

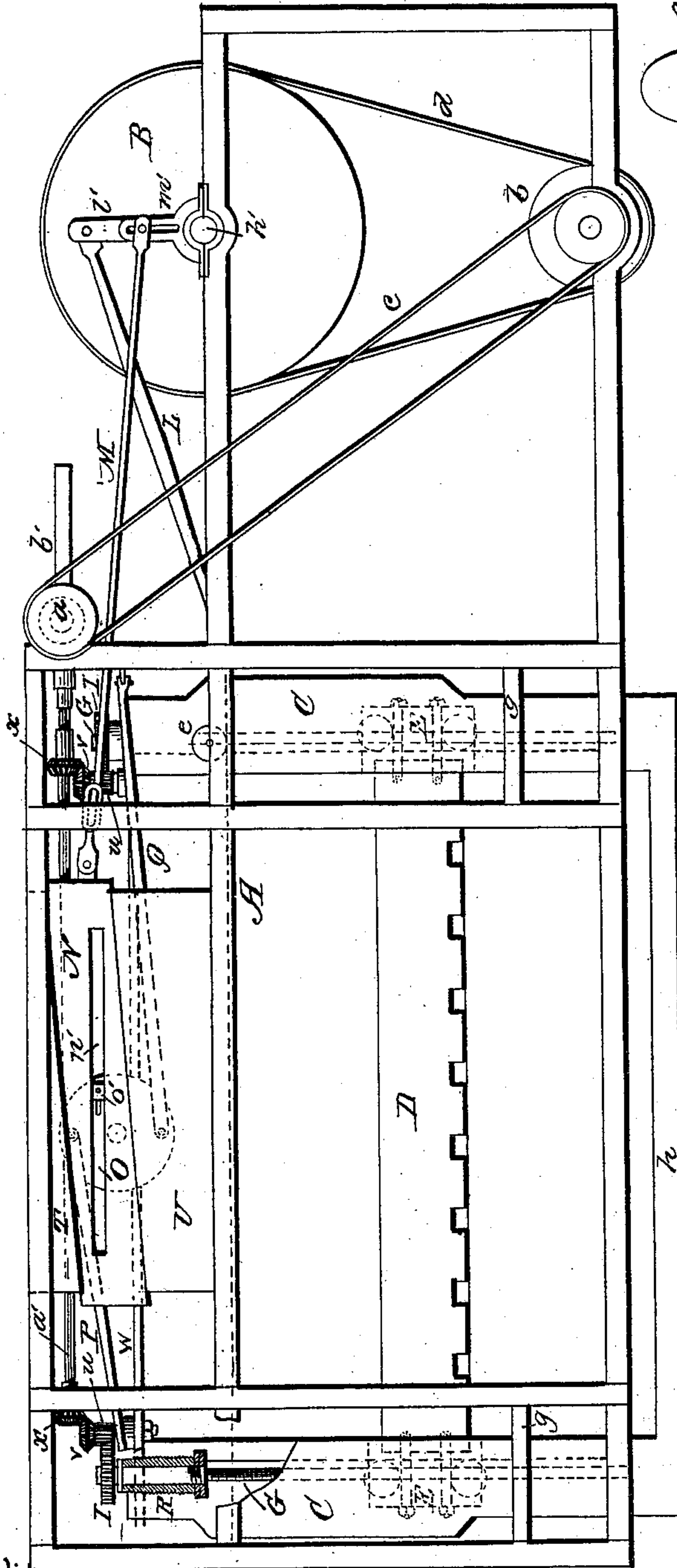
(No Model.)

