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PATENTED JAN. 17, 1905.

S. B. BURKHOLDER & C. G. GEYER.

MOLD FOR CONCRETE COLUMNS.

APPLICATION FILED JULY 27, 1904.

3 SHEETS--SHEET 1.

Fig. 1.

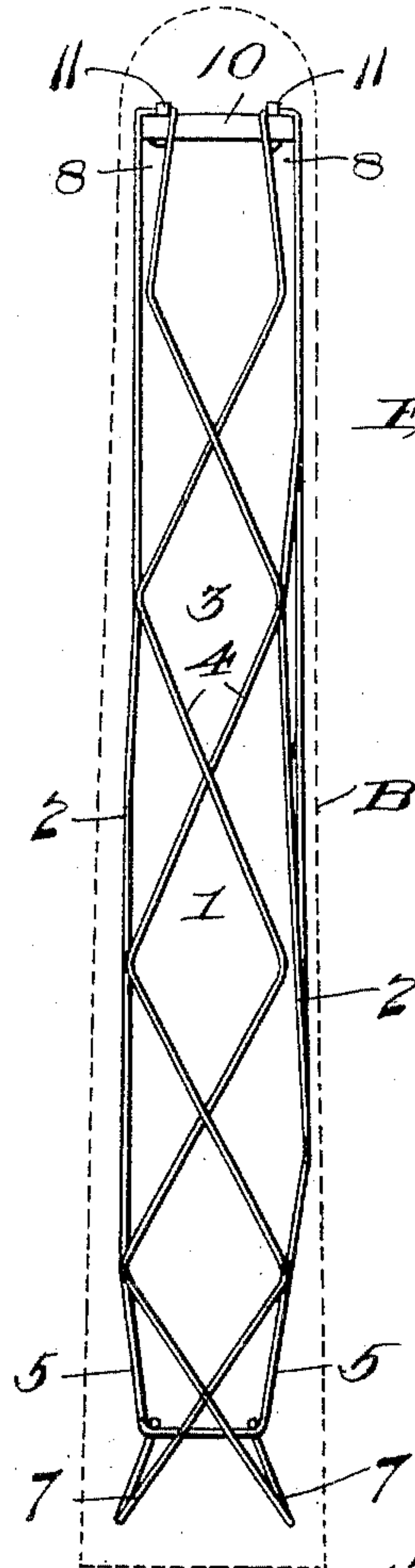
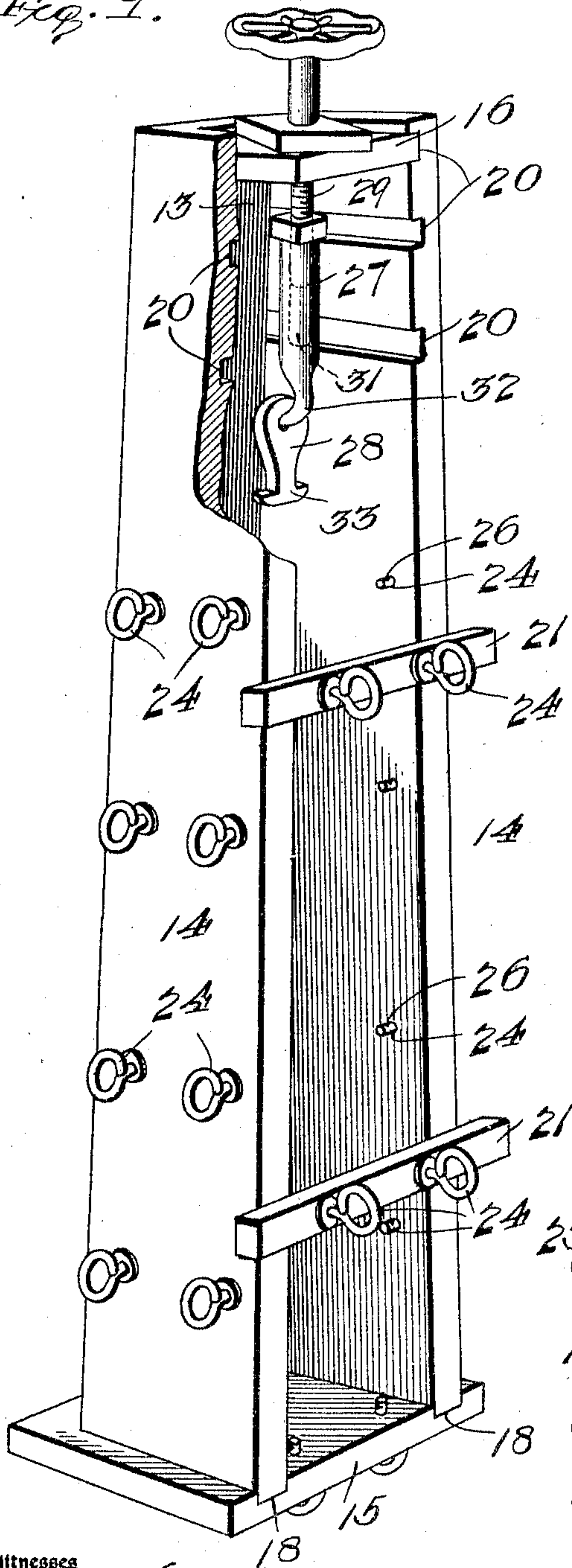


Fig. 8.

