

No. 632,000.

Patented Aug. 29, 1899.

F. W. SHETTLEWORTH.
STONE SAWING MACHINE.

(Application filed Apr. 8, 1899.)

(No Model.)

4 Sheets—Sheet 1.

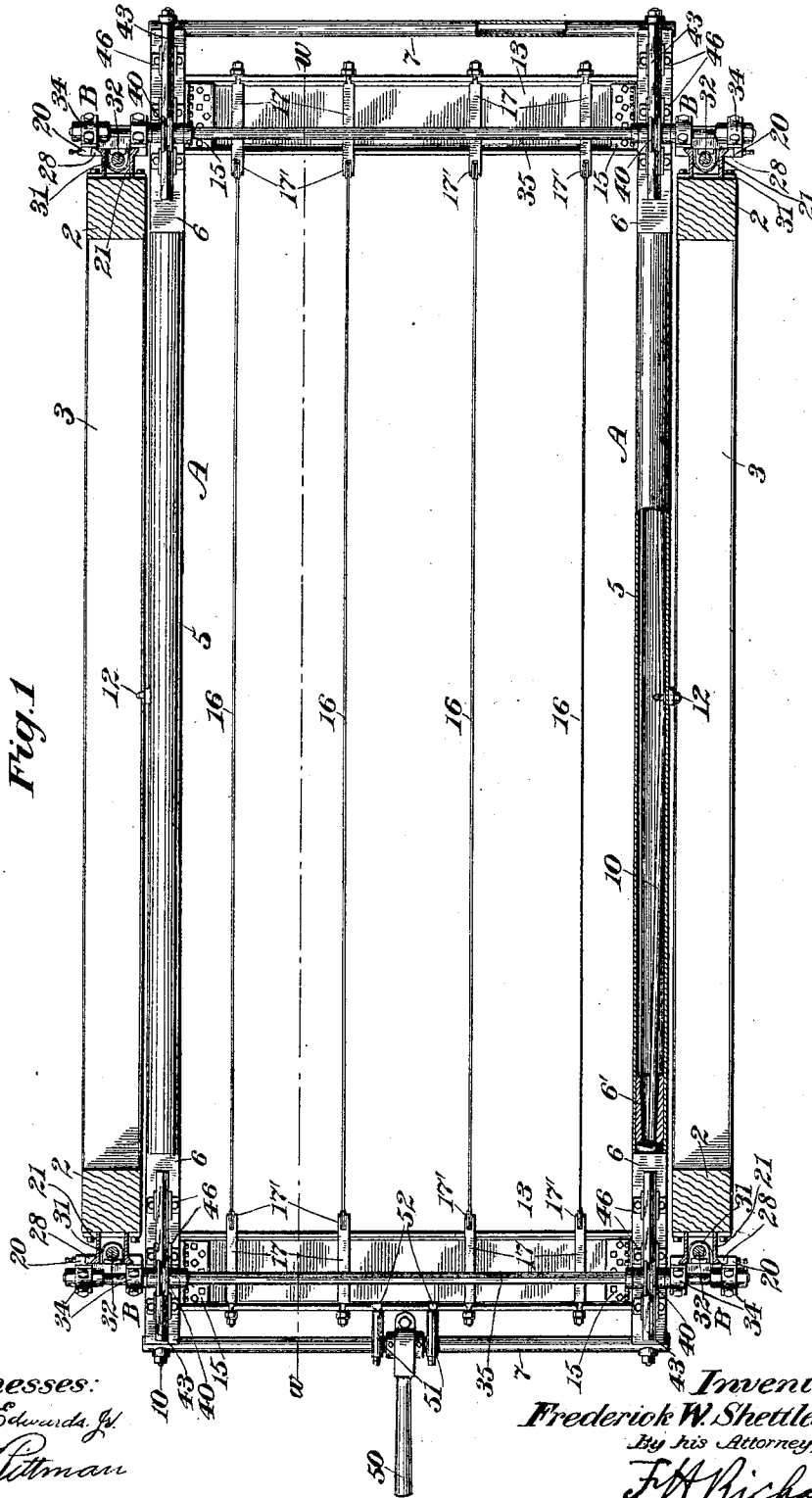