2 Sheets—Sheet 1.

T. A. JACKSON.  
MACHINE FOR SAWING STONE.

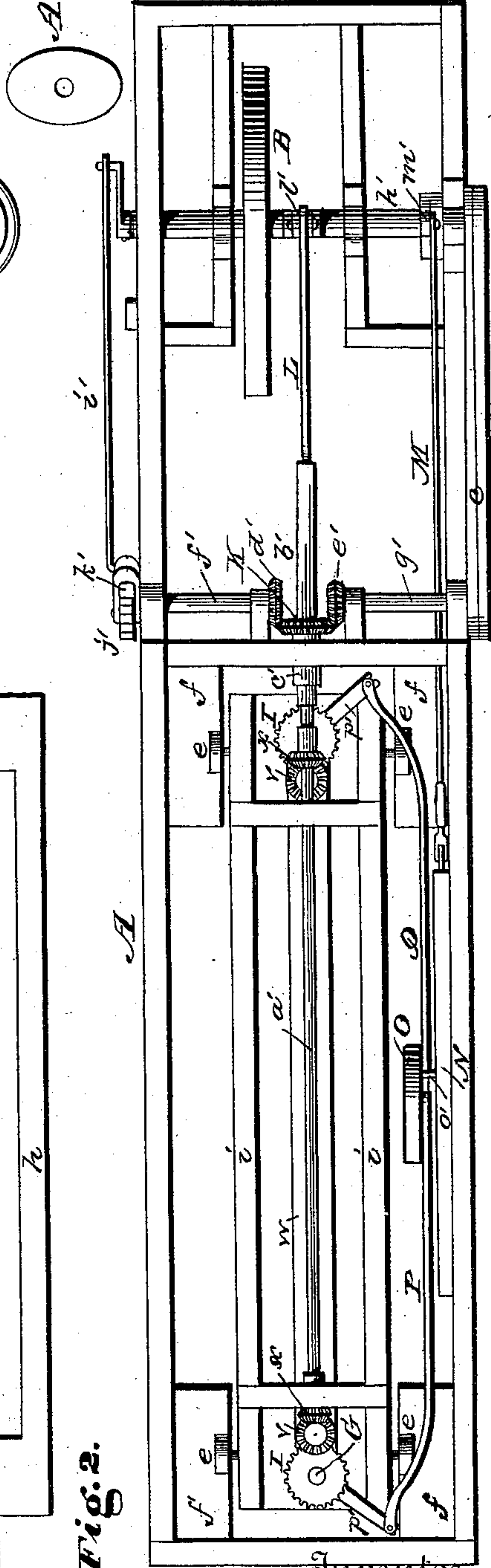
No. 361,011.

Patented Apr. 12, 1887.



Witnesses

*F. L. Ourand*  
*L. L. Miller*  
**Fig. 1.**



**Fig. 2.**

Inventor

*Thaddeus A. Jackson.*  
By *his* Attorney *Chas. H. Fowler*

(No Model.)

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Fig. 4.

