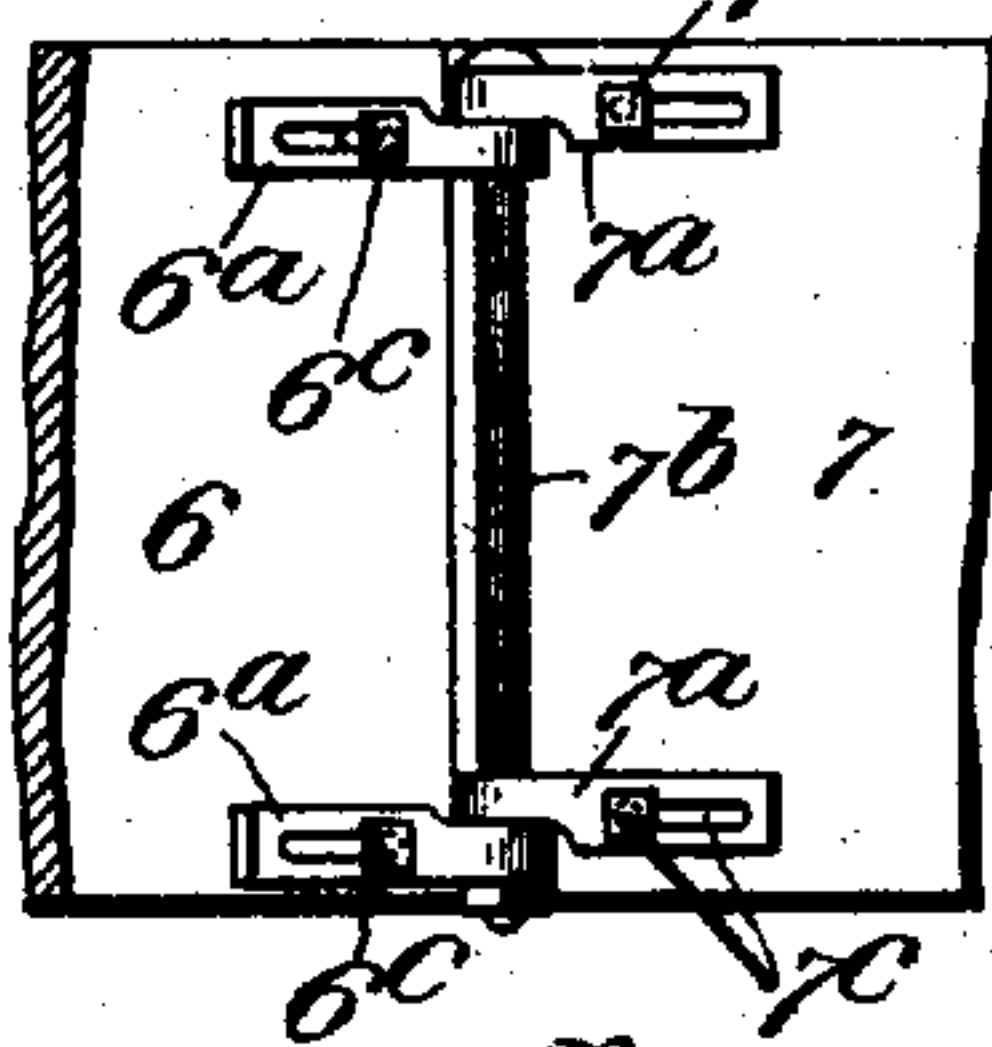
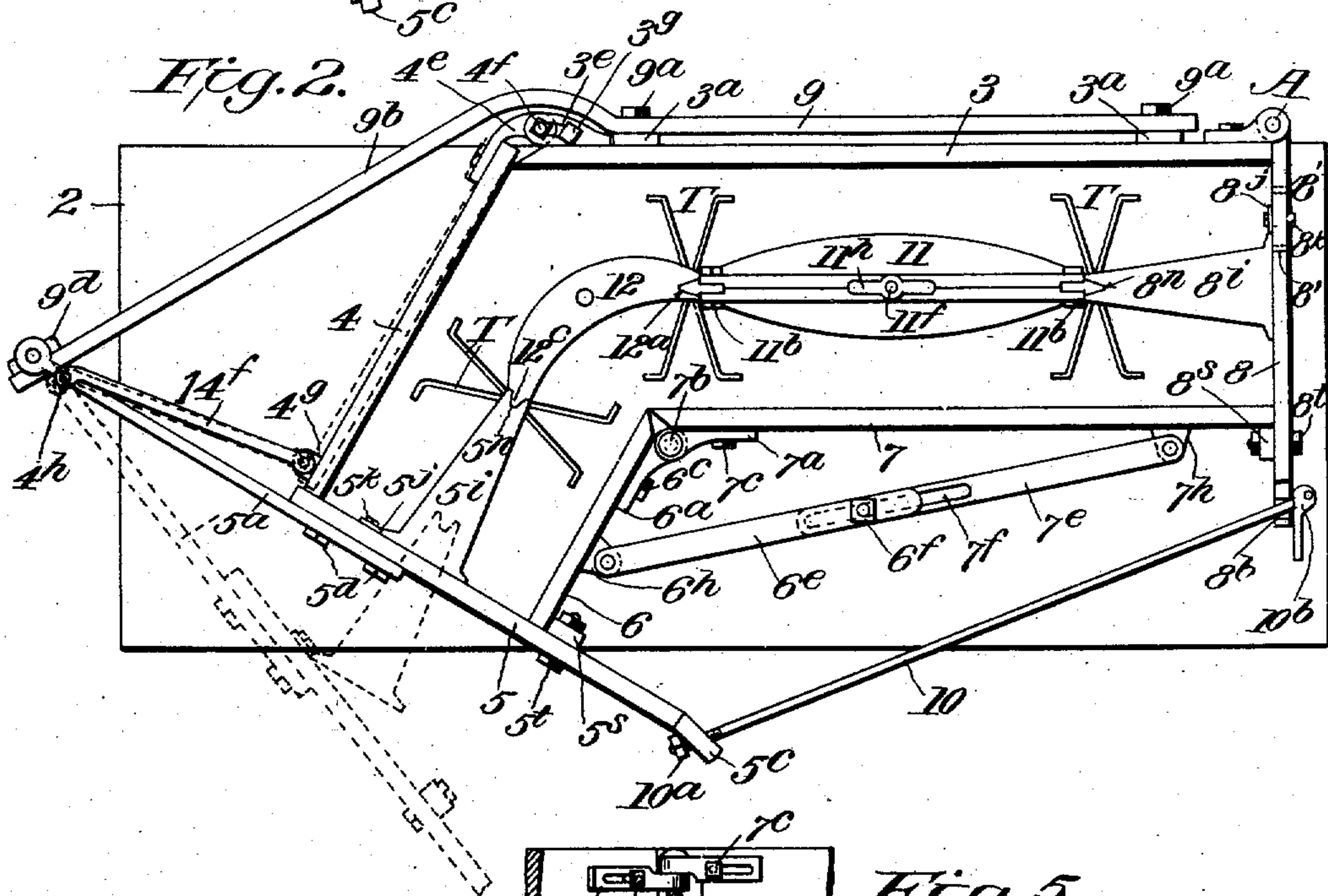
