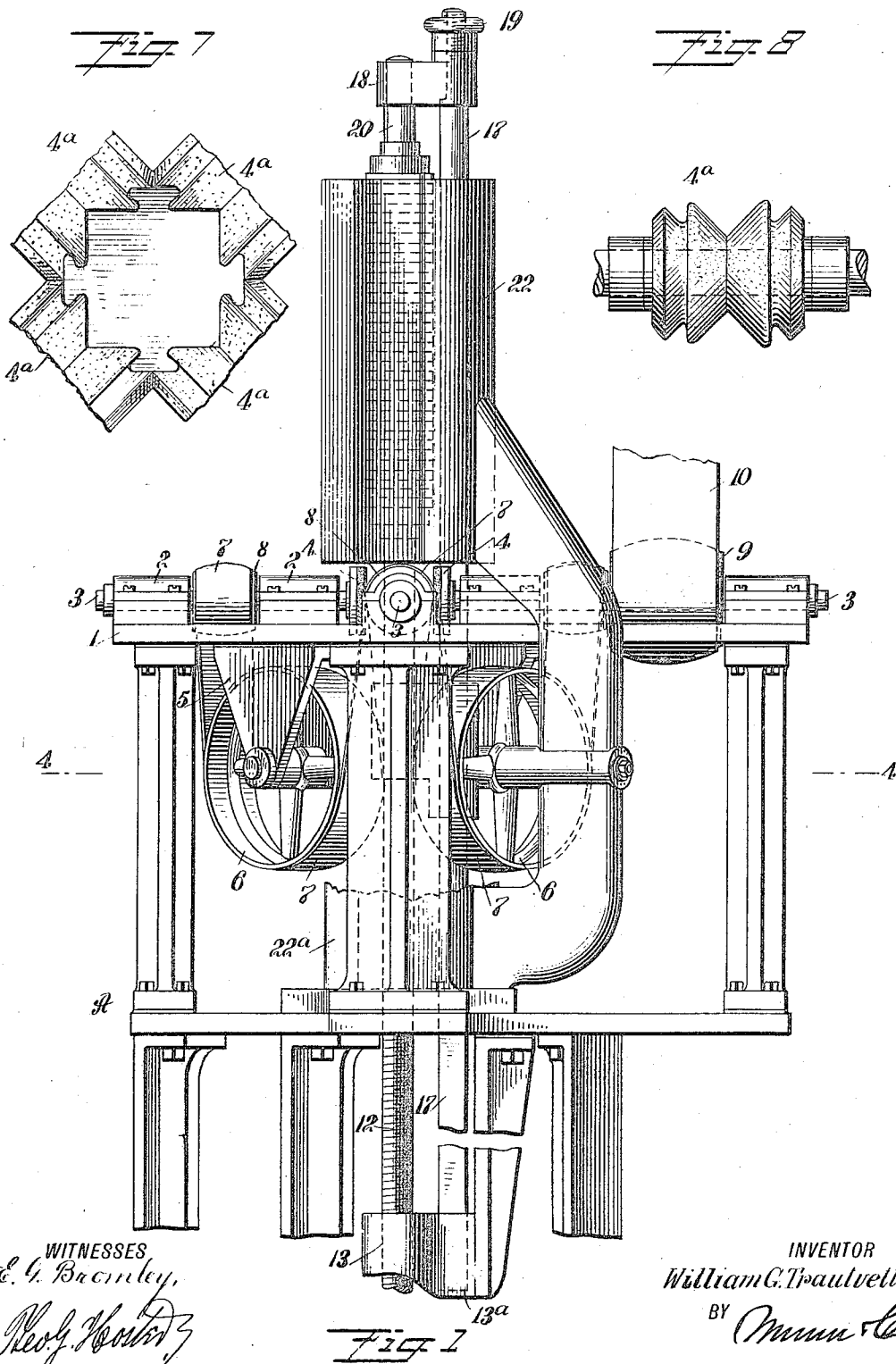


W. G. TRAUTVETTER.
TILE TRIMMING MACHINE.
APPLICATION FILED AUG. 31, 1909.

961,560.

Patented June 14, 1910.