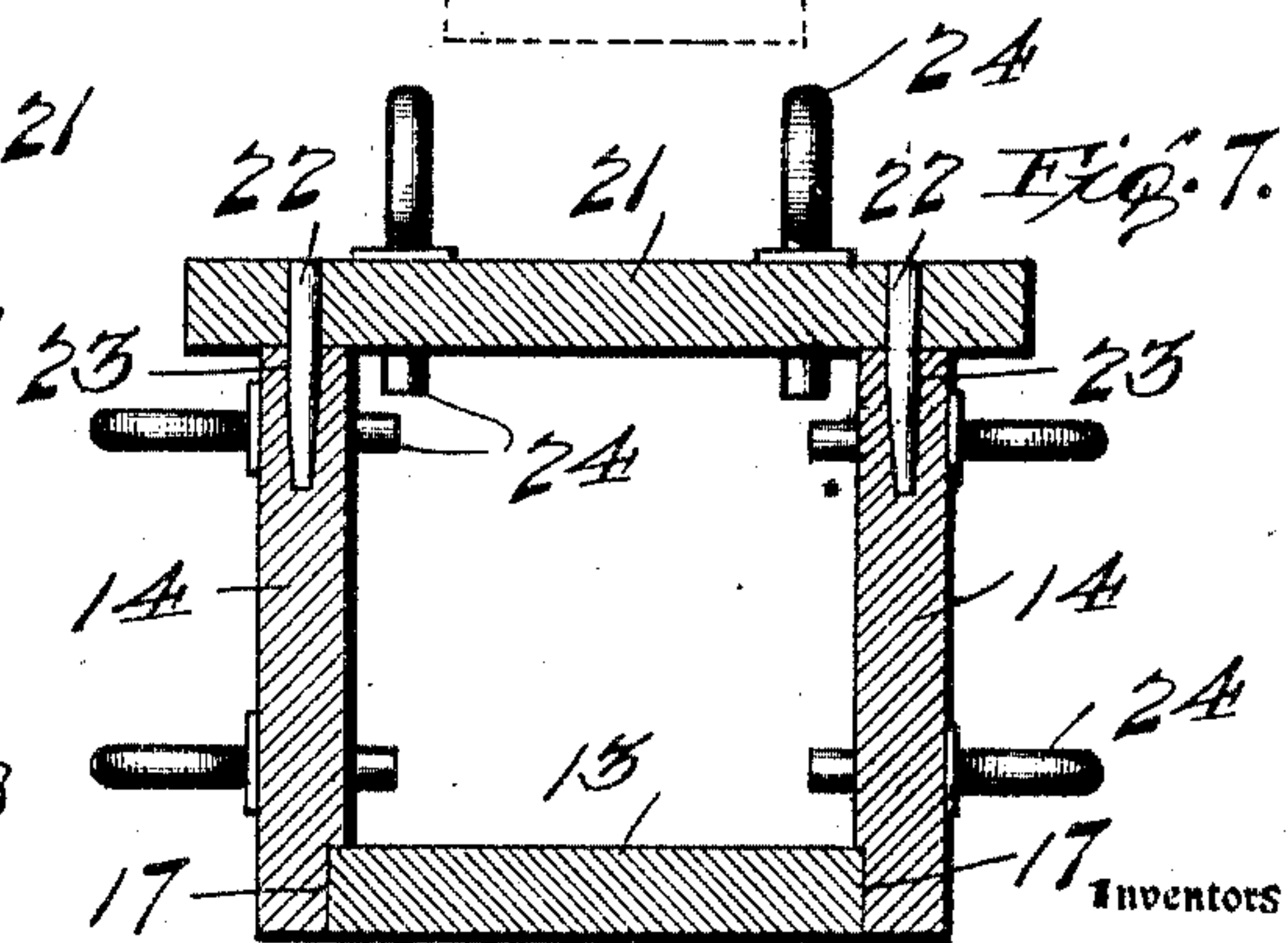


Fig. 7.