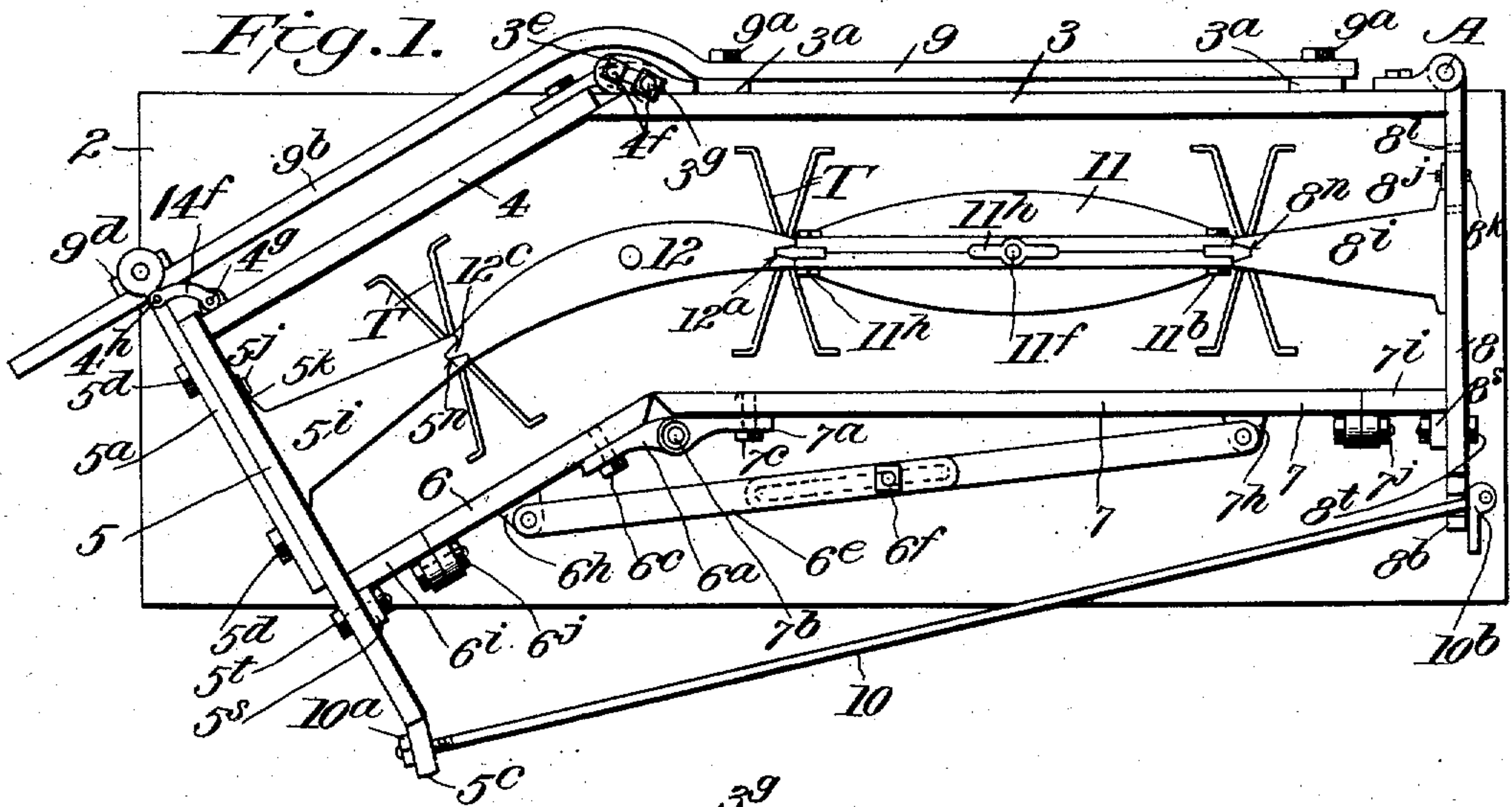