4 SHEETS—SHEET 1.



WITNESSES
E. G. Bramley,
Reed & Howard

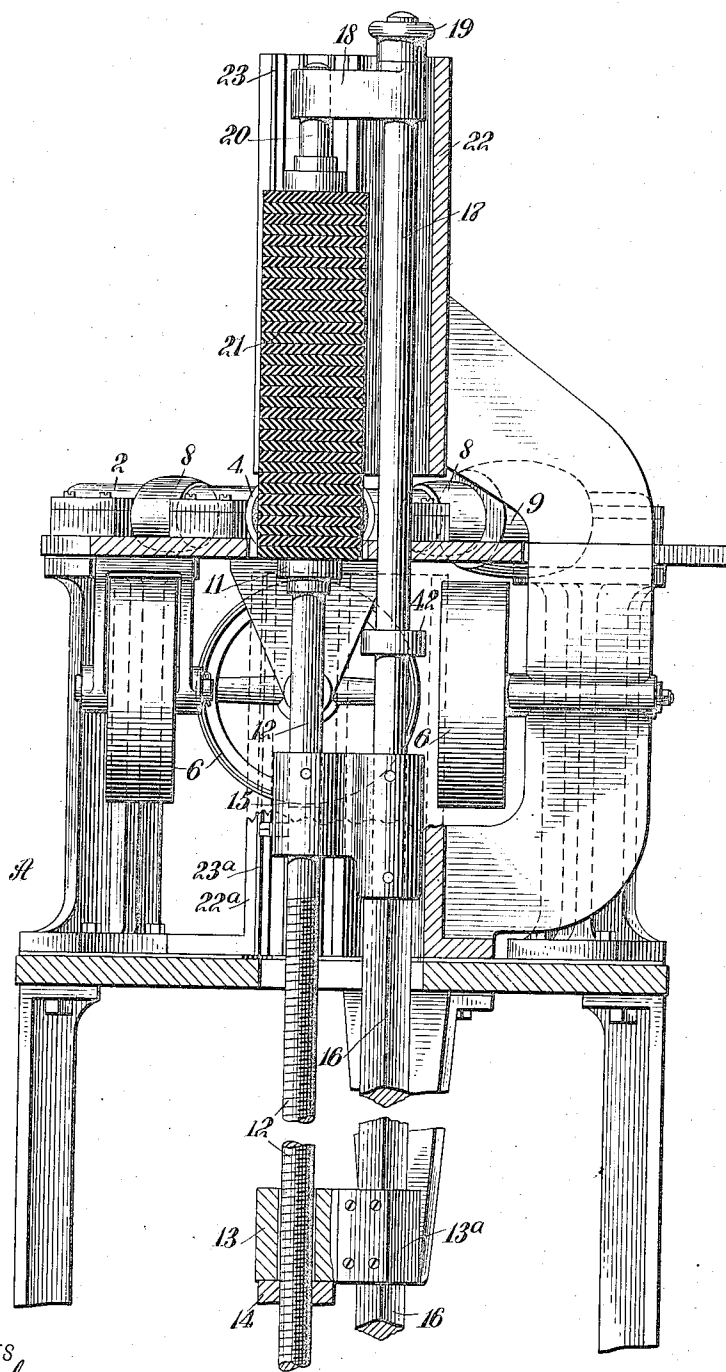
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4 SHEETS—SHEET 2.



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Fig. 2

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4 SHEETS—SHEET 3.