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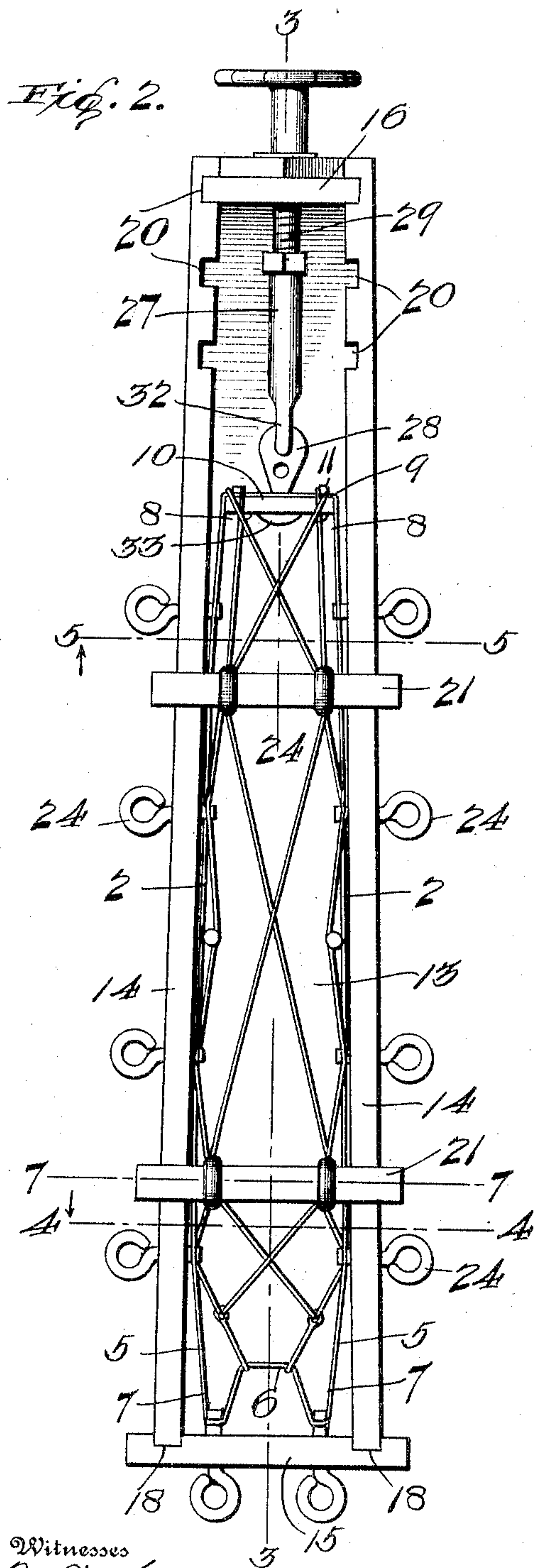
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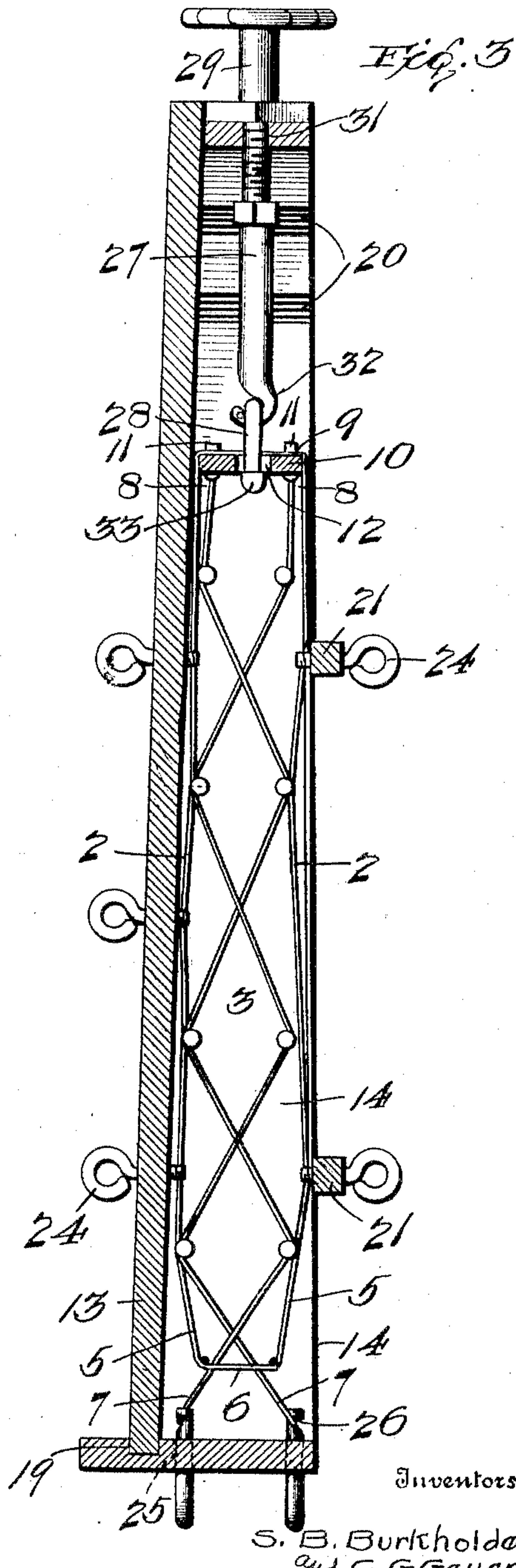
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APPLICATION FILED JULY 27, 1904.

