

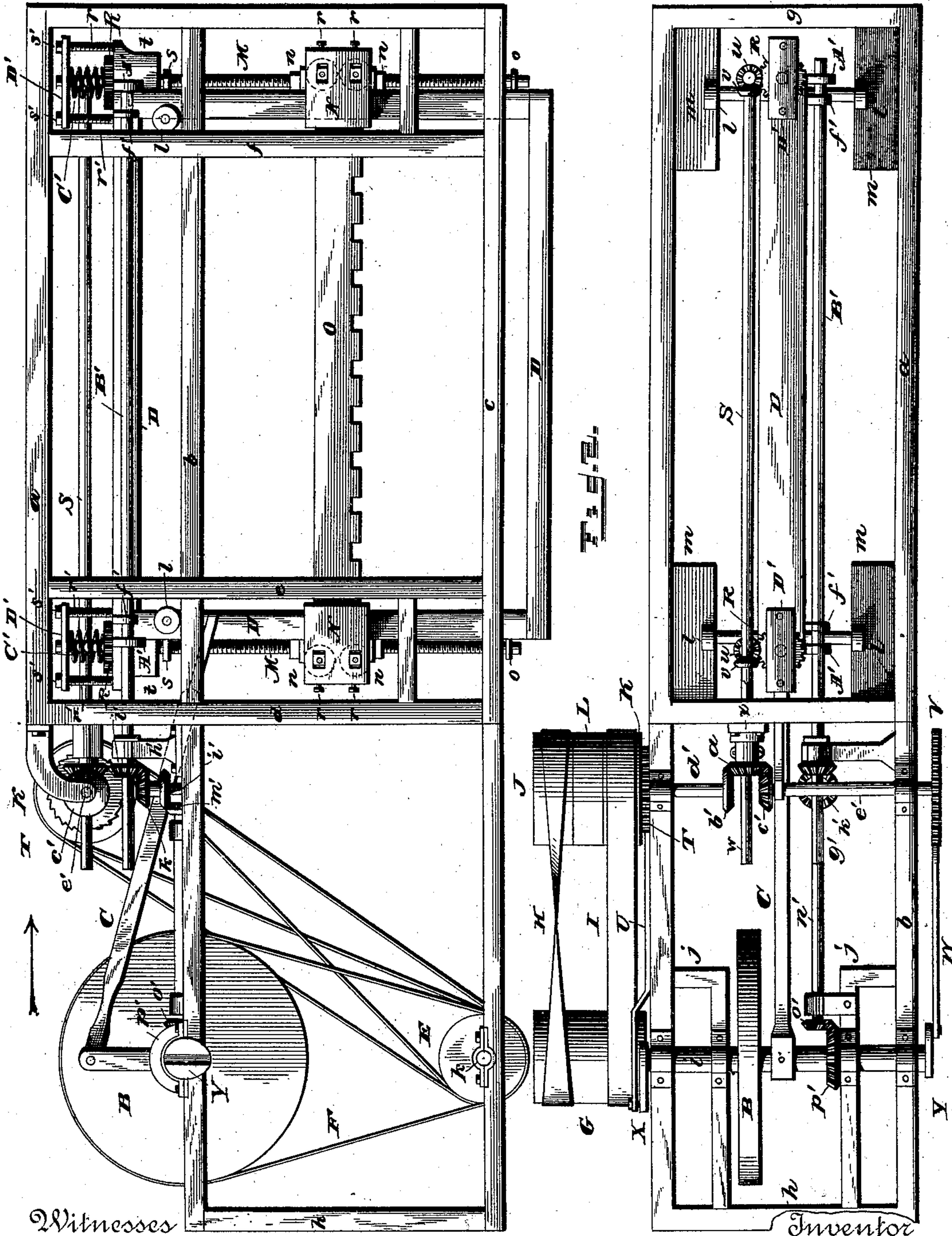
(No Model.)

2 Sheets—Sheet 1.

T. A. JACKSON.
STONE SAWING MACHINE.

No. 370,790.

Patented Oct. 4, 1887.



Witnesses

G. S. Elliott
L. L. Miller

Inventor

Thaddeus A. Jackson.

