

(No Model.)

J. VANDERMOLLEN & J. VEEN.
TILE MACHINE.

No. 559,739.

Patented May 5, 1896.

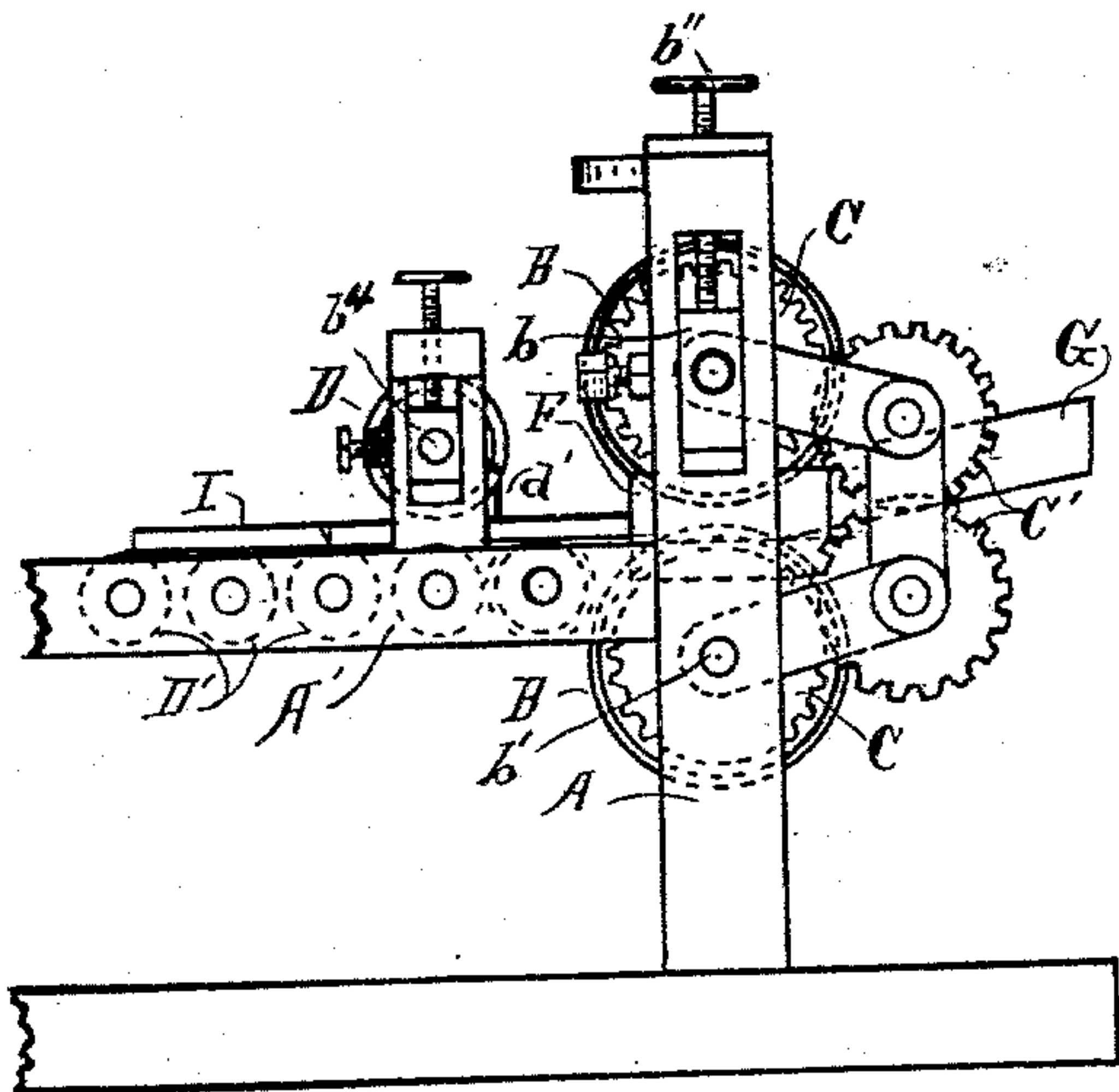


Fig. 1.

