

(No Model.)

2 Sheets—Sheet 1.

L. B. GRAY.

PRESS FOR MOLDING GLASS INSULATORS.

No. 462,862.

Patented Nov. 10, 1891.

Fig. 1.

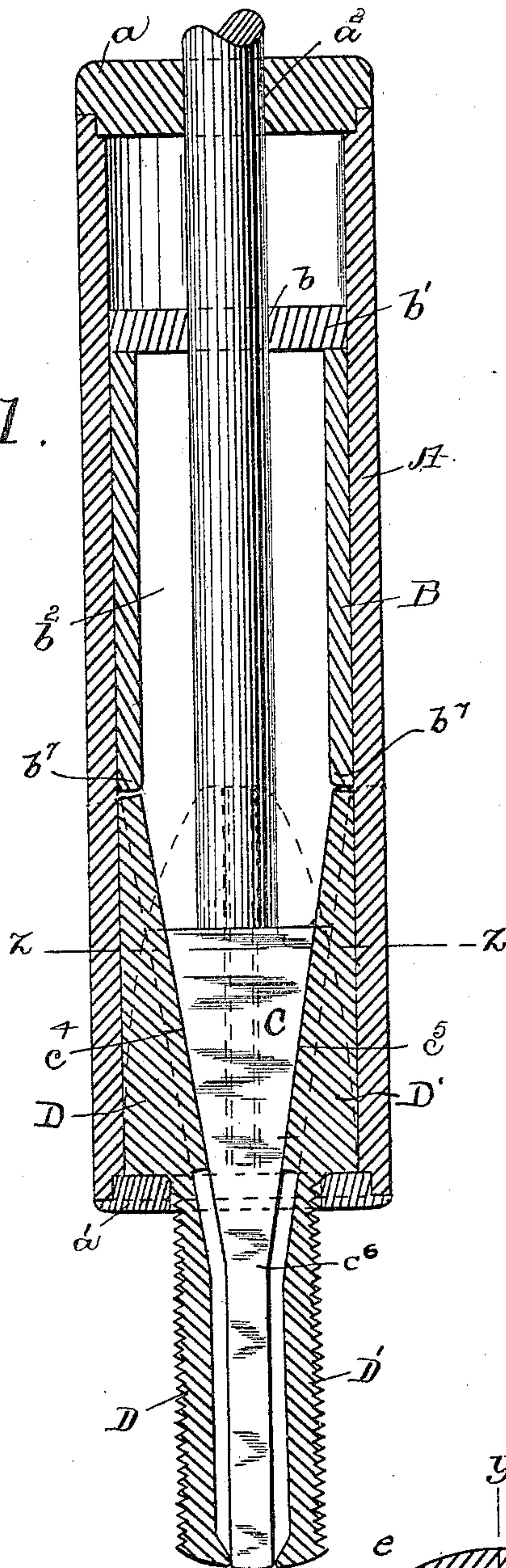
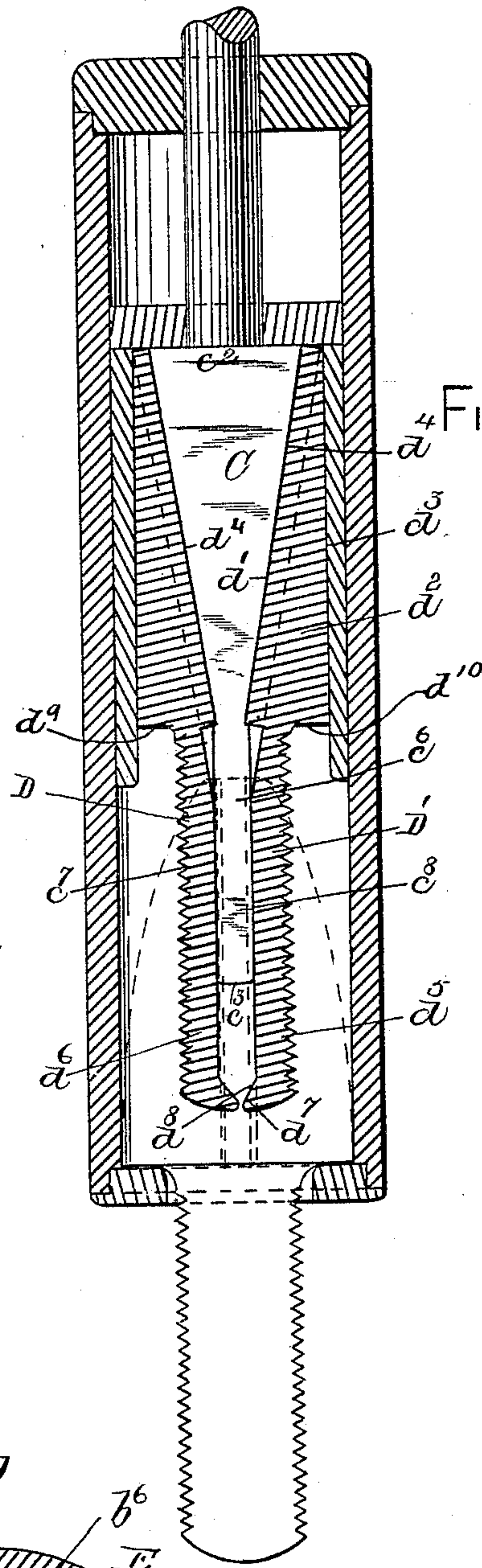