A. E. POTTER.
MOLD FOR CONCRETE BLOCKS.
APPLICATION FILED JUNE 18, 1910.

987,319.

Patented Mar. 21, 1911.

3 SHEETS—SHEET 1.



Witnesses

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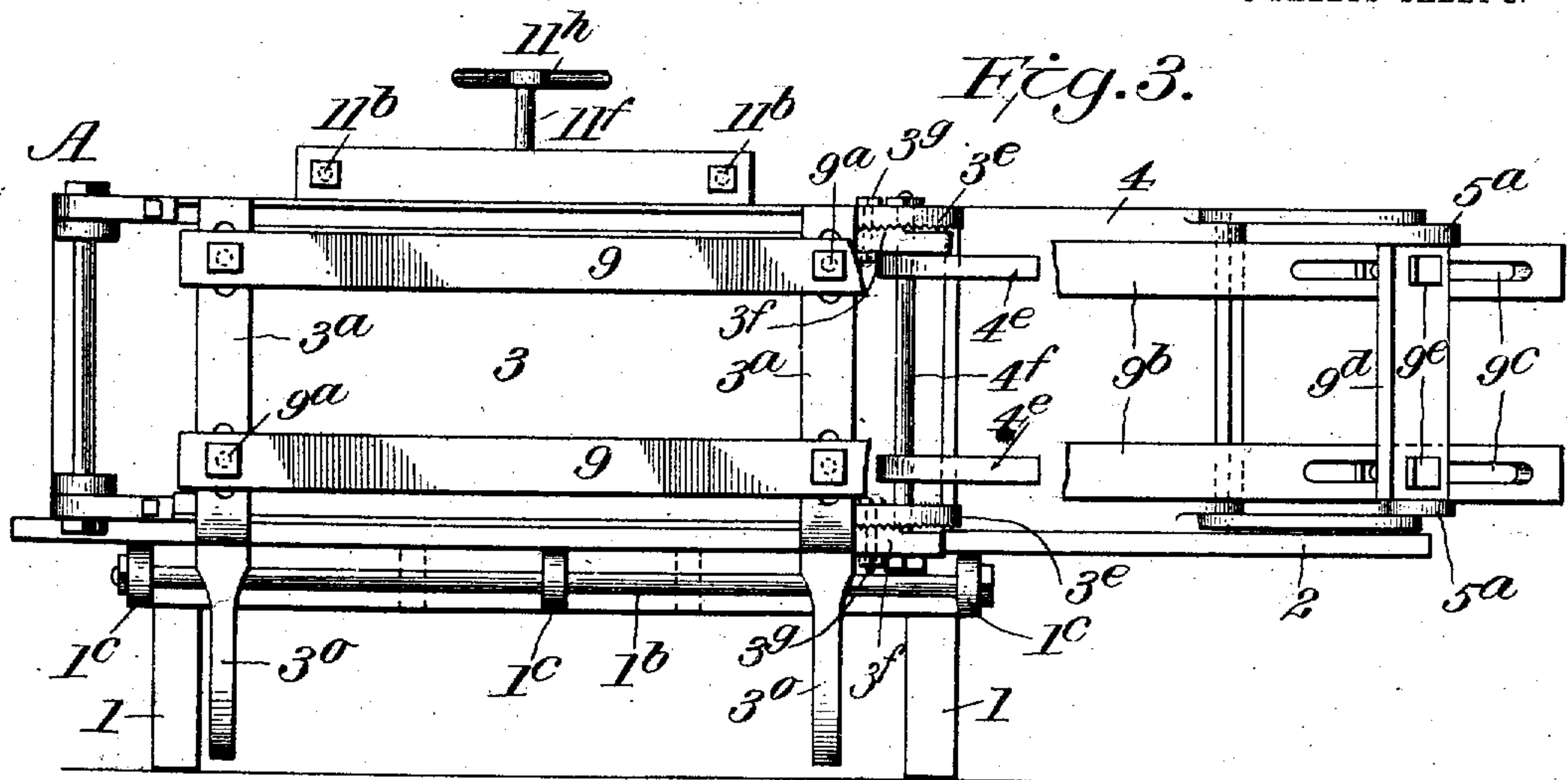
By Alexander S. Swill Attorneys

