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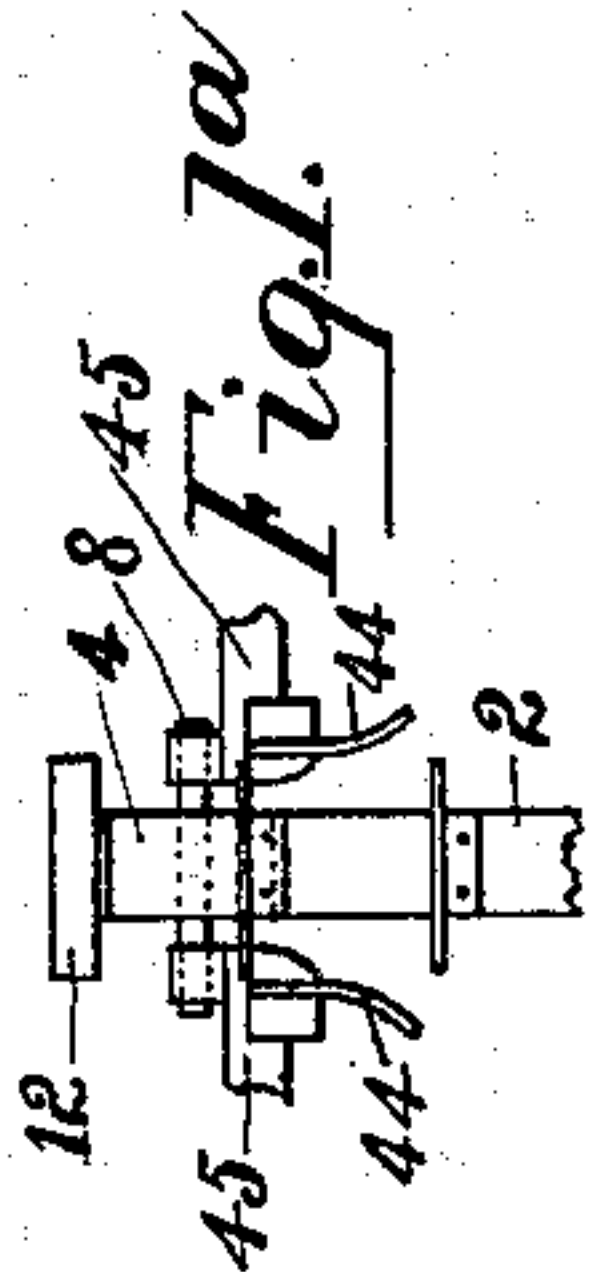
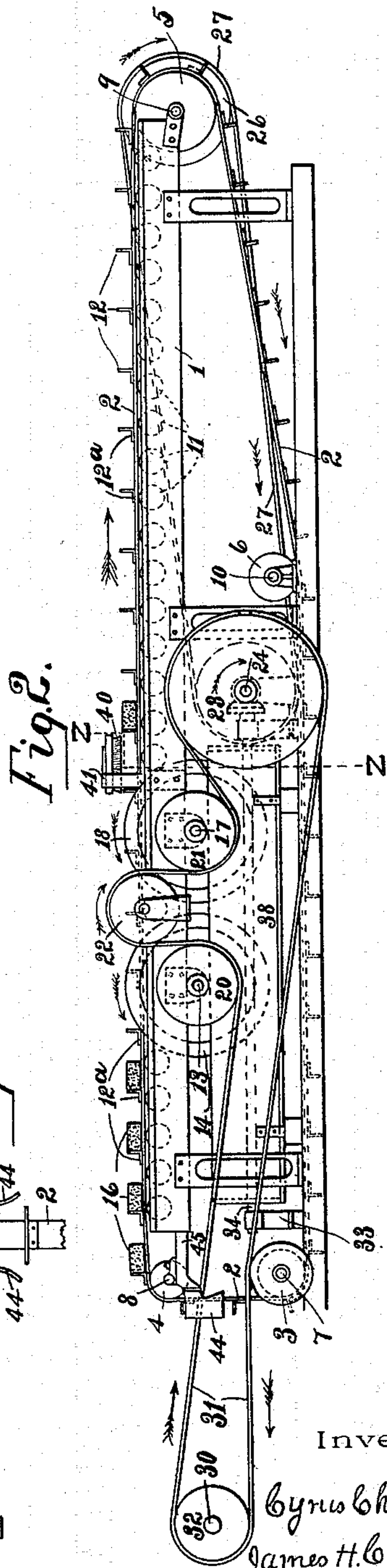
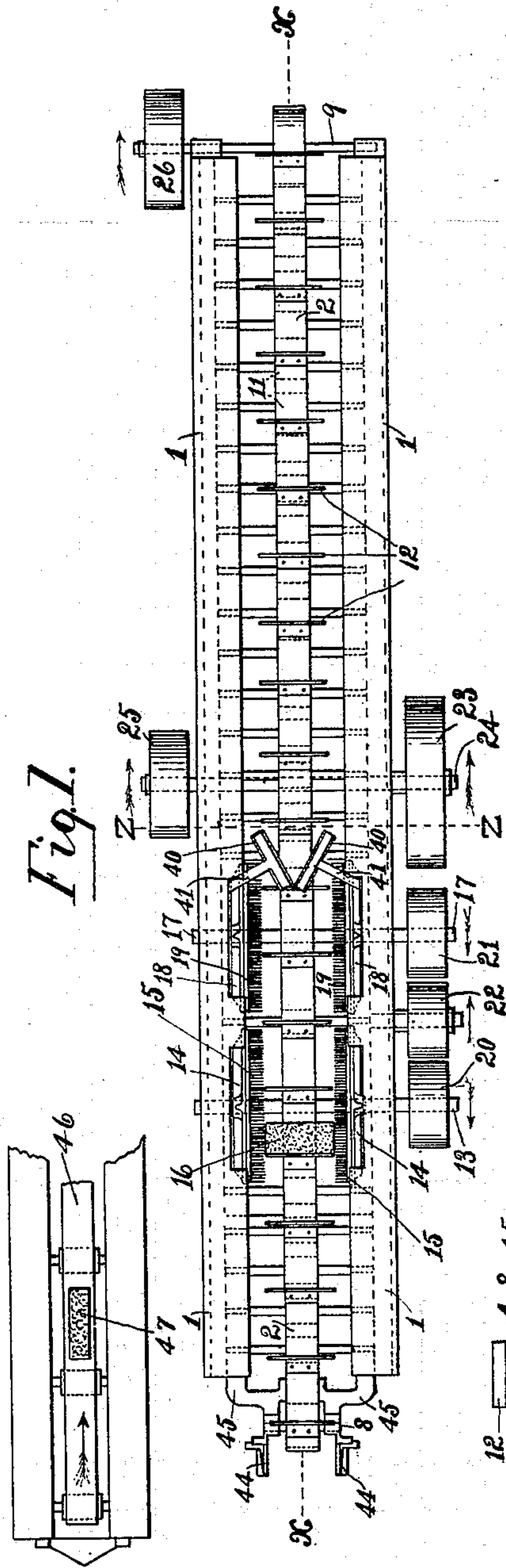
Patented Oct. 11, 1898.