Fig. 2.



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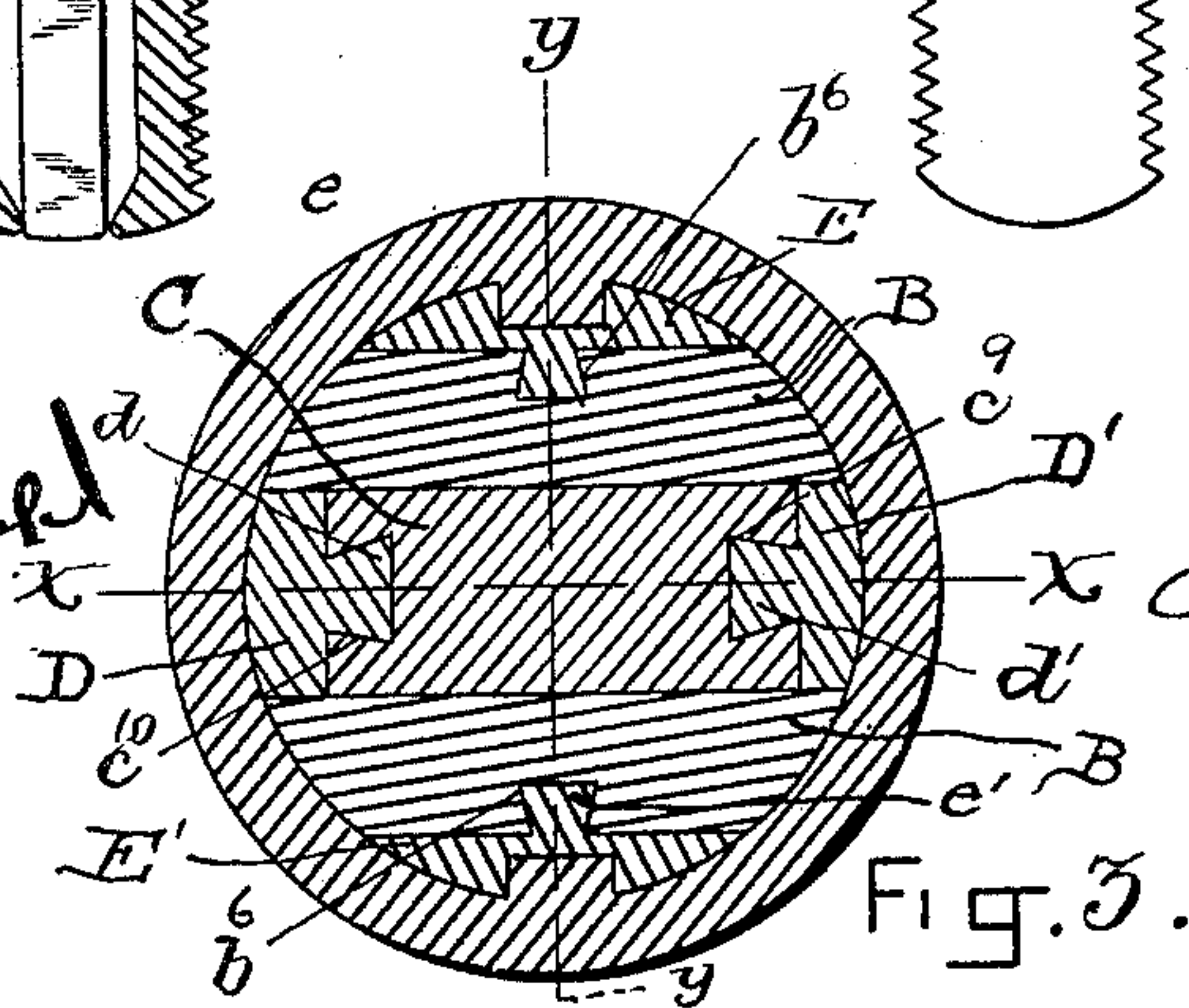