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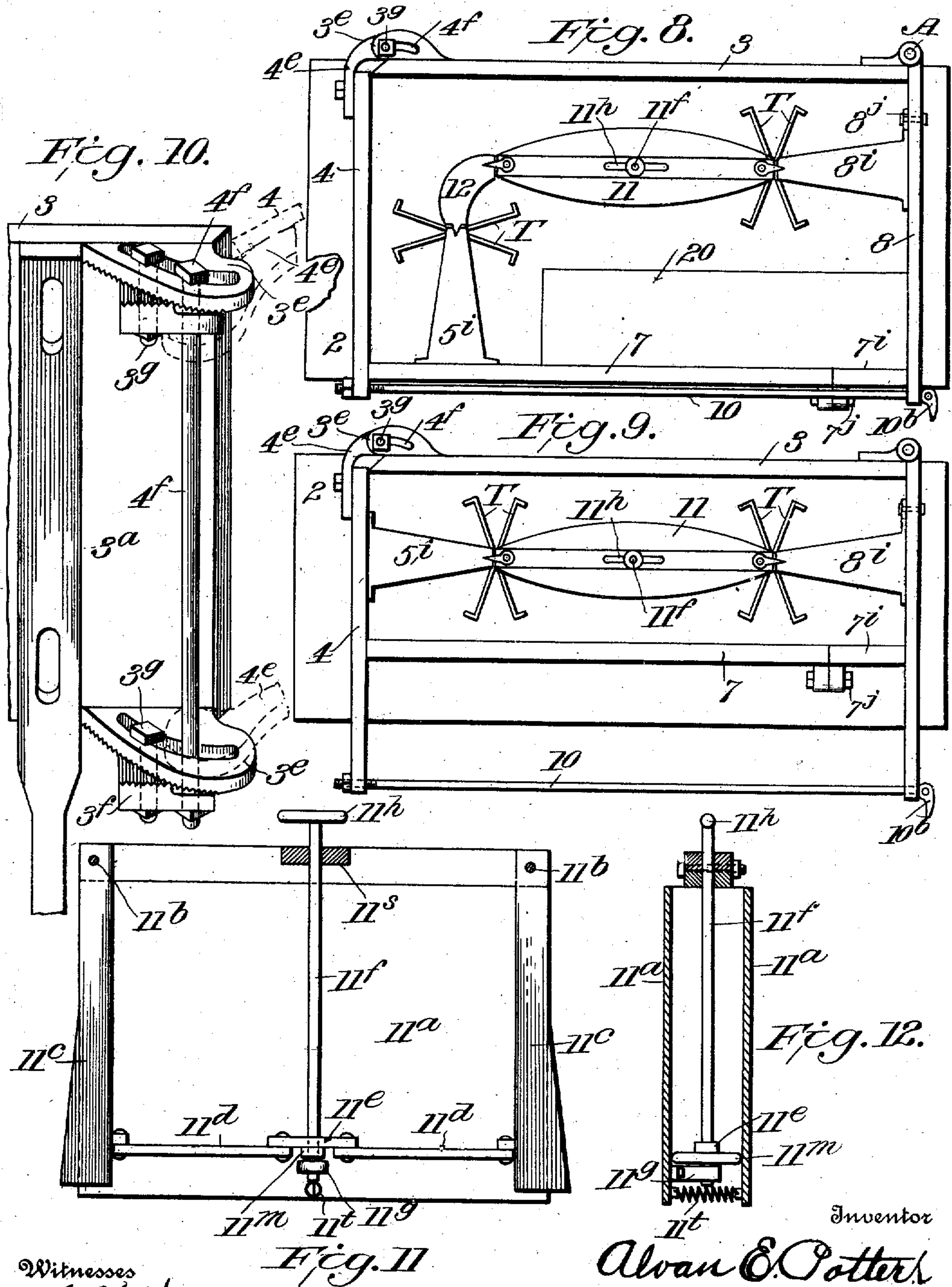
3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