By his Attorney

Chas. H. Fowler

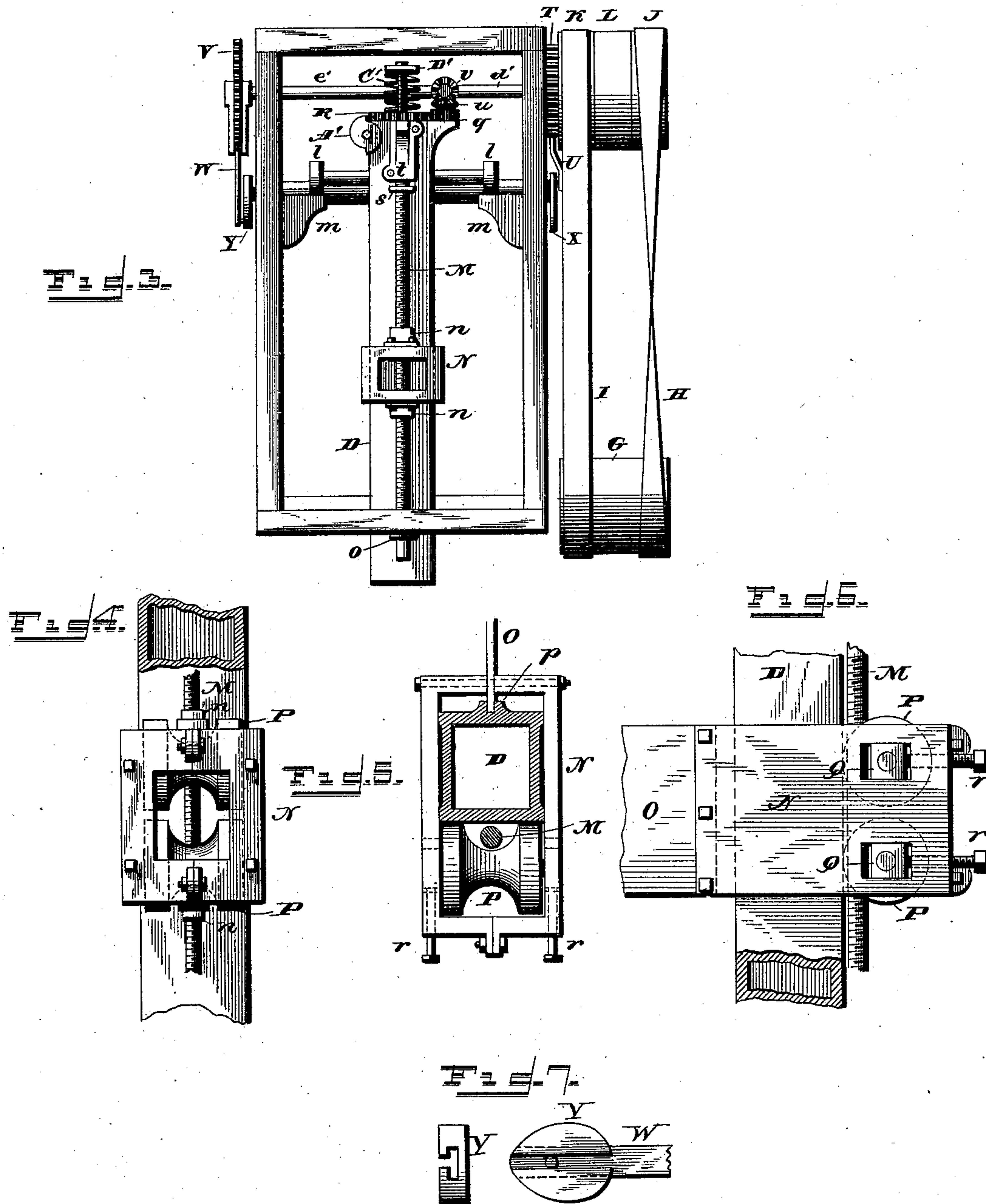
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UNITED STATES PATENT OFFICE.

THADDEUS A. JACKSON, OF NEW YORK, N. Y.

STONE-SAWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 370,790, dated October 4, 1887.

Application filed March 30, 1887. Serial No. 233,048. (No model.)