Fig. 3.

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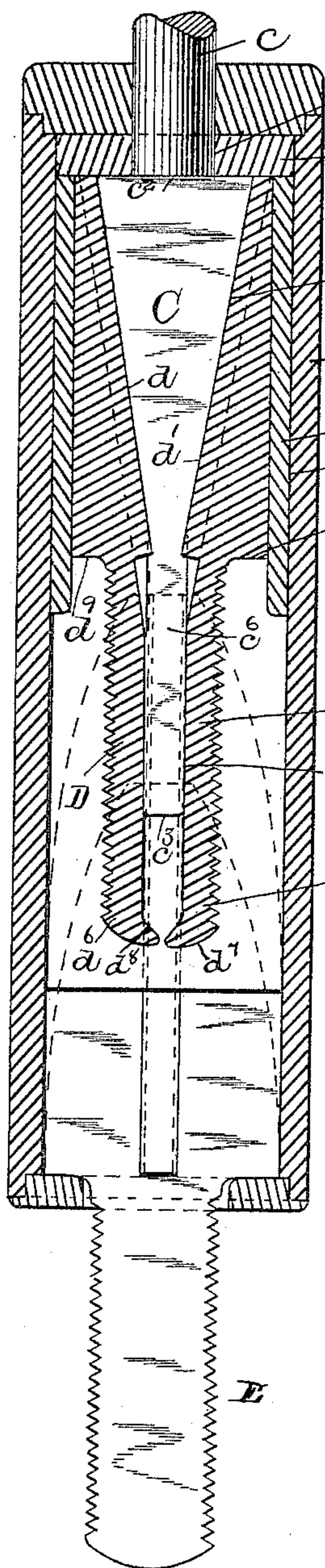


Fig. 4.