3 SHEETS—SHEET 2.



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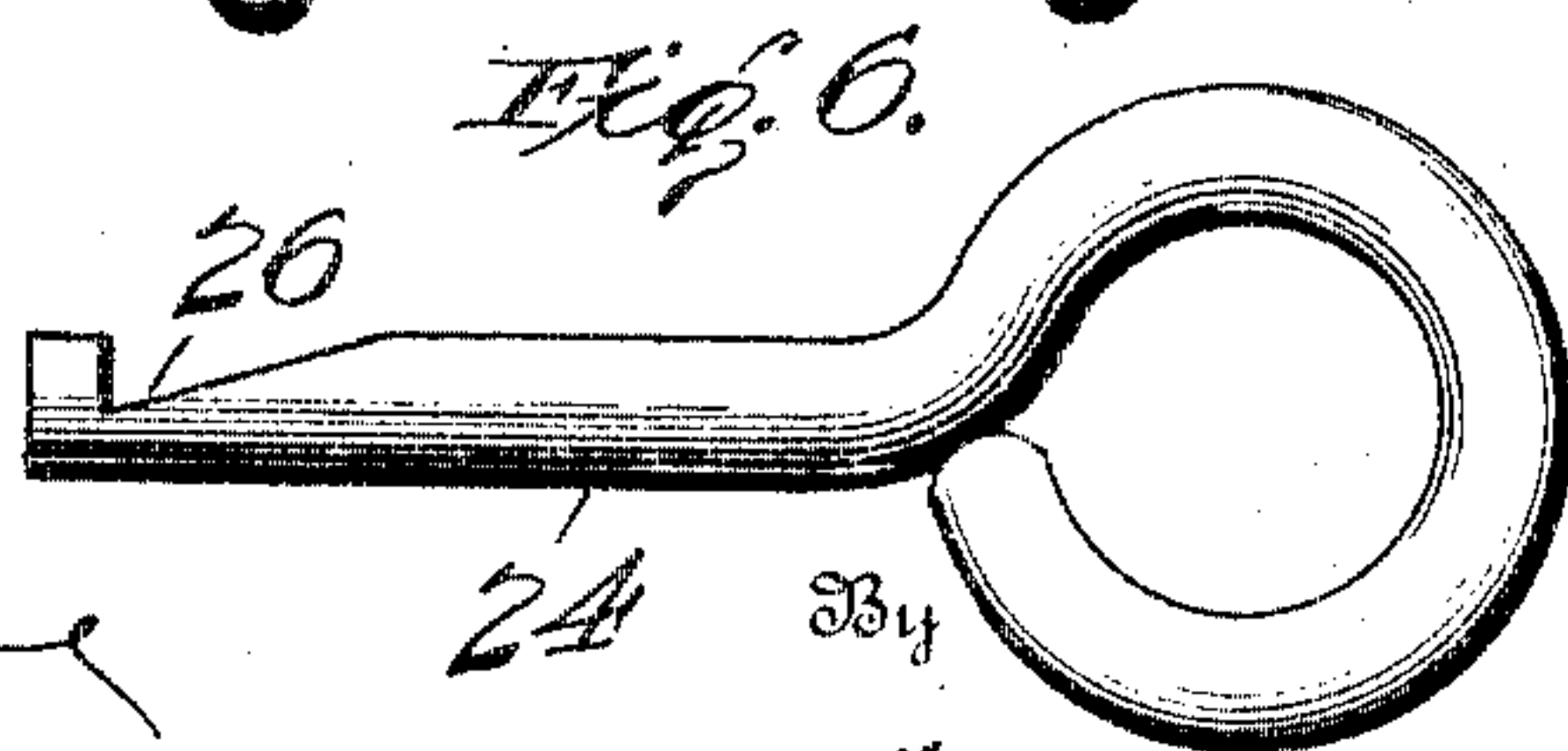
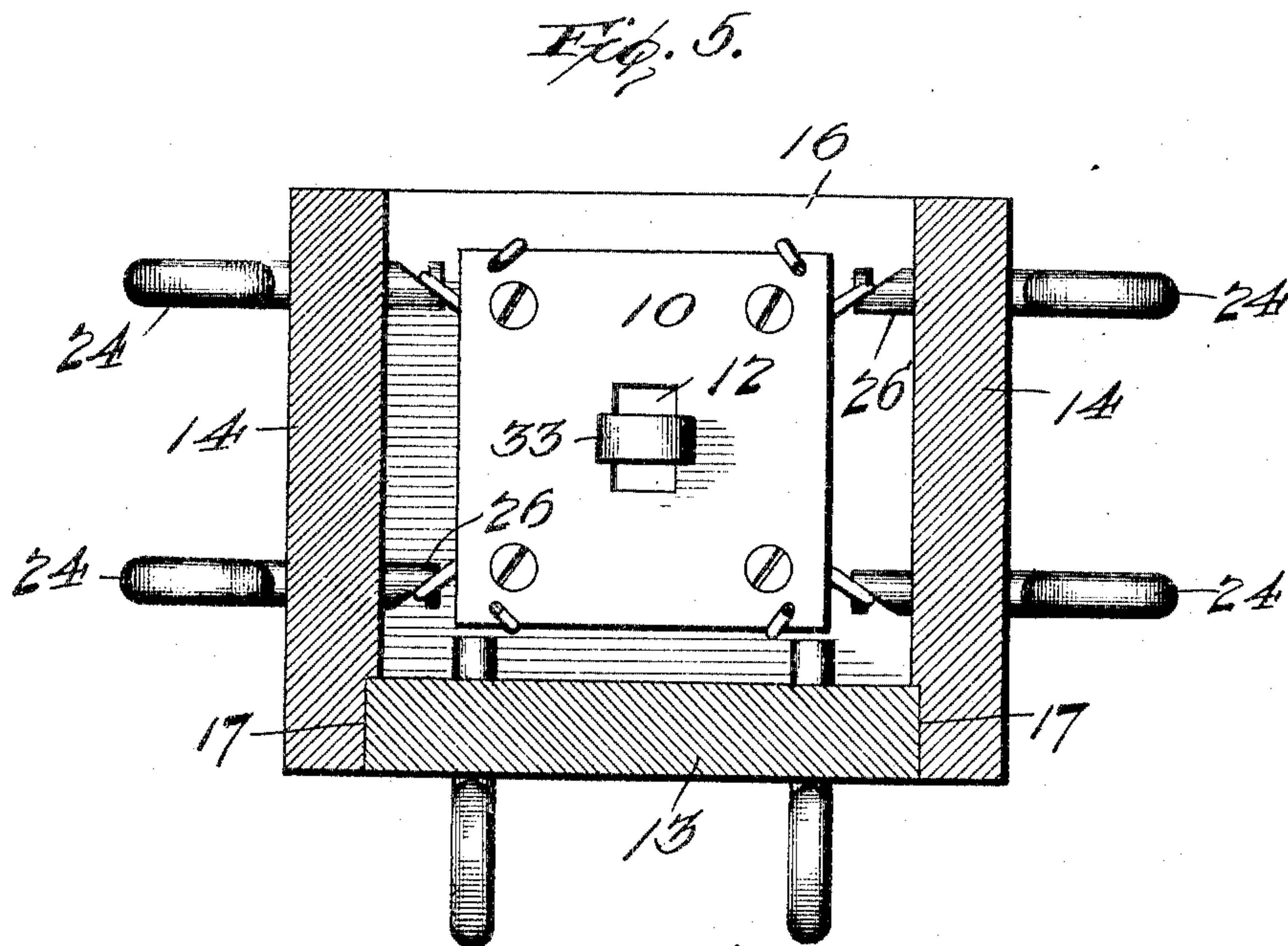
