

No. 744,092.

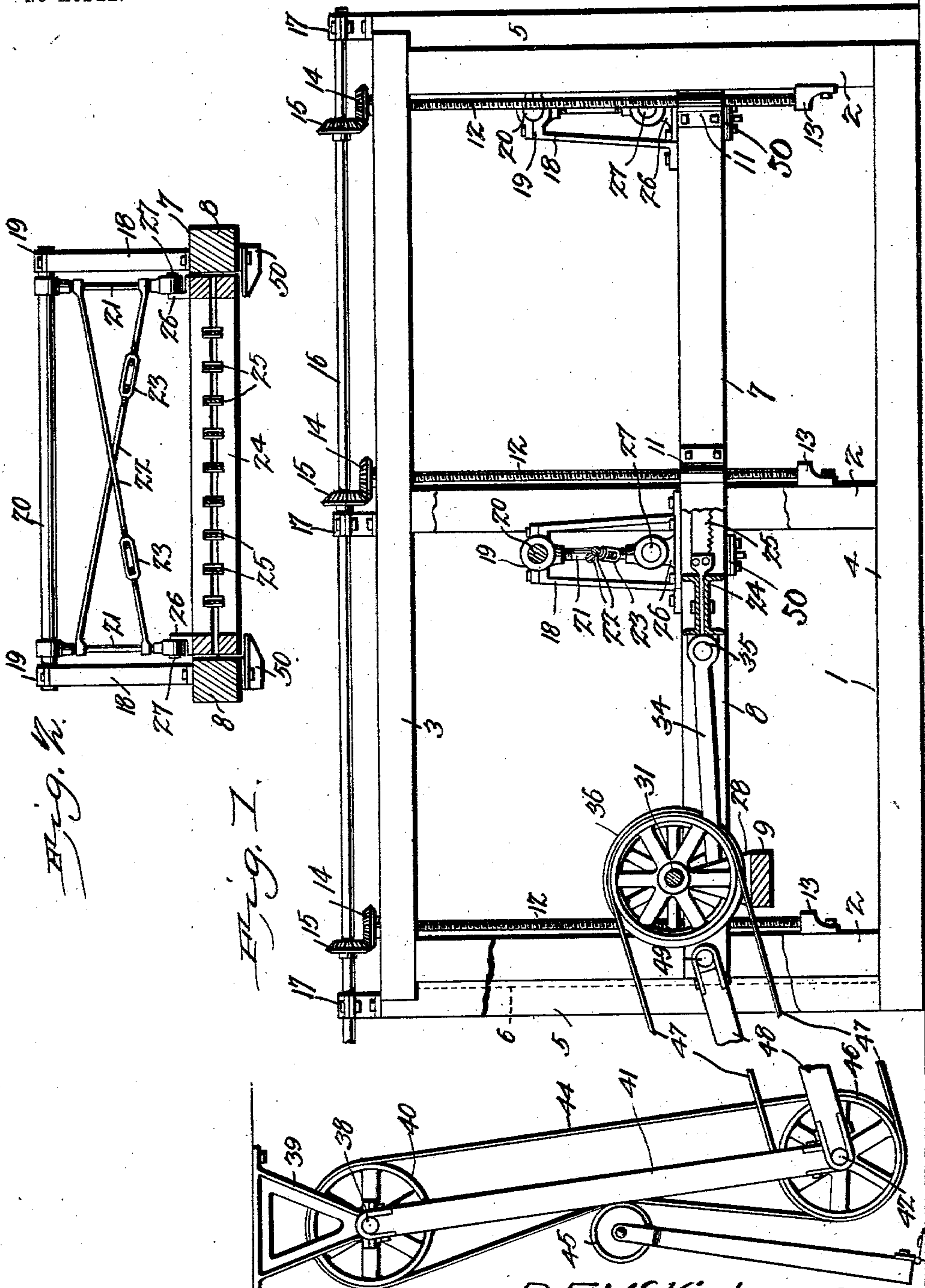
PATENTED NOV. 17, 1903.

