

No. 702,119.

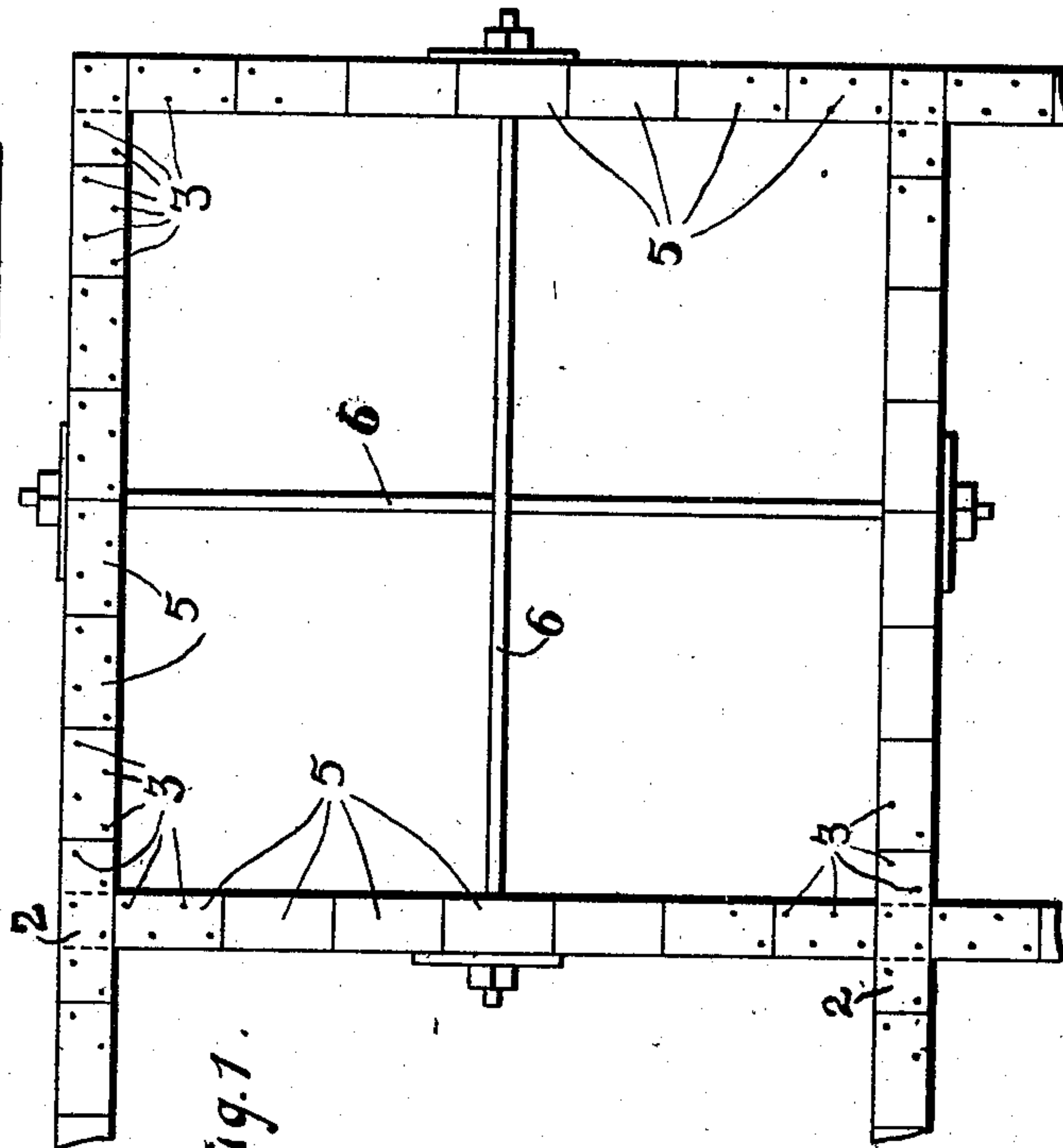
