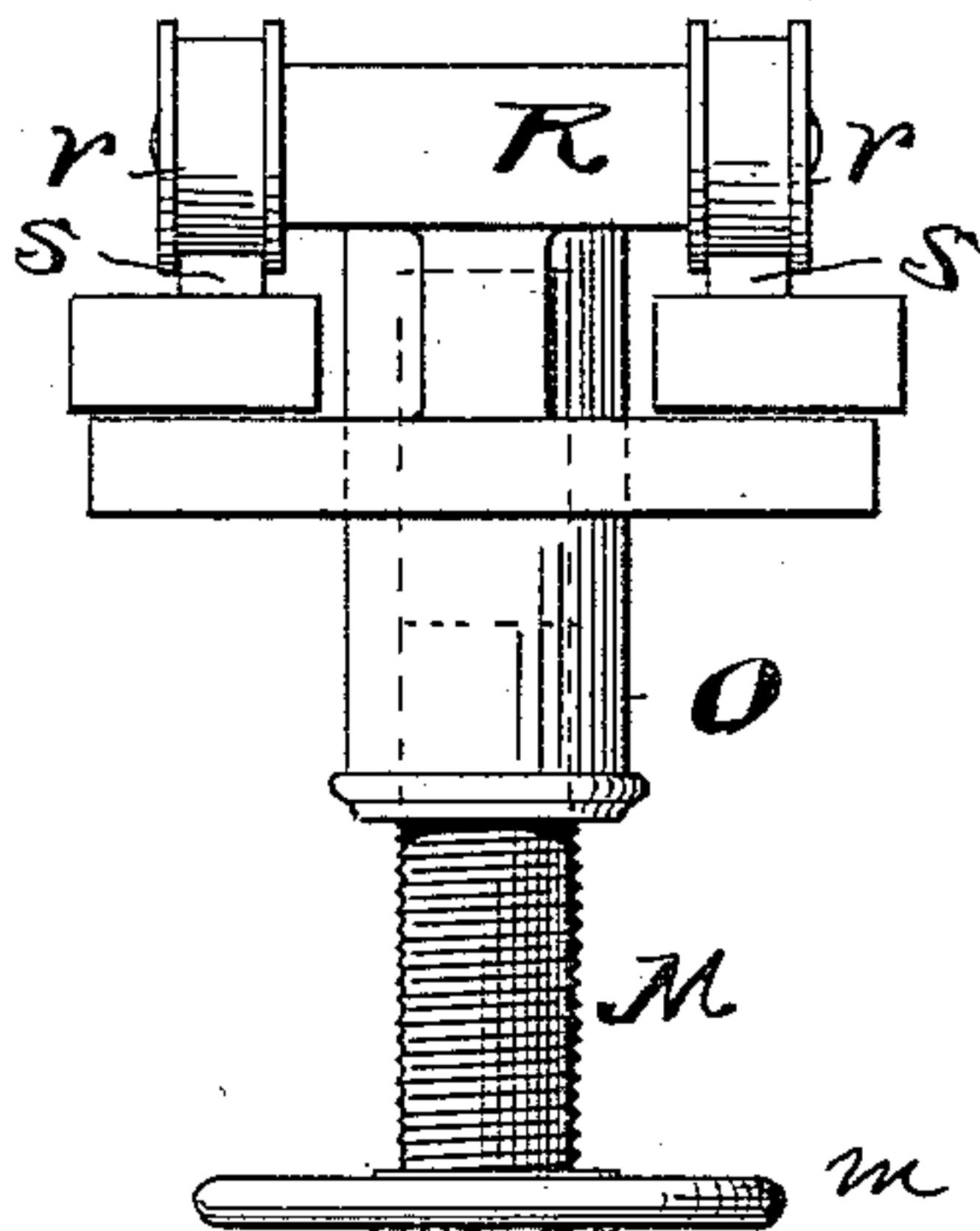


Fig. 6.

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(No Model.)