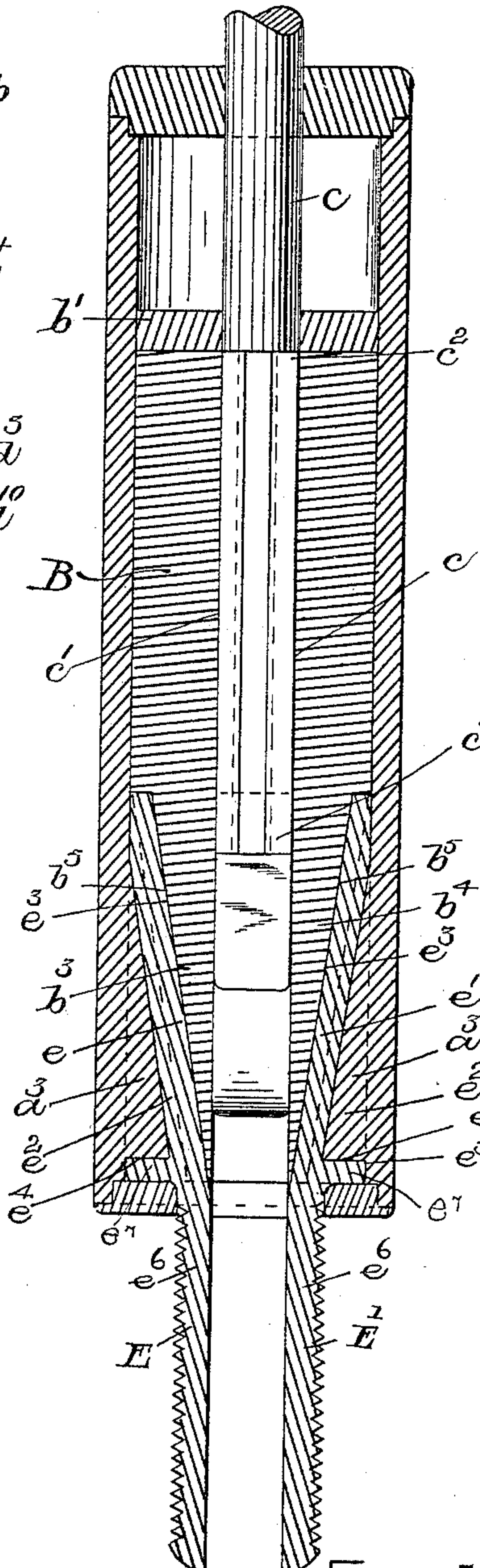


Fig. 5.

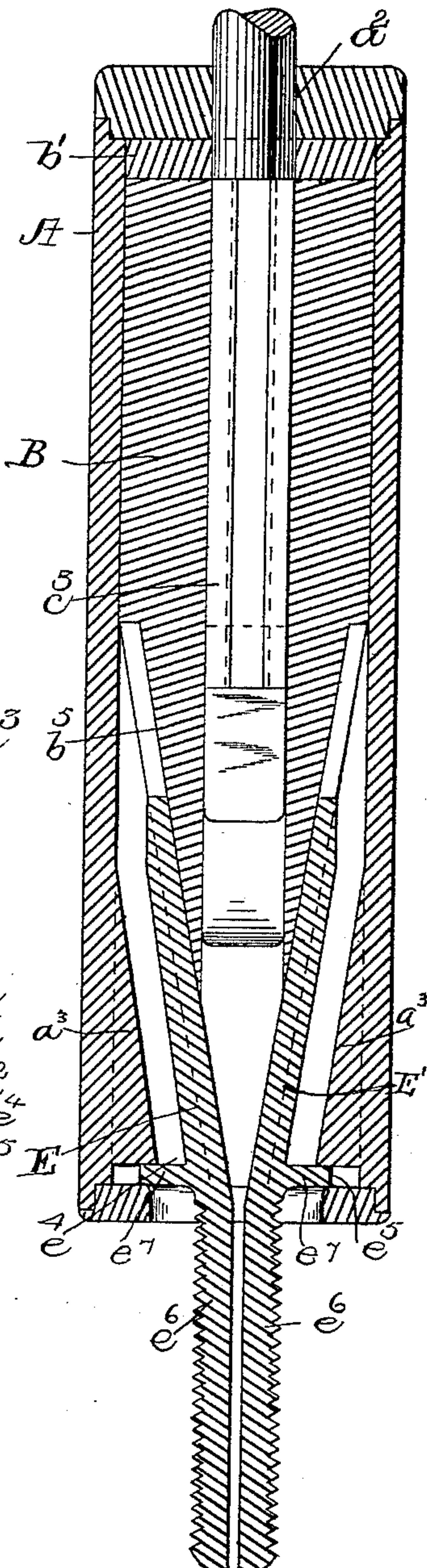


Fig. 6.