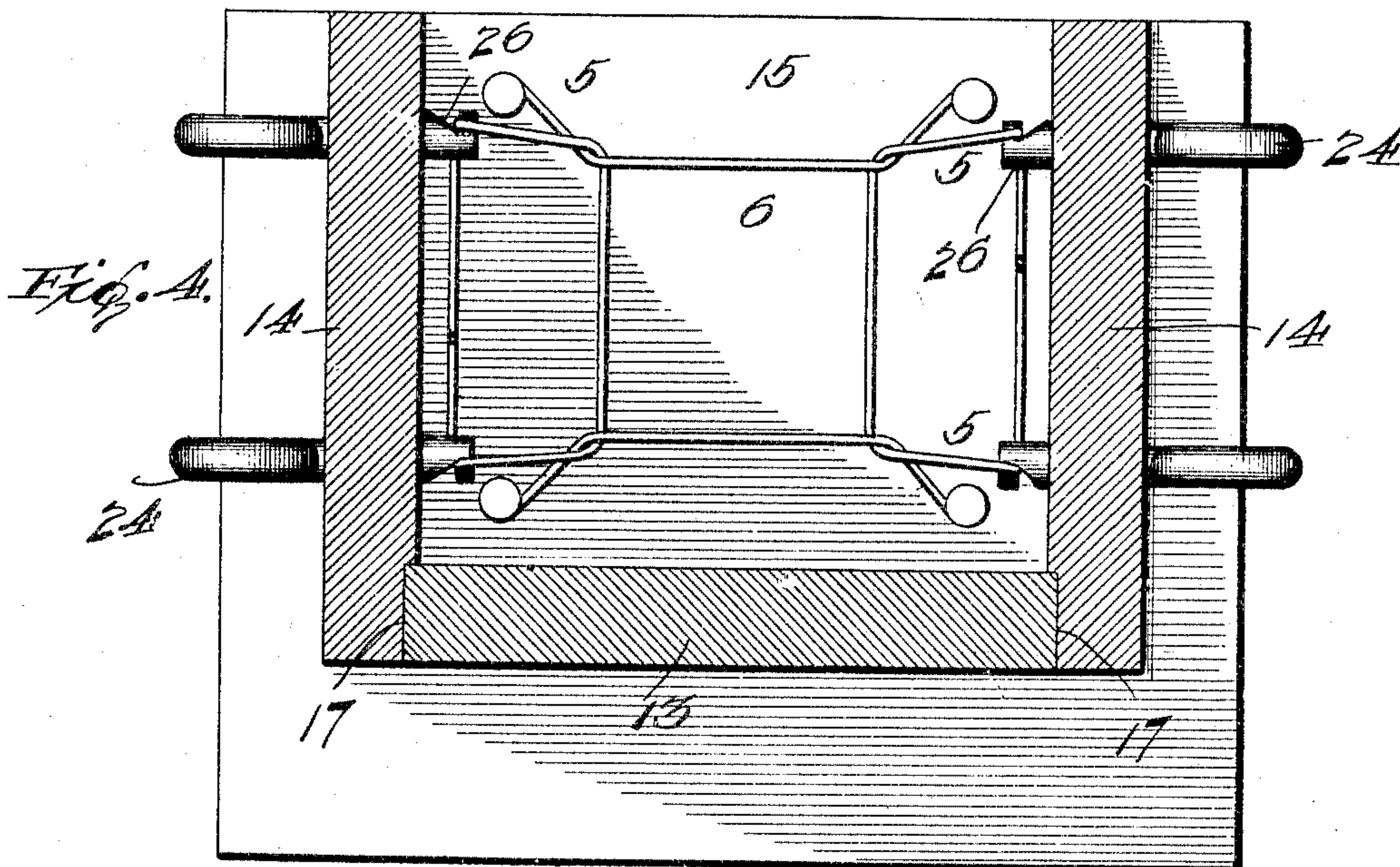
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APPLICATION FILED JULY 27, 1904.