3 Sheets—Sheet 3.

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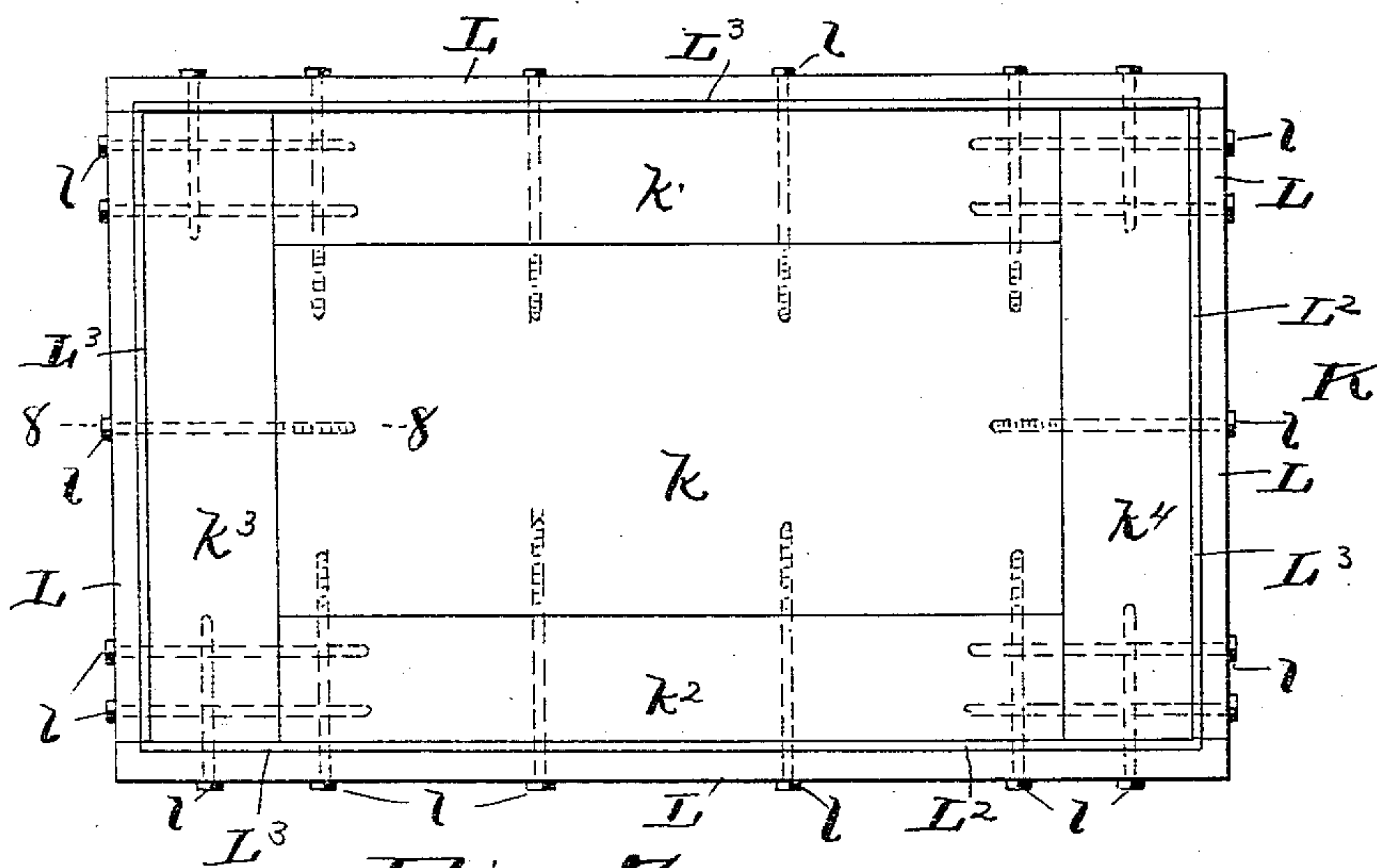


Fig. 7.

