

A. CONNOR.
DRAIN TILE TRIMMER.
APPLICATION FILED JULY 8, 1908.

913,620.

Patented Feb. 23, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

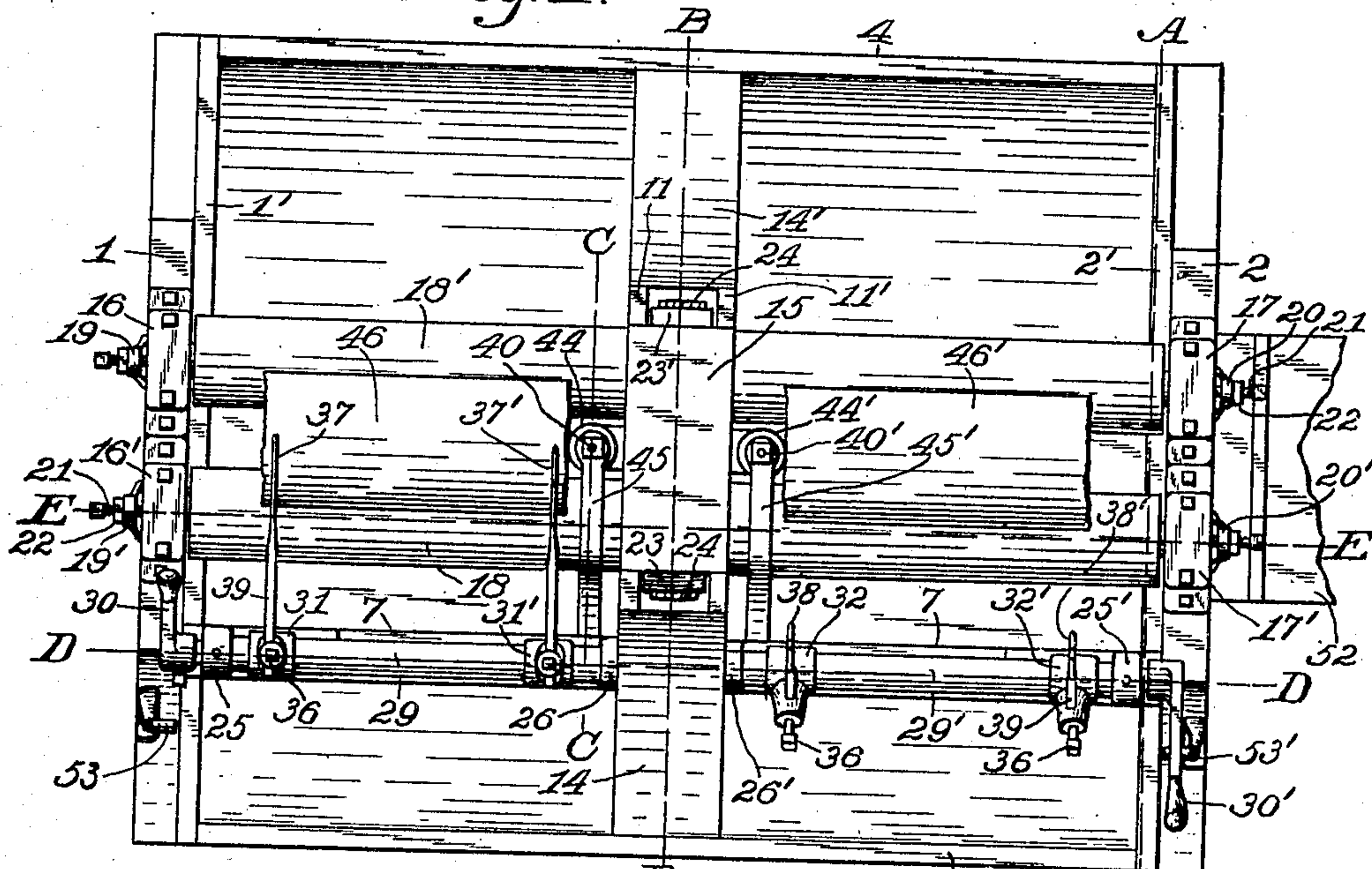


Fig. 2.