Fig. 1

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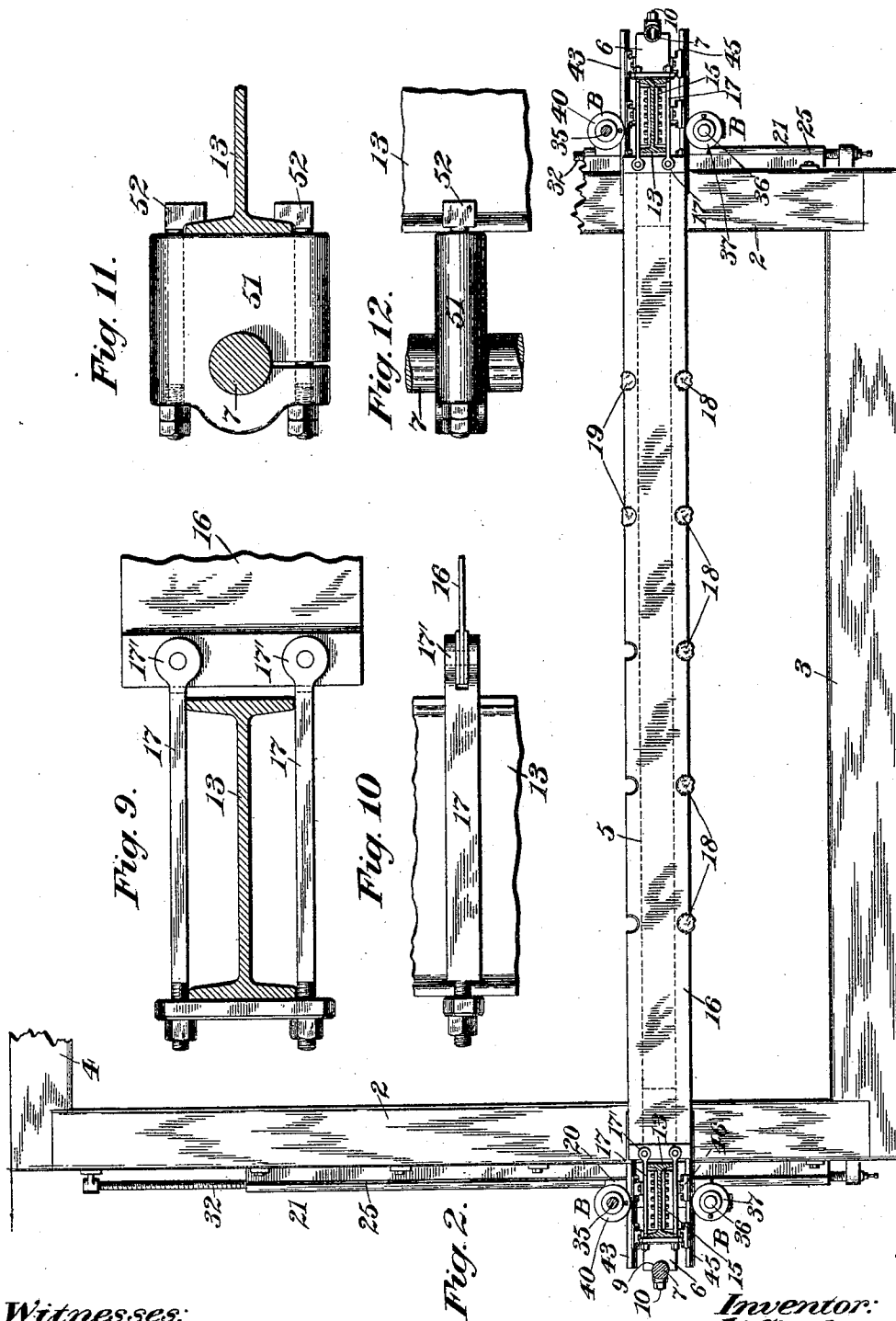
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4 Sheets—Sheet 2.