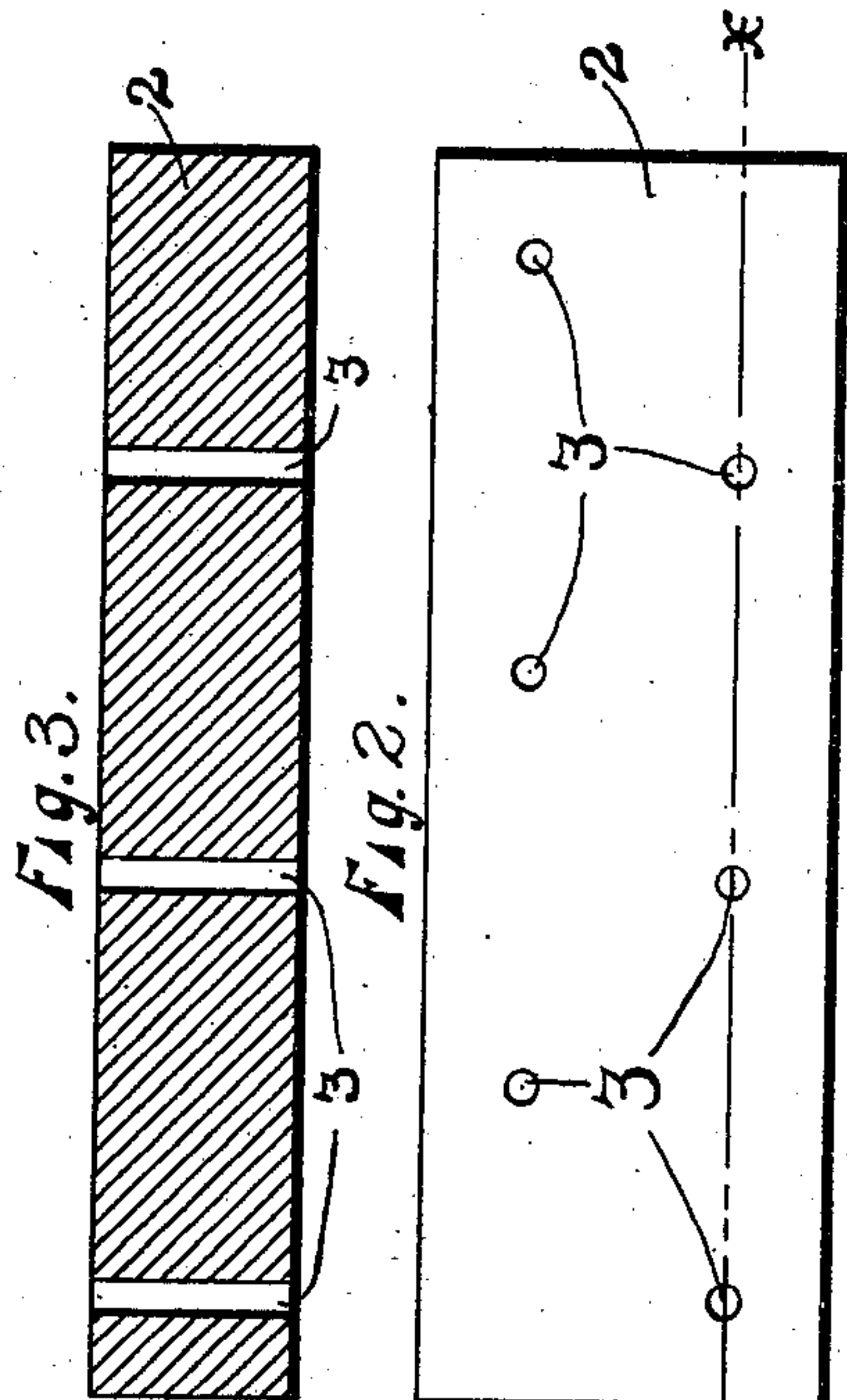
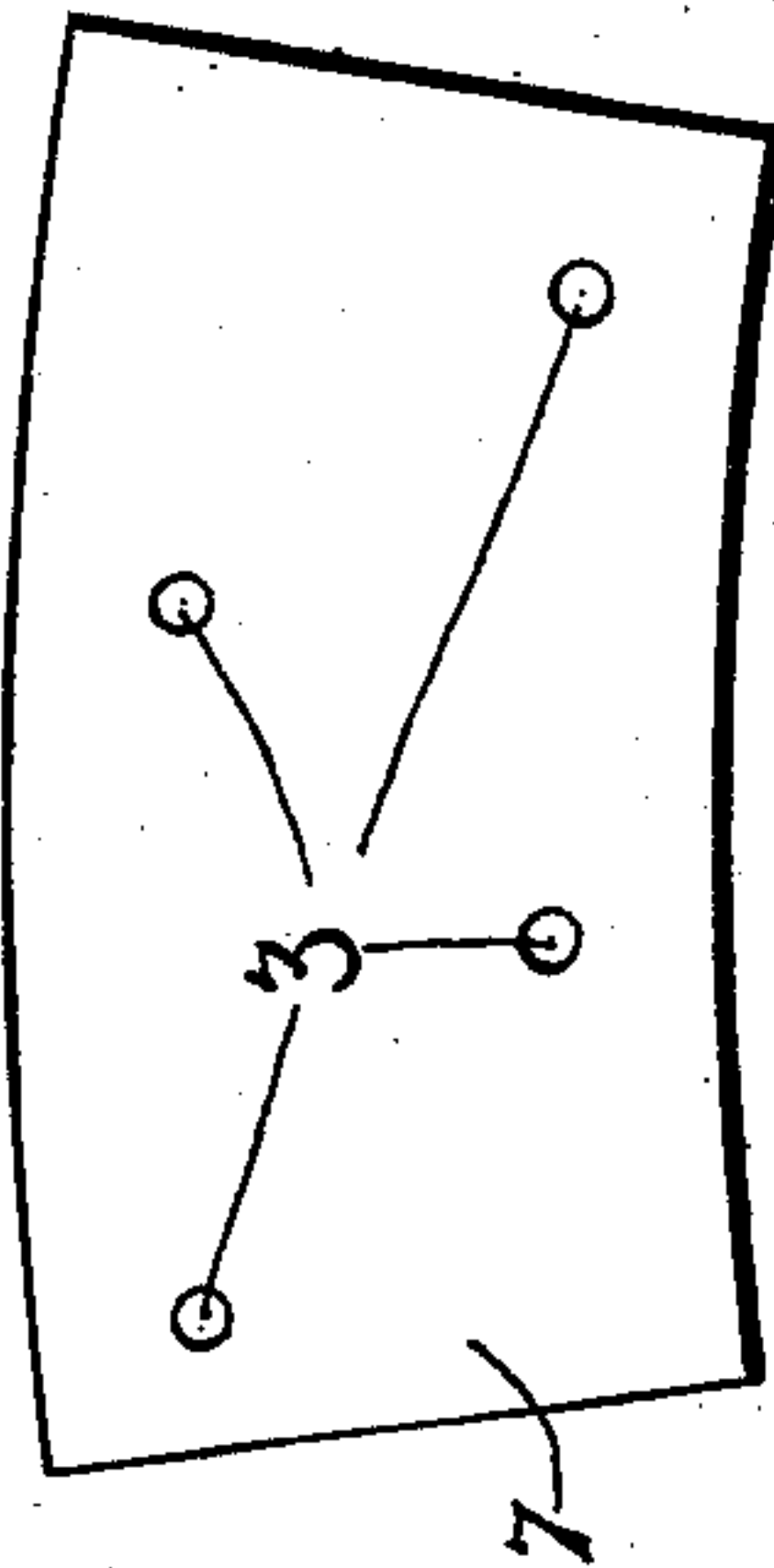