C. CHAMBERS, JR. & J. H. CHAMBERS.
MACHINE FOR FINISHING SURFACES OF BRICKS.

(Application filed May 1, 1897.)

(No Model.)

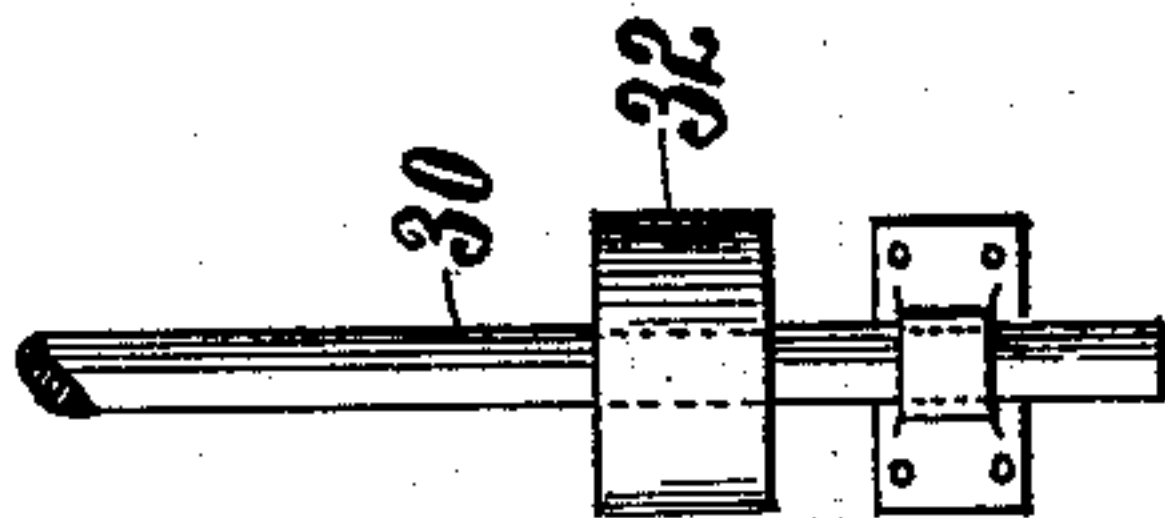
3 Sheets—Sheet 1.



Witnesses.

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Fig. 3.

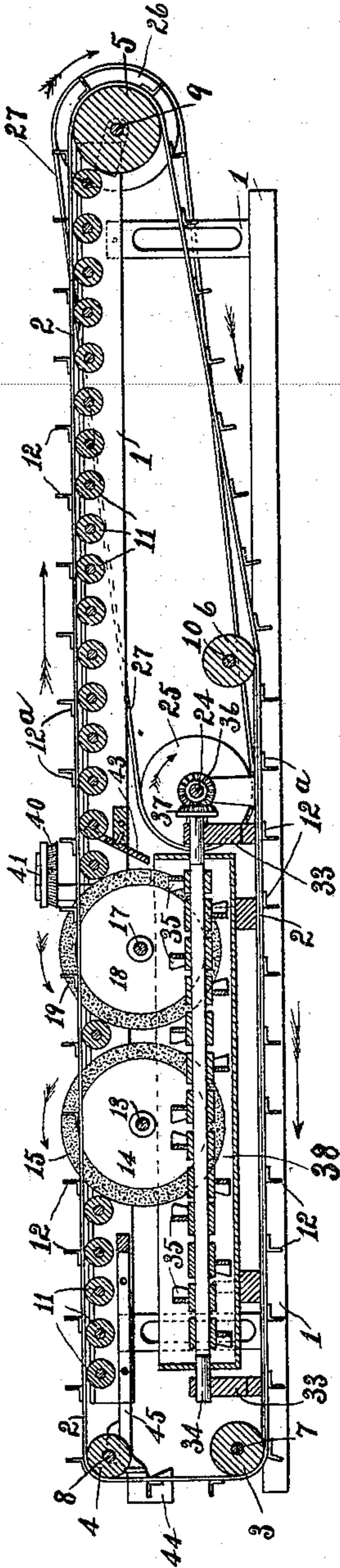


Fig. 4.