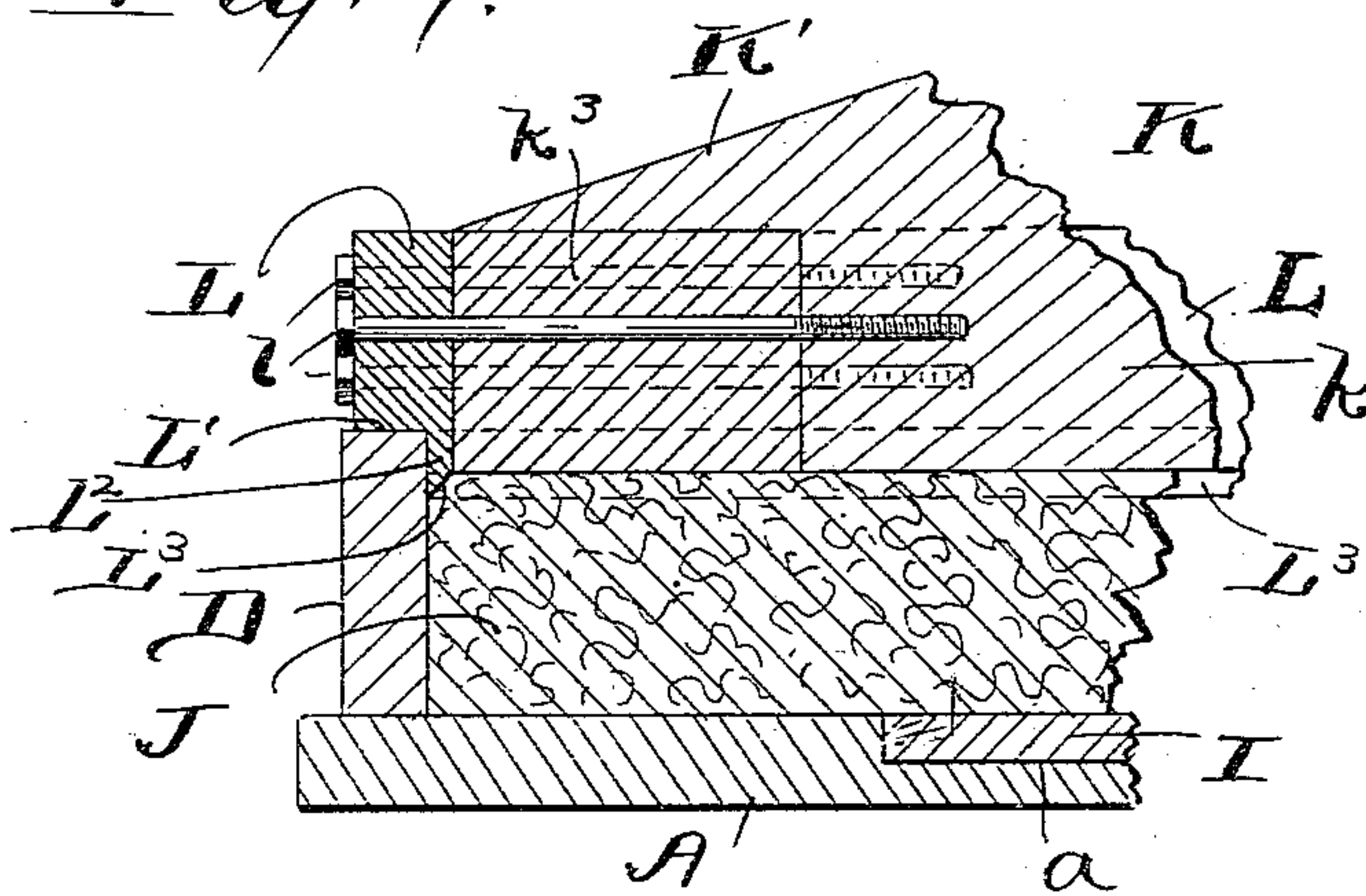


Fig. 8.

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UNITED STATES PATENT OFFICE.

EDWARD SMALLWOOD, OF ELYRIA, OHIO.

APPARATUS FOR MAKING CEMENT FLAGS OR ARTIFICIAL STONE.

SPECIFICATION forming part of Letters Patent No. 555,345, dated February 25, 1896.

Application filed September 20, 1895. Serial No. 563,078. (No model.)