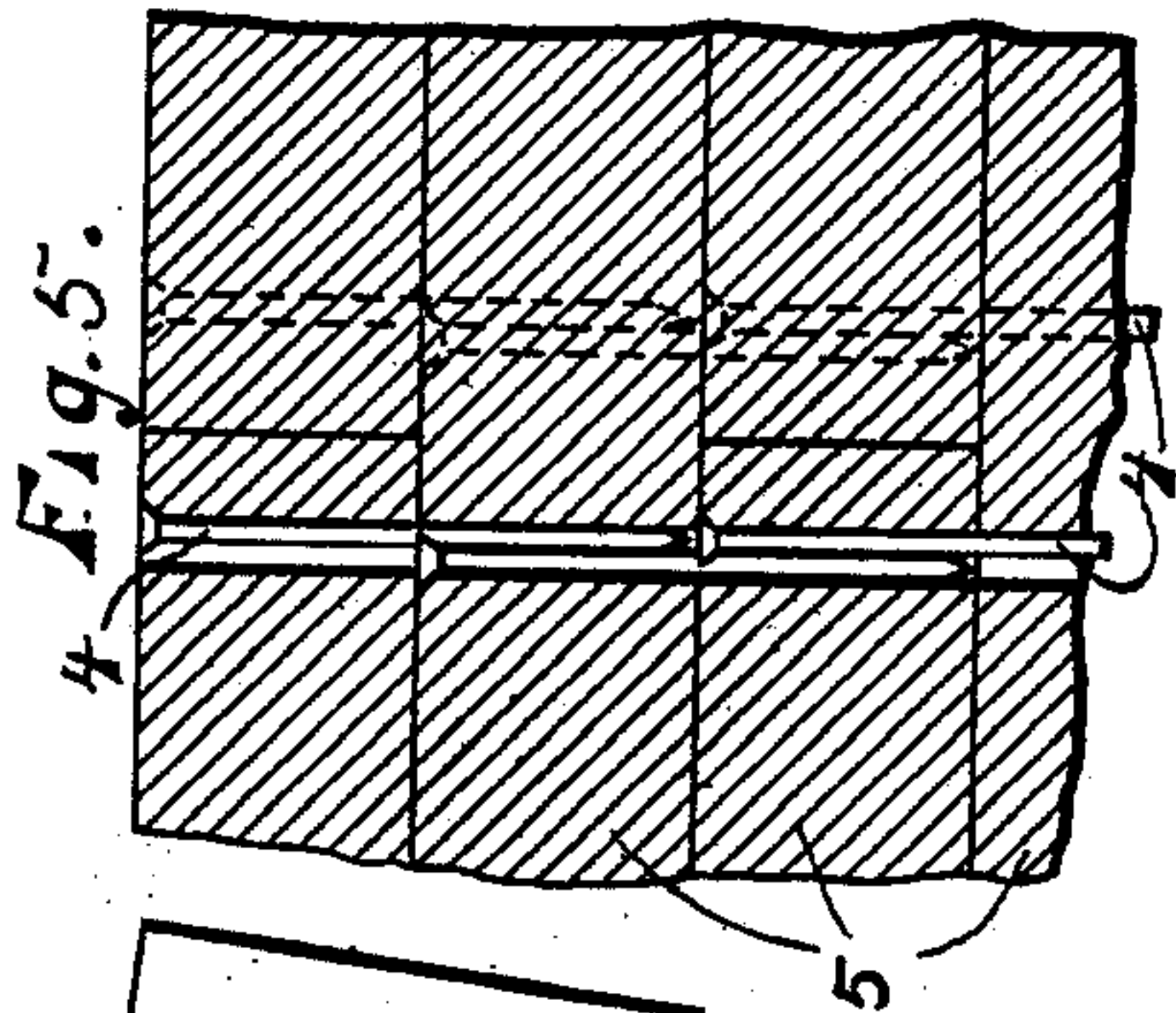
Patented June 10, 1902.