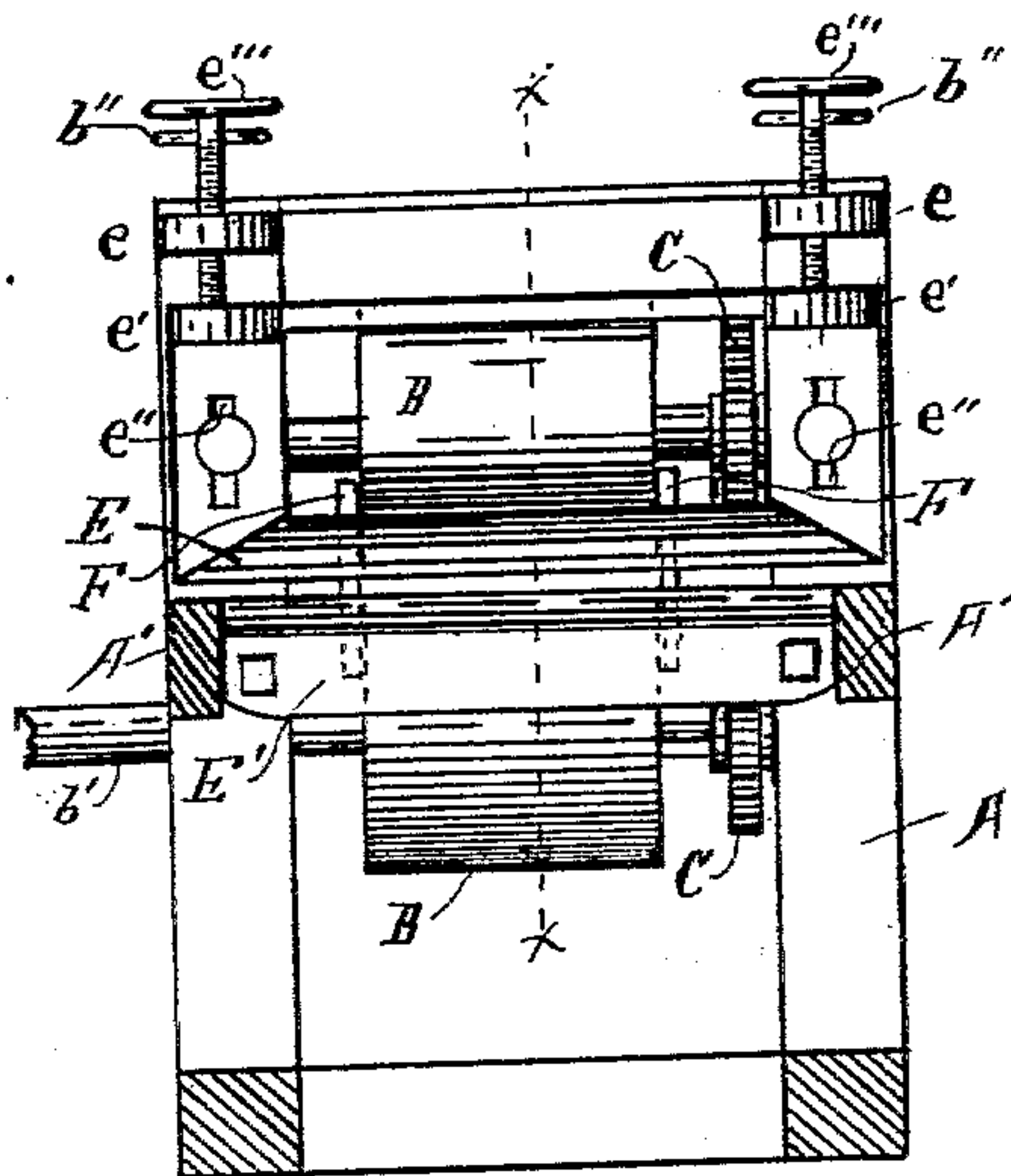


Fig. 2.