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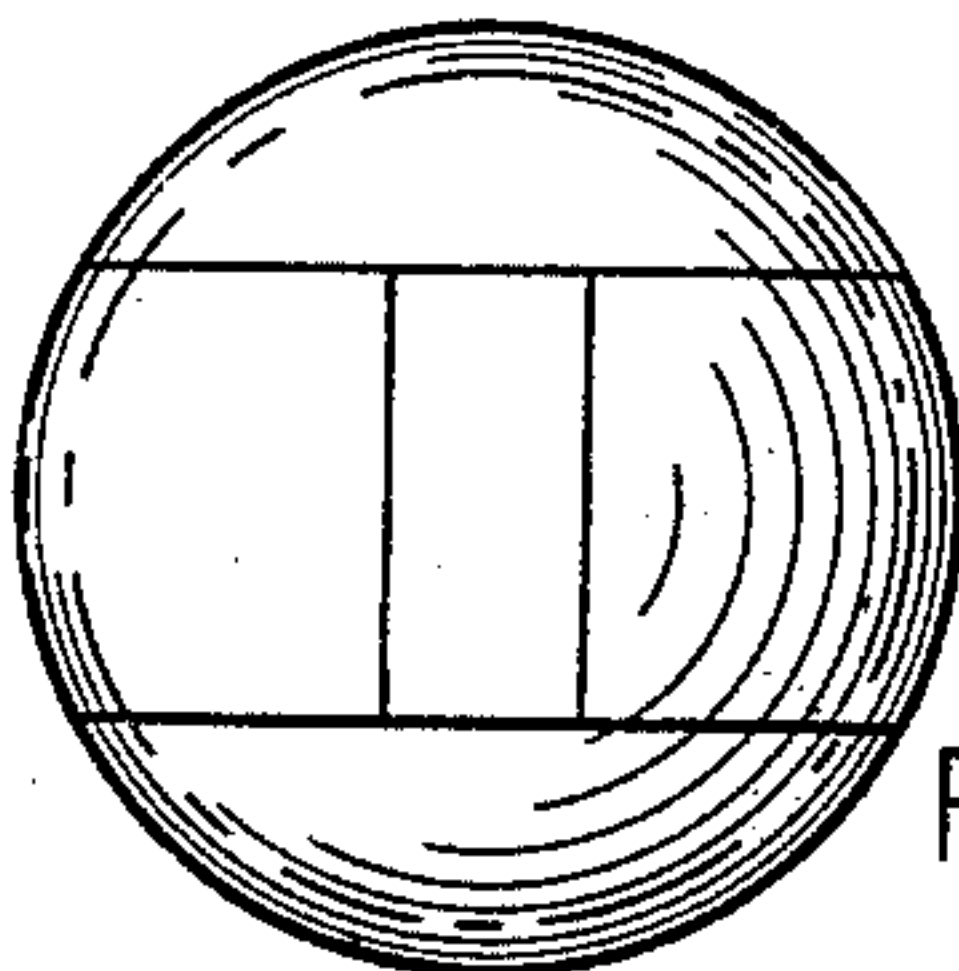


Fig. 7.

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UNITED STATES PATENT OFFICE.

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PRESS FOR MOLDING GLASS INSULATORS.

SPECIFICATION forming part of Letters Patent No. 462,862, dated November 10, 1891.

Application filed February 18, 1891. Serial No. 381,916. (No model.)

To all whom it may concern:

Be it known that I, LAWRENCE B. GRAY, a citizen of the United States, and a resident of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Presses for Molding Glass Insulators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of the specification, in explaining its nature.