S. H. TROMANHAUSER.
BRICK FOR STORAGE BIN CONSTRUCTION.

(Application filed June 17, 1901.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES.
Richard Paul
M. C. Norman

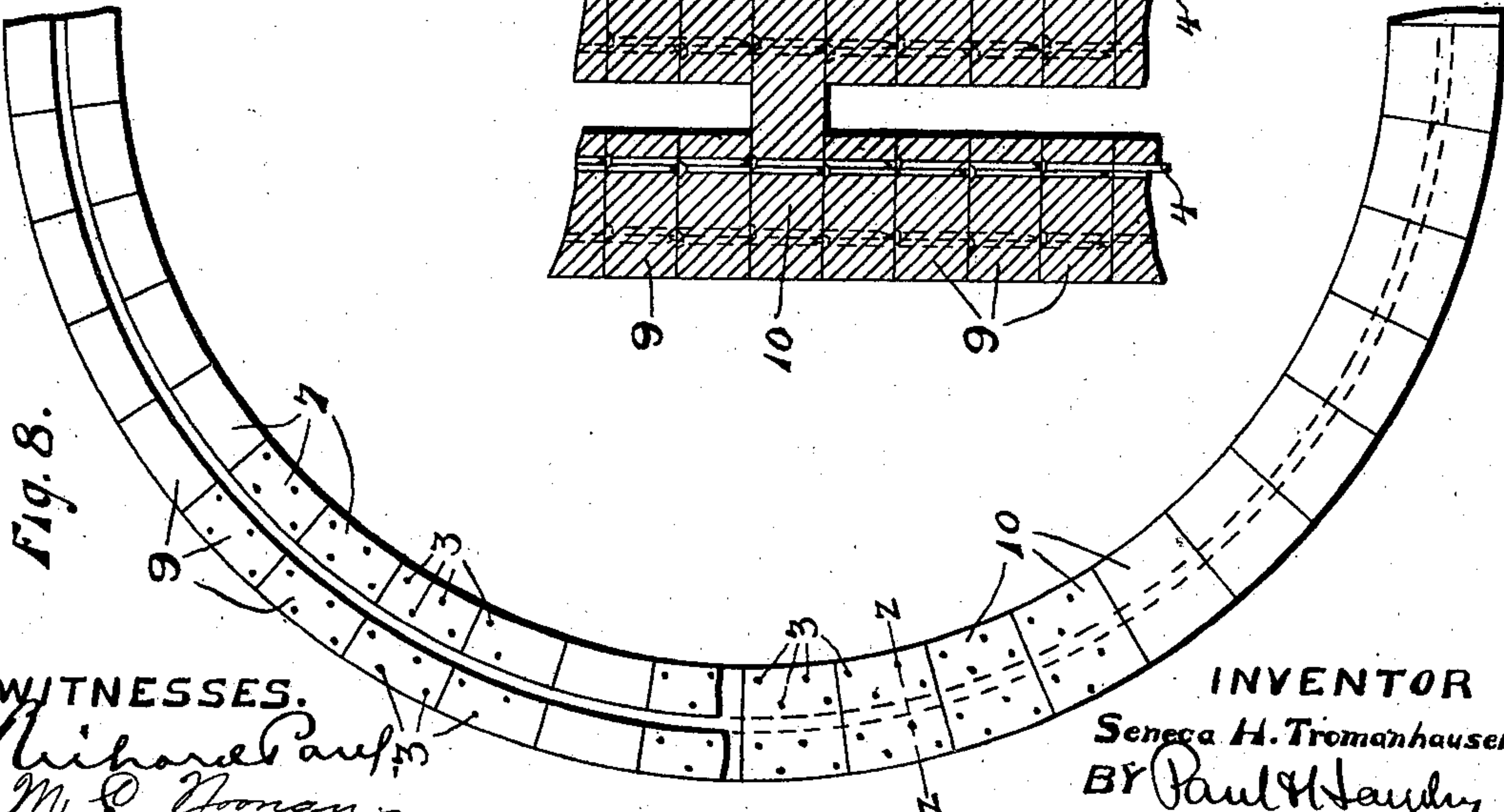
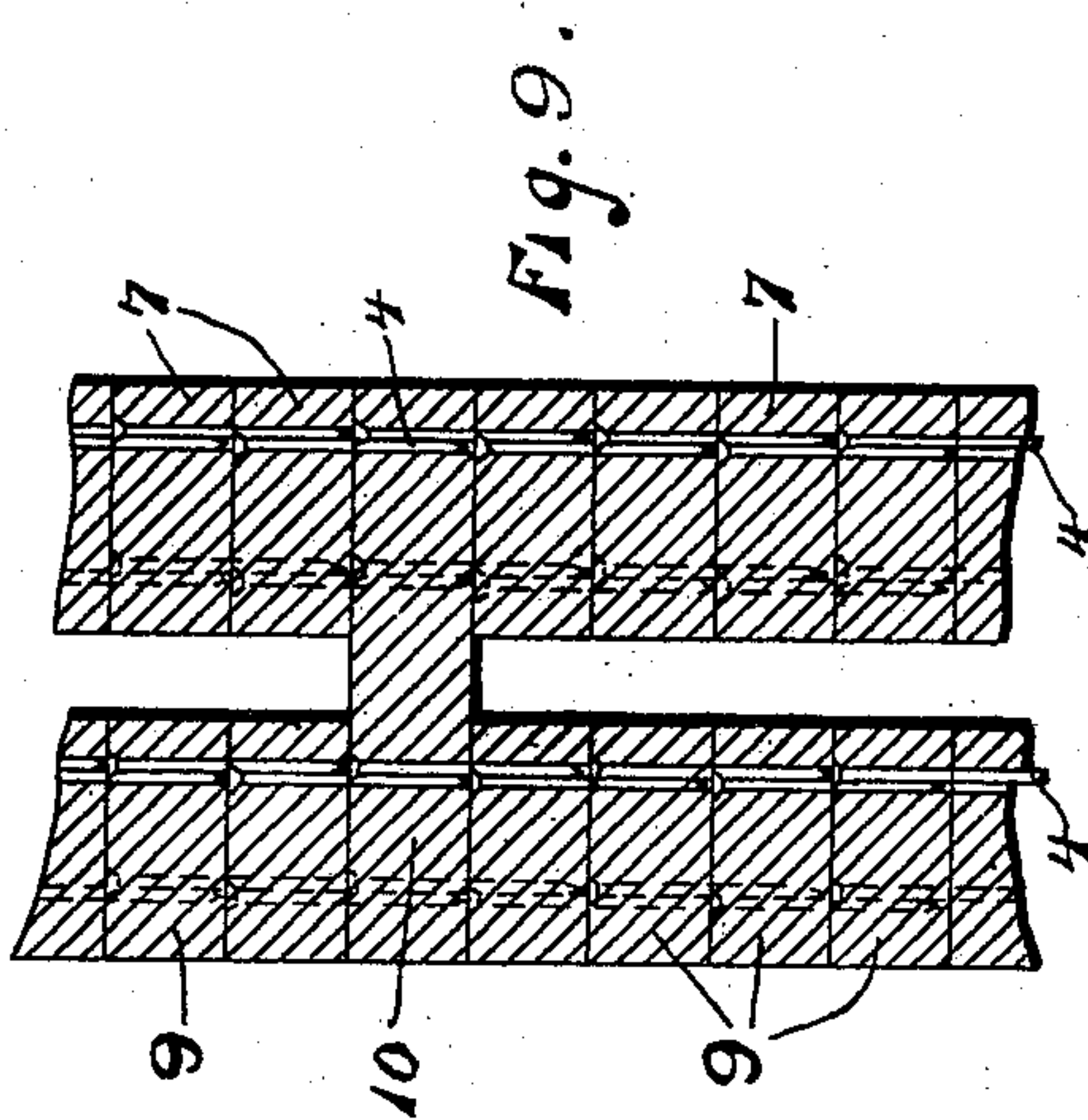
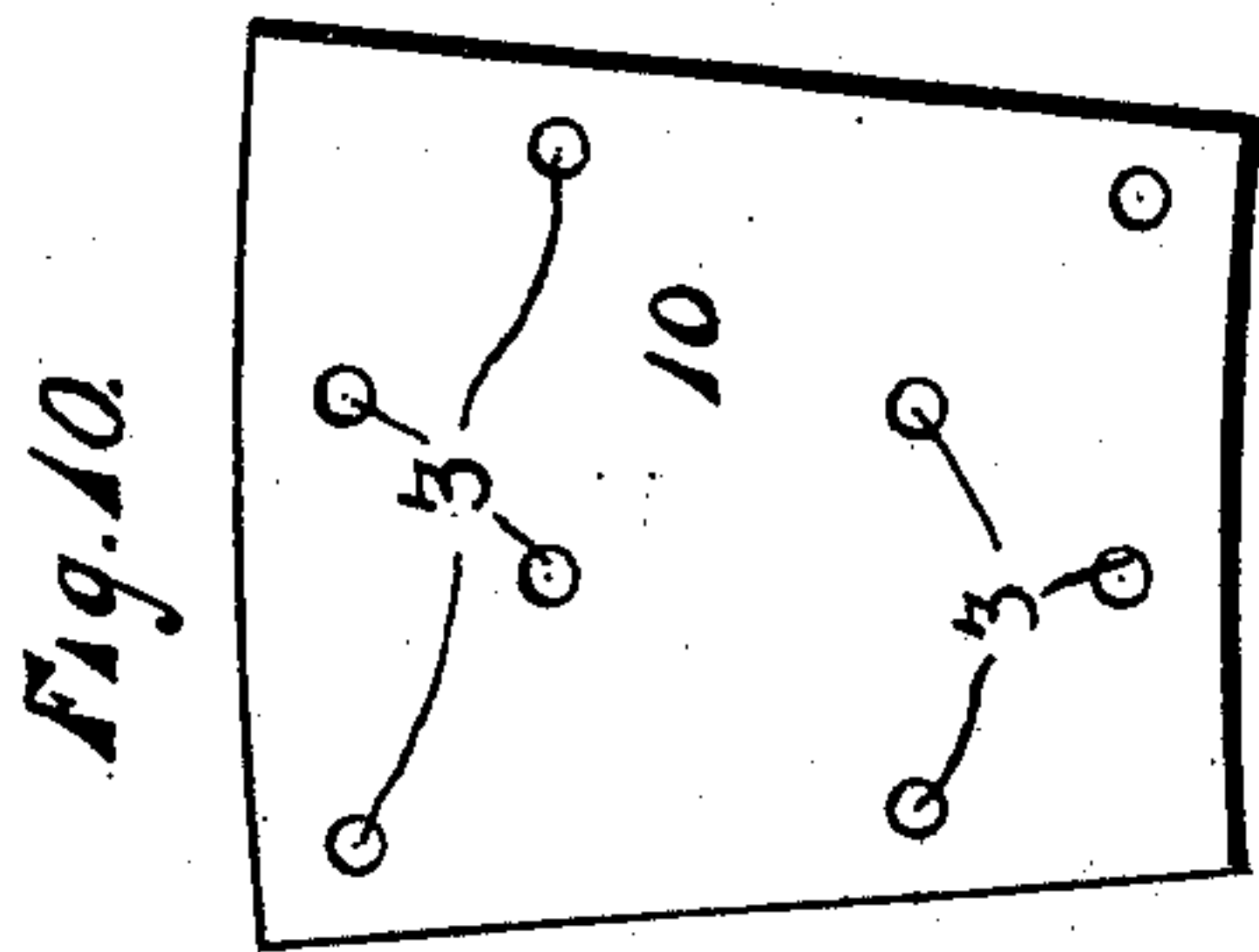