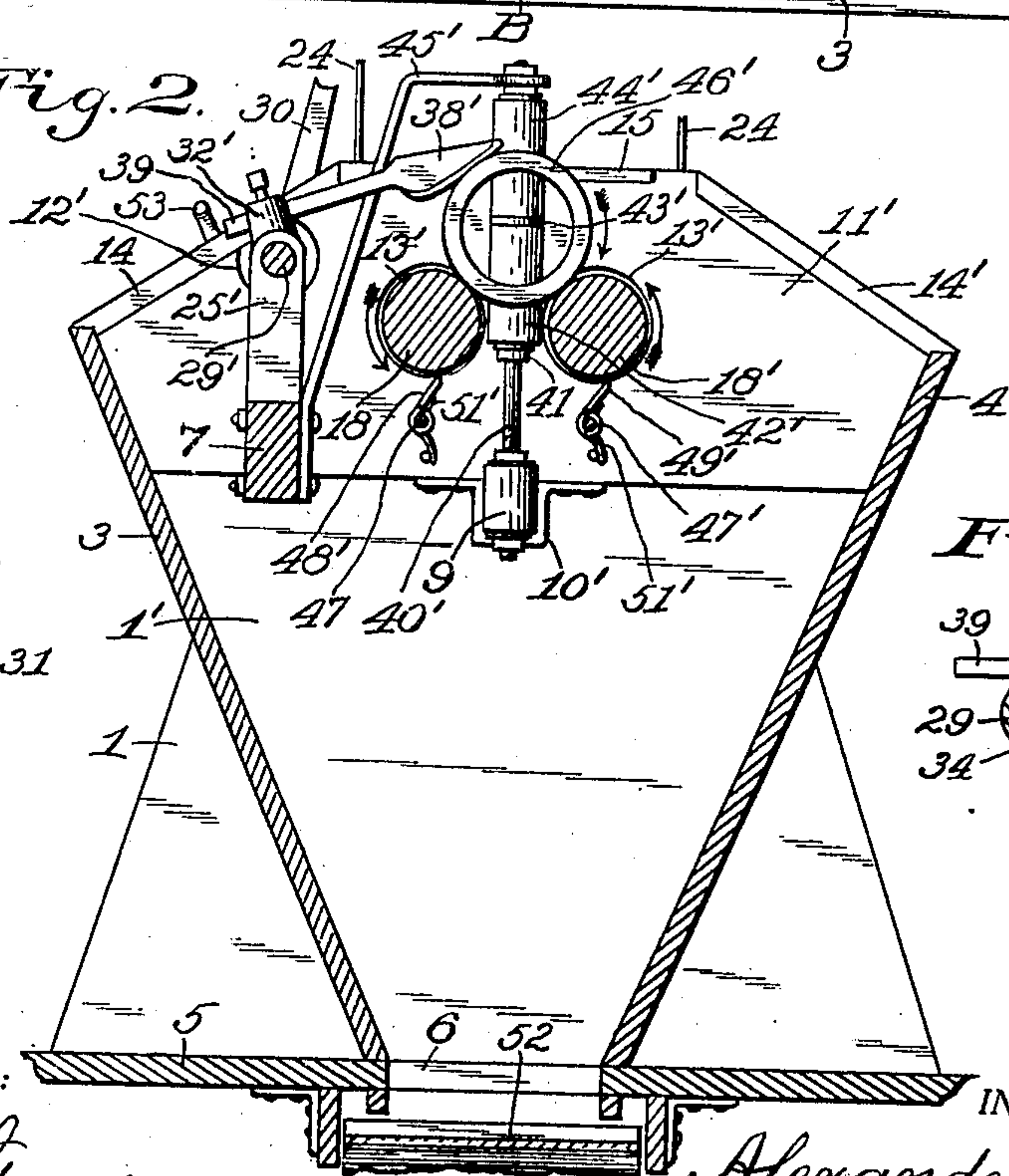


Fig. 3.

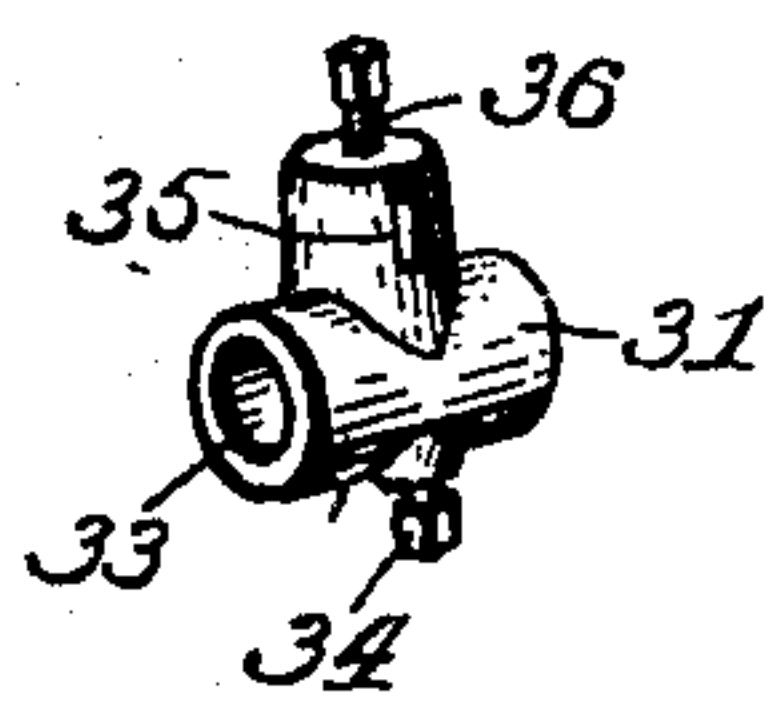
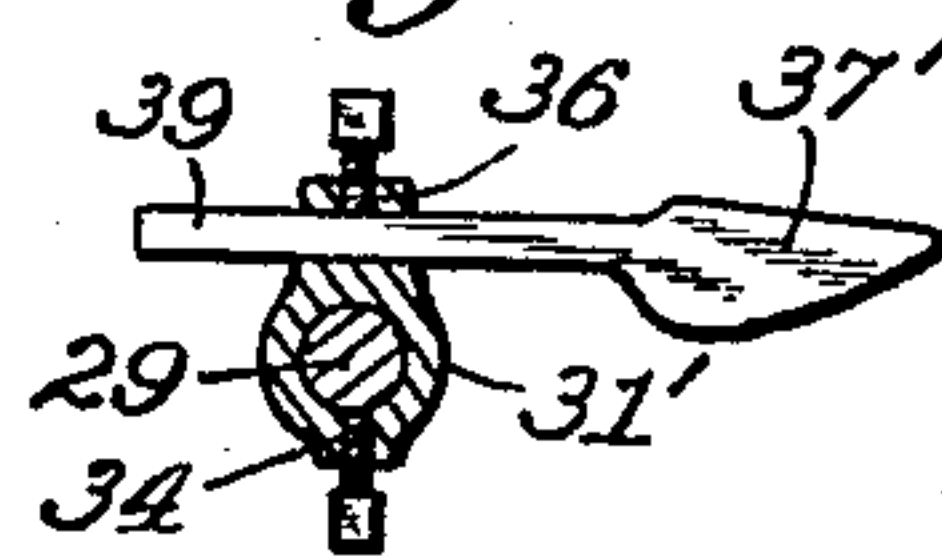