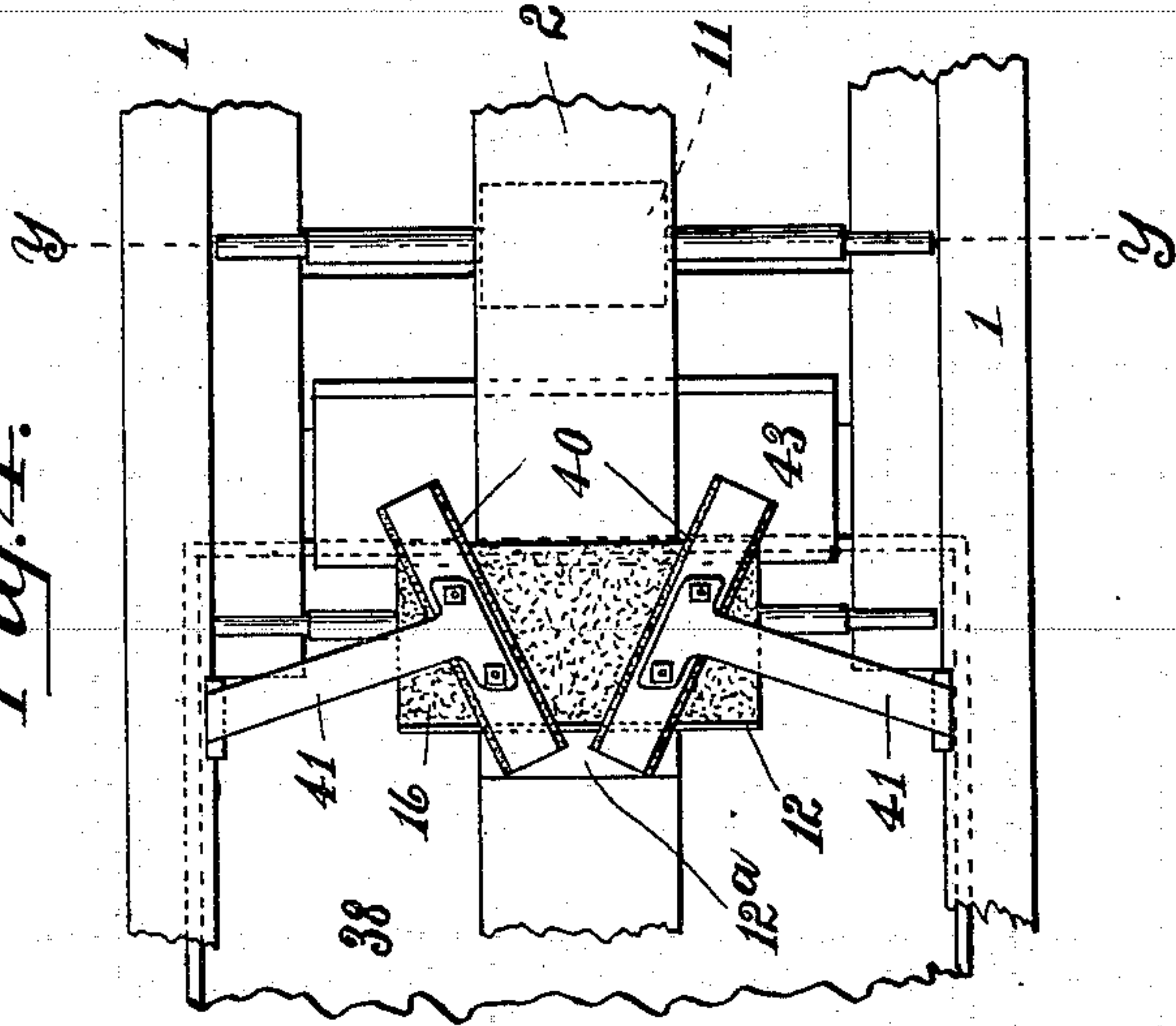
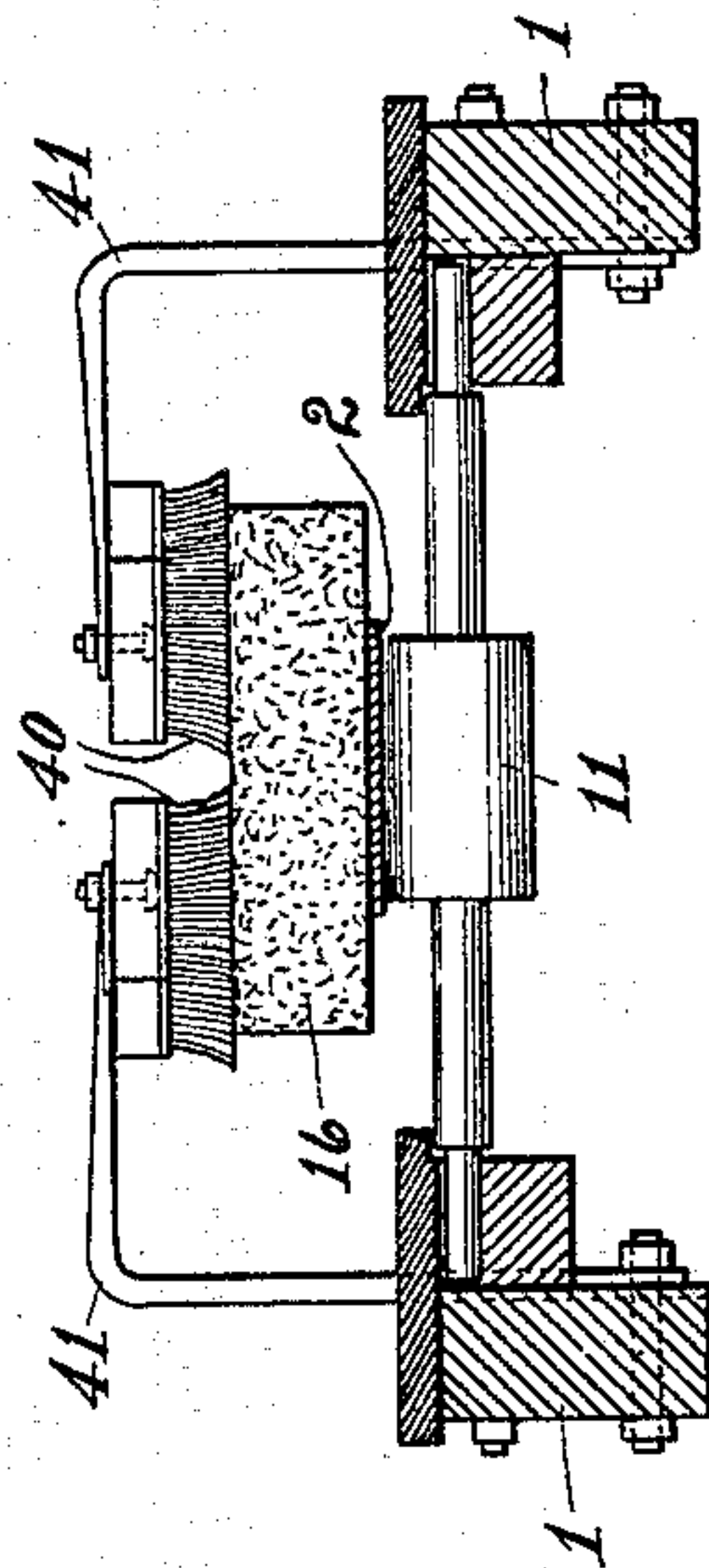