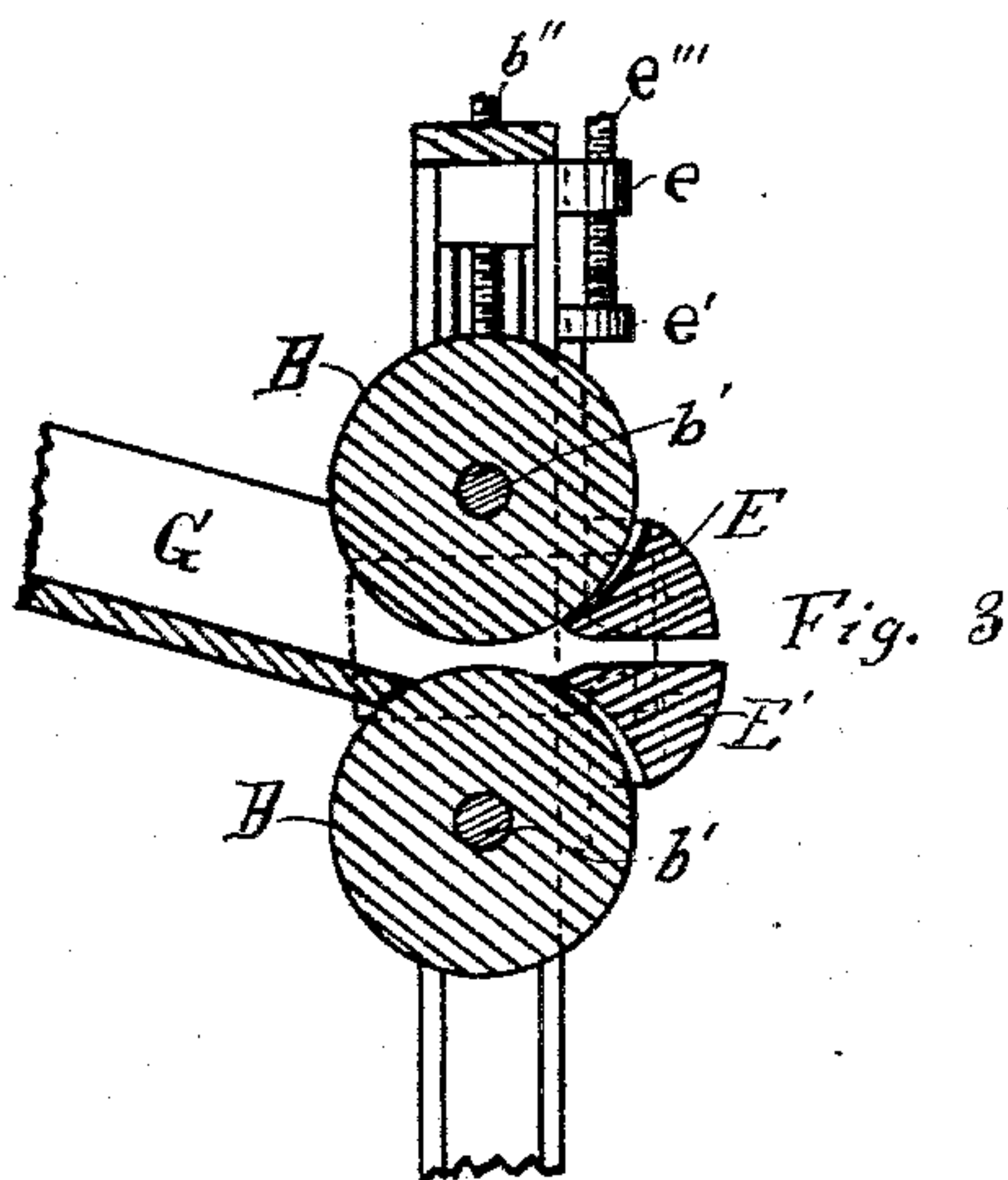


Fig. 3