Fig. 4.



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2 SHEETS—SHEET 2.

Fig. 5.

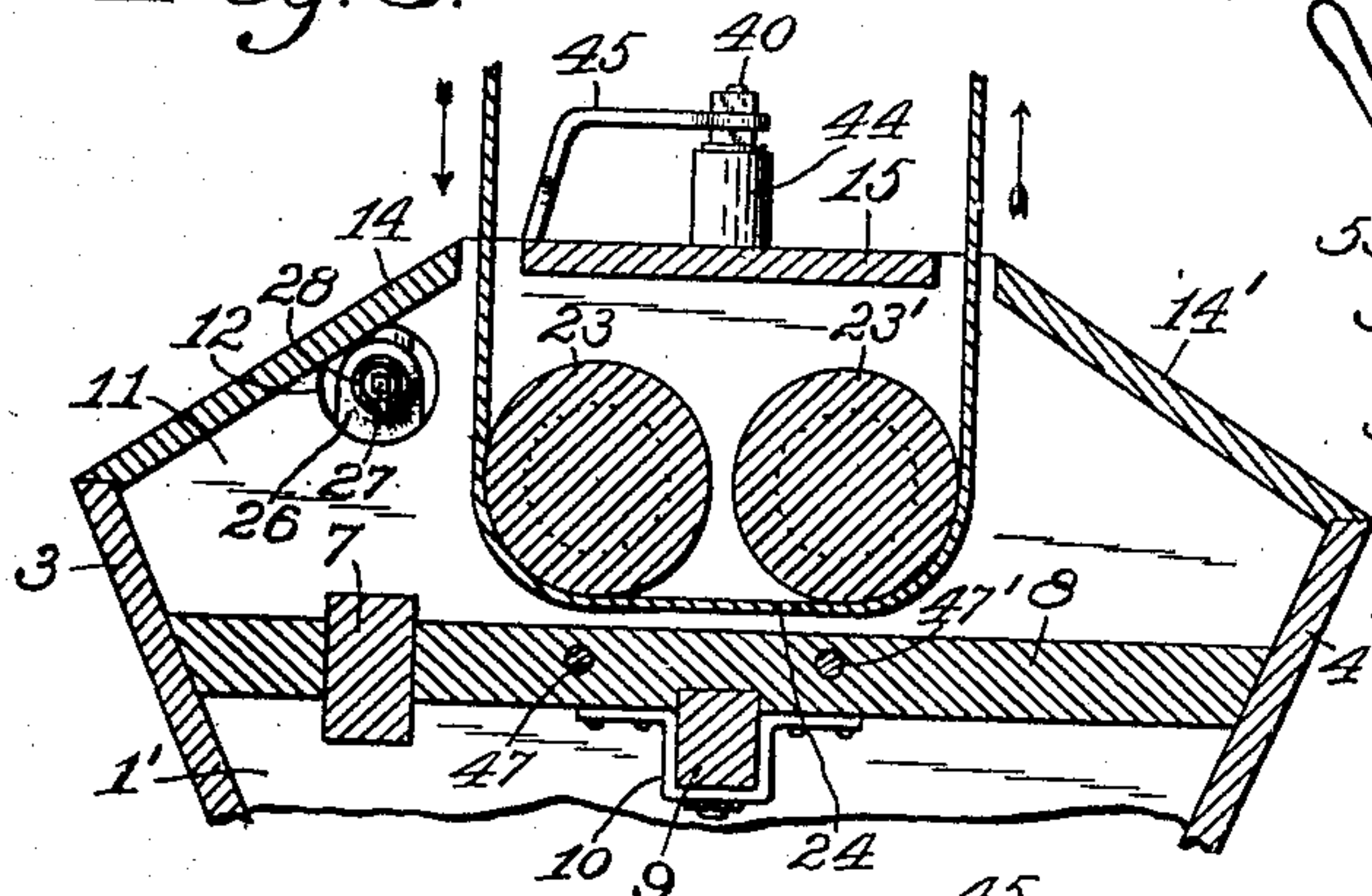


Fig. 6.

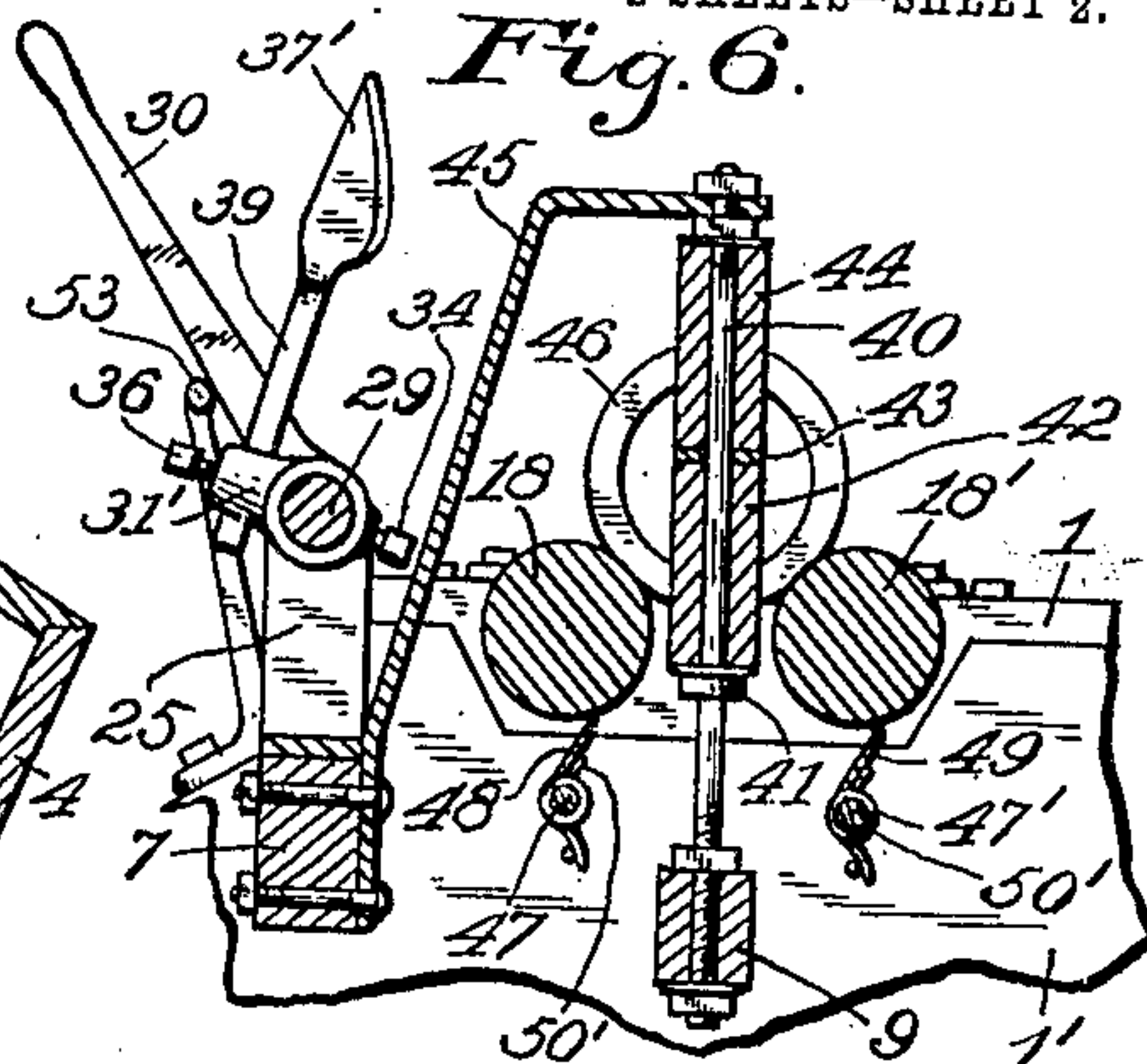


Fig. 7.