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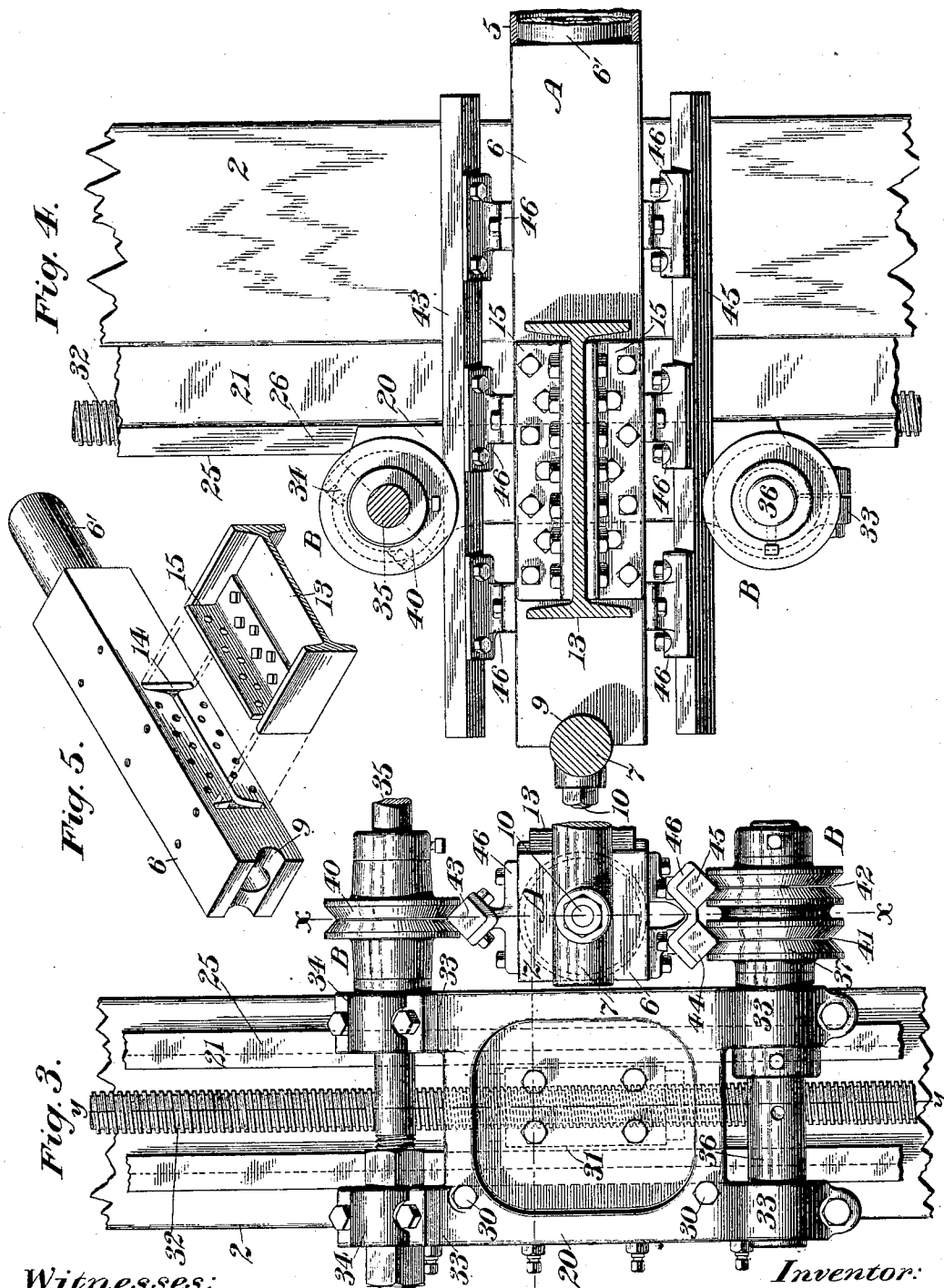
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4 Sheets—Sheet 3.



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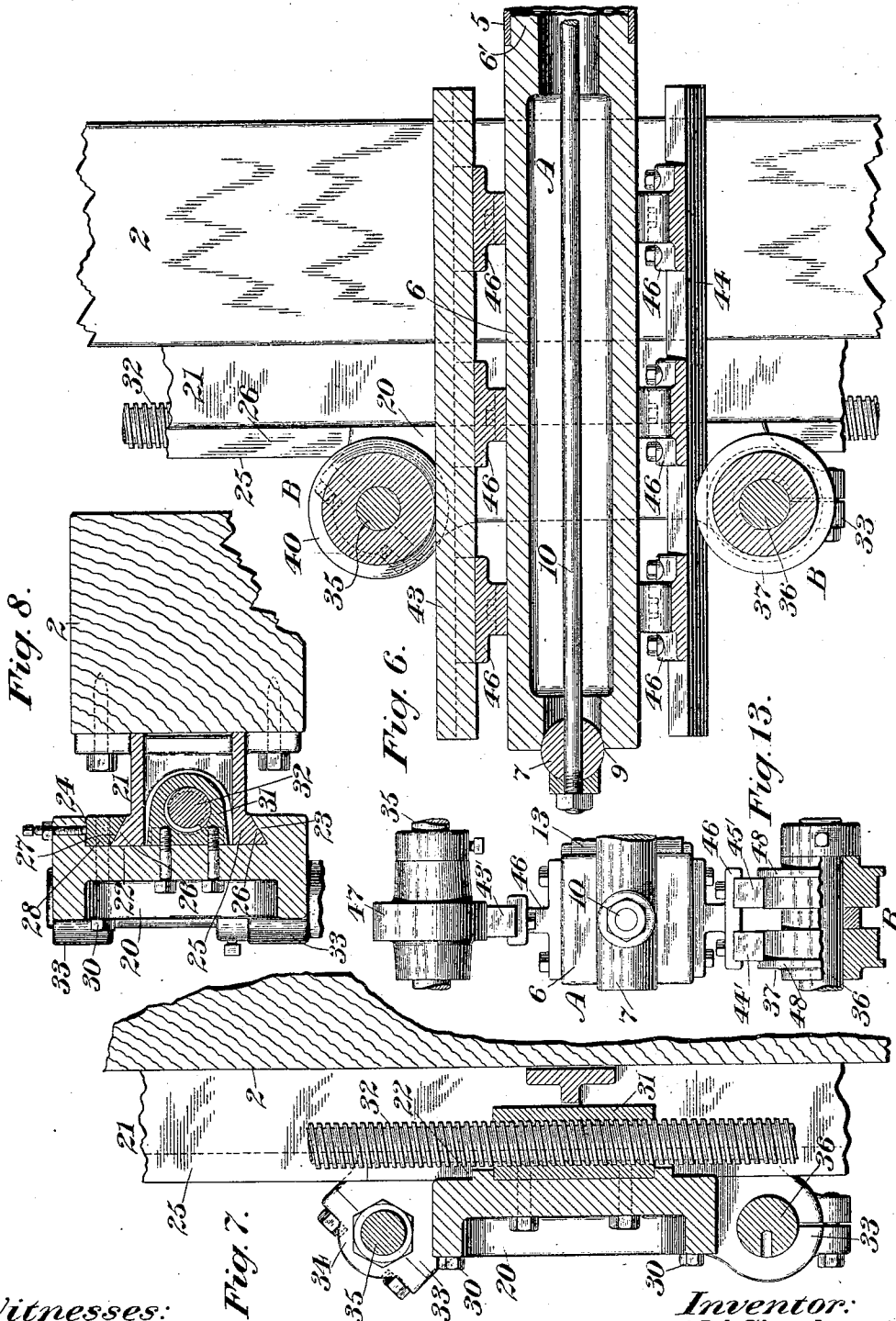
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UNITED STATES PATENT OFFICE.