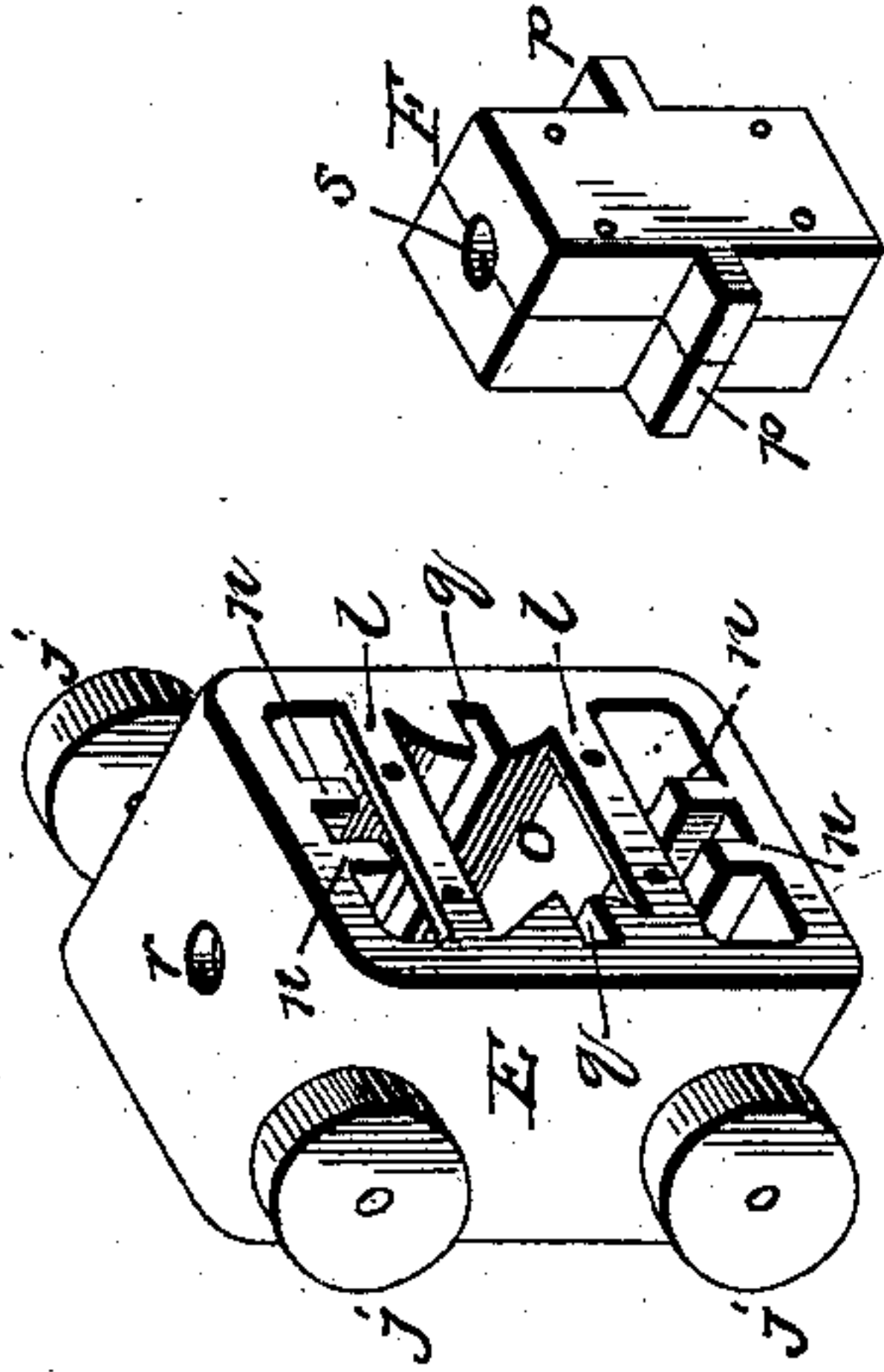


Fig. 5.

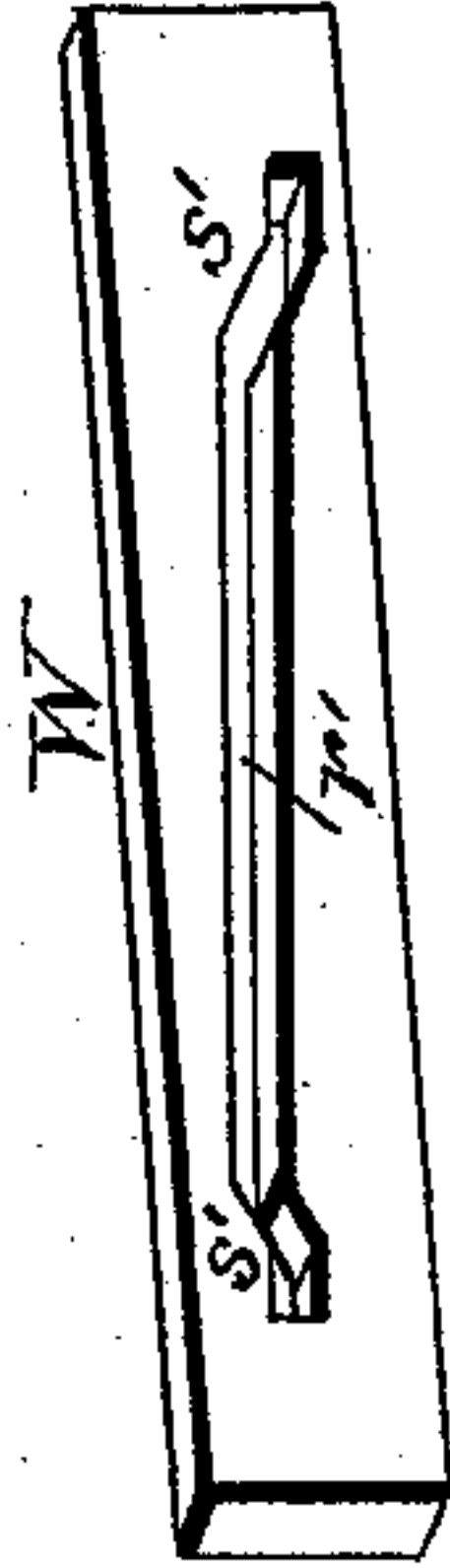


Fig. 7.