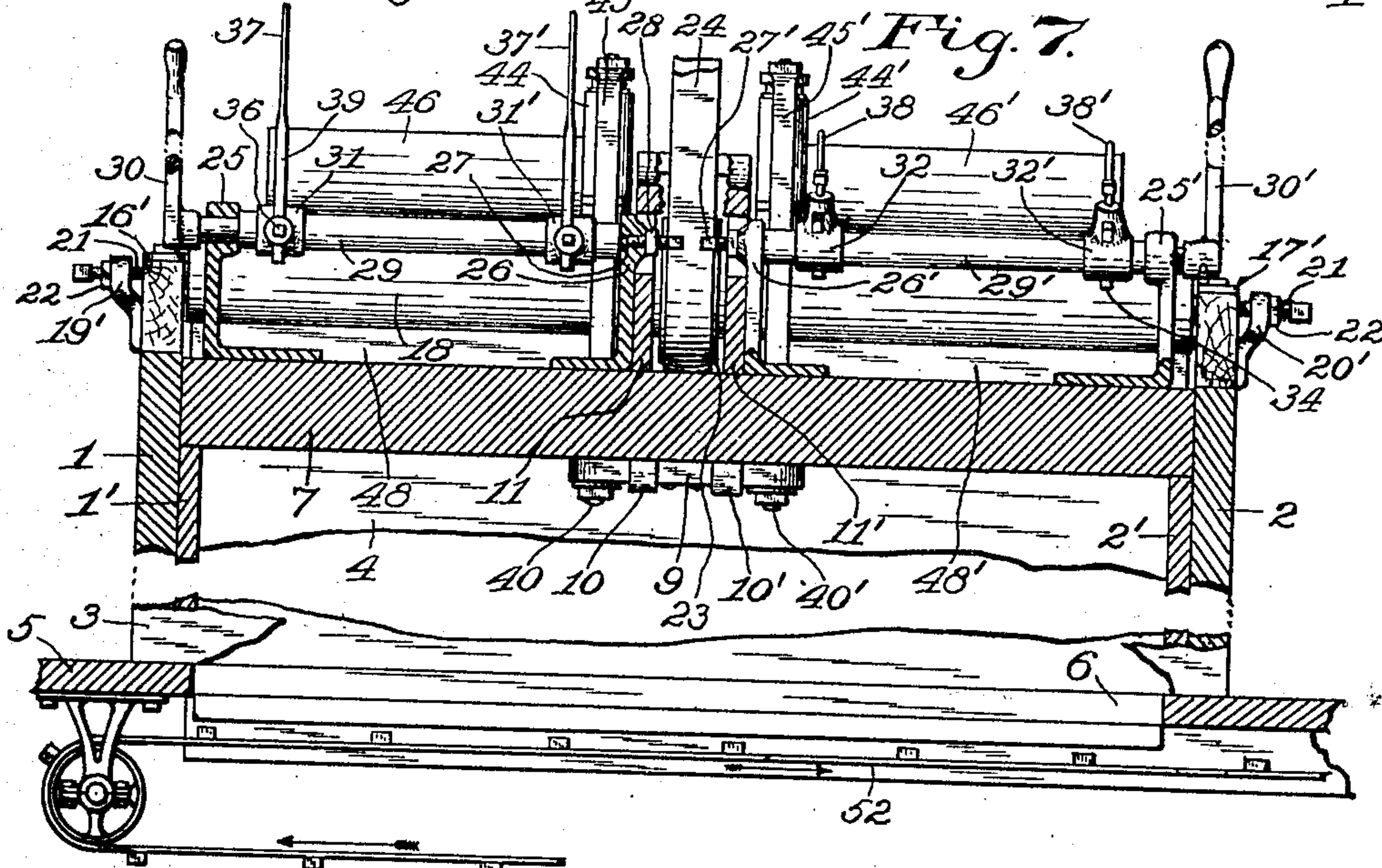
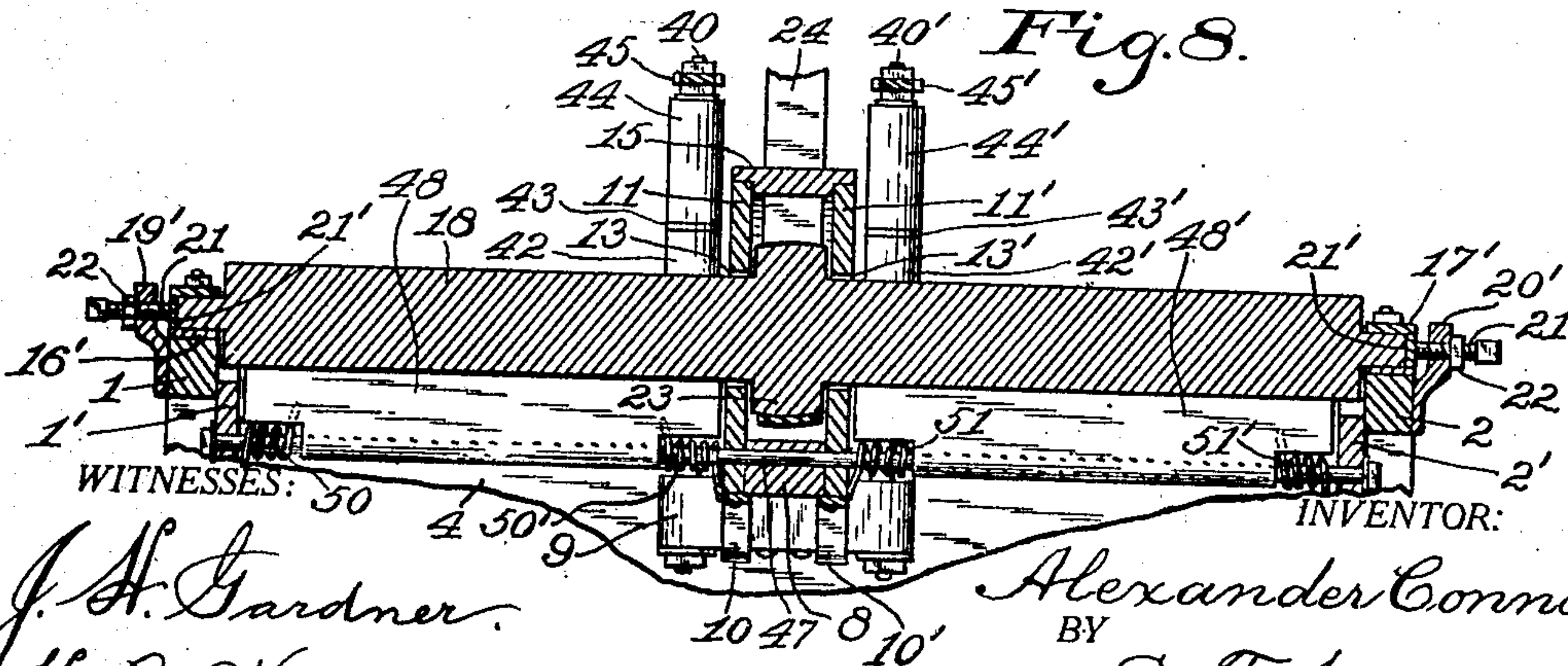