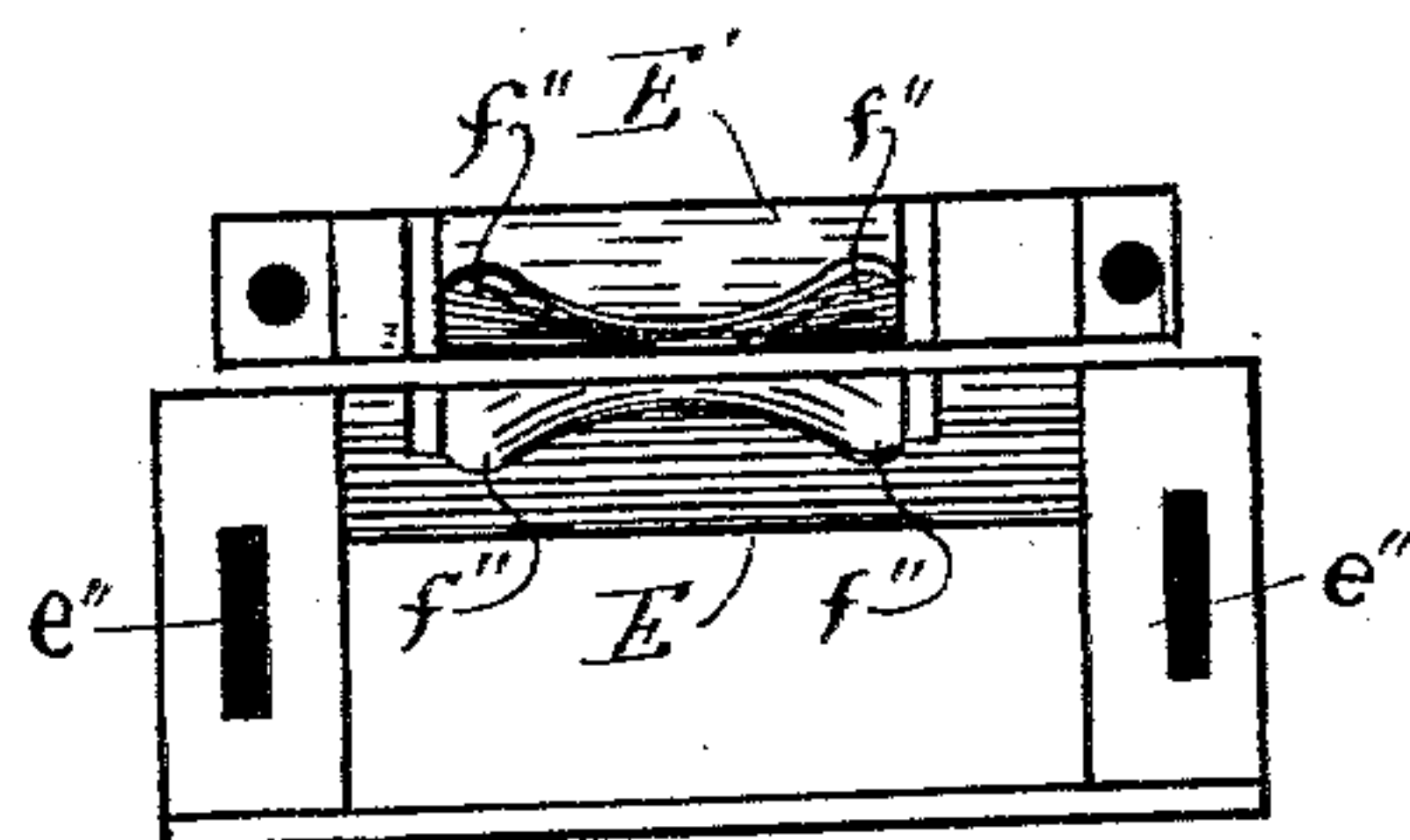


Fig. 4.