Fig. 5.



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Fig. 6.

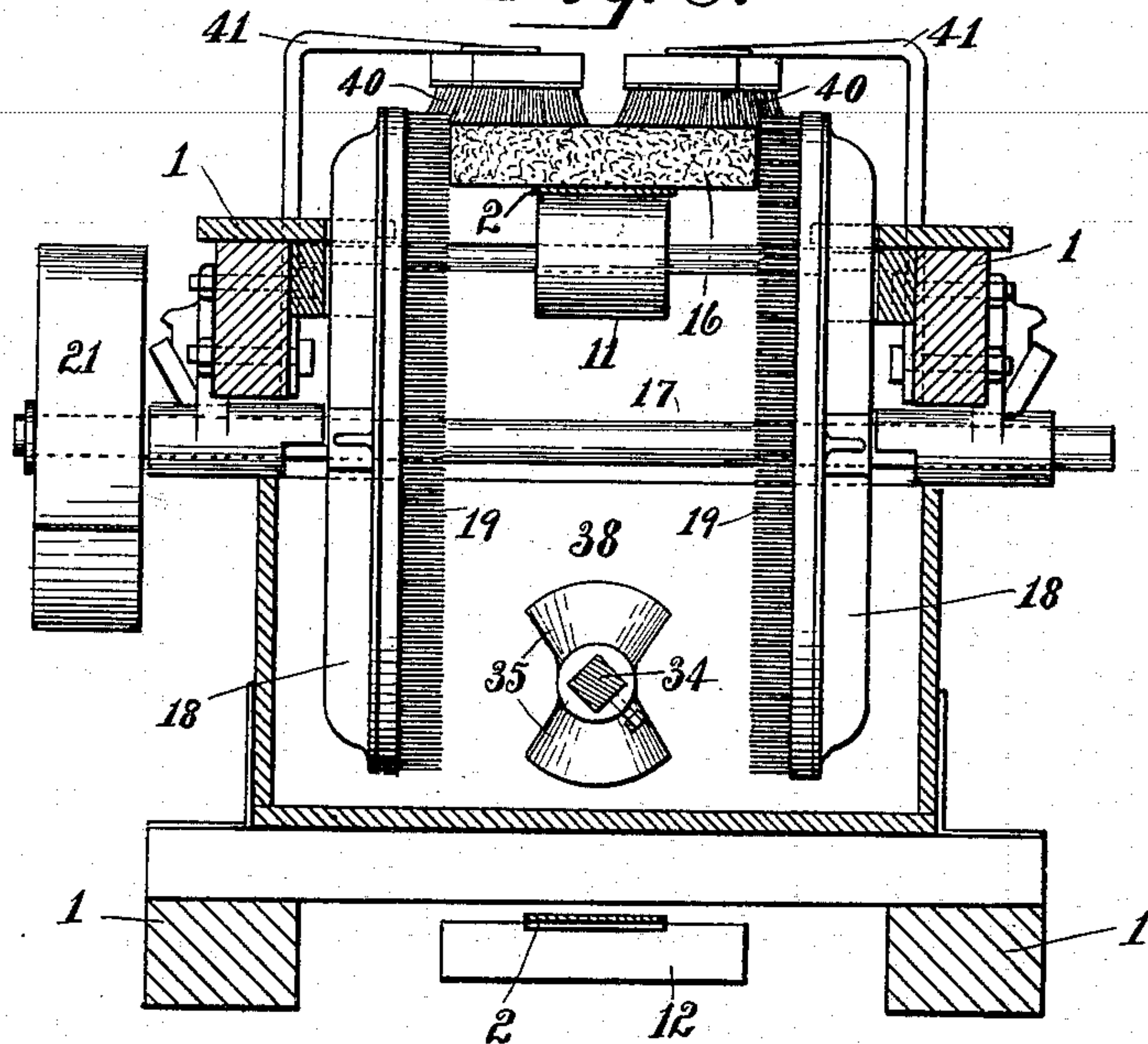
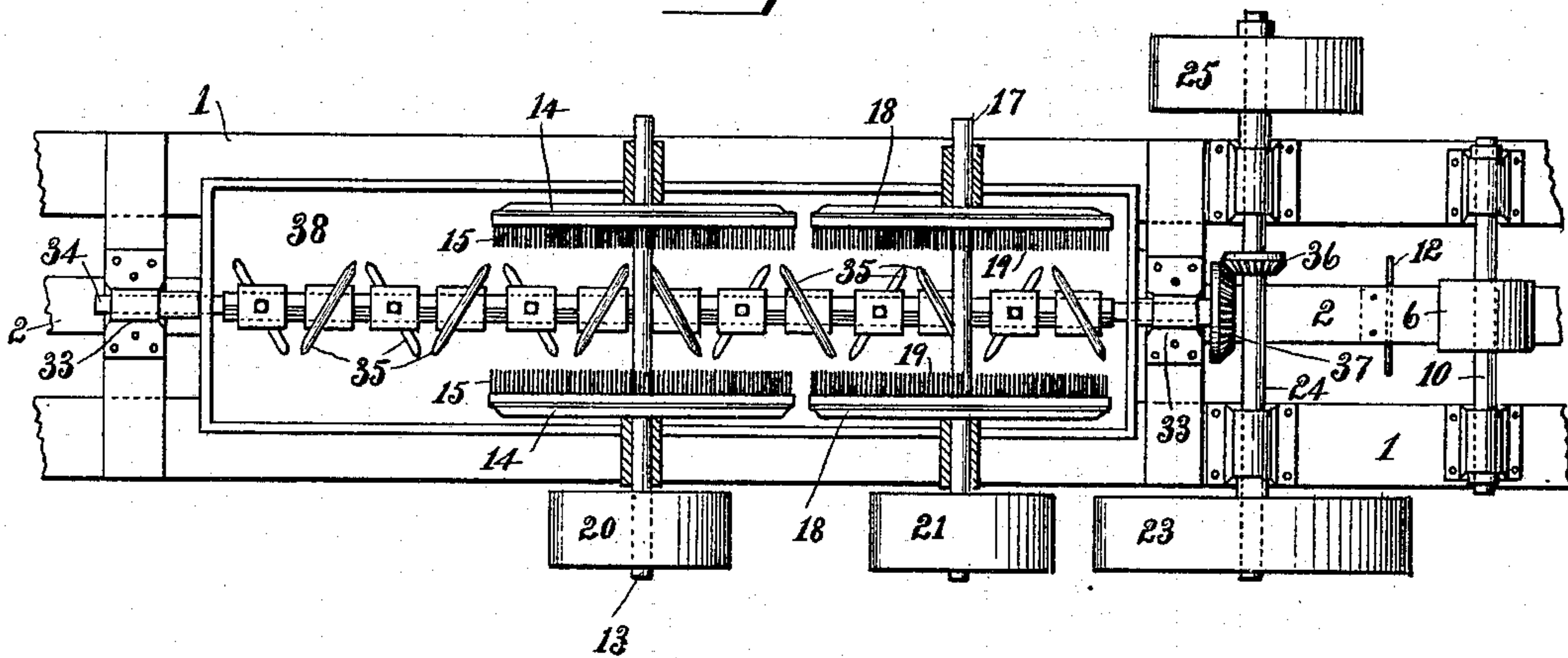


Fig. 7.



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UNITED STATES PATENT OFFICE.

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MACHINE FOR FINISHING SURFACES OF BRICKS.

SPECIFICATION forming part of Letters Patent No. 612,232, dated October 11, 1898.

Application filed May 1, 1897. Serial No. 634,732. (No model.)

To all whom it may concern:

Be it known that we, CYRUS CHAMBERS, JR., residing at Overbrook, Montgomery county, and JAMES H. CHAMBERS, residing in the city and county of Philadelphia, State of Pennsylvania, citizens of the United States, have invented certain new and useful Improvements in Machines for Finishing Surfaces of Bricks, &c., of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, of which—

Figure 1, Sheet 1, is a plan view. Fig. 1^a is an end elevation of the carrier-belt, guide-plates, &c., partially broken away. Fig. 2 is a side elevation. Fig. 3, Sheet 2, is a longitudinal section on line *x x*, Fig. 1. Fig. 4 is a plan view, enlarged, of a part of the carrier-belt and its supporting-frame and the oblique top brushes. Fig. 5 is a section on line *y y*, Fig. 4, looking toward the front of the machine. Fig. 6, Sheet 3, is a vertical section, enlarged, as on line *z z*, Figs. 1 and 2. Fig. 7 is a plan view, enlarged and partly in section, of the rotary brushes, sand-box, and propeller-shaft and the shaft and connections from which the propeller-shaft is driven.