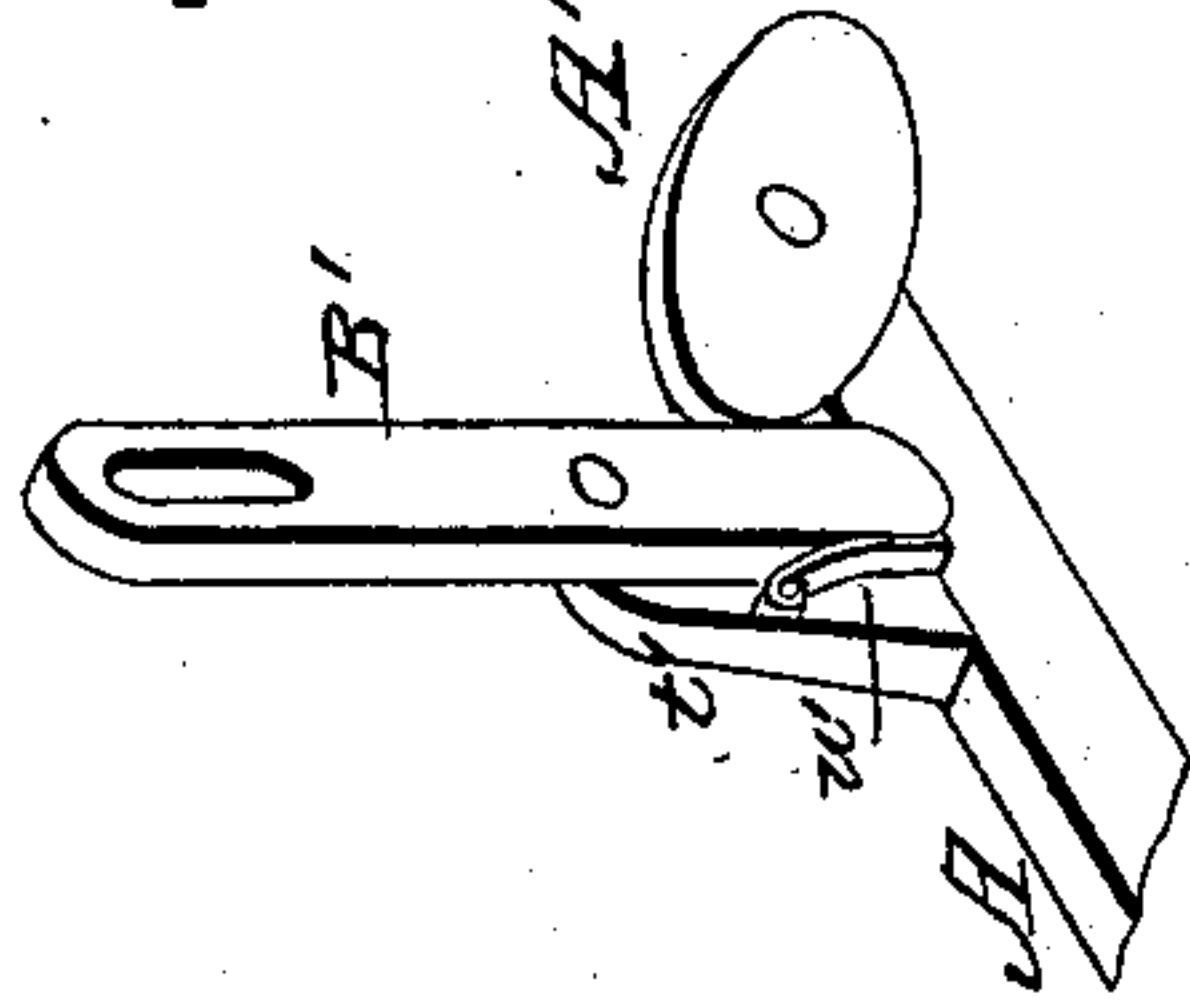


Fig. 6.