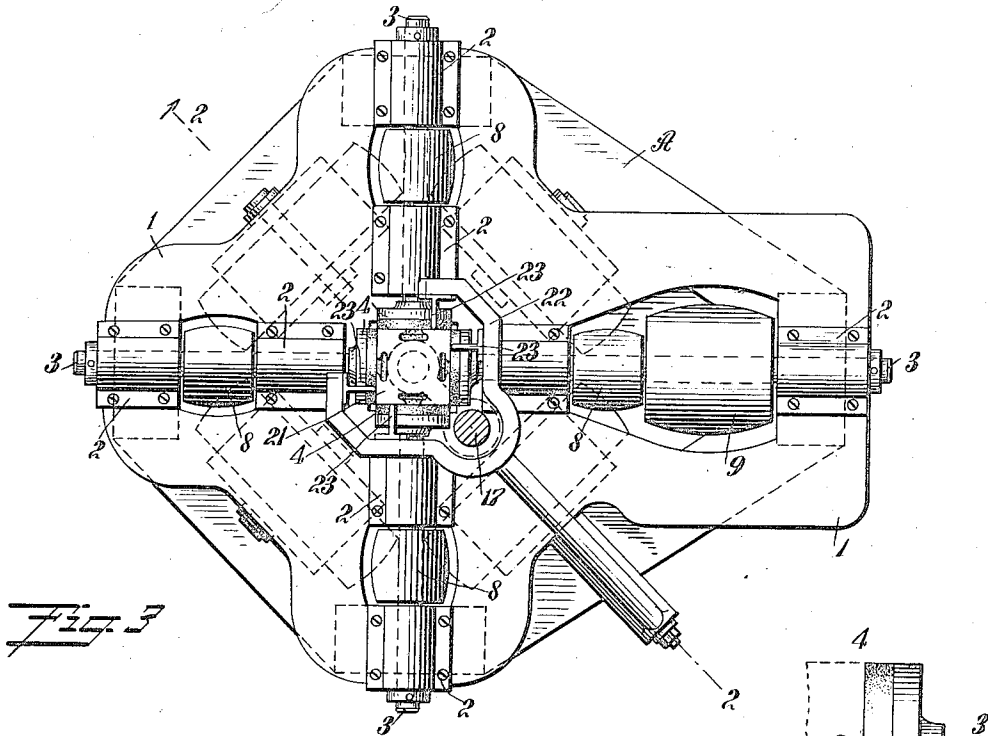


Fig. 3

Fig. 6

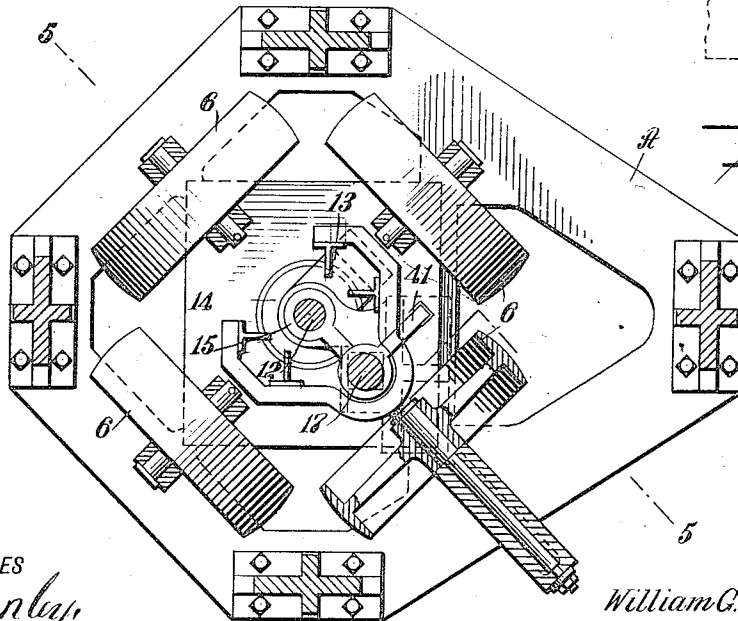
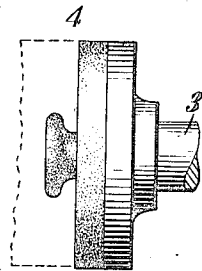