ALVAN E. POTTER, OF PAULLINA, IOWA.

MOLD FOR CONCRETE BLOCKS.

987,319.

Specification of Letters Patent.

Patented Mar. 21, 1911.

Application filed June 18, 1910. Serial No. 567,680.

To all whom it may concern:

Be it known that I, ALVAN E. POTTER, of Paullina, in the county of O'Brien and State of Iowa, have invented certain new and useful Improvements in Molds for Concrete Blocks; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

This invention is an improvement in molds for forming hollow concrete blocks for building purposes; and its principal object is to provide an adjustable mold particularly adapted for forming angle blocks for use at the corner walls of buildings.

The invention comprises a novel construction of the adjustable mold; a novel construction of collapsible cores; and novel changeable O. G. cores for forming cavities in the blocks at the corners thereof.

Another object of the invention is to enable corner blocks to be molded formed of outer and inner wall sections preferably strongly connected or tied by metal bonds but not united by concrete so that there will be no way for moisture to penetrate from the outer to the inner wall sections.

The mold is adapted to form corner blocks of any angle desired from a right angle to 45°; and parts of the mold can be used to form the common straight blocks and corner blocks can also be made.

In the drawings—Figure 1 is a plan view of a complete apparatus adjusted for forming an angle block or corner block of about 30°. Fig. 2 is a similar view showing the machine adjusted for making an angle block of about 60°. Fig. 3 is a rear elevation of Fig. 1. Fig. 4 is a left-hand end elevation of Fig. 1. Fig. 5 is a detail of one of the adjustable hinges. Fig. 6 is a horizontal transverse section through the collapsible core. Fig. 7 is a detail view of one of the end cores. Fig. 8 is a view of the box adjusted for making right-angle corner blocks. Fig. 9 is a view of the box adjusted for making straight blocks. Fig. 10 is a detail view of the adjustable hinge connection between the end 4 and side 3. Figs. 11 and 12 are detail sectional views of the expansible center core.

In the accompanying drawings 1 designates the frame or stand upon which the mold is supported. A removable pallet or plate 2 can be placed upon this stand and

forms the bottom of the mold during the molding operation, and can be removed with the molded block to carry the latter to the drying room.

The mold proper comprises a rear side 3, a front side 7, a right-hand end 8, a left-hand end 5; a rear angle plate 4 is hinged to the left-hand rear end of the side 3; and a front angle plate 6 is hinged to the left-hand end of the front side 7. The rear side 3 is preferably of a predetermined constant length; it shapes one outer side of the main portion of the block to be cast, and its inner face may be surfaced in any desired manner so as to impart the desired surface finish to the outside of the concrete block. The side 3 is attached to upright pieces 3^a which depend below the top bar of the frame 1 and are transfixes by a rod 1^b which also transfixes extensions 1^c on the rear side of the frame 1; and thus hinge the mold to the frame and permit the front side of the mold to be tilted upwardly after the mold is open so that the pallet with the formed block can be withdrawn from the frame and another pallet 2 inserted to form the next block upon. The end 8 is hinged at its rear edge to the adjacent end of the rear side 3 as shown at A so it can be swung inward or outward;—and it is provided on its forward edge with a hook 8^b for engagement with a tie-rod 10 hereinafter referred to.