The nature of our invention, broadly stated, is a machine for smoothing or finishing the surfaces of various articles of manufacture by abrading the same by means of moving brushes, also in connection with sand or the like abrading material. In a more limited sense (as applied to the particular purpose for which we have devised and used our machine) the nature of the invention is a combination of mechanism and devices for smoothing or finishing heads or ends of moist raw bricks that have been cut off from a bar of clay expressed from the die of a brick-machine—as, for example, brick-machines such as those shown and described in the Letters Patent of the United States of Cyrus Chambers, Jr., No. 40,221, dated October 6, 1863, and No. 362,204, dated May 3, 1887. In brick-machines of this class, in which the bar of clay is divided into brick lengths by means of a knife or wire, the surfaces of the bar or bricks, sanded immediately after they come from the machine, are smooth and uniform, excepting

the cut-off ends, which present a different and a rough appearance compared more particularly with the edges, the latter and the ends being the surfaces generally exposed to view when the bricks are laid in the wall.

The object of our invention, as applied to the treatment of such bricks, is to impart to the heads or ends thereof a similar or approximately similar even appearance or texture to that of the sides or edges of the bricks by an operation whereby the ends are smoothed by rotary or other suitable moving brushes, in connection with sand supplied thereto.

The invention, broadly stated, consists of the combination of two brushes having their inner faces in parallel planes opposite each other and a predetermined distance apart corresponding to the width between the opposite surfaces of the bricks or other articles to be treated, means for driving said brushes simultaneously, and means for supporting the bricks, &c., transversely between and against the frictional stress of the brushes.

The invention also consists in the combination of a carrier, preferably an endless belt, suitably supported, upon which the bricks are placed as they come from the brick-machine, together with suitably-disposed brushes and means for driving said carrier and brushes simultaneously, the construction, arrangement, and operation being such as hereinafter described, whereby as the bricks, placed transversely upon the carrier, are carried to and in contact with the brushes the latter smoothes the heads or ends of the bricks, and also when sand is supplied to the brushes it is applied thereby to the ends or heads of the bricks, and thus perfects the finish thereof by imparting to the ends an appearance or texture closely approaching the other sanded surfaces of the brick.

The invention further consists in the combination, with the said brick-carrier and rotary brushes, of means for supplying sand to the latter and means for removing surplus sand from the upper side of the bricks, which had been thrown thereon by the brushes through centrifugal force.

The invention consists, finally, in various

combinations, features, and details hereinafter described and duly pointed out.

Referring to the accompanying drawings, which illustrate a machine that we have practically used and which we believe to be the best construction, 1 is the general frame of the machine. 2 is an endless belt running over pulleys 3, 4, 5, and 6, which pulleys are carried by shafts 7, 8, 9, and 10, respectively, that are journaled in suitable bearings of the frame 1. The upper side of the belt runs upon and is supported by a series of small rollers 11, that are journaled transversely in bearings in the upper part or rails of the frame. The belt is considerably narrower in the present instance than the length of the bricks to be operated upon by the machine, and secured to and projecting therefrom and at right angles thereto at intervals is a series of plates or bars 12, whose ends project beyond the edges of the belt and whose length transversely is equal to or preferably slightly less than the length of the bricks that are to be placed upon the belt, as hereinafter described. In order to provide a convenient means for securing the said bars to the belt and for maintaining them firmly in position against the frictional stress of the brushes, as hereinafter explained, we employ angle-bars of the rectangular form shown, the horizontal limb 12^a of the bars resting upon and being secured to the belt by means of rivets.

Upon a shaft 13, extending some distance below the carrier-belt 11 and journaled transversely in bearings secured to the top part of the frame of the machine, are mounted two wheels 14, each carrying adjacent to its periphery an annular brush 15, of bristles or the like, directed inwardly. These wheels are so placed on their shaft that the lines of the free ends of the bristles are equidistant from the respective sides of the belt 2—that is to say, each brush is the same distance from the line of the adjacent ends of the bars 12—the distances between the working faces of the two brushes being equal to or a little less than the length of the bricks 16 to be operated upon. A short distance to the rear of the said shaft and brushes (the rear of the machine being to the right in Figs. 1, 2, and 3, and toward which the upper side of the endless carrier moves) is a second similar shaft 17, that carries wheels 18, having a set of brushes 19 similar to the first set—that is to say, the second are duplications of the first.

On the end of each of the brush-shafts is a pulley, (marked, respectively, 20 and 21,) and journaled in a bearing of the top of the frame, partly above and between said pulleys, which are of the same diameter, is an idler-pulley 22, and to the rear of pulley 21 is a larger pulley 23 on the end of a shaft 24, running parallel with the said brush-wheel shafts and journaled in bearings or posts rising from the bottom rails of the machine-frame. On the other end of the shaft 24 is a pulley 25, and in line

therewith is a pulley 26 on the rear end shaft 9 of the carrier-belt 2. A belt 27 (omitted in Fig. 1, but shown in Figs. 2 and 3) runs over said pulleys 25 and 26.

30 is the main driving-shaft, driven from a source of power in the direction of the adjacent arrow, Figs. 1 and 2. The entire movable mechanism of the machine before described and certain parts hereinafter described are driven from this shaft through a belt 31, that passes around a pulley 32 on the said shaft, under pulley 20 on the shaft of the first set of brush-wheels, over the idler 22, under pulley 21 on the shaft of the second set of brush-wheels, and around pulley 24 of shaft 23.

Journaled in bearings of vertical posts 33, rising from the lower part of the main frame, one of which bearings is to the rear of the second set of brushes and the other some distance forward of the first set, is a horizontal shaft 34, that extends above the plane of the lower points of the peripheries of the brushes and whose longitudinal axis is substantially midway between the brushes of each set. The said shaft 34 has thereon a series of inclined blades 35. (Seen in side elevation in Fig. 3 and in plan in Fig. 7.) These blades and their driven shaft constitute a screw, and the same will be hereinafter referred to as the "sand-propeller."