Fig. 4

WITNESSES
E. G. Brownley,
R. G. Hester,

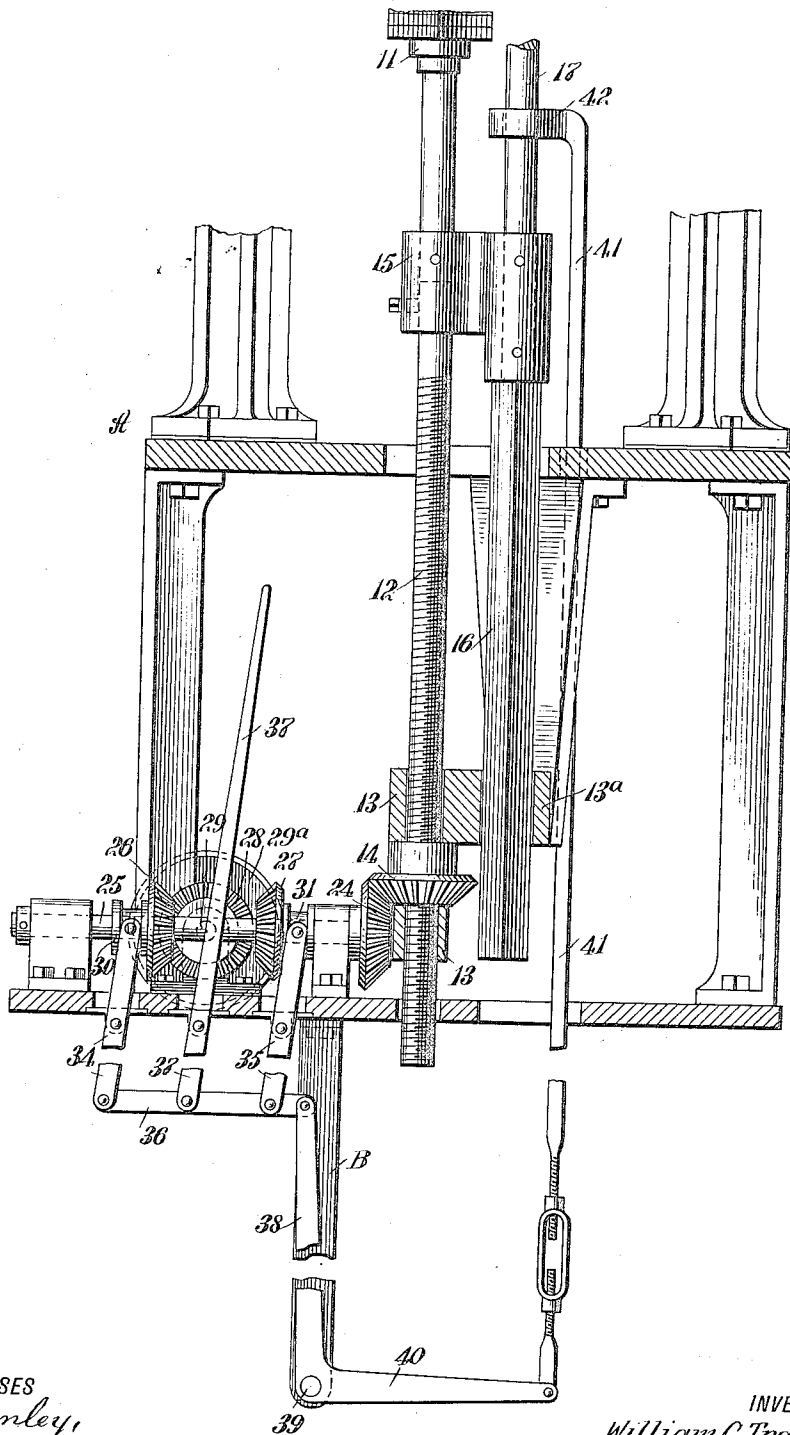
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4 SHEETS—SHEET 4.



WITNESSES
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Fig. 5

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UNITED STATES PATENT OFFICE.

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TILE-TRIMMING MACHINE.

961,560.

Specification of Letters Patent. Patented June 14, 1910.

Application filed August 31, 1909. Serial No. 515,379.

To all whom it may concern:

Be it known that I, WILLIAM G. TRAUTVETTER, a citizen of the United States, residing at Paterson, in the county of Passaic and State of New Jersey, have invented certain new and useful Improvements in Tile-Trimming Machines, of which the following is a full, clear, and exact description.

The machine of my invention is primarily intended for trimming the edges of tiles made of rubber composition which have been formed and vulcanized in a suitable mold. When these tiles are removed from the mold they have what is known as a "flash" or feather extending from the edges of one surface, and which must be removed before the tiles are assembled to constitute a floor covering. The removal of this feather is particularly difficult even by hand when the tile has recesses or reëntrant angles by which the tiles are interlocked.