To the left hand end of the side 3 are secured slotted hinge plates 3^e to which are adjustably attached by means of bolts 3^g the hinge members 3^f (Figs. 3 and 10) through which passes a hinge rod 4^f which also transfixes similar but opposite hinge lugs 4^e on the rear end of the angle plate 4. The adjustable hinge members 3^f are provided to hold the hinge rod 4^f in a fixed position, with reference to the slotted hinge members 3^e, when said rod has been adjusted to the desired angle. The angle plate 4 is hinged on rod 4^f and thus adjustably hinged to the rear side 3 so as to enable it to be set at different angles to the side 3 and yet always maintain a very close joint between the inner faces of the angle plate 4 and side 3 when the mold is closed.

A pair of parallel bars 9 are removably secured to the pieces 3^a by means of bolts 9^a. These bars 9 project beyond the left-hand end of side 3 and are inclined forwardly, as shown at 9^b, and to them is adjustably attached an upright bar 9^d. To

this bar 9^a are pivoted hinge members 5^a, which are connected to the end 5. The bar 9^a is adjustably secured to arms 9^b by bolts 9^c transfixing slots 9^c in said arms. Preferably the end 5 is adjustably secured to the hinge members 5^a by means of bolts 5^d transfixing slots 5^b in said hinge members. It is desirable to have the end member 5 adjustably mounted relative to arms 5^b in order to facilitate adjusting the mold for blocks of different sizes and angles.

The outer or free end of the angle plate 4 must be locked in position when the bolt is adjusted for operation. A convenient means for doing this consists of links 14ⁱ which are pivoted to lugs 4^s on the rear side of the plate as shown, and to pins 4^h on the hinges 5^a. As the position of the angle plate 4 must vary, according to the angularity of the block to be formed, it is necessary that the connection between the points 4^s and 4^h be adjustable accordingly. The link 14ⁱ might therefore be made adjustable for this purpose or a series of interchangeable links of suitable lengths may be provided, and used as required.

The end 5 has an eye or hook 5^c on its free end for engagement with one end of a tie-rod 10 which may be adjusted in length in any desired way,—or interchangeable with like rods of different lengths, and as shown has a nut 10^a on one end and an eccentric 10^b on its other end which engages hook 8^b. This rod 10 is used to draw the ends 5 and 8 toward each other and hold the mold closed.

The front side 7 is preferably detachable and removable from the mold; but can be supported upon the pallet and confined between the ends 5 and 8. Its inner surface will give a finish to that portion of the inner surface of the block to be cast parallel with side 3, and it may be surfaced to give the desired finish to the inner face of the block.

The angle plate 6 is connected to the left-hand end of side 7 by means of a rod 7^b transfixing hinge members 6^a, 7^a, respectively secured to the outer sides and adjacent ends of the members 6 and 7. These hinge members 6^a, 7^a, are preferably slotted and adjustably secured to the plate 6 and side 7 by means of bolts 6^c and 7^c so as to enable the plate 6 to be adjusted at an angle to side 7 and yet always maintain a close joint between the inner meeting edges of the said plate and side, the said meeting edges being preferably beveled as shown to enable a close joint to be maintained therebetween in all the various positions in which plate 6 may be adjusted. The plate 6 and side 7 are also connected by means of brace rods or bars 6^e, 7^e, which are preferably adjustably connected by a bolt 6^f attached to rod 6^e and engaging a slot 7^f in

rod 7^e. The rod 7^e is pivotally connected to a lug 7^h at the right-hand end of member 7, while rod 6^e is pivotally connected to a lug 6^h on the plate 6. After the plate 6 is adjusted to the proper angle to side 7, it is locked in position by tightening the nuts or bolts 6^c, 7^c and 6^f.

The side 7 and plate 6 are made of the lengths required for the smallest angle block to be cast in the mold; and in order to cast larger blocks these parts 6 and 7 must be made extensible in size or length. One convenient means of doing this is shown in the drawings, and as shown in Fig. 1, I provide extension pieces 7ⁱ and 6ⁱ which are removably secured to the outer ends of the side 7 and plate 6 respectively by means of bolts 7^j and 6^j transfixing adjacent lugs at the meeting edges and outer side of the extension pieces and parts 6 and 7. These extension pieces may be connected to the parts 6 and 7 in any other desired manner. When such extension pieces are employed I propose to provide interchangeable sets thereof; to be used in accordance with the size of block to be formed. I do not however consider the invention restricted to this means of varying the length of the parts 6 and 7.