Fig. 8.



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UNITED STATES PATENT OFFICE.

ALEXANDER CONNOR, OF MONTEZUMA, INDIANA.

DRAIN-TILE TRIMMER.

No. 913,620.

Specification of Letters Patent.

Patented Feb. 23, 1909.

Application filed July 8, 1908. Serial No. 442,521.

To all whom it may concern:

Be it known that I, ALEXANDER CONNOR, a citizen of the United States, residing at Montezuma, in the county of Parke and State of Indiana, have invented certain new and useful Improvements in Drain - Tile Trimmers; and I do declare the following to be a full, clear, and exact description of the invention, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to machines for trimming the imperfect ends of tubes or cylinders and has reference more particularly to machines for trimming the ends of sections of drain tiling in the green state, the ends of the sections being more or less imperfect or rough when delivered from the molding machines, the object of the invention being to provide an improved trimming machine whereby the ends of pipes or tubes may be trimmed true and smooth, especially to enable drain tile makers to produce drain tiling that will fit together closely so as to prevent the drains from becoming filled with sand or earthy matter when in use and yet permit the drainage water to percolate through the pipe joints into the drainage lines; a specific object being to improve drain tiles which heretofore have been produced with more or less uneven ends which prevented the making of sufficiently close joints in laying the tiling to prevent entrance of sufficient quantities of sand or earthy matter to partially or wholly fill the drain lines and impair their usefulness.

The invention consists in a drain tile trimmer comprising a frame, twin turning rollers for supporting and turning sections of drain tiling, rotative guides for the sections, a plurality of trimming knives mounted on a rock shaft that is parallel to the turning rollers, and scrapers for removing refuse matter from the turning rollers so as to prevent injury to the surfaces of the tiling sections, and the invention consists further in the parts and combinations, and arrangement of parts, as hereinafter particularly described and defined in the accompanying claims.

Referring to the drawings, Figure 1 is a top plan of the improved trimming machine with a set of knives in operative position and a set of knives in normal position; Fig. 2, a transverse vertical sectional view thereof approximately on the plane of the line A—A in

Fig. 1 with knives in operative positions; Fig. 3, a perspective view of one of the knife holders; Fig. 4, a transverse sectional view of the knife holder and its supporting rock shaft and side view of one of the trimming knives; Fig. 5, a fragmentary transverse vertical sectional view approximately on the line B—B in Fig. 1; Fig. 6, a fragmentary transverse sectional view approximately on the plane of the line C—C in Fig. 1 with the knives in normal position; Fig. 7, a fragmentary longitudinal vertical sectional view approximately at and forward of the plane of the line D—D in Fig. 1 with the knives in different positions; and Fig. 8, a fragmentary longitudinal vertical sectional view at the plane of the line E—E in Fig. 1.

Similar reference characters in the different figures of the drawings indicate corresponding elements or features of construction referred to herein.