For a purpose which will be understood when we come to explain the operation of the machine the blades forward of the vertical plane of the shaft 13 of the first set of brushes form a left-hand screw and those to the rear of said plane a right-hand screw, as seen in Figs. 3 and 7. The sand-propeller shaft is driven from the transverse shaft 24 by a bevel-gear 36 on the latter shaft that engages a bevel-gear 37 on the adjacent end of the propeller-shaft. The sand-propeller, as also the larger portion of the lower half of the sets of brush-wheels, as shown, runs in a box 38, which is supplied with sand, and the blades 35 extend near to the bottom of the box, as shown in Figs. 3 and 6.

We will now proceed to describe the mode of operation of the hereinbefore-described mechanism, as follows: The sand-box 38 having first been supplied with sand, the machine attendant places each brick 16 in succession, that has just been cut off by the brick-machine, flatwise and transversely upon the endless moving carrier 2 and against the face of an angle-bar 12 toward the direction of its travel, the ends of the bricks in line substantially with the ends of the angle-bar, as seen in Figs. 1, 2, and 4. As the brick travels to the first set of brushes 15 its heads or ends come into contact with the latter, which are moving in a direction opposite to that of the brick. The brushes carry up a quantity of sand from the sand-box 38, which they rub against and into the heads of the bricks at the same time that they smooth them. The bar 12, against which the brick

has been laid, maintains the latter in place against the frictional stress of the brushes. The bricks having been thus operated upon by the first set of brushes pass on to the second set, where they are successively treated in a similar way, and are then removed from the carrier, their head having had imparted to them the desired texture and appearance. The latter set of brushes may, however, sometimes be dispensed with. Our purpose in using the same is to insure complete work without having to run the first set of brushes at too high speed or making the same of large diameter, as in the first case the sand, or the greater portion thereof, picked up by the brushes would be thrown off by the centrifugal force. While the described operation is going on the tendency of the rotating brushes is manifestly to drive a portion of the sand within the box 38 to the rear end of the latter. Consequently the machine would soon cease to accomplish its ends unless sand were supplied almost continuously to the box. This tendency of the brushes is counteracted and the difficulty referred to entirely obviated by the use of the rear or right-hand screw part of the sand-propeller, which tends to return the sand to the brushes.

As shown, the front end of the sand-box extends some distance beyond the first set of brushes. This is to afford a convenient space for feeding in and holding a considerable quantity of the sand, thus obviating the necessity of too frequently replenishing the latter, and in order to carry the sand to the brushes we use the forward or left-hand screw part of the sand-propeller. It will be seen that the tendency of these two parts of the sand-propeller carrying the sand in opposite directions from the first set of brushes is to heap the sand up under the latter, and, as before stated, the tendency of both sets of brushes is to carry the sand to the rear. Thus the resultant of these two forces is that there is always an ample or sufficient quantity of the sand for the several brushes, and also the sand is kept agitated and loosened.

It will be observed that the carrier-belt 2 is considerably narrower than the length of the angle-bars thereon—that is, than that of the bricks to be treated by the machine. The purpose of this is to provide as wide a space as practicable between the brushes and the sides of the carrier, so as to permit the larger part of the surplus of sand carried up by the brushes to fall back into the box. As the bricks pass beyond the second set of brushes the surplus sand that has been thrown by both sets of brushes upon the tops of the bricks is swept off by means of two obliquely-placed brushes 40, that are secured to the horizontal limbs of vertically-adjustable angular arms 41, whose vertical limbs are bolted to the frame of the machine. These brushes diverge outwardly from the middle line of the carrier 2, as seen most clearly in Figs. 1 and 4. The sand thus swept off the bricks by

these obliquely-placed brushes falls back into the sand-box. Any sand that may fall from the bricks beyond the line of the end of the box is directed into the latter by an inclined deflecting-plate 43, Figs. 3 and 4.

In order to insure the maintenance of the proper position or alinement of the carrier-belt with relation to the several brushes, we provide a fixed and in this instance a vertical guide-plate 44 on each side of said belt, as shown in Figs. 1, 1^a, and 2. These plates are secured to projections 45 of the forward end of the frame of the machine, in which the carrier-belt pulley 4 is journaled. They are equidistant from the sides of the carrier-belt, and the distance between their inner faces is slightly greater than the length of the angle-bars 12. They are also made outwardly flaring at the lower ends, as seen in Fig. 1^a, so that the ends of the angle-bars cannot catch under the plates.

We prefer to locate the front end of the machine adjacent to the usual off-bearing belt, upon which the bricks are delivered as they are cut off by the brick-machine. Thus the attendant may conveniently take the bricks from the off-bearing belt and place them directly upon the carrier-belt. We have shown at the side of Fig. 1 in plan a section of the off-bearing belt (marked 46) and its supporting-frame located, as above mentioned, with a brick 47, thereon.

Our invention is not limited to the particular construction herein described and as shown in the drawings. For example, it is not confined to the use of rotary brushes, nor to the rotary brushes shown, as suitable brushes upon an endless belt or the like would be an equivalent for the said rotary brushes. Also, the sand-propeller may, although at a disadvantage, be dispensed with, and sand may be supplied to the brushes by other means than those described. The angle-bars may also be sometimes dispensed with.

We remark, finally, as hereinbefore suggested, in describing the general nature of our invention the same may be adapted to finishing or smoothing of various articles besides bricks.