FREDERICK W. SHETTLEWORTH, OF PORTLAND, CONNECTICUT, ASSIGNOR,
BY DIRECT AND MESNE ASSIGNMENTS, TO THE PATENT DIAMOND GANG
SAW COMPANY, OF SAME PLACE.

STONE-SAWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 632,000, dated August 29, 1899.

Application filed April 8, 1899. Serial No. 712,229. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK W. SHETTLEWORTH, a citizen of the United States, residing in Portland, in the county of Middlesex and State of Connecticut, have invented certain new and useful Improvements in Stone-Sawing Machines, of which the following is a specification.

This invention relates to stone-sawing machines, the object being to provide an improved apparatus of this character simple in construction and durable in use and particularly effective owing to the improved organization and assemblage of the parts of such structure for the purpose for which it is designed.

In the drawings, accompanying and forming part of this specification, Figure 1 is a plan view of the main parts of the machine. Fig. 2 is a cross-sectional view taken in line *w w*, Fig. 1. Fig. 3 is a face view, on an enlarged scale, of the means disposed at each end of the saw-frame for supporting the same. Fig. 4 is a side view of the parts shown in Fig. 3, looking from the right to the left. Fig. 5 is a perspective view of one end of one of the saw-frame side bars and a part of the I-beam which supports the saws, the dotted lines illustrating the recess into which the I-beam is fitted when the parts are assembled. Fig. 6 is a cross-sectional view taken in line *x x*, Fig. 3, and looking from the right to the left. Fig. 7 is a cross-sectional view taken in line *y y*, Fig. 3, and looking from the right to the left. Fig. 8 is a cross-sectional view taken in line *z z*, Fig. 3, and looking downward. Fig. 9 is a detail view of one end of a saw, showing its mode of assemblage with the I-beam. Fig. 10 is a top view thereof. Fig. 11 is a side view of the clamp connecting one of the transverse frame-bars with the I-beam. Fig. 12 is a top view thereof, and Fig. 13 is a view of a form of track-rolls different from those shown in Fig. 3 and the other figures hereinbefore described.

Similar characters of reference designate like parts in all the figures of the drawings.

The saw-frame may be supported by any suitable framework adapted for the purpose and usually comprises four upright posts or beams, one adjacent to each corner of the frame. In the present instance this frame-

work is shown comprising four upright beams or posts 2, secured together at their lower and upper ends by cross-beams 3 and 4, respectively.