The improved trimming machine as herein illustrated and preferably constructed comprises two upright frame ends 1 and 2 having linings 1' and 2' forming the ends of a hopper shaped bin to which are suitably attached an inclined front 3 and back 4 serving as parts of the main frame and also as parts of a bin, all mounted on a base 5 in which is a longitudinal slot 6 extending from one end to the other end and from the front to the back of the bin, so that the trimmings may fall through the bottom of the bin. A longitudinal beam 7 is attached to the frame ends near the upper portion of the front 3, and a transverse beam 8 is supported by the front 3 and back 4 midway between the frame ends and is joined to the beam 7. A cross-beam 9 is supported under the beam 8 by means of clamps 10 and 10' that are attached to the under sides of side boards 11 and 11' which are attached to the beam 8 and therewith form a protecting pulley box, the boards having apertures 12 and 12' therein and also relatively larger apertures 13 and 13', the front of the box having a slanting lid 14 and the rear portion of the box having a slanting lid 14', and the middle portion of the box having a lid 15 slightly separated from the other lids so as to provide passage-ways for a driving belt.

The tops of the frame ends each have two journal boxes as 16 and 16' and 17 and 17' mounted thereon in which are journaled twin turning rollers 18 and 18', the rollers being in one and the same horizontal plane

and spaced somewhat apart so that a cylinder may rest thereon and be turned rotatively thereby, each turning roller being mounted in two journal boxes and extending from one to the other one of the frame ends and through the apertures 13 and 13', the middle portion of one roller having a pulley 23 formed thereon, the middle portion of the companion roller having a pulley 23' formed thereon, the two pulleys being engaged by a belt 24 extending under both pulleys and upward and out of the pulley box and may be connected to any suitable driving pulley, so that when the belt is driven the turning rollers will both rotate in one direction.

A pair of standards 25 and 26 are mounted upon the beam 7 at one side of the pulley box, the standard 26 being provided with a well known form of center bearing 27 provided with a lock-nut 28, and another pair of standards 25' and 26' are mounted on the beam 7 at the opposite side of the pulley box, the standard 26' being provided with a center bearing 27'. A rock shaft 29 provided with an operating lever 30 is mounted in a suitable bearing in the standard 25 and on the bearing 27, and a similar rock shaft 29' having an operating lever 30' is mounted in a suitable bearing in the standard 25' and on the bearing 27'. The rock shafts are shouldered against the standards 25 and 25' and longitudinal play by the rock shaft may be prevented by adjusting the center bearings 27 and 27'. Two knife holders 31 and 31' are mounted on the rock shaft 29 and two similar knife holders 32 and 32' are mounted on the rock shaft 29', the knife holders all being alike and each one having a bore 33 receiving its supporting rock shaft, each holder being secured adjustably by a set-screw 34 with which it is provided and engaging the rock shaft. Each holder has an aperture 35 therein that is arranged transversely to the bore 33 and is provided with a set-screw 36 extending into the aperture. Trimming knives 37 and 37' are supported by the knife holders 31 and 31' respectively and similar knives 38 and 38' are supported by the knife holders 32 and 32' respectively, each knife having a shank 39 extending through the aperture 35 and adjustably secured by the set-screw 36, so that the knives may be set properly for trimming the ends of the tiling sections.

A pair of vertical axles 40 and 40' are mounted on the beam 9 at opposite sides of the pulley box extending upward between the turning rollers, one axle having a guide roller 42 and the other axle having a guide roller 42' thereon and extending upward a suitable distance so that the upper ends of the rollers shall be approximately at the axis of a cylinder placed upon the twin turning rollers, the upper ends of the rollers preferably having anti-frictional washers 43 and 43'

thereon on which two other guide rollers 44 and 44' have their bearings, the latter guide rollers being mounted also on the vertical axles and free to rotate independently of the lowermost guide rollers on the axles. The vertical axles are steadied by braces 45 and 45' that are attached to the beam 7 and connected to the upper portions of the axles. The arrangement is such that when a pipe section 46 is placed upon the twin turning rollers against the guide rollers 42 and 44 the trimming knives 37 and 37' when brought into contact with the section will trim off small portions of the two ends of the pipe section, and a section 46' placed against the guide rollers 42' and 44' may be trimmed in like manner.

Two pivoting rods 47 and 47' are arranged longitudinally in the frame and supported thereby under the turning rollers, the rod 47 having two scraping blades 48 and 48' pivoted thereon engaging the roller 18, and the other rod 47' having two scraping blades 49 and 49' pivoted thereon and engaging the roller 18', for scraping off such fragments of the trimmings as may adhere to the turning rollers, each scraping blade being pressed to the roller by a pair of springs as 50 and 50' or 51 and 51'.

In order to save the trimmings from the ends of the green tiling, which in operation will fall through the aperture 6, a conveyer 52 is arranged below the aperture so as to receive the trimmings and convey them away to be worked into the batch of clay for molding other tiling.