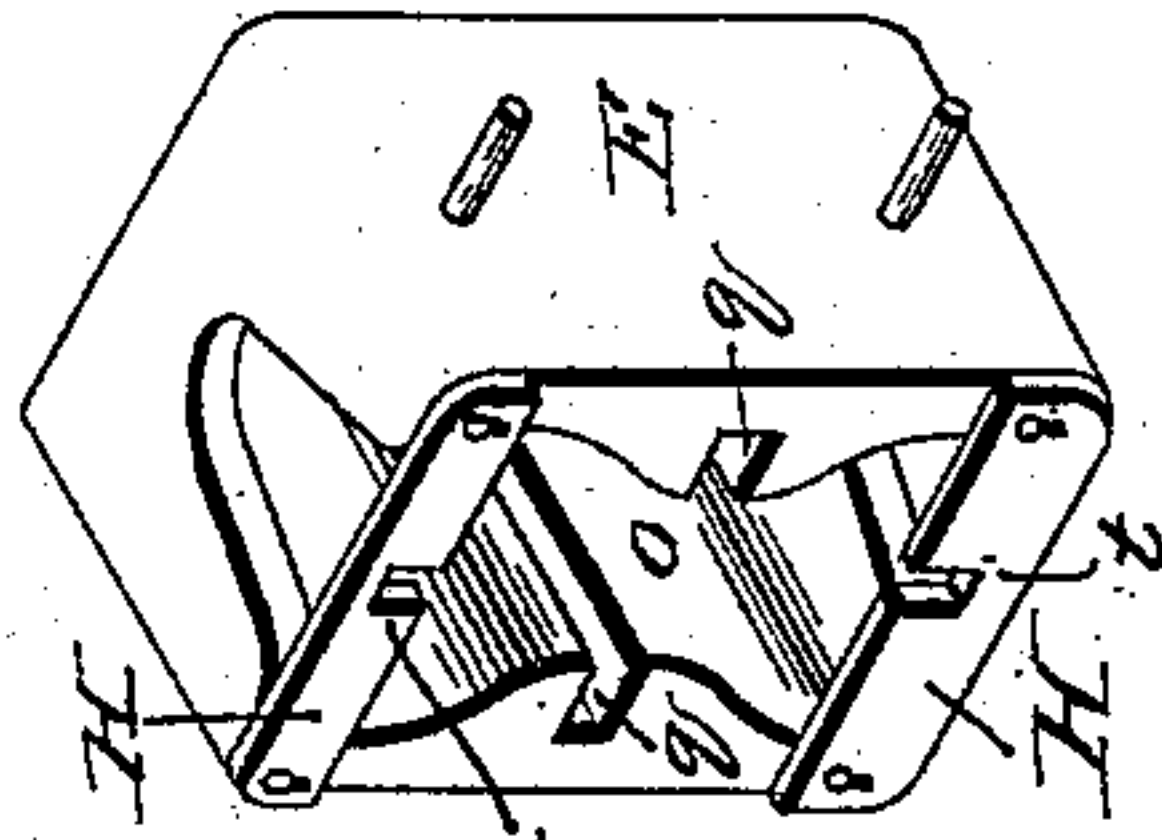
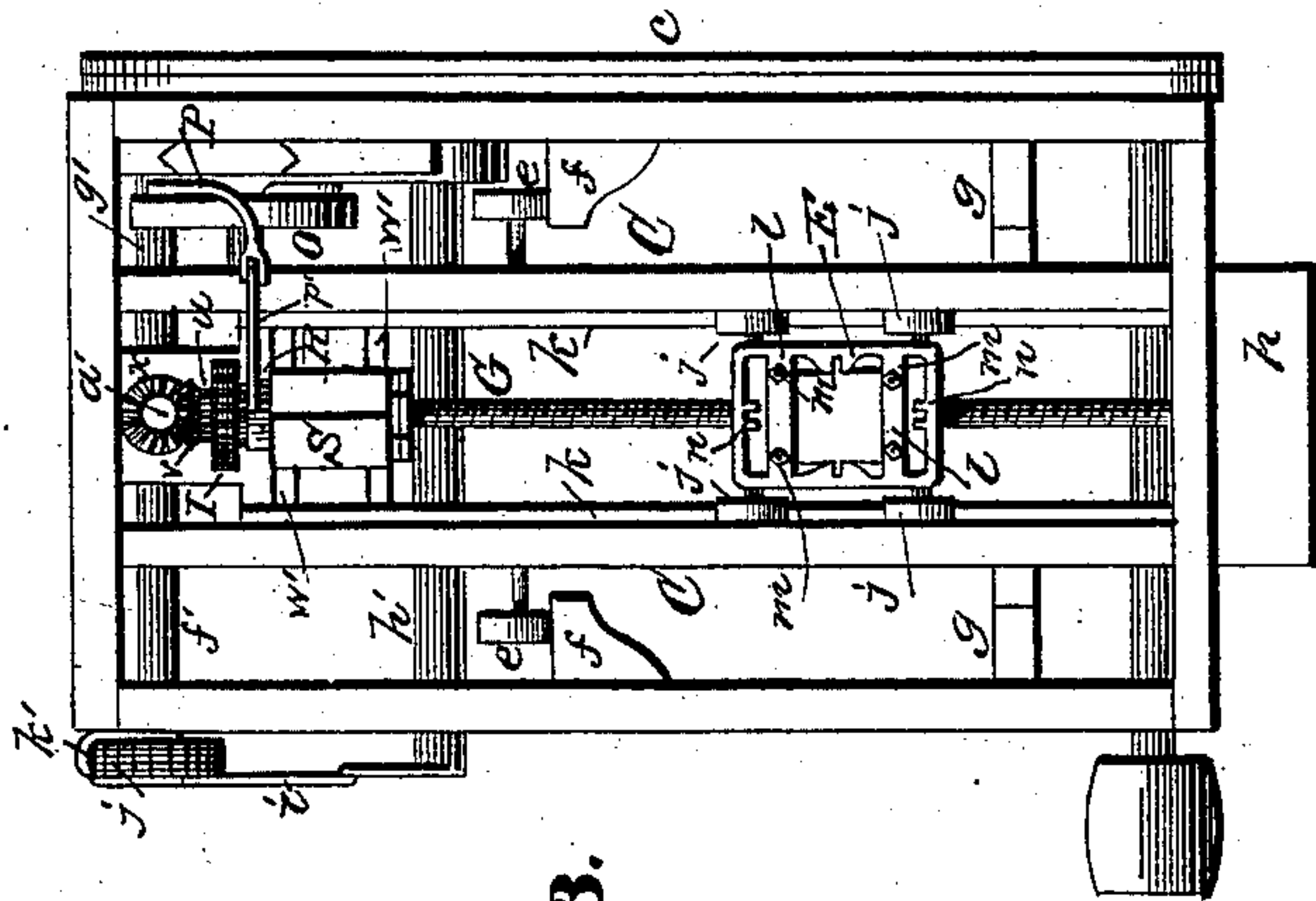