The saw-frame (designated in a general way by A) in the present construction, which may be its preferred construction, if desired, comprises two side bars 5, the major portions of which are preferably shown as tubular. Each of these side bars is provided with squared ends 6, and in the present instance these squared ends are formed separate therefrom and are provided with tubular portions 6' for insertion into the ends of the tubular side bars, whereby a firm and rigid construction is provided. The side bars are connected at their ends by transverse bars 7, and for this purpose the ends of the side bars are shown provided with concaved seats 9, into which the transverse bars are fitted, they preferably being tubular. These transverse bars are bolted to the side bars in some suitable way. In the construction shown they are secured in position by tie-bolts 10, extending entirely through said side bars from end to end thereof, being secured thereto intermediate their ends by suitable bolts 12. Adjacent to each end of this saw-frame is disposed means for supporting the saw-blades, and which means in the construction shown also constitutes a means for reinforcing the frame. In the present instance this means comprises a pair of I-beams 13, the ends of which are preferably fitted into recesses 14, (see Fig. 5,) formed for this purpose, this construction being readily permitted owing to the squared formation of the side-bar ends, and are secured to said side bars by bolted angle-plates 15. By this assemblage a saw-frame rigid and firm in construction is furnished. The saw-blades 16, of which there may be any desired number, (shown herein as a gang thereof,) are secured to the I-beams by bifurcated bolts 17, the bifurcated ends 17' of which receive the saw-blades, one extending above and the other below the I-beam and being united at the outer side thereof by plates and nuts. Each of the saw-blades is preferably constructed to carry two sets of teeth of different efficiencies, one set at each edge, and for this purpose one edge (herein shown as the lower edge of each blade)

is formed for the reception of steel teeth 18, Fig. 2, and which teeth may be of the formation and assembled in the manner shown and described in my Patent No. 618,524, if desired. The opposite edge is formed to receive diamond teeth 19, whereby in operation the same saw-blades can be used with either the diamond or the steel teeth.

The saw-frame-supporting means in the form thereof herein shown and described comprises a plurality of sets of rolls or roll-surfaces. (Shown herein as four sets, one set located adjacent to each corner of the saw-frame.) For supporting these rolls suitable means is provided, which in the form shown comprises an adjustable support or traveling block 20, carried by each of the upright beams 2. Each of these blocks 20 is formed at its rear side to slide upon a track or way 21, secured to the beam 2, Fig. 8, and for this purpose it is provided with a recess 22, having at one side thereof an inclined wall 23, its opposite side 24 being straight for the reception of the track 25, which is provided with a pair of inclined sides 26, one in engagement with the inclined wall 23 of the block and the other in engagement with the inclined wall 27 of a strip 28, having its opposite side 29 straight, whereby it is also adapted to fit into said recesses 22, being secured therein by a suitable fastening device, such as bolts 30. By means of this construction the formation and assemblage of the block and its way is permitted.

For adjusting the block it is shown provided with an internally-threaded sleeve 31, through which extends a screw 32, secured at its upper and lower ends to the beam 2. Each of these screws 32 may be suitably connected by gearing, (not shown,) whereby all may be operated simultaneously to raise or lower the blocks, and the saw-frame supported thereby. Each of these traveling blocks 20 is provided with bearings 33 for the reception of roll shafts or journals, one of each set of which is so supported that the roll or rolls carried thereby can be adjusted toward and from the other shaft. In the construction shown each of these blocks is shown provided at its upper end with a pair of journal-bearings having removable caps 34, while the lower end of said block is provided with a pair of split journal-bearings.

The direct means for supporting the saw-frame and for permitting the reciprocation thereof in a horizontal plane comprises a plurality of sets of rolls, (shown herein as four sets and designated in a general way by B,) each set comprising a plurality of rolls or roll-surfaces so organized that the saw-frame while supported for reciprocatory movement in a horizontal plane will be prevented from lateral or sidewise play and also so organized that the greatest amount of support will be at the under side of said frame, and in the present construction each set of rolls comprises a three-point bearing.

At each end of the saw-frame is a trans-

versely-extending shaft 35, mounted in the upper bearings 33 of the traveling blocks 20, on which a roll 40 is journaled adjacent to each end thereof, each end forming one of the rolls of its respective set.

Mounted in the lower bearing 33 of each block is a shaft 36, eccentrically supported within said bearings. (See dotted lines, Figs. 4 and 6.) Carried by this shaft is a two-point bearing 37, which may be formed as two separate and independent rolls or as one roll having two independent track-surfaces 41 and 42. By the adjustment of this eccentrically-mounted shaft, which is provided with holes for this purpose, it will be seen that the bearing 37 will be adjusted toward or from its co-acting bearing 40. By this means it will be seen that said bearing 37 is adjustable toward and from the bearing 40, owing to the eccentrically-mounted shaft.

The track-surfaces of the rolls shown in Figs. 1, 3, 4, and 6 are V-shaped in cross-section, whereby the rolls have inclined peripheral flanges to prevent lateral movement of the saw-frame. For engagement with these rolls each squared end of the saw-frame side bars is provided with a series of tracks (shown herein one, as 43, at the upper side, and two, as 44 and 45, at the under side, thereof) carried by suitable brackets 46, these tracks being so disposed that the edges thereof will fit into the grooves of the rolls.