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

1. In a machine for smoothing or finishing the surfaces of bricks, or the like, the combination of an endless carrier for holding the articles to be operated upon, means for driving said carrier, an annular lateral brush having its inner face in a plane at right angles to the plane of said carrier, and means for driving said brush in a direction contrary to that in which the carrier is driven, substantially as and for the purpose set forth.

2. In a machine for smoothing or finishing the surfaces of bricks, or the like, the combination of the endless carrier for conveying the articles to be operated upon, the two opposite lateral brushes having their inner op-

erating-faces in parallel planes opposite each other and a predetermined distance apart corresponding to the width between the opposite faces of the articles to be operated upon, means for driving said carrier, and means for driving said brushes at a surface speed greater than that imparted to the carrier, substantially as and for the purpose set forth.

3. In a machine for smoothing or finishing the surfaces of bricks, or other articles, the combination of the endless carrier, the series of transverse bars secured thereto, the two opposite lateral brushes having their inner operating-faces in parallel planes and a predetermined distance apart corresponding to the width between the opposite surfaces of the articles to be operated upon and placed upon said carrier, means for driving said carrier, and means for driving said brushes at a surface speed greater than that of the carrier, together with means for supplying sand or the like to said brushes, substantially as and for the purpose set forth.

4. In a machine for smoothing or finishing the surfaces of bricks, or other articles, the combination of the endless carrier, the two opposite, lateral, annular, rotatable brushes having their inner operating-faces in parallel planes and a predetermined distance apart corresponding to the width between the opposite faces of the articles to be operated upon and placed upon said carrier, means for driving said carrier, and means for imparting a rotary motion to said brushes at a surface speed greater than that of the carrier, together with means for supplying, or charging, said brushes with sand or the like, substantially as and for the purpose set forth.

5. In a machine for smoothing or finishing the surfaces of bricks, or the like, the combination of the endless carrier, the transverse bars secured thereto, the two opposite, annular, rotatable brushes, having their operating-faces in parallel planes and a predetermined distance apart corresponding to the width between the opposite faces of the bricks, or the like, conveyed by said carrier, means for driving said carrier, and means for imparting a rotary motion to said brushes in a direction opposite to the movement of the said carrier, and at a surface speed greater than the latter, substantially as and for the purpose set forth.

6. In a machine for smoothing or finishing the surfaces of bricks, or the like, the combination of the endless carrier, the two lateral, opposite, annular, rotatable brushes having their operating-faces in parallel planes and a predetermined distance apart corresponding to the width between the opposite faces of the bricks, or the like, conveyed by said carrier, means for driving said carrier, and means for imparting a rotary motion to said brushes at a surface speed greater than that of the carrier, together with the sand-supply

box in which said brushes rotate, substantially as and for the purpose set forth.

7. In a machine for smoothing or finishing the surfaces of bricks, or the like, the combination of the endless carrier, the two sets of rotary annular brushes laterally arranged with relation to the side edges of said carrier, means for driving said carrier, means for rotating said sets of brushes at a surface speed greater than that of the carrier, and means for maintaining the article deposited upon the carrier against the frictional stress of the several brushes, substantially as and for the purpose set forth.

8. In a machine for smoothing or finishing the surfaces of bricks, or the like, the combination of the endless carrier, the transverse bars secured thereto, the rotary annular brushes laterally arranged with relation to the side edges of said carrier, means for driving said carrier, and means for rotating said brushes in a direction opposite to that of the carrier, together with means for supplying or charging the brushes with sand, or the like, substantially as and for the purpose set forth.

9. In a machine of the character and for the purpose described, the combination of the endless carrier-belt, the transverse bars secured thereto and their ends projecting beyond the edges of the belt, and the guide-plates constructed and arranged substantially as shown, and for the purpose set forth.

10. In a machine for the purpose recited, the combination of the set of brushes, the sand-box in which they are adapted to rotate, and the sand-propeller adapted to return to the path of the brushes the sand carried back by the latter; together with means for driving said brushes and propeller, substantially as and for the purpose set forth.

11. In a machine for the purpose recited, the combination of the endless carrier, having transverse supporting-bars thereon, the set of rotary brushes; means for driving said carrier and set of brushes in opposite directions; the sand-box in which said brushes rotate, and the rotary propeller within said box constructed and adapted to operate to carry the sand to the said brushes in opposite directions, substantially as set forth.

12. In a machine for the purpose recited, the combination of the endless carrier, the two sets of rotary brushes placed relatively to each other and the said carrier as shown, means for driving said brushes and carrier simultaneously; together with means for supplying sand to said sets of brushes, substantially as and for the purpose set forth.

13. In a machine for the purpose recited, the combination of the endless carrier, the two sets of rotary brushes placed relatively to each other and the said carrier as shown, means for driving said carrier in one direction, and the sets of brushes simultaneously in the opposite direction; together with means

for maintaining in place the bricks deposited upon said carrier, against the frictional stress of the several brushes, and means for supplying sand to said sets of brushes, substantially as described.

14. In a machine for the purpose recited, the combination with the endless brick-carrier, the set of rotary brushes, and the sand-box in which they rotate, of the oblique brushes arranged as shown whereby the surplus sand thrown by the said brushes upon

the upper sides of the bricks is removed and returned to the sand-box, substantially as specified.

In testimony whereof we have hereunto affixed our signatures in the presence of two subscribing witnesses.

CYRUS CHAMBERS, JR.
JAMES H. CHAMBERS.

Witnesses:

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E. S. MAYNE.