The plate 6 and side 7 are properly positioned on the mold by means of stop bars 5^s and 8^s adjustably attached to the inner faces of ends 5 and 8 by means of bolts 5^t and 8^t transfixing holes in the ends, said ends may be provided with a series of holes for the engagement of the bolts 5^t, 8^t to allow ready adjustment of the stop bars.

To the ends 5 and 8 are respectively attached end cores 5ⁱ and 8ⁱ which are preferably hinged at their inner edges to the ends as shown at 5^j, 8^j; the hinges allow the ends 5 and 8 to be swung outward after the block is formed, and the cores withdrawn endwise from the green molded block without cracking or breaking the latter. The hinges 5^j and 8^j are preferably adjustably attached to the ends by bolts 5^k and 8^k which can be received in any of the proper series of holes 5^l, 8^l in the end pieces 5 and 8. This adjustability of the end cores is necessary in order to enable them to be properly centered between the front and rear sides and plates for the several different sizes, thicknesses or widths of blocks which can be formed on the mold.

In order to form a continuous hollow space in the block intermediate the end cores 5ⁱ, 8ⁱ, I provide a main collapsible core 11 and corner core 12. The collapsible core 11 (Figs. 6-11 and 12) is preferably composed of opposite convex walls 11^a which are loosely connected at top by bolts 11^b. Intermediate the meeting ends of these walls 11^a are placed wedge-bars 11^c which are pivotally connected by means of links 11^d with

arms 11^e on a vertical shaft 11^f journaled to a top piece 11^s and in a bracket 11^z attached to one of the members 11^a, and which shaft can be rotated by means of a handle 11^h.

5 On the shaft 11^f of the core is a cross piece 11^m which braces the central portions of the walls 11^a of the core when the latter is expanded; and a spring 11^t may be connected to the sides 11^a below bracket 11^z to draw
10 the sides toward each other and cause the mold to normally contract. When shaft 11^f is turned in one direction the wedge bars 11^c are projected outwardly and force the sides 11^a apart and expand the core. And
15 when turned in the opposite direction the wedges are retracted and the sides 11^a of the core can move more closely together and contract the core.

The inner ends of the end cores 5ⁱ, 8ⁱ, are
20 preferably notched as shown at 5ⁿ and 8ⁿ, and when the core 11 is placed adjacent the end core 8ⁱ and its wedge bar 11^c is projected, the latter will engage notch 8ⁿ and thus prevent lateral displacement of the collapsible
25 core, and at the same time will make a closure preventing the passage of concrete between the ends of the cores 11 and 8ⁱ.

To close the space between the left-hand end of the collapsible core 11 and the left-
30 hand end core 5ⁱ the corner cores 12 are used. These cores may be made extensible or interchangeable as the distance between the cores 5ⁱ and 11 will vary according to the curvature and angularity of the block being
35 formed. I propose to make them interchangeable, and provide a set of such corner cores adapted to suit different styles and sizes of angle blocks to be formed on the machine; such corner cores are constructed
40 substantially alike except that they are curved on an arc to suit the different angle blocks to be formed. Each corner core has a notch in one side, as shown at 12^a, for engagement of a wedge bar 11^c of the collapsi-
45 ble core, and it may have a notched rib 12^c on its other edge to engage the notch 5ⁿ in the ends of core 5ⁱ. The corner cores 12 are preferably made slightly tapering being smaller at bottom than at top so they can
50 be withdrawn from the molded block.

Operation: As shown in Fig. 1, the mold is set to make an angle block of about 30°, and the side 7 and angle plate 6 as length-
55 7ⁱ. The thickness of the block is determined by the distance between the sides 3 and 7 and plates 4 and 6, which is regulated by adjusting the stops 5^t and 8^t on the ends 5 and 8. The end cores 5ⁱ and 8ⁱ are also ad-
60 justed into central position on the ends 5 and 8. The collapsible core 11 is then placed in the mold next end core 8ⁱ, and a corner core 12 of suitable curvature and size is inserted between the collapsible core 11 and the end
65 core 5ⁱ. Wire ties T of any suitable kind