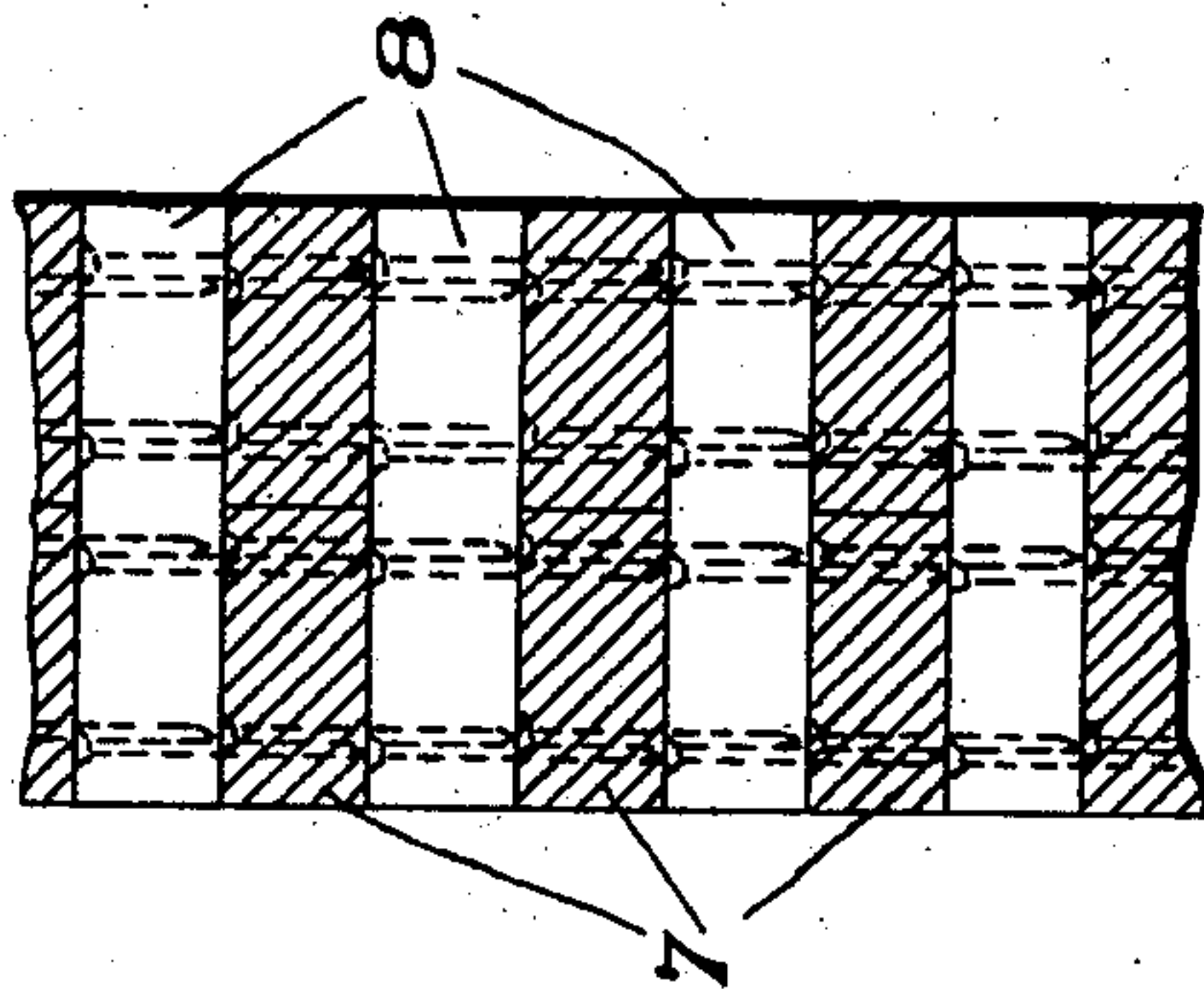
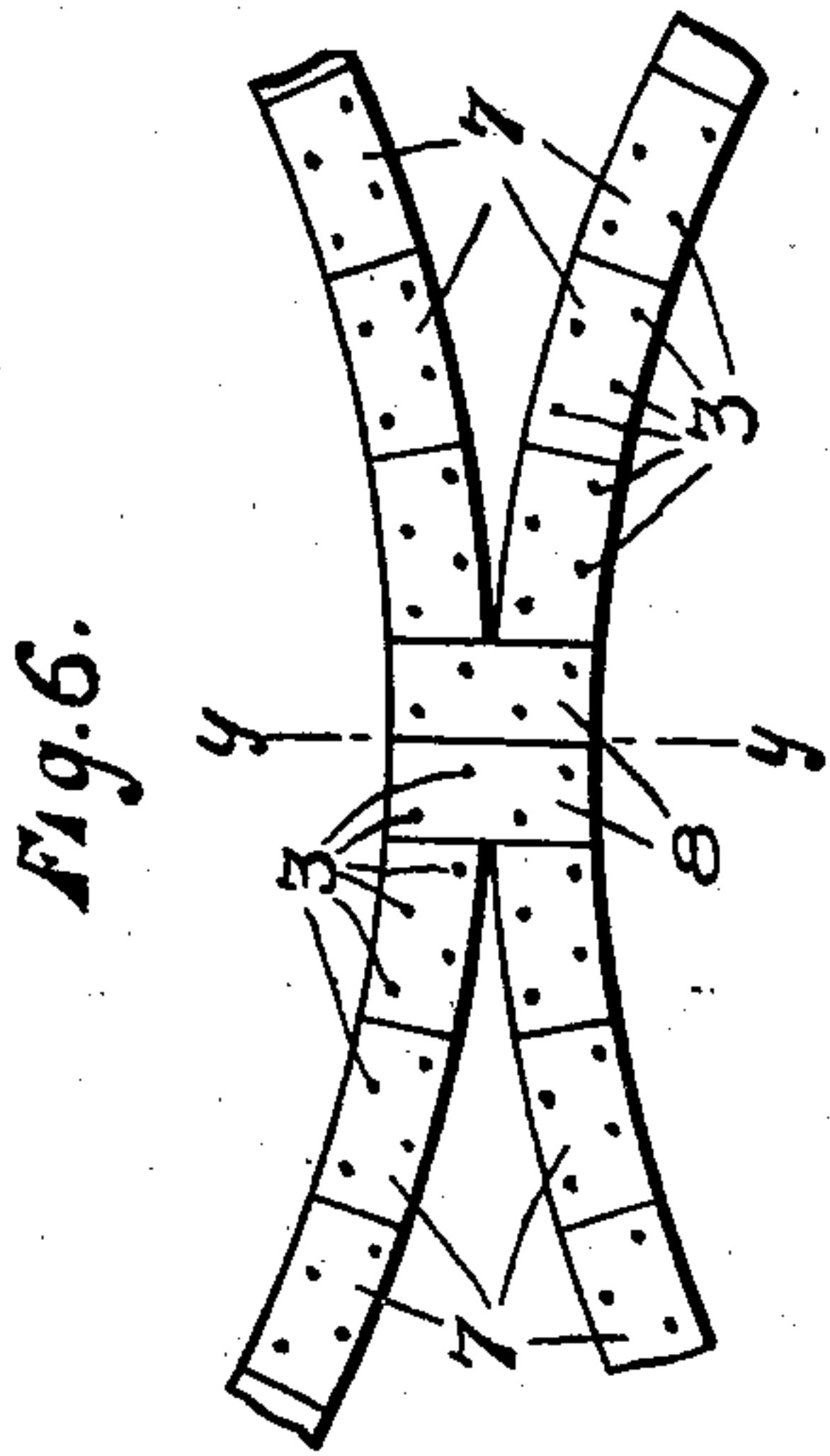
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ATTORNEYS.