R. F. McKINLEY.  
HIGH SPEED GANG STONE SAWING MACHINE.

APPLICATION FILED MAR. 24, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses  
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*J. W. Garner*

R. F. McKinley, Inventor.  
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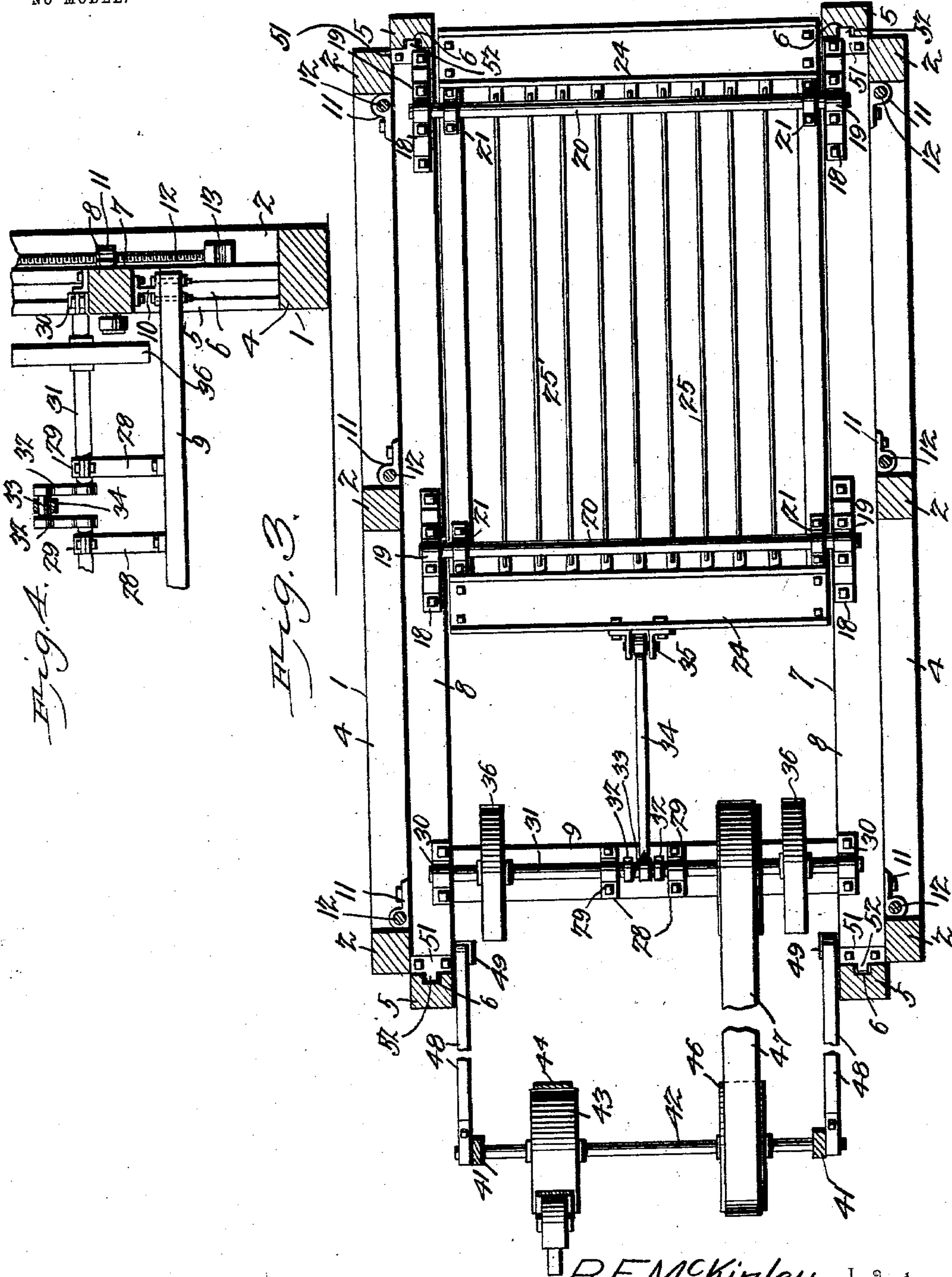
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# UNITED STATES PATENT OFFICE.

ROBERT F. MCKINLEY, OF BEDFORD, INDIANA.

## HIGH-SPEED GANG STONE-SAWING MACHINE.

**SPECIFICATION** forming part of Letters Patent No. 744,092, dated November 17, 1903.

Application filed March 24, 1902. Serial No. 99,685. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT F. MCKINLEY, a citizen of the United States, residing at Bedford, in the county of Lawrence and State of Indiana, have invented a new and useful High-Speed Gang Stone-Sawing Machine, of which the following is a specification.