The object of my invention, therefore, is to provide a machine by which a large number of tiles may be accurately trimmed at one time, thereby greatly reducing the labor involved and therefore decreasing the cost of manufacture of the tiles. I wish it to be understood, however, that my machine is not limited to this particular use, for the same may be employed in the manufacture or treatment of any article composed of other substances, where similar shapes are to be formed or finished.

Briefly stated, my invention comprises a machine which has a reciprocating table upon which a series of superposed tiles may be placed, the table being arranged to travel past a series of grinders which not only trim the straight edges of the tiles but also their reëntrant angles and recesses. The mechanism for moving the table is provided with devices for automatically stopping its motion at each end of a cutting.

For a detailed description of one form of my invention which I at present deem preferable, reference may be had to the following specification and to the accompanying drawings forming a part thereof, in which similar characters of reference indicate corresponding parts in all the views, and in which—

Figure 1 is an elevation of my improved machine showing the relative arrangement of the reciprocating table, guides and grinders; Fig. 2 is a vertical sectional view there-

of taken substantially upon the line 2—2 of Fig. 3; Fig. 3 is a plan view thereof; Fig. 4 is a horizontal sectional view taken substantially upon the line 4—4 of Fig. 1; Fig. 5 is a vertical sectional view showing driving mechanism for the reciprocating table and taken substantially upon the line 5—5 of Fig. 4; Fig. 6 is an enlarged plan view of one of the grinders; Fig. 7 is a plan view of the grinders and tiles having interlocking tongues; Fig. 8 is an enlarged plan view of one of the grinders for the trimming of tiles having interlocking tongues.

The upper end of a suitably constructed frame A is provided with a plate 1, upon which are mounted bearings 2—2 for a series of shafts 3, which carry at their inner end the revoluble grinders 4. For trimming tiles having a recess along each side use is made of grinders such as shown in Fig. 5, each grinder 4 being in the form of a disk, of a diameter corresponding approximately to the length of the corresponding side edge of the tile to be trimmed. On the front face of the disk is centrally disposed an auxiliary grinder, shaped in cross section according to the shape of the recesses in the tiles, so that the side edges of the tiles as well as the recesses are trimmed simultaneously. For trimming tiles having a tongue at each side for interlocking with the recessed tiles, it is necessary to arrange the grinders 4^a across the corners as indicated in Fig. 7. In this case the peripheral face of each grinder 4^a is shaped corresponding to the halves of adjacent sides of a tile, so that the several grinders completely trim the side edges as well as the tongues of each tile. It is evident that for tiles of different shapes, grinders of corresponding shape are employed and arranged as above described. To the lower side of the plate 1 are attached shaft hangers 5, which carry the pulleys 6 over which the driving belt 7 runs and in connection with the pulleys 8 serve to transmit power to all of the spindles or shafts 3. One of the spindles is provided with a main driving pulley 9, which is driven by the main power belt 10. The table or base 11, which supports a stack of tiles to be trimmed, is carried upon the upper end of a screw rod 12, which passes downward through a bearing 13 fixed to the frame-work A. The bearing 13 consists of two parts, between which is supported a bevel gear 14, which is in-

teriorly screw-threaded, so that as it revolves the screw rod 12 will be given an upward or downward motion. To the upper end of the screw rod 12 is secured a bracket 15 also
 5 attached to a guide 16, reciprocating vertically with the said screw rod 12. The lower end of the guide 16 is square and mounted to slide in a correspondingly shaped bearing 13^a on the bearing 13, in order
 10 to hold the guide 16 against turning. The upper end 17 of the guide 16 is preferably round and carries a laterally-extending movable arm 18 retained in position by a thumb nut 19, which is screw-threaded
 15 thereon.