To all whom it may concern:

Be it known that I, EDWARD SMALLWOOD, of Elyria, in the county of Lorain and State of Ohio, have invented certain new and useful Improvements in Apparatus for Making Cement Flags or Artificial Stone; 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 pertains to make and use the same.

My invention relates to improvements in apparatus for making cement flags or artificial stone; and it consists in certain features of construction and combinations of parts hereinafter described and pointed out in the claims.

The object of my invention is to make cement flags that are adapted to be laid as ordinary stone flags.

In the accompanying drawings, Figure 1 is a top plan of a mold wherein the cement is compressed to form a stone or flag, and Fig. 2 is a side elevation of said mold. Fig. 3 is a side elevation of a portion of the mold, and exhibits more especially one of the pressure-blocks employed in securing the side and end walls of the mold together, and for retaining said walls in their assembled position during the compression of the cement within the mold; and Fig. 4 is an elevation, partly in section, on line 4 4, Fig. 3. The parts exhibited in Figs. 3 and 4 are shown on a larger scale than in Figs. 1 and 2. Fig. 5 is a side elevation, partly in section, of the mold and a preferable construction of plunger employed for compressing the cement within the mold. Fig. 6 is an end elevation relative to Fig. 5, partly in section. Fig. 7 is a bottom plan of the plunger. Fig. 8 is a side elevation in vertical section on line 8 8, Fig. 7.

A rectangular mold is exhibited in the drawings. The bottom of the mold is preferably composed of planks A, that are arranged lengthwise of the bottom, and at each end and at the central portion rest upon cross-beams B, to which the planks are secured in any approved manner. Beams B, therefore, extend transversely of the under side of mold bottom and are rigid with said bottom. Two removable bars or beams C C form the different side walls, respectively, of the mold, and are located a suitable distance apart and

extend longitudinally of the bottom of the mold. Members C are preferably metallic bars planed upon the inner side. Two bars or beams D D form the different end walls, respectively, of the mold. Members D D are preferably metallic bars planed upon their inner side. Said end walls extend transversely of the bottom of the mold, and are removably arranged a suitable distance apart. The end walls preferably engage mortises or grooves C' formed in the inner sides of the side walls C, as shown in Fig. 1.

The side walls and end walls of the mold are preferably secured in their assembled position by means adapted to clamp the side walls against the ends of the end walls, and the means preferably employed for securing together the end walls and side walls of the mold are as follows:

Each beam B extends in under and a suitable distance beyond the outer sides of the side walls of the mold, and each beam B, at the outer side of each side wall of the mold, bears a pivotally-supported cam or eccentric shaped block E, the belly *e* whereof is adapted to engage the outer surface of the respective side wall of the mold, and the side walls of the mold, at the points adapted to be engaged by blocks E, are preferably provided with planed lugs C² adapted to be engaged by the bellies of blocks E when the latter are actuated or turned into their operative position. The pressure-blocks E, supported by the two outer beams B, are preferably located in line with the adjacent end wall of the mold, as shown in Figs. 1 and 2, so that said blocks, when they are actuated or turned into an operative position, will press the side walls against the end walls at the points where said walls engage each other.

The pressure-blocks upon the centrally-located beam B prevent outward deflection of the central portion of the side walls of the mold during the compression of the cement in the mold. Each pressure-block E is preferably provided with a lever E' for turning the block, as required, to actuate the latter from an inoperative to an operative position, or vice versa. Each pressure-block E is preferably horizontally pivoted, as at E², to and between two upright standards F (see also Figs. 3 and 4) that are integral or rigid with a base *f*

that rests upon the supporting-beam B, and upon its under side is provided with a depending stud f' that extends downwardly through a vertical slot B' formed in and arranged longitudinally of the respective beam B, and communicating below with a recess B² formed in the under side of the beam. A nut G is mounted upon the screw-threaded lower end of each stud f' within the respective recess B², and a washer H is mounted upon the stud between the nut and the upper wall of said recess. By tightening nut G the pressure-block is secured in the desired adjustment, and by loosening said nut the pressure-block is rendered adjustable longitudinally of the supporting-beam, and this adjustment of the pressure-blocks is required to accommodate the adjustment of the side walls toward and from each other to render the mold capable of being enlarged or reduced in width, according as wider or narrower flags are desired. Other end walls are, of course, substituted in changing the width of the mold, and longer or shorter end walls are employed according as the mold is made wider or narrower.