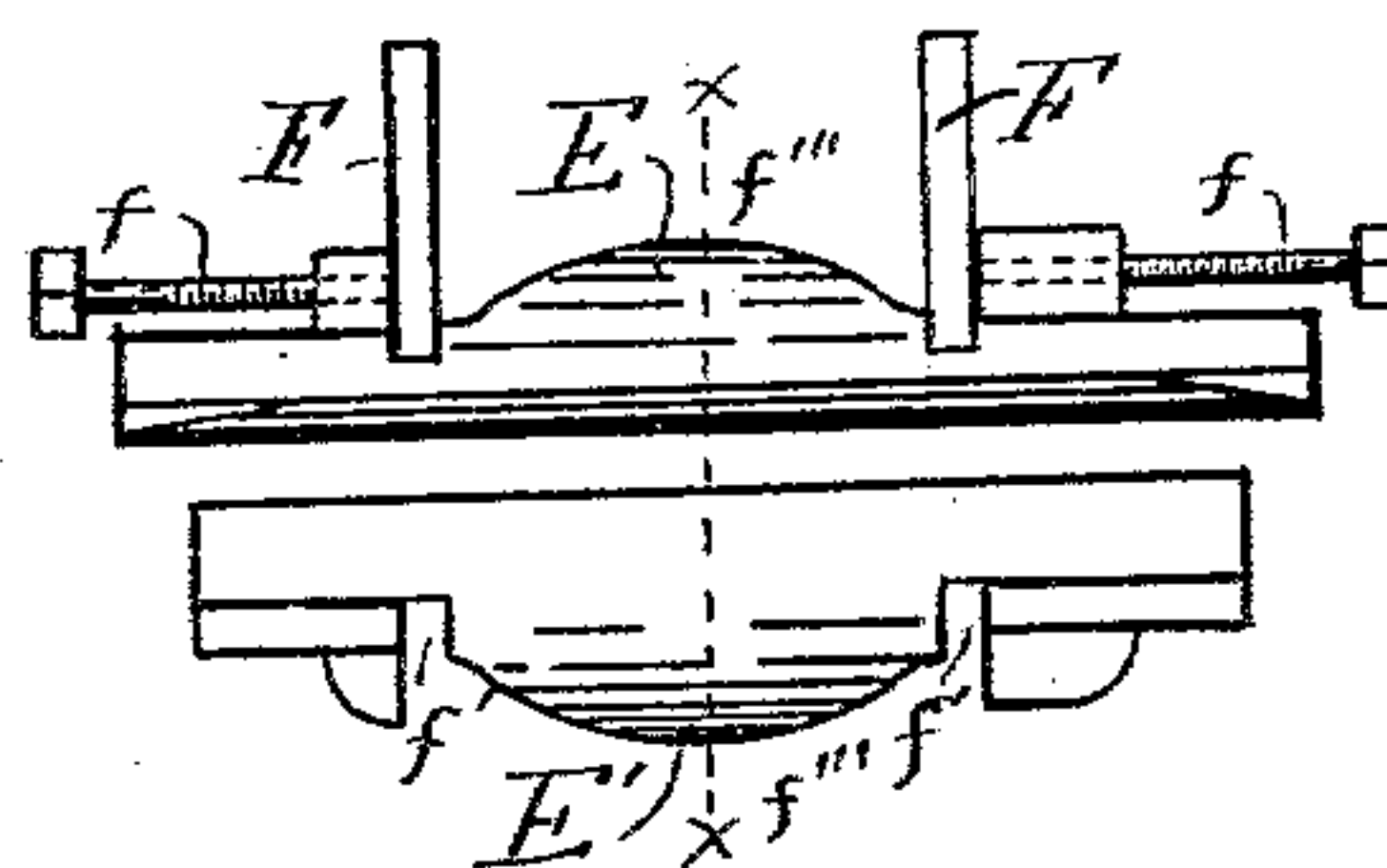


Fig. 5.