S. H. TROMANHAUSER.
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2 Sheets—Sheet 2.



WITNESSES.

Richard Paul
M. Q. Noonan

INVENTOR

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UNITED STATES PATENT OFFICE.

SENECA H. TROMANHAUSER, OF MINNEAPOLIS, MINNESOTA.

BRICK FOR STORAGE-BIN CONSTRUCTION.

SPECIFICATION forming part of Letters Patent No. 702,119, dated June 10, 1902.

Application filed June 17, 1901. Serial No. 64,805. (No model.)

To all whom it may concern:

Be it known that I, SENECA H. TROMANHAUSER, of the city of Minneapolis, county of Hennepin, State of Minnesota, have invented
5 certain new and useful Improvements in Bricks for Storage-Bin Construction, of which the following is a specification.

The invention relates to grain elevator or warehouse construction; and the object of
10 the invention is to provide a brick or block for use in building an elevator or storage-bin wall that will be capable of withstanding extreme bulging or lateral strain arising from the outward pressure or weight of the grain
15 contained in the bin.

A further object is to provide blocks of which a wall of more simple and economical construction can be built than of those that have been heretofore employed for this purpose.
20

A further object is to provide a wall composed of blocks that will be fire and moisture proof and adapted to absorb moisture from damp grain.

25 The invention consists generally in various constructions and combinations, all as hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, forming
30 part of this specification, Figure 1 is a horizontal section of a square bin embodying my invention. Fig. 2 is a plan view of one of the bricks of which the wall is composed. Fig. 3 is a longitudinal section on the line $x x$ of
35 Fig. 3. Fig. 4 is a plan view of a form of brick which I prefer to use in the circular bin. Fig. 5 is a sectional view showing the position of the dowel-pins in a completed wall. Fig. 6 is a sectional view of a portion
40 of the wall of two adjoining bins, showing means for tying them together. Fig. 7 is a sectional view on the line $y y$ of Fig. 6. Fig. 8 is a plan view of the top of a portion of a bin-wall, a section of the same being broken
45 away to show the manner of tying the two walls together. Fig. 9 is a sectional view on the line $z z$ of Fig. 8. Fig. 10 is a plan view of the cross or tie brick.

In the drawings, 2 represents a brick or
50 block rectangular in form, the ratio of its length to its width being preferably three to

one. This brick or block is made in the usual way and is provided with a series of holes 3, arranged at intervals, there being preferably
55 two near one end, two in the middle, and two at the opposite end. In each third of the block there will be two holes that will register with the corresponding holes of a third section of an abutting block. A greater number of
60 holes may be provided, if preferred; but I have found this number generally sufficient. The blocks are laid in cement or mortar in courses in the usual manner, the holes in the blocks of the adjacent courses coinciding. Into these holes I drop dowel-pins or rods 4
65 and allow them to pass down through several courses, the number depending upon the length of the pins employed. The holes are of sufficient diameter to allow the pins to drop into them easily, and I then prefer to fill in
70 cement around them, which on becoming hardened will hold the pins firmly and cause the wall to become a solid rigid mass capable of withstanding extreme lateral pressure.

In Fig. 1 I have shown a horizontal section
75 of a square bin composed of blocks 5, that are twice as long as they are wide, so that in laying the successive courses and joining the ends of the walls together at the corners the corresponding holes in the adjacent bricks
80 will always register. At the corners of this bin I prefer to provide blocks 2, that are placed in the side walls with their ends bound thereto and their middle sections tied to the end sections of the blocks 5 in the cross-walls.
85 When the dowel-pins or rods have been dropped into the holes and the spaces around them filled with cement, the four walls of each bin will be firmly bound together and to the walls of the adjacent bins. As shown in said
90 figure, I may prefer to further strengthen the bin by means of tie-rods 6, that cross the same from side to side and firmly bind its opposite walls together.

In Fig. 6 I have shown portions of the walls
95 of two circular abutting bins, and I prefer to connect or tie these walls together by a series of blocks 8, having perforations corresponding to those in the blocks 9 and registering therewith when placed together. The blocks
100 8 are substantially rectangular in form and a little longer than the abutting blocks of the

bin-walls. These bracing or tying blocks may be arranged between every course, running from the top to the bottom of the bin.