may be inserted between the cores as indicated in the drawings so as to form bonds between the front and rear sections of the molded block. If it is desired to make a block of greater angle, the mold is adjusted
70 accordingly. Fig. 2 shows it adjusted for making an angle block of 60°; the extension pieces 6ⁱ and 7ⁱ being removed. The drawings show but two of the many adjustments of which the mold is capable. By turning
75 the angle plate 4 at right angles to the side 3 and properly lengthening the side 7ⁱ, or substituting a straight piece therefor, a rectangular block can be cast in the machine. After a block is formed the collapsible core 11 is
80 contracted and removed; and the ends 5 and 8 are swung outward to withdraw the end cores 5ⁱ and 8ⁱ from the block. The corner core 12 is lifted out, and then the side 7 and angle plate 6 are removed. The remaining
85 parts of the mold can then be swung upwardly on the hinge rod 1^b and the pallet with the formed block removed from the machine. When a number of the same size of blocks is to be made, the only part that
90 has to be unfastened in order to open the mold is the clamp 10^b, all the parts being so hinged and connected in position that a block can be removed from the mold and the mold reset to form another block very ex-
95 peditiously. In making a small right-angled block the parts of the mold can be adjusted as shown in Fig. 8. In this case the end 5 and angle plate 6 can be detached, and the angle plate 4 swung across and in
100 contact with the ends of the sides 3 and 7, a suitable extension piece 7ⁱ being attached to the side 7 to make it correspond in length with the side 3. A suitable corner core 12 is inserted and a filler block 20 is placed in
105 the mold as shown. In this instance the end core 5ⁱ is detached from the end 5 and attached, in suitable position, to side 7. Fig. 9 shows the parts adjusted for forming a straight block. In this instance the end
110 plate 5 and angle plate 6 are detached, and the end core 5ⁱ is attached to the angle plate 4 which is now adjusted to form one end of the mold. The adjustment of the other parts is obvious from the drawings.
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What I claim is:

1. In a mold, the combination of a rear side, bars attached thereto and extending beyond one end thereof, an upright bar attached to the projecting ends of said bars, an end member hinged to said upright bar, an angle plate hinged to said rear side adjacent said end member, an end member hinged to the opposite end of said rear side, and a front side and an angle plate interposed between the end members.
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2. In a cement block mold, the combination of a rear side, an angle plate hinged to one end thereof, an end piece hinged to the other end thereof, a removable front side, an
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angle plate connected thereto opposite the first angle piece, and an adjustable swinging end piece having a mediate hinge connection to the rear side and closing the space between the angle plates.

3. A mold for forming concrete blocks comprising a rear side, an angle piece connected to one end thereof, bars connected to said rear side and projecting beyond said angle piece, an end member adjustably hinged to the said bars, a front side, and an adjustable angle plate connected therewith.

4. In a mold for forming concrete blocks, the combination of a rear side, bars connected to this rear side and projecting beyond one end thereof, an end member adjustably hinged to the extension of said bars, a front side, and adjustable angle plates respectively located between the adjustable end member and the adjacent ends of the front and rear sides.

5. A mold for forming concrete blocks comprising a frame, and a pallet thereon, with a rear side hinged to said frame and adapted to rest on said pallet, bars connected to said side and projecting beyond one end thereof; an end member hinged to the projecting ends of said bars, an angle piece hinged to said rear side adjacent said end member; an end member hinged to the opposite end of said rear side, all said parts connected to the rear side being swingable upwardly with the rear side on the hinges, a removable front side, and an angle plate connected to said front side opposite the other angle plate.

6. In a mold, the combination of a side, brackets attached to one end thereof having

curved slots, adjustable plates clamped to said slotted brackets, and a rod attached to said plates and having its ends entered in the slots in said brackets; with an angle plate, and hinge members attached to said angle plate and connected to said rod, substantially as described.

7. In a mold, the combination of brackets attached to one end of one side of the mold and having curved slots, plates adjustably attached to said brackets by bolts transfixing the plates and engaging said slots; a rod attached to the plates and having its ends entered in the slots in the brackets, and an angle plate hinged to said rod, substantially as described.

8. A collapsible center core comprising opposite convex side walls and movable wedge bars located between the ends of said walls and pivoted thereto at their upper ends, and adapted to project outwardly between the ends of the walls to force them apart and expand the core, the outer edges of said wedge bars projecting beyond the ends of the side walls; means for projecting and retracting said wedge bars comprising a central shaft, arms on said shaft, links pivotally connecting the opposite ends of said arms to opposite wedge bars, and brace arms on said shaft adapted to centrally brace the walls when the mold is expanded.

In testimony that I claim the foregoing as my own, I affix my signature in presence of two witnesses.

ALVAN E. POTTER.

Witnesses:

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M. L. PETERSON.