Instead of forming the rolls as just described and in order to materially decrease the friction which is present in such a construction, each upper roll may be formed as a flat roll 47, Fig. 13, coöperating with a flat-faced track 43', carried by the frame side bar, while the lower two-point bearing 37 may comprise one roll having a pair of right-angle flanges 48 or a pair of rolls having a right-angle flange at its outer side, said bearing coöperating with a pair of flat-faced tracks 44' and 45', carried at the under side of said side bar. In this construction it will be seen that the peripheries of the rolls (three in number) only are in frictional engagement with the tracks, whereas in the other there are six friction-surfaces in each set of rolls. Furthermore, it will be seen that the right-angle flanges of the lower rolls prevent lateral or sidewise movement of the saw-frame during its reciprocatory operation.

It will be understood, of course, that the tracks of each set are of sufficient length to permit the necessary reciprocatory movement.

Any suitable means may be used to reciprocate the frame on the rolls, such means having a power-transmitting connector 50, which in the present instance is shown secured to one of the transverse bars 7 of the saw-frame. To prevent the buckling of this bar, it is shown clamped to one of the I-beams, and for this purpose a pair of split clamps 51 are shown secured to said transverse bar 7, flanged bolts 52 extending therethrough and over-

lapping the I-beam at its upper and lower sides. It will thus be seen that the means which clamp the I-beam—namely, the bolts—also constitute means for clamping the split body of the clamp itself to the transverse frame-bar, whereby a portion of the strain imparted to the bar will be carried by the I-beam to which it is connected.

The operation of this improved machine will be readily understood without a further description.

Having described my invention, I claim—

1. In a stone-sawing machine, the combination of a saw-frame carrying a saw, and means for supporting said frame for reciprocatory movement and comprising a plurality of sets of three-point coacting roll-bearing surfaces each set organized with parts thereof at opposite sides of said frame.

2. In a stone-sawing machine, the combination of a saw-frame, and means for supporting said frame for reciprocatory movement in a horizontal plane and comprising a plurality of sets of three-point bearings each set located to have its greatest bearing-surface at the under side of said frame.

3. In a stone-sawing machine, the combination of a saw-frame carrying a saw, and means for supporting said frame for reciprocatory movement in a horizontal plane and comprising a plurality of sets of triangularly-disposed three-point bearings, each set located to have one bearing at one side, and two in parallelism at the opposite side, of said frame.

4. In a stone-sawing machine, the combination of a saw-frame, and means for supporting said frame for reciprocatory movement in a horizontal plane and comprising a plurality of sets of rolls, each set comprehending three rolls located one above and two in parallelism below said frame and directly under said single roll, and one or more of said rolls having flanges.

5. In a stone-sawing machine, the combination of a framework, a saw-frame, and means for supporting said saw-frame for reciprocatory movement in a horizontal plane and comprising four sets of bearings secured to said framework, and comprising rolls located one set adjacent to each corner of said saw-frame, each set comprehending three rolls disposed one above and two in parallelism below said saw-frame and directly under said single roll, and one or more of said rolls having flanges.

6. In a stone-sawing machine, the combination of a saw-frame, and means for supporting said frame for reciprocatory movement and comprising a plurality of sets of rolls each set embodying a pair of roll-supporting surfaces disposed in juxtaposition side by side.

7. In a stone-sawing machine, the combination of a saw-frame having a plurality of sets of independent tracks secured thereto, each set comprising three tracks disposed one at one side of said frame and two in parallelism at the opposite side of said frame, and means

for supporting said frame for reciprocatory movement in a horizontal plane and comprising a plurality of rolls in engagement with said tracks.

8. In a stone-sawing machine, the combination of a saw-frame having four sets of independent tracks secured thereto, each set comprising three tracks disposed one at one side of said frame and two in parallelism at the opposite side thereof, and means for supporting said frame for reciprocatory movement in a horizontal plane and comprising four sets of rolls, one set for each set of said tracks, each set comprehending three rolls one in engagement with each of said tracks, and one or more of said rolls having flanges.

9. In a stone-sawing machine, the combination of a saw-frame carrying a saw, and means for supporting said saw-frame for reciprocatory movement and comprising a plurality of sets of three-point coacting bearings comprising rolls, each set located to have a greater bearing-surface at one side of the frame than at the other side thereof, and one or more of said rolls having right-angled flanges having smooth peripheries.

10. In a stone-sawing machine, the combination, with framework, of a saw-frame; a plurality of tracks secured to said saw-frame; and means for supporting said saw-frame for reciprocatory movement and comprising a plurality of sets of bearings comprehending rolls supported on said framework and in engagement with said tracks, each set of said rolls including one or more roll-surfaces provided with one or more right-angled flanges having smooth peripheries.

11. In a stone-sawing machine, the combination of a saw-frame, and means for supporting said frame for reciprocatory movement in a horizontal plane and comprising a plurality of sets of three-point bearings, each set comprising three rolls comprehending a flat-faced roll at the upper side of said frame and a pair of right-angled flanged rolls in parallelism below said frame and directly under said upper roll.