My invention is an improved high-speed gang stone-sawing machine; and it consists in the peculiar construction and combination of devices hereinafter fully set forth and claimed.

In the accompanying drawings, Figure 1 is a side elevation of a stone-sawing machine embodying my improvements, parts of the same being broken away and parts shown in section. Fig. 2 is a detail transverse sectional view of the same. Fig. 3 is partly a horizontal sectional view and partly a top plan view of the same. Fig. 4 is a detail transverse sectional view.

The main frame 1 is here shown as provided with vertical posts 2, having their upper and lower ends connected together, respectively, by plates 3 and sills 4, and at the ends of the said frame 1, at the corners thereof and just within the corner-posts 2, are vertical guide-posts 5, also resting on the sills 4. On the opposing inner sides of the latter are vertical guide-grooves 6.

A vertically-movable carriage 7 is here shown as comprising a pair of horizontally-disposed side beams 8 and a cross-beam 9, which is disposed near the front ends of the beams 8 and is connected thereto on their lower sides, as at 10. On the said beams 8 on the outer sides thereof are bolted traveling nuts 11, which are engaged by vertically-disposed adjusting-screws 12. The latter have their lower ends stepped in bracket-blocks 13, which are bolted or otherwise secured to the inner sides of the posts 2 and have their upper portions suitably journaled in bearings, (not shown,) with which the plates 3 are provided. At the upper ends of the adjusting-screws 12 are miter-gears 14, which engage similar gears 15 on longitudinally-disposed shafts 16, which latter are journaled in bearings 17, that are here shown as bolted on the upper sides of the plates. A suitable mechanism such as is commonly employed in machines of this class is used to rotate the

shafts 16 in unison, automatically to revolve the screws 12, and hence raise or lower the carriage 7, as may be required when the machine is in operation. The said adjusting-screw-operating mechanism not being of my invention and being well understood by those skilled in the art to which my invention relates is not here shown.

The vertically-movable carriage 7 is provided on its side beams 8 at suitable points with standards 18, at the upper ends of which are bearings 19. Transversely-disposed rock-shafts 20 are journaled in the said bearings. Oscillating hangers 21 are secured to and depend from the said rock-shafts near the ends thereof, and each pair of the said hangers is connected together by cross brace-rods 22. The said brace-rods are each provided with a turnbuckle 23, whereby said brace-rods may be lengthened or shortened, as may be required, to appropriately brace the oscillating hangers 21 and maintain the latter parallel with each other.

It will be observed by reference to Figs. 1 and 3 of the drawings that the standards 18 are so disposed on the carriage 7 that the frame 24, which carries the gang of saws 25 and is suspended from the lower ends of the hangers 21, is disposed at the rear end of the vertically-movable carriage 7. I here show the gang-saw frame 24 as provided on the upper sides of its side bars, near the ends thereof, with hanger-brackets 26, which are connected to the lower ends of the hangers 21 by pivotal bolts or spindles 27.

It will be understood from the foregoing that the gang-saw frame is adapted to be moved endwise and reciprocated between the side beams 8 of the carriage 7, and it will be further understood that owing to the provision of the hangers 21 by which the said gang-saw frame is suspended the latter will be caused to rise and fall as it reciprocates, and hence is adapted for reciprocatory oscillatory motion.

On the cross-beam 9, at the front end of the vertically-movable carriage 7 at points near the center of said beam, are secured standards 28, which have bearings 29 at their upper ends. Bearings 30 are also secured on the side beams 8 of said vertically-movable carriage and disposed in line with the bearings



29, and a shaft 31 is journaled in said bearings 29 30. The said shaft has crank-arms 32 at its center, which arms are connected together by a pin 33. A pitman 34 engages the said crank-pin 33, and the rear end of the pitman is pivotally connected to the front end of the gang-saw frame 24 at the center thereof, as at 35. It will be understood from the foregoing that by rotating the shaft 31 the reciprocatory oscillatory motion hereinbefore described will be imparted to the gang-saw frame. On the said shaft 31, near the ends thereof, are shown fly-wheels 36. A pulley 37 is secured on the said shaft 31.