Two planks or bars I extend transversely of the bottom of the mold, between the central portion and opposite ends, respectively, of the mold, and said members I are preferably seated in mortises or recesses a formed in and arranged transversely of the mold bottom, and have their upper surface flush with the upper side of the bottom, as shown in Fig. 2.

In making cement flags I introduce the suitably-prepared cement within the mold and then compress the cement by means of any suitably-operated plunger. When the compressed cement is sufficiently hardened within the mold to render the flag formed thereby capable of standing on edge, I remove pressure-blocks B and the side walls and end walls of the mold, and then by lifting planks or bars I at one side of the mold I tilt the flag upwardly on edge, and when the flag has thus been tilted upwardly on edge I remove the bottom of the mold, beams B, and pressure-blocks, and use said pressure-blocks, beams, and bottom and side walls and end walls of the mold in the construction of other flags, and then reassemble said parts to form another mold, and provide other planks or bars I for the newly-formed mold.

I would here remark that the outer beams B at their ends are preferably provided with eyes b , adapted to be engaged by the hooks of hoisting-tackle (not shown) employed for transferring said beams and the bottom thereon from one place to another, and bars or planks I preferably extend in under and beyond the respective opposing walls of the mold and have their projecting ends provided, respectively, with a hole I' for receiving the hook of hoisting-tackle (not shown) employed in lifting said bars or planks at one end, as hereinbefore described, in tilting the cement flag on edge.

Referring now to the means employed for compressing the cement within the mold, a preferable construction of compressing-plunger is exhibited in Figs. 5, 6, 7, and 8. K designates the plunger that is suitably constructed upon its under surface to uniformly engage the cement within the mold during the compression of said cement from above, and the dimensions of the plunger are, of course, such as to render it suitable for co-operation with the mold in the formation of the cement flag. It is desirable to have the flag beveled at the upper end of its edges, and in order to form a bevel at the place indicated I provide the plunger at each edge with a bar L that is secured to the body portion of the plunger, preferably removably, by means of bolts l . Each bar L is provided with a shoulder or seat L' that in the extreme lower position of the plunger is adapted to engage and rest upon the adjacent wall of the mold and thereby form a stop to limit the depression of the plunger. Each bar L at its lower end and inner side is provided with a downwardly-projecting flange L² that projects below the under surface of the body portion of the plunger, and is beveled upwardly and inwardly at its inner side, as at L³, and extends the entire distance between the two respective opposing walls of the mold, and hence is instrumental in the formation of the bevel along the upper end of one of the edges of the flag. Sloping surfaces L³ are located entirely below the under surface of the body portion of the plunger.

J designates the cement under compression in the mold shown in Figs. 5, 6, and 8.

I would here remark that the plunger is preferably composed of several sections, and the plunger (see Fig. 7) consists preferably of a central section, k , and four outer sections, k' , k^2 , k^3 and k^4 , arranged about the different edges, respectively, of the central section. Sections k^3 k^4 constitute two of the outer sections of the plunger and engage two oppositely-located edges, respectively, of the central section, k , of the plunger, which sections k' k^2 are consequently arranged between sections k^3 k^4 and engage the two remaining oppositely-located edges, respectively, of the central section of the plunger. The outer sections of the plunger are secured to the central section, preferably removably, by the bolts employed in securing beveling-bars L in place, and some of the bolts extending through sections k^3 k^4 extend into the ends of sections k' k^2 , as shown in Fig. 7.

By the construction just described it will be observed that by removing all of the outer sections of the plunger and suitably securing suitably-sized beveling-bars directly to the central section of the plunger, the size of the plunger is materially reduced; or by removing one of the sections k' k^2 and by securing the beveling-bar, secured to said section, directly to the central section of the plunger, and by substituting shorter sections for the sections k^3 k^4 , the plunger is reduced in size

between the outer sides of the two sections k' and k^2 ; also, by substituting wider sections $k' k^2$ and longer sections $k^3 k^4$, the size of the plunger between the outer sides of sections $k' k^2$ is enlarged.

