

G. N. WILLIAMS, JR.
 STONE FLUTING MACHINE.
 APPLICATION FILED JAN. 29, 1909.

939,577.

Patented Nov. 9, 1909.
 3 SHEETS—SHEET 1.

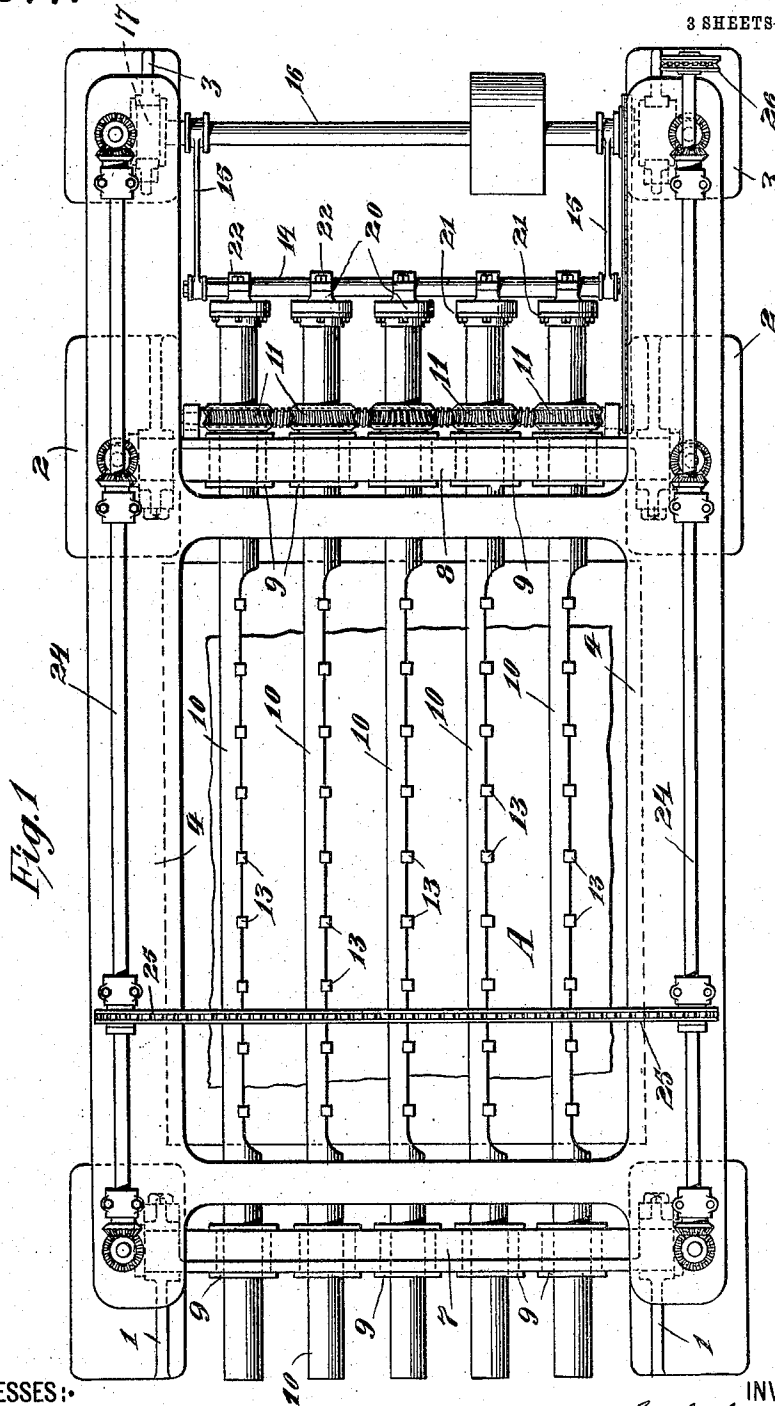


Fig. 1