In Fig. 8 I have shown a section of a double wall, the inner being composed of blocks corresponding to those employed in the construction shown in Fig. 1, and the outer of a block 9, that is similar in form, but a little longer to compensate for the greater diameter of the outer wall. These walls are arranged with the spaces between them, and to brace and securely bind them together I provide a block 10, that is narrower at its inner end than at its outer and is provided with a series of perforations corresponding to those heretofore described that register with the perforations in the blocks of the outer and inner wall. These blocks are of sufficient length to extend over both walls and bridge the spaces between them and are arranged at suitable intervals between the courses from the top to the bottom of the bin. As the walls are built and the cross-blocks are placed therein, suitable dowel-pins are dropped into the holes in the manner heretofore described, and the holes are then filled with cement or other suitable material.

The double-wall construction with the cross or tie blocks is designed particularly for use in large bins, such as are found in terminal elevators, while the construction shown in Fig. 1, being considerably less expensive, will be found particularly adapted for the small storage-bins of country elevators or at small terminal stations. The bricks or blocks which I prefer to employ in the construction of these bins are preferably baked very hard and will consequently be very tough and strong and capable of withstanding the extreme bulging strain to which the wall of a grain-bin is frequently subjected.

A bin composed of blocks of this description pinned or tied together in the manner described can be built very economically. No plates or bands of iron or steel are required in the construction to bind the courses of brick or the ends of the walls together at the corners of the bins. The brick when molded in the yards can be made with perforations as cheaply as in the ordinary way, and as I propose to use large size spikes or rods of steel or iron it will not be necessary to provide any special fittings or parts for the construction of a bin. The blocks can be turned out quickly and economically, and the pins may be purchased in any market ready for use. These advantages render my improved construction particularly adapted for wheat-bins, where an economical and thoroughly fireproof structure has become desirable.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A series of grain-bins having walls intersecting each other substantially at right angles and composed of blocks laid in courses one upon the other with a suitable binding

material between them, the length of the blocks intermediate to the intersections of the walls being with respect to their width in the ratio of two to one, and those at the intersections in the ratio of three to one to permit the blocks of the intersecting walls to be tied thereto and said intermediate and intersection blocks having a series of small holes or perforations regularly arranged therein, the holes in the blocks of one course registering with those in the blocks of the adjacent course, and dowel-pins fitting into said holes to bind the intermediate blocks together and to the projecting ends of the longer blocks at the intersections of the walls, and a suitable filling material with which the holes in said blocks are filled and wherein the pins are firmly embedded and the courses bound together.

2. A grain-bin having its walls intersecting each other substantially at right angles and composed of blocks laid in courses one upon the other with a suitable binding material between them, each block having a series of holes or perforations arranged in groups, the holes of one group in a block being adapted to register with those in the abutting block of the adjacent course, the blocks at the intersections of the walls being longer than those intermediate to the intersections, the ends of said intersection-blocks projecting beyond the cross-walls, dowel-pins fitting into said holes to bind the intermediate blocks together and to the projecting ends of the longer blocks at the intersections of the walls, a suitable filling material with which the holes in said blocks are filled and wherein the pins are firmly embedded and the courses and walls bound together, and tie-rods connecting the opposite walls and preventing the same from being pressed or bulged outward by the contents of the bin.

3. A bin having double walls with a space between them, each wall being composed of bricks or blocks that are each provided with a series of small holes or perforations those of each brick coinciding with the corresponding holes in the bricks of the adjacent courses, cross-bricks having their ends inserted between the courses at intervals from the top to the bottom of the bin and bridging the space between the walls, each cross-brick having holes registering with the corresponding holes in the bricks abutting thereto, dowel-pins fitting the holes in said cross and abutting bricks and binding or tying the courses of abutting and cross bricks, and a filling material for said holes wherein said pins are embedded and firmly held and the walls and courses securely tied together, substantially as described.

4. A series of grain-bins having walls intersecting each other substantially at right angles and composed of blocks laid in courses one upon the other with a suitable binding material between them, the length of the blocks at the intersections of the walls being longer than those intermediate to the inter-

sections to permit the blocks of the intersect-
ing walls to be tied to those at the intersec-
tions and said intermediate and intersecting
blocks having a series of small holes or per-
forations arranged therein, the holes in the
5 blocks of one course registering with those of
the blocks in the adjacent course, and dowel-
pins fitting into said holes to bind the inter-
mediate blocks together and to the project-
ing ends of the longer blocks at the intersec-
10 tions of the walls, and a suitable filling ma-
terial with which the holes in said blocks are
filled and wherein the pins are firmly em-
bedded and the courses bound together.

15 5. A grain-bin having its walls intersecting
each other substantially at right angles and
composed of blocks laid in courses one upon
the other with a suitable binding material
between them, each block having a series of
20 holes or perforations arranged in groups, the
holes of one group in the block being adapted
to register with those of the abutting block

in the adjacent course, the blocks at the in-
tersections of the walls being longer than
those intermediate to the intersections, the
25 ends of said intersection-blocks projecting
beyond the cross-walls, dowel-pins fitting into
said holes to bind the intermediate blocks to-
gether, and to the projecting ends of the
longer blocks at the intersections of the walls,
30 a suitable filling material with which the holes
in said blocks are filled and wherein the pins
are firmly embedded and the courses and
walls bound together, and means for tying
the walls together and preventing the same
35 from being pressed or bulged outward by the
contents of the bin.

In witness whereof I have hereunto set my
hand this 12th day of June, 1901.

SENECA H. TROMANHAUSER.

In presence of—

RICHARD PAUL,
M. C. NOONAN.