3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

SAMUEL B. BURKHOLDER, OF WEST LEIPSIC, AND CHARLES G. GEYER,
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MOLD FOR CONCRETE COLUMNS.

SPECIFICATION forming part of Letters Patent No. 780,321, dated January 17, 1905.

Application filed July 27, 1904. Serial No. 218,418.

To all whom it may concern:

Be it known that we, SAMUEL B. BURKHOLDER, residing at West Leipsic, and CHARLES G. GEYER, residing at Leipsic, in the county of Putnam and State of Ohio, citizens of the United States, have invented certain new and useful Improvements in Molds for Concrete Columns, of which the following is a specification.

This invention relates to an improved mold for concrete and metal bodies, such as fence-posts, poles, and structural columns.

To this end the invention has specially in view an improved mold embodying simple and practical means for building up and forming therein a trussed wire core-frame and for placing and maintaining such frame under a stretching tension, so that the plastic body may be filled into and about the frame while in its stretched condition. The mold also involves means whereby the various elements may be readily released from the article after the plastic material has set.

With these and other objects in view, which will more readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts, which will be hereinafter more fully described, illustrated, and claimed.

The essential features of the invention are necessarily susceptible to structural modification without departing from the scope of the invention; but a preferred embodiment thereof is shown in the accompanying drawings, in which—

Figure 1 is a perspective view of a mold constructed in accordance with the present invention and showing the core-frame removed. Fig. 2 is a top view of the mold with the wire core-frame built up therein. Fig. 3 is a central longitudinal sectional view on the line 3 3 of Fig. 2. Fig. 4 is a cross-sectional view on the line 4 4 of Fig. 2. Fig. 5 is a similar view on the line 5 5 of Fig. 2. Fig. 6 is a detail view of the preferred form of lacing element employed. Fig. 7 is a cross-sectional view on the line 7 7 of Fig. 2. Fig. 8 is a detail view of the completed article, showing the wire core-frame in full lines.

Like reference characters designate corresponding parts in the several figures of the drawings.

The mold or molding apparatus contemplated by the present invention also acts in the capacity of a form or former for the building up therein of the trussed core-frame which sustains, protects, and strengthens the plastic or concrete body of the column. All of the elements of this core-frame cooperate with the parts of the mold, and as the latter is designed particularly for the construction of a core-frame of the special form shown in Fig. 8 of the drawings the essential features and characteristics of that frame will first be pointed out.