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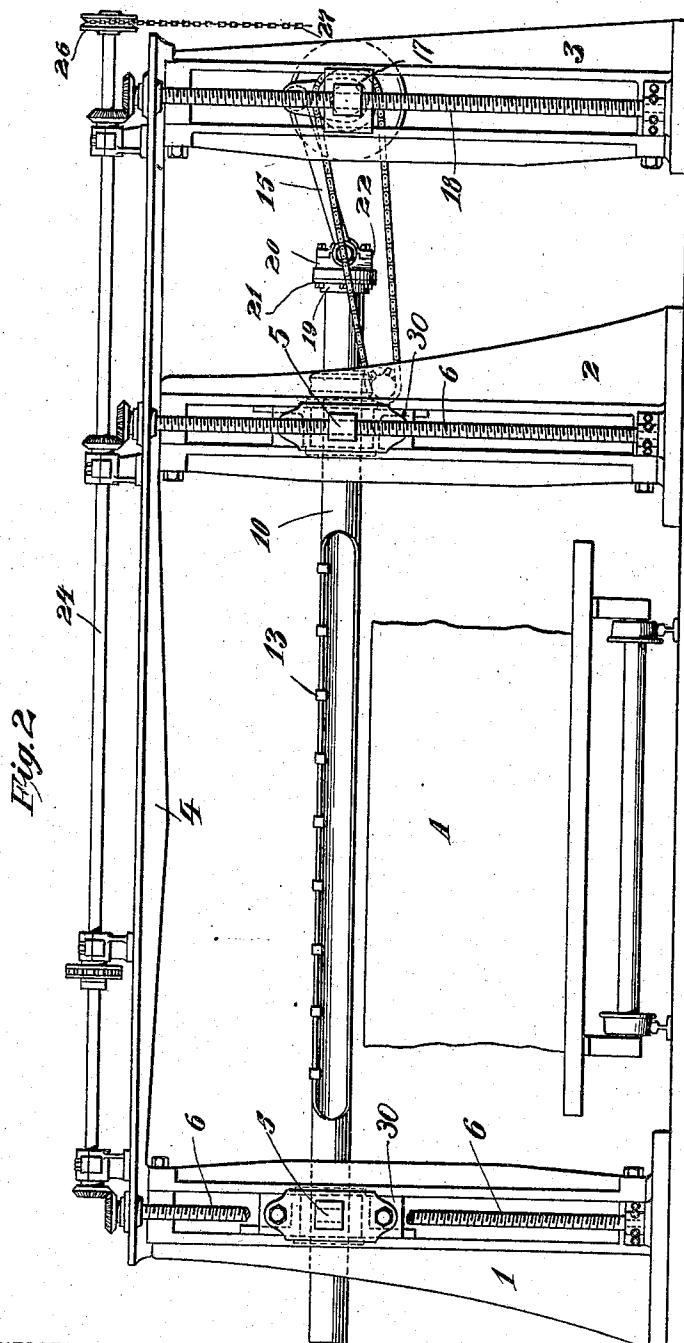


Fig. 2

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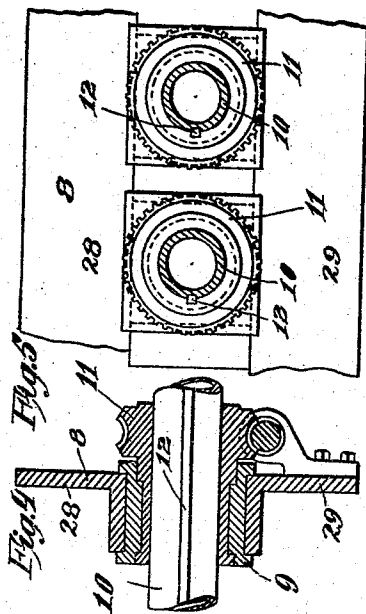