A stud 20 projects downward from the arm 18 and constitutes a follower which may be brought into contact with the top end of the stack of tiles 21, to hold them approximately in position, although no very great pressure is required, as it is desired to have the tiles move slightly in order that they may adapt themselves to the grinders so as not to be ground to a greater degree on one
 20 edge than on another. Surrounding the guide rod 17, as well as the three sides of the tiles 21 is a casing 22, having four inwardly extending flanges or ribs 23, which terminate in fairly sharp edges. These ribs
 25 constitute guides and are arranged in pairs, as indicated in Fig. 3, so that they contact with the tiles on the straight edges thereof adjacent two opposite corners, although the tiles are free to slide between the ribs without binding. The sharp edges of the ribs
 30 23 pass through the feathers and contact directly with the said tile edges, so that the body of the tile is held correctly in position without regard to the position or thickness
 35 of the feathers. Below the plate 1 is arranged a casing 22^a secured to the frame A and having ribs 23^a similar to the ribs 23 and serving the same purpose, that is, to guide the tiles while the latter travel below the
 40 plate 1.

The power mechanism for driving the reciprocating table will be described as follows: The bevel gear 14 meshes with a vertically-arranged bevel gear 24 carried on one
 50 end of a horizontal shaft 25, journaled in the lower portion of the frame A (see Fig. 5). The shaft 25 also carries two slidable bevel gears 26 and 27 which are keyed thereon and which are adapted to mesh at diametrically opposite points with an intermediate bevel gear 28 which is carried on one
 55 end of a shaft 29 to the opposite end of which the driving pulley 29^a is attached. This pulley is adapted to turn continuously in one direction. The gears 26 and 27 are respectively provided with grooved collars 30 and 31, which engage the yokes 32 and 33 carried on the upper ends of the levers 34 and 35, fulcrumed on the frame A. The
 60 lower ends of these levers are united by a

connecting bar 36, to the central portion of which the operating lever 37 is attached. It will thus be seen that the driving mechanism may be turned in one direction or the other or may be thrown out of operation, according to whether the lever 37 is forced toward the right or left, or is in its central position.

One end of the connecting bar 36 is attached to a bell-crank lever 38 pivoted at 39 to a bracket B on the frame A, and the horizontal portion 40 of the bell-crank lever 38 extends through the axis or line of travel of the screw rod 12, and has attached at its outer end a rod 41 which extends upwardly and terminates in an eye 42 through which the guide 17 passes. It will thus be seen that assuming that the screw rod 12 is traveling downward its end will come in contact with the horizontal arm 40 of the bell-crank lever and will oscillate the levers 34 and 35, so as to throw the gear 26 out of mesh with the gear 28 and thus stop the motion of the screw rod 12, table 11 and the tiles carried thereby. The lever 37 may then be thrown to the limit of its motion in the same direction in which it was last moved, thereby causing the gear 27 to mesh with the gear 28, which will reverse the motion of the screw-threaded gear 14, thereby causing the screw rod 12 to move upward. This motion will be continued until the bracket 15 comes in contact with the eye 42 which will raise the rod 41 and the arm 40 of the bell-crank lever so that the lever 35 will be oscillated to move the gear 27 toward the right, thereby disengaging it from the driving gear 28. Thus the motion of the table in an upward direction will be stopped. It is obvious that the position of the bell-crank lever 38 and of the rod 41 may be so adjusted as to cause the tiles to travel to such extent that the grinders or cutters 4 will pass over all of the edges thereof, according to the number of tiles being treated at one time.

By reference to Fig. 3, it will be noticed that the grinders 4 are so arranged relative to the stack or pile of tiles 21, that one grinder engages a corresponding side of the stack or pile of tiles, and hence when the machine is running and the grinders and the stack or pile of tiles move relatively one past the other, then all the sides of the stack or pile of tiles are trimmed or cut simultaneously, together with the recesses.

The operation of trimming tiles having an interlocking tongue is similar to the one just described, it being, however, understood that in this case the cutters shown in Figs. 7 and 8 are used. The tiles are placed in position on the table or base 11 or removed therefrom after trimming at the time the said table 11 is in an upper position, it being understood that a pile or stack of tiles 21 is subjected twice to the grinding action

of the grinders 4 or 4^a, that is, once while the pile or stack of tiles moves downward past the grinders or cutters 4 (or 4^a), and a second time when the pile or stack of tiles is moved upward into removing position. When the tiles are trimmed the operator loosens the nut 19 and swings the follower 18 to one side to permit removal of the trimmed tiles and to allow a new pile or stack of tiles to be placed in position on the table 11 and guide 22, after which the follower 18 is returned and locked in place by screwing down the nut 19.