12. In a stone-sawing machine, the combination of a saw-frame having a plurality of sets of flat-faced tracks secured thereto, each set comprising a series of three tracks located one above and two in parallelism below said frame, and means for supporting said frame for reciprocatory movement in a horizontal plane and comprehending a plurality of sets of rolls in engagement with said tracks, each set comprising a flat-faced roll at the upper side of said frame and a pair of right-angled flanged rolls at the under side thereof.

13. In a stone-sawing machine, the combination of a saw-frame comprising a pair of side bars, each of said bars having a pair of angularly-formed ends inserted therein provided with a beam-receiving recess in one of its faces; a beam projecting into said recesses and clamped to said angularly-formed ends; tracks mounted on said angularly-

formed ends; and means for supporting said saw-frame for reciprocatory movement and comprising a plurality of track-rolls engaging said tracks.

14. In a stone-sawing machine, a saw-frame comprising a pair of parallel side bars having squared ends; transversely-extending connecting-bars; and tie-bolts extending through said parallel side bars from end to end thereof and connecting said transversely-extending connecting-bars with said parallel bars.

15. In a stone-sawing machine, a saw-frame comprising a pair of parallel side bars having squared ends; transversely-extending connecting-bars; tie-bolts extending through said parallel side bars from end to end thereof and connecting said transversely-extending connecting-bars with said parallel bars; and means for connecting said tie-bolts intermediate their ends to said parallel side bars.

16. In a stone-sawing machine, a saw-frame comprising a pair of parallel side bars having angularly-formed ends, each of said ends having an I-shaped recess in one of its faces; transverse connecting-bars secured to said side bars; saw-supporting means comprising a pair of I-beams secured to said angular ends and projecting into said I-shaped recesses, one of said beams being located adjacent to each end of said frame; and a saw supported thereby.

17. In a stone-sawing machine, a saw-frame comprising a pair of parallel tubular side bars having squared ends inserted therein; transversely-extending connecting-bars; tie-bolts extending through said parallel side bars and connecting the transversely-extending connecting-bars and secured to said parallel side bars intermediate their ends; saw-supporting means comprising I-beams secured to the squared ends of said parallel side bars; and saws carried by said I-beams.

18. In a stone-sawing machine, the combination of a saw-frame, and means for supporting said frame for reciprocatory movement and comprising a plurality of sets of rolls each set having a part thereof adjustable to and from another part of said set.

19. In a stone-sawing machine, the combination of a saw-frame, and means for supporting said frame for reciprocatory movement and comprising a plurality of sets of three-point bearings, each set comprising a series of three roll-surfaces one part thereof having an adjustment toward and from another part of the same set.

20. In a stone-sawing machine, the combination of a saw-frame, and means for supporting said frame for reciprocatory movement and comprising a plurality of sets of three-point bearings, each set comprising a series of three rolls one above and two in parallelism below said frame and one part of the set having an adjustment toward and from another part thereof.

21. In a stone-sawing machine, the combination of a saw-frame, and means for supporting said frame for reciprocatory movement, said supporting means embodying one or more eccentrically-supported rolls.

22. In a stone-sawing machine, the combination of a saw-frame; means for supporting said frame for reciprocatory movement and comprising a plurality of sets of three-point bearings, each set comprising a series of three rolls adjustable toward and from each other; and means for adjusting said frame and rolls in a plane transverse to the plane of its reciprocatory movement.

23. In a stone-sawing machine, the combination of a saw-frame; means for supporting said frame for reciprocatory movement, said supporting means embodying one or more eccentrically-supported rolls; and means for adjusting said rolls and saw-frame in a vertical plane.

24. In a stone-sawing machine, the combination of a saw-frame; a plurality of sets of tracks secured thereto; means for supporting said frame for reciprocatory movement and comprising a plurality of sets of rolls; and means for adjusting a part of the rolls of each set toward and from another part.

25. In a stone-sawing machine, the combination of a saw-frame; a plurality of sets of tracks secured thereto, each set having one track at one side and a pair of parallel tracks at its opposite side; means for supporting said frame for reciprocatory movement and comprising a plurality of sets of rolls, one in engagement with each track; means for adjusting the rolls of each set toward and from each other; and means for adjusting said rolls and saw-frame in a plane transverse to the plane of the saw-frame reciprocatory movement.

26. In a stone-sawing machine, the combination, with a saw-frame supported for reciprocatory movement, of a gang of saws carried thereby; means comprising a plurality of sets of three-point bearings for supporting said frame, each set having parts thereof located at opposite sides of said saw-frame; and means for reciprocating said frame.

27. In a stone-sawing machine, the combination, with a saw-frame supported for reciprocatory movement, of a gang of saws carried thereby; means comprising a plurality of sets of three-point coacting roll-surfaces for supporting said frame, each set having parts thereof located at opposite sides of said frame; means for reciprocating said frame; and means for adjusting said frame in a plane transverse to that of its sawing movement.