Fig. 6

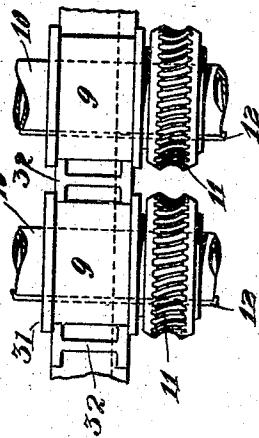


Fig. 7

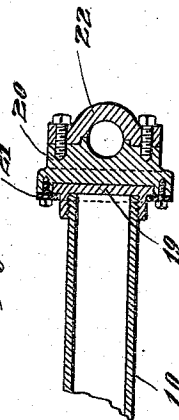
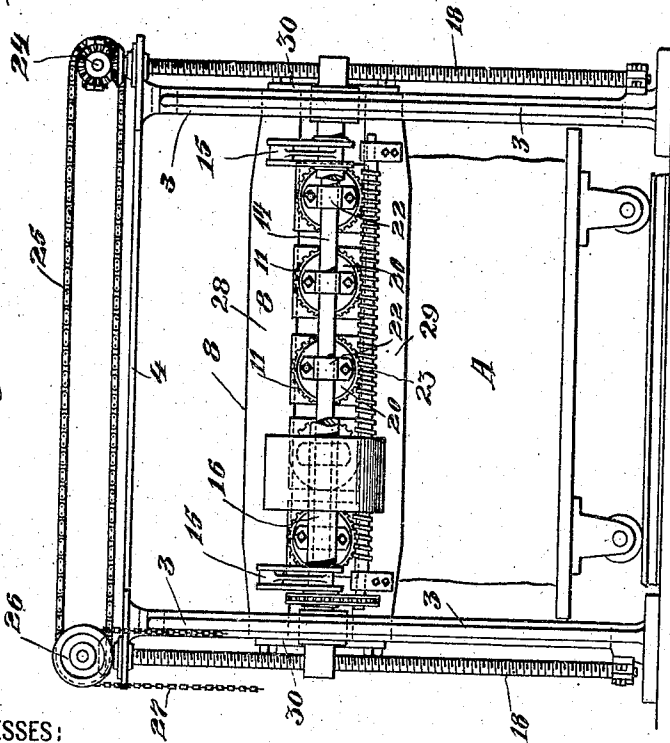


Fig. 3



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UNITED STATES PATENT OFFICE.

GEORGE N. WILLIAMS, JR., OF NEW YORK, N. Y.

STONE-FLUTING MACHINE.

939,577.

Specification of Letters Patent.

Patented Nov. 9, 1909.

Application filed January 29, 1909. Serial No. 474,993.

To all whom it may concern:

Be it known that I, GEORGE N. WILLIAMS, Jr., a citizen of the United States, residing at New York, in the county and State of New York, have invented certain new and useful Improvements in Stone-Fluting Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The object of the invention is to provide a machine for fluting stone quickly and economically, and capable of cutting flutes of different dimensions. To this end I provide one or more reciprocating parti-tubular tools or blades armed with cutting teeth, together with mechanism for rotating the tools on their longitudinal axes while they are being reciprocated and in order to increase the flexibility of operation of the machine I may further provide mechanism for readily bringing the tool or tools toward and away from the work.

In the drawings Figure 1 is a plan, Fig. 2 is a side elevation, Fig. 3 is an end elevation looking at the right of Fig. 1, and Figs. 4, 5, 6 and 7 are detail views on a larger scale of parts of the machine.

The upright members 1, 2 and 3 of the frame, supporting the entablature 4, are each provided with vertical guideways, as shown.

Guided in the ways of uprights 1 and 2 are the supporting cross frames 7 and 8, in which are mounted guide sleeves 9 for the reciprocating tools 10. Each of these supporting cross frames comprises upper and lower separate guide members 28 and 29 united at their ends by yoke plates 30, and attached to the yoke plates 30 are box-nuts 5 engaged respectively by the four elevating screws 6.

Within the sleeves 9 in cross-frame 8 are housed the hubs of worm gears 11 which hubs are grooved to receive feathers 12 on tools 10, so that the tools may be rotated by the gears 11 while being reciprocated.

Each tool 10 is made from a tube having a longitudinally extending cut-away portion as shown, and armed with cutting teeth 13, so that each tube forms a parti-cylindrical saw blade which may be reciprocated to effect the cut and may be rotated about its axis to feed into the work and remove there-

from a parti-cylindrical core, leaving the desired flute.