The means employed for removing the plunger vertically consists preferably of an upright screw M that, at its lower end, is connected with the plunger in such a manner that the screw can rotate independently of the plunger. The screw engages a correspondingly-threaded nut O that is supported in any approved manner from above, and the plunger is elevated or lowered according as the screw is turned in the one direction or the other. The screw is provided with suitable means—such, for instance, as a hand-wheel m —for turning the same.

The screw-engaging nut of the means instrumental in effecting the elevation and downward movement of the plunger is preferably suitably supported from a wheeled carriage R, the wheels r whereof engage a track S supported in any approved manner a suitable distance above the horizontal plane in which the molds are constructed, and hence the cement-compressing plunger can be moved from one place to another in the plant engaged in the manufacture of the artificial flag. I would also remark that the body portion of the plunger is provided with members K' that overhang and form abutments for the upper side of and thereby prevent upward displacement of the outer sections, $k' k^2 k^3 k^4$, during the compression of the cement within the mold by the plunger.

What I claim is—

1. In apparatus of the character indicated, a mold having the surrounding walls removable, in combination with suitable means for securing said walls in place, and any suitable number of planks or bars I extending transversely of and removably seated within the mold-bottom, substantially as shown, for the purpose specified.

2. In apparatus of the character indicated, a quadrangular mold having the four surrounding walls removable, in combination with suitable means for securing said walls in place, and any suitable number of planks or bars I extending transversely of and being removably seated within the mold-bottom and having their upper surface flush with the upper surface of said bottom, substantially as shown, for the purpose specified.

3. In apparatus of the character indicated, a quadrangular mold having the four surrounding walls removable, in combination with suitable means for securing said walls in place, and two planks or bars I extending transversely of the mold-bottom between the central portion of said bottom and two oppositely-located walls, respectively, of the mold, said members I extending transversely of and

being removably seated within the mold-bottom, and having their upper surface flush with the upper surface of said bottom, said members I, at their ends, extending a suitable distance beyond the mold-bottom, substantially as shown, for the purpose specified.

4. In apparatus of the character indicated, a quadrangular mold having the four surrounding walls removable, in combination with suitable means for securing said walls in place, and planks or bars I extending transversely of and being removably seated within the mold-bottom and having their upper surface flush with the upper surface of said bottom, said members I, at their ends, extending a suitable distance beyond the mold-bottom, and the protruding ends of said members I being provided with holes I' , substantially as shown, for the purpose specified.

5. In apparatus of the character indicated, the combination with a mold, of a suitably-actuated plunger adapted to enter the mold and compress the cement within the mold, and beveling-bars suitably secured to the edge of the plunger, and each beveling-bar, at its lower end, being provided with an upwardly and inwardly inclined surface that is located below the lower surface of the body portion of the plunger, and means for limiting the downward movement of the plunger, substantially as set forth.

6. In apparatus of the character indicated, the combination with the mold, of a suitably-actuated plunger adapted to enter the mold from above and compress the cement within the mold, and beveling-bars suitably secured to the edges of the plunger, each of which beveling-bars, at its lower end, is provided with a depending flange, that, upon its inner side, is provided with an upwardly and inwardly inclined surface that is located entirely below the lower surface of the body portion of the plunger, substantially as set forth.

7. In apparatus of the character indicated, the combination with the mold, of a suitably-actuated plunger adapted to enter the mold from above and compress the cement within the mold, beveling-bars suitably secured to the edges of the plunger, each of which beveling-bars, at its lower end, is provided with a depending flange, that, upon its inner side, is provided with an upwardly and inwardly inclined surface that is located entirely below the lower surface of the body portion of the plunger, and stops for limiting the downward movement of the plunger, substantially as set forth.

In testimony whereof I sign this specification, in the presence of two witnesses, this 6th day of September, 1895.

EDWARD SMALLWOOD.

Witnesses:

C. H. DORER,
ELLA E. TILDEN.