Referring to the completed article which is designed to be produced through the agency of the mold forming the subject-matter of the present application, it will be observed by reference to said Fig. 8 of the drawings that the concrete and metal column as an entirety essentially comprises a skeleton stretched wire core-frame 1 and a plastic or concrete body B filling and enveloping the said core-frame while under a stretching tension. The core-frame 1 is made up of a single wire or a plurality of wires of suitable gage and is usually of an oblong rectangular form.

The wire lengths constituting the core-frame are so arranged as to provide well-defined reinforced corner-strands 2, extending the full length of the wire body, and also the said wire lengths are so arranged as to provide the trussed frame side portions 3, formed by diagonally lacing and crossing the wire strands 4 continuously back and forth from the said longitudinal wire strands. At the bottom of the wire body the strands thereof are converged inwardly, as indicated at 5, and are shaped into a bottom horizontal rectangular wire base 6, from the corners of which wire base 6 the strands are looped to provide the outwardly-divergent pendent strengthening-spurs 7, which extend to and strengthen the bottom corner portions of the column or post.

At the top the corner-strands 2 are separated, as at 8, and passed laterally across the corrugated top holding-surface 9 of a cap-plate 10, from the corner portions of which

cap-plate project the retaining-studs 11, which are engaged by the separated strands 8 at their points of intersection. The said cap-plate 10 is further provided centrally therein
5 with a key-slot 12, which coöperates with a member of the tension device forming a part of the mold now to be described.

The mold proper is in the form of an open separable mold-box essentially consisting of a
10 bottom board 13, the opposite longitudinal side walls 14, a fixed head-piece 15, and a shift-able head-block 16, the latter constituting a part of the tension device hereinafter explained.

15 The board or member 13 has been designated the "bottom" board for convenience in locating the relative positions of the various parts of the mold-body. This bottom board, as well as the longitudinal side walls 14, is of
20 any desired width or length, according to the size and shape of the column to be constructed. To correspond to the general configuration of the fence-post illustrated in Fig. 8 of the drawings, the mold-box is of an oblong rectangular form, and the longitudinal side walls
25 14 extend the full length of the bottom board or base 13. There is no direct fastening connection between the bottom board and the longitudinal side walls 14; but to provide for the
30 proper registering of the parts the said longitudinal side walls are formed at their inner side edges with the longitudinal rabbets 17, receiving the side edges of the bottom board 13, and at this point it will be observed that
35 this bottom board is preferably of the tapering width when the mold is used in the formation of fence-posts or other columns of tapered form.

The fixed head-piece 15 forms a cap or closure for one end of the open mold-box, and
40 said head-piece is provided in its inner face with retaining-grooves 18 and 19, designed, respectively, for the reception of one end of the side walls 14 and one end of the bottom
45 board 13.

The shiftable head-block 16, in effect, constitutes the end of the mold-box opposite the head-piece 15; but the same is shiftable in a direction longitudinally of the mold-box, according to the length of the column or post
50 to be constructed therein. To provide for the shiftable mounting of the head-block 16, the longitudinal side walls 14 are provided adjacent to one end thereof with a series of transverse holding-grooves 20, which detachably
55 receive opposite side edges of the said head-block 16.

The several parts of the mold described are held in properly-assembled relation through
60 the stretching action of the wire strands constituting the core-frame 1, as will be presently described, and also through the employment of a plurality of individual supporting-bars 21, arranged transversely across the top of the
65 mold-box and provided at their end portions

with retaining-dowels 22, detachably engaging in the sockets 23, provided in the top edges of the side walls 14.

A plurality of core-forming lacing elements 24 are distributed throughout the bottom
70 board 13 and the side walls 14, and a plurality of such elements are also carried by the fixed head-piece 15 and the individual supporting-bars 21. All of the lacing elements 24 project into the mold-box and form lacing-
75 points, upon which the wire strands are held and laced in the operation of building up or shaping the core-frame 1 into the form illustrated in Fig. 8 of the drawings. A large number of these core-forming lacing elements
80 24 are preferably distributed throughout the bottom board and side walls to permit of making the network of trussing of as close or open mesh as desired. All of the said forming lacing elements are preferably duplicates
85 and also preferably consist of hooks mounted in openings 25 of the parts of the mold supporting the same. These hooks 24 are provided at their inner ends with shallow engaging notches 26, constituting the hooks proper.
90 These notches are formed in one side of the hooks, so that by a turning of the same they will become automatically disengaged from the wire strands and laced thereover. The lacing elements or hooks carried by the indi-
95 vidual supporting-bars 21 are preferably arranged in complementary relation, certain of the lacing elements or hooks mounted in the bottom board 13, so that the trussing formation of the core may be made the same at the
100 open top as well as at the bottom of the box. In practice it is desirable that the trussing upon all sides of the core-frame be substantially the same as shown in the drawings. In building up a core-frame within the mold-box
105 the cap-plate 10 is supported by the tension device, essentially comprising a swivel member 27, a catch-key 28, and a tension-screw 29. The tension-screw 29 is mounted to loosely turn in an opening 30, provided in the shiftable
110 head-block 16, and engages the threaded bore 31 of the swivel member 27, which is of tubular form. The said swivel member is provided at one end with a hook 32, engaged at one end portion of the catch-key 28, which key is pro-
115 vided at one end of a transversely-disposed shouldered engaging head 33, adapted to pass through the key-slot 12 of the cap-plate 10 and to be turned to a locking position beneath such cap-plate and transversely of the said
120 slot. After passing the cap-plate the wire strands are engaged thereover in the manner already described and are then woven back and forth over the complementary lacing-
125 hooks 24 until the core-frame is completely built up into substantially the form indicated, and in thus constructing the core the looped strengthening-spurs 7 are formed upon and engage with those lacings or hooks 24, which are mounted in and carried by the
130