The mechanism for reciprocating the tools comprises a cross-bar 14 driven by crank-mechanism 15 from shaft 16, which shaft is mounted in bearing boxes 17 in vertical guide-ways in the uprights 3, the bearing boxes being engaged by elevating screws 18.

In order to attach the cross-bar 14 to the ends of the tools 10 without interfering with their rotary movements, I provide the construction illustrated in detail in Fig. 7. To the screw-threaded end of each tool 10 is screwed a flanged cap 19 which rests within a yoke-block 20 in which it is held by an annular collar 21. The yoke-block has the ordinary split yoke with removable portion 22 so that it may readily be detached from the cross-bar 14.

For the purpose of rotating the tools on their axes I provide, in conjunction with the worm-gears 11 already described, the worm shaft 23 which may conveniently be driven from shaft 16 as shown.

For the purpose of readily bringing the tools toward and from the work I provide, in conjunction with the elevating screws 6 and 18 the common driving shafts 24 and connecting sprocket chain 25, and a chain wheel 26 and chain 27 connected to one of the shafts 24, so that the elevating mechanism may readily be manipulated by the operator.

It will be understood that in operation the stone is placed, as shown at A in Fig. 1, beneath the tool frame, and the tools are brought to rest upon the surface of the stone by manipulating the elevating mechanism by means of chain 27. Shaft 16 is started to reciprocate the tools while they are pressed against the stone by the elevating mechanism, and the tools are rotated on their axes to ultimately cut from the stone a parti-cylindrical core leaving the desired flute. So far as I am aware it is broadly new to cut flutes in stone by the employment of a parti-cylindrical reciprocating saw blade which is rotated about its own axis, and the following claims should have a correspondingly broad interpretation.

From an examination of Figs. 3 to 6 inclusive, it will be seen that, in order to permit the insertion of tubular cutting tools of different sizes, and to permit of variation in the spacing of the tools, the frames 7 and 8

are made up of upper and lower separate guide members 28 and 29 united at their ends by yoke-plates 30, the lateral flanges of members 28 and 29 fitting between the
 5 flanges 31 on guide sleeves 9 which have a rectangular outline, and the blocks or sleeves 9 are spaced apart by spacer blocks 32.

When it is desired to substitute a different set of tools, or change the spacing, the parts
 10 28 and 29 are separated by removing plates 30, the old tools are removed and new tools with their blocks or sleeves 9 are inserted, or the spacer blocks 32 are removed and blocks of different size substituted, and parts 28
 15 and 29 fastened together again by replacing yoke plates 30.

What I claim is:—

1. A machine for fluting stone having a plurality of tubes with longitudinally extending cut-away portions armed with cutting teeth, in combination with mechanism
 20 for reciprocating the tubes and mechanism for rotating them on their longitudinal axes.

2. In a machine for fluting stone, a fluting
 25 tool comprising a tube having a longitudinally extending cut-away portion armed with cutting teeth, in combination with mechanism for reciprocating the tool and mechanism for rotating it on its longitudinal axis.

30 3. A stone fluting tool comprising a tube having a longitudinally extending cut-away portion armed with cutting teeth.

4. In a machine for cutting flutes in the

display surfaces of stones, an elongated saw blade curved transversely to its length to
 35 correspond to the curvature of the desired flute and mounted to be brought against the display surface of the stone, and mechanism for reciprocating the saw blade and rotating it to remove a core from the stone and leave
 40 the desired flute.

5. In a machine for fluting stone, a framework, oppositely disposed cross-frames supported therein, a plurality of fluting tools comprising tubes mounted for rotation about
 45 their axes in said cross-frames, and having longitudinally extending cut-away portions armed with cutting teeth, and mechanism for reciprocating said tools.

6. In a machine for fluting stone, a frame
 50 work having vertical guideways, cross-frames guided by said ways, elevating screws engaging the cross-frames, a plurality of fluting tools, comprising tubes mounted for rotation about their axes in
 55 said cross-frames and having longitudinally extending cut-away portions armed with cutting teeth, and mechanism for reciprocating said tools.

In testimony whereof I affix my signature, 60
 in presence of two witnesses.

GEORGE N. WILLIAMS, JR.

Witnesses:

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