In Fig. 1 the line-shaft 38 is shown journaled in fixed bearings 39. The line-shaft is provided with a pulley 40. Arms 41 have their upper ends pivotally mounted on the line-shaft, said arms depending therefrom, and said arms have bearings at their lower ends for a counter-shaft 42. The same has a pulley 43, which is connected to the pulley 40 of the line-shaft by a slack belt 44. When said belt is tightened, as by a belt-tightener 45, (shown in Figs. 1 and 3,) power is communicated from the line-shaft to the counter-shaft, as will be understood. The counter-shaft is further provided with a pulley 46, which is connected to the pulley 37 on the crank-shaft 31 by an endless belt 47, and hence power is communicated from the counter-shaft to said crank-shaft 31, which drives the gang-saw frame. On the ends of the counter-shaft the outer ends of arms 48 are hereshown as pivotally connected, and the inner ends of said arms 48 are pivotally connected to the vertically-movable frame 7, preferably at the inner sides of the side beams 8 of said frame near the front ends of said beams, as at 49. It will be understood that the said arms 48 keep the belt 47 sufficiently tight to drive the shaft 31, and that as the carriage 7 is moved vertically the said arms 48 serve to move the counter-shaft concentrically with relation to the line-shaft. Hence the gang-saw frame may be driven irrespective of the adjustment or vertical disposition of the carriage 7.

It will be understood from the foregoing that the crank-shaft 31 is the member or element which directly applies power to the gang-saw frame to reciprocate and oscillate the latter, and that the said crank-shaft is carried by the same carriage 7 which supports and vertically moves the gang-saw frame, and hence my machine is "self-contained" and the gang-saw frame and the power element thereof are at all times maintained in correct operative relative position, so that the operation of the gang-saw frame is not affected by the vertical adjustment of the carriage 7. My improved sawing-machine is adapted to be operated at high speed as compared with machines of this class heretofore constructed, hence greatly increasing the efficiency and capacity of my improved machine.

In Fig. 2 of the drawings I show catch-brackets 50, which in practice are secured to the under sides of the beams 8 of carriage 7 in such position that their inner ends extend under the corners of the gang-saw frame and slightly below the same, the function of these catch-brackets being to catch the gang-saw frame in the event that any of its supporting devices should become broken, and hence prevent the gang-saw frame from falling and injuring the saws or the stone on which they may be operating. The beams 8 of the carriage 7 are here shown as having plates 51 bolted on their upper sides at their ends, which plates are formed with guide-tongues 52, that engage and travel in the guide-grooves 6.

I do not desire to limit myself to the precise construction and combination of devices here-in shown and described, as it is evident that modifications may be made therein without departing from the spirit of my invention.

Having thus described my invention, I claim—

1. The combination in a gang sawing-machine, of a rigid frame including the uprights having vertical guiding-slots, uprights and longitudinal members forming supports for an adjusting mechanism, a vertically-adjustable frame having portions entering the vertical guiding-slots, said adjustable frame being further held from lateral play by the supporting-frame, standards carried by the adjustable frame, rock-shafts journaled in said standards and forming connecting means between the spaced members of said adjustable frame, a gang-saw frame held from lateral play by the longitudinal members of the adjustable frame, hangers connecting the gang-saw frame to the rock-shafts, a revoluble shaft, supporting-bearings carried by the adjustable frame, a crank on said shaft, a pitman connecting the crank to the gang-saw frame, means for driving the shaft and an adjusting means for raising and lowering the adjustable frame.

2. The combination with a gang sawing-machine, of a frame including a plurality of spaced uprights, the end uprights being provided with vertical guiding-slots, an adjustable frame comprising a pair of spaced members having plates 51 provided with tongues for engaging the vertical guiding-slots, a cross-bar connecting the two longitudinal members of the adjustable frame, bearings carried partly by the longitudinal members and the cross-bar of the frame, a crank-shaft adapted to said bearings, a crank on said shaft, means for guiding the shaft, a pair of sets of brackets or standards carried by the spaced longitudinal members of the adjustable frame, rock-shafts carried by the brackets and forming a connecting means between said longitudinal members, a gang-saw frame guided between said longitudinal members of the auxiliary frame and held thereby from



5 lateral play, a pitman connecting said gang-saw frame to the crank, hangers depending from the rock-shafts and connected to the gang-saw frame, and auxiliary brackets extending inward from the under sides of the longitudinal members of the adjustable frame and serving as supports or catches for the gang-saw frame in the event of breakage.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

ROBERT F. MCKINLEY.

Witnesses:

C. S. NORTON,  
EDWARD K. DYE.