The invention relates especially to the portion of the press known as the "plunger-case" and "plunger," and particularly to the construction of the plunger whereby it is adapted to be easily removed from the molded insulator after it has formed a screw-thread therein. The plunger is of the kind known as a "sectional" plunger. It is made in four principal parts or pieces, which are arranged to be moved in pairs and each of which contains a section of a screw-thread. Each of the two pairs of sections has the same movements, and they are formed or arranged in operative position as follows: One pair of the plunger-sections is loosely attached to the case and moved downward with it, and the other pair of plunger-sections is attached to an actuating-block carried by a rod or spindle. The downward movement of the case moves the first pair of sections into the mold, but does not spread them. This spreading movement is accomplished by an actuating-block carried in the case and moved by the said rod or spindle upon its downward movement into contact with the first-named pair of sections, thereby spreading them. The vertical movement of the rod and actuating-block carried thereby and the second pair of plunger-sections is continued until they are upon a line with the first pair, when by the further movement of the plunger and actuating-block they are spread or moved laterally. In removing the plunger from the molded material without spreading the screw-thread which it forms, the actuating-rod and its block are moved upward. This causes the pair of plunger-sections secured to the said block to be first closed laterally, and to then be moved upward vertically, and the rod, still moving upward, comes in contact with the actuating-block which actuates the said first-

named pair of plunger-sections and closes them laterally together, and the upward vertical movement of the case and its attachments removes said last-named plunger-sections from the mold or molded insulator.

Referring to the drawings, Figure 1 is a view of the plunger-case and plunger in vertical section upon the dotted line xx of Fig. 3. Fig. 2 is a vertical section of the plunger-case and plunger upon the dotted line yy of Fig. 3. Fig. 3 is a horizontal section of the plunger-case and plunger upon the dotted line zz of Fig. 1. Figs. 4, 5, and 6 illustrate in vertical section various positions of the parts to which reference will be hereinafter made. Fig. 7 is a view in plan of the end of the plunger inverted.

A represents the plunger-case. It is preferably cylindrical in form, and its ends are closed by the heads or caps $a a'$. The case A contains a movable head or block B and a movable block C. The block C is attached to the lower end of a rod or spindle c , which extends upward through a hole b in the upper end b' of the block B, and through the hole a^2 in the case-head a . (See Fig. 1.)

The block C has its sides $c c'$ parallel from its upper end c^2 (see Fig. 5) to its lower end c^3 , and its sides $c^4 c^5$ inclined from its upper end c^2 downward to the point c^6 , (see Fig. 2,) and from the point c^6 to the end c^3 the sides $c^7 c^8$ are parallel. (See Fig. 2.) On or in each of the inclined faces $c^4 c^5$ there is a dovetail groove $c^9 c^{10}$, (see Fig. 3,) and these dovetail grooves receive the dovetail tongues $d d'$ of the members D D' of the sectional plunger. Each of the members D D' is shaped as represented in Fig. 2—that is, it has the upper section d^2 , having the straight outer edge d^3 curved to fit the cavity b^2 of the movable head B, and the inclined inner face d^4 , from which the tongue extends. The sections d^2 are of the width of the wedge-block C.

From each of the sections extend the straight threaded extensions or sections $d^5 d^6$, and the lower end of each threaded extension or section has an inwardly-extending foot d^7 , the upper surface d^8 of which is inclined. The two members D D' are movable vertically with the wedge C to the lower end of the case, when their vertical movement is stopped and an opening or lateral move-

ment given them. The movable head B has two downwardly-extending sections or ends $b^3 b^4$, (see Fig. 5,) each of which has the inclined face or surface b^5 , (see Fig. 5,) in which is a dovetail recess b^6 , and these dovetail recesses b^6 receive the dovetail tongues $e e'$ of the members E E' of the plunger, each of these sections having the section or upper end e^2 provided with an inclined inner face e^3 , from which the tongue above referred to extends, and the recess e^4 in its outer face, (see Fig. 5,) which is inclined from the shoulder e^5 upward and outward. These recesses receive the inclined stops a^3 , extending from the inner surface of the case A. The lower portions e^6 of these members E E' of the plunger are threaded. From this it will be seen that the members E E' of the plunger are attached to the case A and are vertically movable with it and not with the movable head B, and that the movable head B is movable in the case A to separate or bring together the members E E', but not to otherwise move them.