28. In a stone-sawing machine, the combination of a saw-frame supported for reciprocatory movement, of a gang of saws carried thereby, and means comprising a plurality of sets of rolls for supporting said frame, the rolls of each set having a part thereof adjustable toward and from each other.

29. In a stone-sawing machine, the combi-

nation, with a saw-frame supported for reciprocatory movement, of a saw-blade carried thereby and constructed to carry teeth on both edges thereof, one set of different efficiency from the other set, and means for supporting said frame.

30. In a stone-sawing machine, the combination, with a saw-frame supported for reciprocatory movement, of a gang of saw-blades carried thereby, each constructed to carry teeth on both edges thereof, one set of teeth of different formation from the other set, and means comprising a plurality of sets of rolls for supporting said frame.

31. In a stone-sawing machine, the combination of a saw-frame embodying a saw-supporting beam and a transverse connecting-bar extending in parallelism with said beam; means for supporting said frame; a power-transmitting connector secured to said bar; and means for preventing the buckling of said bar and comprising a split clamp secured to said bar and having flanged bolts overlapping said beam.

32. In a stone-sawing machine, the combination of a gang of saws supported thereby; means for supporting said frame for reciprocatory movement in a horizontal plane and embodying a plurality of sets of rolls, the rolls of each set having an adjustment toward and from each other; and means for adjusting said rolls and frame in a vertical plane.

33. In a stone-sawing machine, the combination of a saw-frame; a plurality of sets of tracks secured to said frame, each set having a track at the upper and two in parallelism at the under side of said frame; a gang of saws carried by said frame; means for supporting said saw-frame and comprising a plurality of sets of rolls one in engagement with each track, the rolls of each set having an adjustment toward and from each other.

34. In a stone-sawing machine, the combination of a saw-frame; a set of tracks secured adjacent to each corner of said frame, one at the upper and two in parallelism at the under side thereof; a gang of saws carried by said frame; four sets of rolls for supporting said frame for reciprocatory movement in a horizontal path, each set comprising a pair of flanged and adjustable rolls supported at the under side of said frame for engagement with said parallel tracks, and a roll at the upper side of the frame; and means for adjusting said frame in a vertical plane.

35. In a stone-sawing machine, the combination, with framework comprising four up-rights each having a way and a screw carried thereon, of a traveling block supported for movement in each way and having bearings at its upper and lower ends supporting shafts; a roll carried by each upper shaft; a pair of flanged rolls supported side by side on each lower shaft; a saw-frame reciprocatory in a horizontal path supported by said rolls; a series of three tracks secured thereto adjacent to each end thereof, one at the upper and two

in parallelism at the under side of said frame for engagement with said rolls; and a gang of saws carried by said frame.

36. In a stone-sawing machine, the combination, with framework comprising four up-rights each having a way and a screw carried thereon, of a traveling block supported for movement in each way and having bearings at its upper and lower ends supporting shafts; a roll carried by each upper shaft; a pair of flanged rolls supported side by side on each lower shaft; a saw-frame reciprocatory in a horizontal path supported by said rolls; a series of three tracks secured thereto adjacent to each end thereof, one at the upper and two in parallelism at the under side of said frame for engagement with said rolls; and a gang of saws carried by said frame, each of said saws having two sets of teeth of different efficiencies.

37. In a stone-sawing machine, the combination, with framework comprising four up-rights each having a way and a screw carried thereon, of a traveling block supported for movement in each way and having bearings at its upper and lower ends supporting shafts; a roll carried by each upper shaft; a pair of flanged rolls eccentrically supported side by side on each lower shaft; a saw-frame reciprocatory in a horizontal path supported by said rolls and comprising a pair of parallel side bars having squared ends, transverse connecting-bars, tie-bolts extending through said parallel bars and clamping said transverse bars in position, and an I-beam clamped to the squared ends adjacent to each end of said frame; a series of three tracks secured to said saw-frame adjacent to each end thereof, one at the upper and two in parallelism at the under side thereof, for engagement with said rolls; and a gang of laterally-adjustable saws carried by said I-beams.

38. In a stone-sawing machine, the combination of a saw-frame having a plurality of sets of tracks, each set comprising a plurality of tracks one disposed at one side of said frame and a plurality thereof disposed at another side thereof, and means for supporting said saw-frame for reciprocatory movement and comprising a plurality of sets of rolls in engagement with said tracks, the bearing-surfaces of said rolls corresponding in number with the number of tracks of the set with which they are in engagement.

39. In a stone-sawing machine, the combination, with framework comprising four up-rights each carrying a screw, of a traveling block carried by each screw and having bearings; a set of rolls carried by each bearing, one part thereof adjustable toward and from another part thereof; and a saw-frame supported by said rolls for movement.

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