To all whom it may concern:

Be it known that I, THADDEUS A. JACKSON, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Stone-Sawing Machines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a side elevation of my improved stone-sawing machine; Fig. 2, a top plan view thereof; Fig. 3, an end view looking in the direction of the arrow in Fig. 1; Fig. 4, a top plan view of the saw-blade carrier, showing the upper one of the rollers, the feed-screw, and the sash, the latter being in section and the saw-blade shown as connected to the carrier; Fig. 5, an end view of Fig. 4; Fig. 6, a side elevation thereof; Fig. 7, detail views of the crank-connections.

The present invention has relation to that class of stone-sawing machines in which the blade-carrier has a lifting motion by mechanism connected with the driving-power, also a reciprocating sash to which the saw-blade is connected.

The object of the invention is to provide a simple and effective means for giving to the saw-blade the required lifting motion at the end of its stroke, or midway of the stroke, also to bring the blade down upon the stone with a sharp or sudden blow, and, further, to improve the machine in the several details of construction, as will be hereinafter described, and subsequently pointed out in the claims.

In the accompanying drawings, A represents a stationary frame of any suitable construction and of any preferred size, said frame consisting in the present instance of the longitudinal beams *a b c* and the upright beams *d e f g h*, bolted or otherwise secured to the longitudinal beams, the beams *g h* forming the ends of the frame. This frame is one of many forms that may be used, and therefore may be variously modified as circumstances require, as may also the driving mechanism, which is of that form usually employed in this class of machine, and consists, principally, of the large driving-pulley B, suitably mounted upon a transverse shaft, *i*, having its bearings in the longitudinal beams *b* of the frame of the

machine, and also in braces *j*, connected thereto, as shown more clearly in Fig. 2. The shaft *i* is a crank-shaft and has connected to it in any well-known manner one end of a crank-arm, C, the opposite end thereof being attached to the movable sash D, whereby it is given a reciprocating motion.

Extending around the driving-pulley B and pulley E is a belt, F, the latter-mentioned pulley being mounted on a shaft, *k*, and upon the extremity of this shaft is a wide pulley, G, over which pass belts H I, and also extend over movable pulleys J K upon each side of a stationary pulley, L, whereby the belts may be shifted from a movable to a stationary pulley.

So far as I have described, this driving mechanism is of the usual construction, and consequently I reserve the right to make such changes or modifications therein as necessity requires, or such change as would better adapt the driving-power to the purpose intended.

The sash D may be of any preferred construction, and is provided upon its outer sides with anti-friction rollers *l*, supported upon short tracks *m*, connected to the frame of the machine, and to the ends of the sash are feed-screws M, which extend down through screw-nuts *n*, fastened to the blade-carriers N, said nuts being of any suitable construction and having interior screw-threads to engage with those upon the feed-screws M, whereby the carriers N, to which the saw-blade O is connected, may be raised or lowered, as desired, to adapt the saw to different thicknesses of stone. The lower ends of the feed-screws M are perfectly plain, or without screw-threads, and extend through bearings *o*, so as to steady the feed-screws at their lower end.

The sash D is preferably made hollow or of hollow cast beams, as shown in Fig. 4, and the end beams pass down through the carriers N and have a slot, *p*, upon their inner side to receive the saw-blade O at its extremity after being bolted to the carriers. The carriers N have friction-rollers P, which bear against the upright beams of the sash D, so as to render the carriers easy in their vertical movement when operated by means of the feed-screws, said rollers having their journals in adjustable boxes Q, whereby the carriers may be moved outwardly to take up the slack in the blade. This is done by means of the screw *r*, which forces the rollers P inwardly against the upright beams of the sash D, and in turn forcing

the carriers outwardly a sufficient distance to bring the saw-blade to the required tension.

The upper ends of the feed-screws M are provided with collars *s*, and the upper extremities of the feed-screws are set into the sides of the sash D, and held thereto by suitable caps, *t*; or any other preferred means may be employed for confining the upper ends or extremities of the feed-screws to the sash, so as to form a guide and support therefor.

The feed-screws above the caps *t* are provided with gear-wheels R, with which engage pinions *q*, as shown in Fig. 3, said pinions having their bearing in the top of the sash D. These pinions are cast with beveled pinions *u*, which mesh with the teeth of similar bevel-pinions, *v*, upon the ends of a horizontal shaft, S, said shaft operating the feed-screws M to raise or lower the saw-blade.