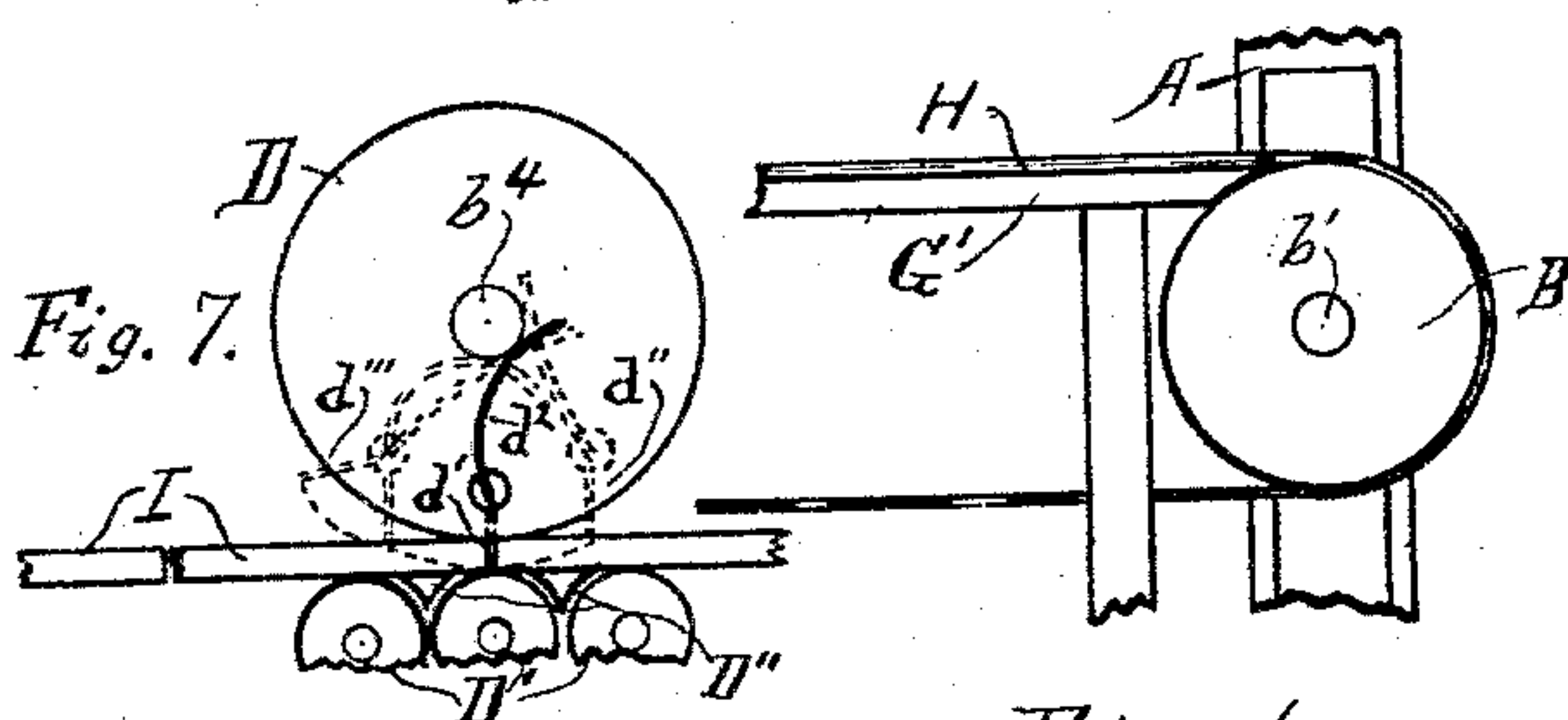


Fig. 7.

Fig. 6

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UNITED STATES PATENT OFFICE.

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TILE-MACHINE.

SPECIFICATION forming part of Letters Patent No. 559,739, dated May 5, 1896.

Application filed June 22, 1895. Serial No. 553,742. (No model.)

To all whom it may concern:

Be it known that we, JOE VANDERMOLEN, a citizen of the United States, residing at Grand Rapids, Kent county, and JOHN VEEN, a subject of the Queen of the Netherlands, residing at Vriesland, in the county of Ottawa, State of Michigan, have invented certain new and useful Improvements in Tile-Machines, of which the following is a specification.

Our invention relates to improvements in machines for forming the clay to a proper thickness, width, and length to be placed in the molds for final forming; and its objects are, first, to enable us to take the clay directly from the pugging-mill and form it to the desired size for roofing-tile; second, to avert the danger of laminations in the tile common in brick and tile when the ordinary worm-feed brick-machine is used, and, third, to insure a perfect packing of the clay before it is placed in the molds for final molding. We attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of the working end of our machine. Fig. 2 is a back elevation of the same. Fig. 3 is a longitudinal vertical section of the same on the dotted lines *xx* in Figs. 2 and 5, showing the relative position of the rollers and stamps through which the clay is forced to give it the desired thickness and consistency. Fig. 4 shows the stamps removed from the machine and reversed to show the front or entrance sides. Fig. 5 is the same thrown open to show the surfaces between which the clay passes when leaving the rollers. Fig. 6 is a modified form of slide for conducting the clay to the rollers, and Fig. 7 is an end view of the roller and knife that cuts the clay to the proper length.

Similar letters refer to similar parts throughout the several views.

Our machine proper is simply a pair of rollers *B B*, supported on a frame *A*, with one roller directly above the other, the upper roller being adjustable vertically by means of sliding boxes *b*, so that the machine may be set to make tile of different thicknesses. These rollers are driven from the shaft *b'* and motion transmitted from the one to the other by means of the ordinary elbow-gear *C* and

C' to provide for varying their distance apart, as hereinbefore stated. Just ahead of these rollers we construct a receiving-flume *G*, into which the clay is thrown as soon as it is taken from the pugging-mill, (in common use with brick-machines,) and through which it will slide to the surface of the rollers when it is drawn through the rollers by the rotary motion thereof and forced between the stamps *E* and *E'*. A sufficient amount of clay must be fed continually to the rollers to cause them to pack it solidly when passing through. Just back of the rollers we place two cross-girths or stamps *E* and *E'* in position to receive the compressed clay as it leaves the rollers and compress it somewhat more than it is compressed by the rollers. We find by experience that it is necessary to construct these stamps at the point of entrance for the clay with the center projecting forward, as shown at *f'''* in Fig. 5, and the corners widened or spread gradually, as shown at *f''* in Fig. 4, so that the opening is a little wider at the center than the bearing parts of the stamps and the edges are considerably more open, so that the clay slab has a free entrance and is pressed snugly through the bearing portion to more thoroughly compress the clay as it is forced through by the rollers.