Although I have shown the device for trimming the tiles in the form of grinders, yet it is obvious that these may be steel or other cutters, and instead of being used simply for finishing or grinding, may be used to cut the recesses in the tiles or other articles themselves.

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

1. A tile-trimming machine, comprising means for supporting a stack of tiles, a series of revoluble grinders arranged for engagement with the sides of the said stack of tiles, each grinder having a main grinding disk for trimming the corresponding sides of the stack of tiles, and an auxiliary grinder centrally arranged on the said disk for trimming the recesses in the corresponding side of the stack of tiles, and means for relatively moving the stack of tiles and grinders one past the other.

2. A tile-trimming machine having a series of revoluble grinders arranged for engagement with the edges of a tile, each grinder having a main grinding disk for trimming the edge of a tile, and an auxiliary grinder centrally arranged on the said disk for trimming the recess in the corresponding edge of the tile, and means in connection with the support for engaging the edges of the tiles to retain them in position.

3. A tile-trimming machine, comprising a support for a series of superimposed tiles, and revoluble grinders, the said tiles and grinders being relatively movable one past the other for the grinders to trim the edges of the tiles.

4. A tile-trimming machine, comprising a support for a series of superimposed tiles, and revoluble grinders one for each side of a tile, the said tiles and grinders being relatively movable one past the other for the grinders to simultaneously trim all the edges of a tile, a casing inclosing the superimposed tiles and longitudinal ribs on the inner surface of the casing for engaging the tiles to retain them in proper position.

5. In a machine of the kind described, a series of grinders, a table adapted to receive a series of superposed articles to be treated, and a follower adapted to produce pressure

on said articles, said grinders; and the table and follower being relatively movable past each other.

6. In a machine of the kind described, a series of grinders, a table adapted to receive a series of superposed articles to be treated, said grinders and table being relatively movable one past the other, and a series of guides adapted to engage said series of articles to hold the same approximately in alignment.

7. In a machine of the kind described, a series of grinders, a table adapted to receive a series of superposed articles to be treated, a follower adapted to produce pressure on said articles, said grinders, and said table and follower being relatively movable past each other, and a series of guides adapted to engage said articles to hold the same in position while being placed on the table.

8. In a machine of the kind described, a series of grinders, radially extending shafts carrying said grinders at their inner ends so that they may act simultaneously upon all sides of the articles being treated, a table adapted to carry a series of said articles superposed upon each other, said grinders and table being relatively movable one past the other, and a series of guides located in line with the relative path of motion of said table.

9. In a machine of the kind described, a series of grinders, a reciprocating table provided with means to receive and hold a series of superposed articles to be treated, means adapted to hold said articles approximately in alinement, means for reciprocating said table, and means for automatically arresting the motion of said table at each end of its travel.

10. In a machine of the kind described, a series of grinders, a reciprocating table provided with means to receive and hold a series of superposed articles to be treated, means for holding said articles approximately in alinement, a screw connected with said table, a stationary threaded power device engaging said screw, and automatic means connected with said power device for arresting the motion of said screw at each end of its travel.

11. In a machine of the kind described, a series of grinders, a reciprocating table, provided with means to receive and hold a series of superposed articles to be treated, means for holding said articles approximately in alinement, a screw connected with said table, a stationary threaded power device engaging said screw, a continuously rotating power shaft, means connecting said power shaft with said power device for rotating the latter in either direction, and means operated by the motion of said screw for disconnecting said power shaft from said power device.

12. In a machine of the kind described, a series of grinders, a reciprocating table provided with means to receive and hold a series of articles to be treated, means for holding said articles approximately in alignment, a screw connected with said table, a stationary internally threaded gear engaging said screw, a shaft, a gear thereon engaging the first mentioned gear, slidable gears keyed to said shaft, a gear adapted to engage either of said slidable gears, means for sliding said gears on said shaft and located in the path of travel of said screw for

sliding said gears in one direction, a stop connected with said screw, and means located in the path of said stop for operating said gear sliding means in the opposite direction. 15

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses. 20

WILLIAM G. TRAUTVETTER.

Witnesses:

THOS. G. HOSTER,
JOHN P. DAVIS.