To provide means for turning the shaft S, one end thereof is formed square or flat sided, as shown at *w*, the same passing through a suitable bearing, *x*, and has mounted on its extremity or the flat-sided end of the shaft a pinion, *a'*, so that when said pinion is turned it will carry the shaft with it.

Engaging with the pinion *a'* are pinions *b'* *c'*, mounted, respectively, upon the inner ends of shafts *d'* *e'*, the outer end of the former-mentioned shaft having connected to it a ratchet-wheel, T, said shaft also carrying the pulleys J K L, hereinbefore described. A suitable pawl, U, engages with the ratchet-wheel T, said pawl being left off in Fig. 1, but shown in Fig. 2, as the pawl and ratchet-wheel form no part of the invention so far as their special construction is concerned. The shaft *e'* is also provided with a ratchet-wheel, V, also shown in Fig. 2, with which engages a pawl, W, and both the pawls of the ratchet-wheels are adjustably connected to crank-disks X Y, so as to vary their stroke.

By the employment of the double pawls and ratchets the saw-blade is made to feed down at each end of the stroke, the pawls operating the ratchet-wheels alternately at stated intervals and turning the shafts to which the pinions *b'* *c'* are connected, which turns the shaft S at each end of the stroke of the saw-blade.

The required lift motion is imparted to the saw-blade O by means of the cams A', as shown more clearly in Fig. 3, said cams being connected to the extremities of the shaft B', which has its bearings in depending brackets *f'* upon the sash D, one end of said shaft being formed square or flat-sided, as shown at *g'*, and passes through a bracket, *h'*, and has mounted thereon a pinion, *i'*, which engages with a pinion, *k'*. The pinion *k'* is mounted upon a short vertical shaft having upon its opposite or lower end a pinion, *l'*, which meshes with the teeth of a pinion, *m'*, upon a horizontal shaft, *n'*, said shaft having upon its opposite end a pinion, *o'*, which engages with a beveled gear, *p'*, upon the driving-shaft *i*. By this arrangement of gearing the shaft B' is turned, and by means of the cams A', acting upon the under

side of the gear-wheels R, the feed-screws M will be raised at each end of the stroke, and when the cams on the shaft release the feed-screws suitable springs, C', will force them downward with a quick and sharp blow, so that when sawing with shot and sand or other like hard substance it more effectually drives it into the stone.

The tension of the springs C' may be regulated to increase or diminish the blow of the saw-blade by means of the cap-plate D', screws *r'*, and nuts *s'*, the plate being brought down upon the springs to bring the coils closer together, as may be desired.

Having now fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a stone-sawing machine, the combination, with the feed-screws M and saw-blade O, of the carriers N, provided with the friction-rollers P, mounted in adjustable boxes, substantially as and for the purpose set forth.

2. In a stone-sawing machine, the blade O and carriers N, in combination with the feed-screws M and springs C', substantially as and for the purpose specified.

3. In a stone-sawing machine, the feed-screw M and saw-blade and carriers, in combination with the shaft B', provided with cams, and operating substantially as and for the purpose set forth.

4. In a stone-sawing machine, the feed-screw M, provided with gear-wheel R, driven by pinions *q u v*, in combination with the shaft S, pinion *a*, shafts *d' e'*, carrying ratchet-wheels T V, respectively, and operated by suitable pawls, and the shaft B', provided with cams, and operating substantially as and for the purpose set forth.

5. In a stone-sawing machine, the saw-blade O, carriers N, and feed-screws M, carrying the gear-wheels R, in combination with the shaft B', cams A', and springs C', substantially as and for the purpose specified.

6. In a stone-sawing machine, the saw-blade O and carriers N, provided with adjustable friction-roller P, in combination with the movable sash D, having slots *p* for the reception of the extremity of the saw-blade, as specified.

7. In a stone-sawing machine, the combination, with the saw-blade carriers N and feed-screws M, of the screw-nuts *n*, arranged above and below the carrier, substantially as and for the purpose specified.

8. In a stone-sawing machine, the combination, with the saw-blade O and feed-screws M, of the carriers N, provided with screw-nuts *n*, and the anti-friction rollers P, mounted in adjustable boxes Q, substantially as and for the purpose set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

THADDEUS A. JACKSON.

Witnesses:

L. L. MILLER,
M. P. CALLAN.