We provide for raising and lowering the upper roller by means of the hand-screws *b''*, and for raising the upper stamp we make use of the hand-screws *e'''* in the usual manner of raising and lowering corresponding parts of machines of this general construction, the shaft *b'* of the upper roller being supported in movable boxes *b* and the supporting-arms or sides of the stamp being provided with slots *e''* to allow of their necessary movement.

At each side of the rollers we place side guards *F* in position to be pressed snugly against the ends of the rollers to give to the slab of clay that is being formed thereby perfectly square edges and the exact width desired. As the great pressure necessary to form this slab and force it through between the stamps will force the sides or parts thereof through very small crevices these side guards must be held very close to the ends of the rollers and provisions made for taking up the wear natural to continual use, and for this

purpose we provide one or more screws *f*, adapted to press against the sides of the guards and force them against the rollers, as desired.

To support and convey the clay slabs *I* from the stamps we support a series of rollers *D'* in the girths *A'*, as indicated in Fig. 1, in the direct line of travel of the slab.

We provide for cutting the slab to proper lengths by means of a friction-roller *D*, supported upon a shaft *b⁴*, so arranged that it may be raised and lowered to correspond with the thickness of the clay slab that is being formed by the rollers and stamps. This roller is made to revolve by pressure upon the clay, and the cutting of the clay is accomplished by the knife *d'*, which is pivoted to the roller in position to be brought in contact with the clay at or near the point shown in Fig. 1, said knife being of a proper length to just cut through the clay when directly under the center of the roller. We pivot this knife in position so that its position will be exactly at right angles with the surface of the clay at all times from the time it approaches until it leaves it, and to insure the throwing of this knife to the proper position (shown at *d''* and *d'''* in Fig. 7) we sometimes make use of a spring, as *d²*, of a proper form and tension to allow the knife to retain its relative position with the clay slab *I* while cutting it and to throw it back to the position indicated by the dotted lines *d''* when it is drawn out of the clay after cutting it, which position corresponds, relatively with the roller, with that shown at *d''*. It is not absolutely necessary to use a spring for the purpose of throwing this knife to position, as the weight of the knife will carry it over when it has been carried around to the proper point in the revolution of the roller, nor is it necessary to confine ourselves to this particular form of spring or manner of applying it.

D'' in Fig. 7 represents cores or cleats set in between the rollers *D'* to form a supporting-bed for the support of the clay while being cut by the knife *d'*, as hereinbefore explained.

In Fig. 6 we show a metallic belt *H*, that is designed to be driven by the lower roller *B* to carry the raw clay to the rollers in lieu of

using the flume *G* and shoveling the clay to it, as hereinbefore set forth.

With ordinary brick and tile machines the clay is taken from the pugging-mill and forced through the molds by a screw-feed, which cuts the clay in thin strips or laminations, which it is hard to make again adhere to each other to form a solid reliable brick or tile.

With our device the clay is taken directly from the pugging-mill in a thoroughly pulverized and amalgamated state and in passing through the rollers is pressed to a solid mass with the moisture well exhausted, and when it finally passes through between the stamps it is so drawn that lamination is impossible and we are insured a perfectly solid and thoroughly compressed mold to place into the press for forming the final and complete tile, which averts all danger of the completed tile splitting or crumbling to pieces.

G' represents a table or support for the metallic belt *H* when that is used.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent of the United States, is—

In a tile-machine, a supporting-frame, compression-rollers mounted in said frame, compression molds or stamps back of said rollers, screws for adjusting the position of said rollers and said stamps and an elbow-gear to transmit motion to the rollers; in combination with side guards *F* at each end of the rollers, a conveyer to carry the stock from the machine, and a knife for cutting the stock, said knife mounted in a roller and pivoted so that it will always, when approaching and cutting the stock, be at right angles therewith, and a spring to hold said knife to position to always cut the stock off squarely, substantially as and for the purpose set forth.

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