Any suitable stops may be provided for the operating levers 30 and 30' when drawn forward to hold the trimming knives out of the way of the operator approximately in the position shown in Fig. 6 and in one side of Figs. 1 and 7, and for this purpose brackets 53 and 53' are preferably mounted on the frame ends on which the operating levers may rest by gravity.

In practical use the belt 24 will be driven in the direction indicated by the arrows in Fig. 5 which will cause the turning rollers to rotate in the direction indicated by the arrows in Fig. 2, and if sections of green drain tiling after having been roughly cut off by the molding machine be then placed upon the twin turning rollers they will rotate in the direction indicated by the arrow in Fig. 2 and turn the lowermost guide rollers in one direction and the uppermost guide rollers in the opposite direction, if placed in contact with the guide rollers, so that the tiling sections will be enabled to rotate smoothly. The operating levers 30 and 30' will be moved so as to bring the trimming knives down onto the end portions of the tile sections and will smoothly trim off sufficient quantities of the material to leave smooth and true ends, after which the sections will be fired or

burned as usual. In the operation of trimming the sections the rolling will have the effect of improving the appearance of the outer surfaces of the tiling by smoothing them somewhat. The sections should be placed near to or against the guide rollers without forcibly engaging them.

In operating the machine one man may operate both sets of trimming knives while any desired number of attendants may place the tiling sections in position and remove them from the turning rollers, or in some cases a greater amount of work may be accomplished by two operators, one at each set of trimming knives and a greater number of attendants.

Having thus described the invention, what is claimed as new, is—

1. A drain tile trimmer including a frame, horizontal twin turning-rollers journaled on the frame and having each a pulley thereon, a vertical guide mounted on the frame in a plane between the turning-rollers, a trimming-knife, and a guide for the trimming-knife.

2. A drain tile trimmer including a frame, horizontal twin turning-rollers journaled on the frame, a vertical guide mounted on the frame in a plane between the turning-rollers, and a rock-shaft mounted on the frame and having two trimming-knives mounted thereon.

3. A drain tile trimmer including a frame, horizontal twin turning-rollers journaled on the frame for supporting and rotating a tile section, a vertical axle mounted on the frame and extending between the turning rollers, a guide-roller for the section mounted rotatively on the axle, a trimming-knife, and a guide for the trimming-knife mounted on the frame.

4. A drain tile trimmer including a frame, horizontal twin turning-rollers journaled on the frame, two guide-rollers mounted on the frame to rotate independently about a vertical axis that is between the axes of the turning-rollers, and a rock-shaft mounted on the frame and having two trimming-knives mounted thereon.

5. A drain tile trimmer including a frame, horizontal twin turning rollers journaled on the frame, a vertical axle mounted on the frame and having a guide-roller mounted rotatively thereon, a rock-shaft mounted on the frame and having a plurality of knife-holders secured thereto, and a plurality of trimming-knives secured to the knife-holders, one to each knife-holder.

6. A drain tile trimmer including a frame, horizontal twin turning-rollers journaled on the frame and having each a pulley thereon, a vertical axle mounted on the frame and extending between the turning-rollers, two guide-rollers mounted rotatively on the axle, a rock-shaft mounted on the frame and provided with two knife-holders that are secured adjustably thereto, two trimming-knives secured to the knife-holders, one to each, and a plurality of scrapers mounted in the frame in engagement with the twin turning-rollers.

7. A drain tile trimmer including a frame, horizontal twin turning-rollers journaled on the frame and having each a pulley on the middle portion thereof, a pulley-box mounted on the frame over the pulleys, two vertical axles mounted on the frame at opposite sides of the pulley-box and having each a guide-roller mounted thereon, two rock-shafts mounted on the frame and having each an operating lever thereon, a plurality of knife-holders, two mounted on one of the rock-shafts and two on the other one of the rock-shafts, and a plurality of trimming-knives secured to the knife-holders, one to each knife-holder.

8. A drain tile trimmer including a frame comprising a bin with an aperture in the bottom thereof, a longitudinal beam secured in the bin, a pulley box comprising a transverse beam and apertured sides and mounted on the frame, two horizontal turning-rollers journaled on the frame and having each a pulley on the middle portion thereof in the pulley-box, two vertical axles supported by the pulley-box and each having two guide-rollers mounted rotatively thereon, braces attached to the longitudinal beam and also to the tops of the axles, a drive belt extending into the pulley-box and under the pulleys of the two turning-rollers, two pairs of standards secured to the longitudinal beam, two rock-shafts each mounted in a pair of the standards, two pairs of knife-holders each pair secured to one of the rock-shafts, two pairs of trimming-knives each secured to one of the knife-holders, four scraping blades mounted pivotally under the turning-rollers, two blades for each turning-roller and held yieldingly in contact therewith, and a conveyor mounted below the aperture of the bin.

In testimony whereof, I affix my signature in presence of two witnesses.

ALEXANDER CONNOR.

Witnesses:

LEANDER MOORE,

FRANCIS M. M. LAUGHLIN.