fixed head-piece 15. After completing the core-frame the tension-screw 29 is tightened to stretch the entire frame and bring the same to a "singing" tension. With the core-frame
 5 under that tension the plastic or concrete body is filled into and about the frame and allowed to set, so that the frame will be maintained in the completed article under its original stretched tension. After the setting of the
 10 plastic material the various lacing elements or hooks are turned so as to be disengaged from the wires and withdrawn from the body. Also the tension-screw is loosened up, so that by manipulating the swivel member 27 the
 15 catch-key member 28 can be given a quarter-turn to bring it in position for withdrawal through the key-slot 12. Then the supporting-bars 21 can be removed and the sides, bottoms, and ends of the mold-box loosened
 20 up. The holes left in the concrete body by the lacing-hooks and the catch-key are pointed up with the concrete material to finish the article. During the process of formation holes may be pressed into the plastic body to
 25 provide means for attaching wires or boards thereto in the use of the same.

From the foregoing it is thought that the construction, operation, and many advantages of the herein-described mold will be readily
 30 apparent without further description, and it will be understood that various changes in the form, proportion, and minor details of construction may be resorted to without departing from the spirit of the invention or sacrific-
 35 ing any of the advantages thereof.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. In a mold of the class described, a mold-
 40 box having lacing elements for the formation thereon of a wire core-frame, and a tension device.

2. In a mold of the class described, a mold-
 45 box having withdrawable lacing elements for the formation thereon of a wire core-frame, and a tension device for stretching said frame.

3. In a mold of the class described, a sep-
 50 arable mold-box having lacing elements for the formation thereon of a wire core-frame, and a tension device for stretching said frame.

4. In a mold of the class described, a sep-

arable mold-box, having independently-with-
 drawable lacing elements for the formation
 thereon of a wire core-frame, and a removable
 tension device for said frame. 55

5. In a mold of the class described, a mold-
 box having side, end, and bottom members
 provided with lacing elements projecting into
 the box for the formation thereon of a wire
 core-frame, and separate supporting-bars ar- 60
 ranged over the open side of the box and also
 carrying lacing elements.

6. In a mold of the class described, a sep-
 arable mold-box having side, bottom, and end
 members provided with inwardly-projecting 65
 withdrawable lacing elements for the forma-
 tion thereon of a wire core-frame, separate
 supporting-bars spanning the open side of the
 mold-box and also carrying lacing elements,
 and a withdrawable tension device adjustably 70
 and detachably mounted within one end por-
 tion of the box.

7. In a mold of the class described, the com-
 bination with a cap-plate for engagement by
 a wire core and provided with a keyhole-slot 75
 therein, of a separable mold-box comprising
 a bottom board, longitudinal side walls ar-
 ranged at the longitudinal edges of the bot-
 tom board, a fixed head-piece engaging and
 capping one end of the bottom board and side 80
 walls, a shiftable head-block adjustably mount-
 ed within an open end portion of the box op-
 posite the fixed head-piece, and a plurality of
 supporting-bars arranged over the open side
 of the box and detachably engaged with the 85
 longitudinal side walls, a plurality of lacing-
 hooks mounted in the bottom board, the side
 walls, the fixed head-piece and the separate
 supporting-bars having their hook ends dis-
 posed within the mold-box, and a tension de- 90
 vice comprising a headed catch-key engaging
 the slotted cap-plate, a threaded swivel mem-
 ber connected with the catch-key, and a ten-
 sion-screw engaging the threaded swivel mem-
 ber and mounted in the shiftable head-block. 95

In testimony whereof we affix our signatures
 in presence of two witnesses.

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CHARLES G. GEYER.

Witnesses:

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 JOSEPH W. ARMSTRONG.