The operation of the complete device is as follows: The parts prior to their downward movement have the position represented in Figs. 4 and 6—that is, the rod C has been moved upward sufficiently to bring the movable head B to the upper end of the case and the case is sufficiently elevated to remove the members E E' of the plunger from the mold. To then form the plunger in the mold, the case and the rod C are moved downward. This causes the wedge-block C and the members D D' of the plunger to be moved downward and also the movable head B. This downward movement of the movable head B spreads or separates the members E E' from their position represented in Fig. 6 to that represented in Fig. 5, and the movable head B then comes to rest. The movement of the wedge-block C and members D D' of the plungers continues until the stops $d^9 d^{10}$ upon the members D D' come in contact with the upper surface of the lower cap a' of the case, at which time the lower ends of the threaded sections are upon a line with the lower ends of the threaded sections of the members E E', when they come to rest so far as their vertical movement is concerned; but by the further movement of the block C they are spread apart or moved horizontally from their closed position represented in Fig. 4 to the position represented in Fig. 1, the lower end c^3 of the plunger coming in contact with the inclines d^8 upon the lower ends of the said sections and assisting in the spreading or opening movement. The plunger is then used in the ordinary way in which said plungers are employed in molding the insulator, and is then removed from the molded material, as follows: The upward movement of the rod C and its connected wedge-block C first draws the members D D' inward toward each other, this inward movement of these members being due to their dovetailed tongue-and-groove connections

with the inclined faces of the wedge-block C, and to the fact that the portions b^7 of said head serve as stops to prevent their upward movements. When these members have become closed against the straight lower portion of the said block and have been moved inward, so as to clear the portions b^7 of the movable head B, to positions which will permit them to enter the cavity b^2 of said head, the continued upward movement of the rod C and wedge-block C lifts the closed members D D' to the position shown in Fig. 2, where the upper ends of said members and of the wedge-block C are shown as being in contact with the upper portion b' of the movable head or block B. The further upward movement of the rod C and wedge-block C causes the head or block B to be lifted in the case A, and owing to the dovetailed tongue-and-groove connections of the upper portions of the members E and E' with the inclined lower part of the head or block B, the said members are now drawn together from the positions shown in Fig. 5 to the positions shown in Fig. 6, the stops a^3 on the case A engaging the lateral projections e^7 on the members E and E', and by thus preventing them from rising in the said case A compel them to move toward each other, thus freeing them from the molded insulator, and the case A may then be lifted from the mold.

Of course the device can be used for forming threads or undercut recesses or formation in any moldable material.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a press for molding insulators, the combination, with a case A, having stops a^3 , of a head or block B, movable in said case and having downwardly-extending parts $b^3 b^4$, with inclined surfaces b^5 , the plunger members E E', the upper parts of which have dovetailed tongue-and-groove connections with said parts $b^3 b^4$, and said members having projections e^7 beneath said stops, the wedge-block C, its operating-rod C, and the plunger members D D', having dovetailed tongue-and-groove connections with the inclined faces of said wedge-block, substantially as set forth.

2. In a press for molding insulators, the combination, with a case A, of a sectional plunger consisting of two parts or members E E', movable laterally in said case but held from longitudinal movement therein, two members D D', longitudinally and laterally movable in said case, a longitudinally-movable head or block B for operating said members E and E', and a longitudinally-movable wedge-block C for operating said members D D' and said head or block B.

3. The combination, with the case A, of the head or block B, movable in said case and having the recess b^2 , the plunger members D D', longitudinally and laterally movable in said case and arranged, when lifted, to enter at their upper parts in said case, the plun-

ger members E E', laterally movable in said case but held from longitudinal movement therein, said members E E' having dovetailed tongue-and-groove connections with said head
5 B, and said members D D' having similar connection with said wedge-block C.

4. The combination of the case A, having the stops a^3 , with the plunger members E E', having the shoulders e^5 and sections e^2 , shaped

as specified, with the actuating head or block 10 B, shaped and connected with the said sections e^2 , as specified, as and for the purposes described.

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Witnesses:

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J. M. DOLAN.