Fig. 3.



Witnesses  
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# UNITED STATES PATENT OFFICE.

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

## MACHINE FOR SAWING STONE.

SPECIFICATION forming part of Letters Patent No. 361,011, dated April 12, 1887.

Application filed November 27, 1886. Serial No. 220,043. (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 Machines for Sawing Stone; 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 machine for sawing stone and driving mechanism for imparting to the saw-blade the required reciprocating motion; Fig. 2, a top plan view of the same; Fig. 3, an end view; Fig. 4, a detail view in perspective of the saw-blade carrier, also the feed-nut detached from the carrier; Fig. 5, a detail view in perspective of the slotted plate employed with other mechanism for lifting the saw-blade and carrier at each end of the stroke; Fig. 6, a detail view, in perspective, showing a modification of the carrier; and Fig. 7, a detail view in perspective of the mechanism employed in connection with the slotted plate for feeding the saw-blade in a downward direction when cutting both ways.

The present invention has relation to that class of stone-sawing machines in which the saw-blade is raised by suitable mechanism at the end of the stroke and lowered at the beginning of the next stroke, whereby the kerf can be cleared of debris while the saw-blade is in operation.

The object of the invention is to provide simple and effective means for raising and lowering the saw-blade at the end of the stroke; also, improving the machine in the several details of construction, whereby a more perfect action of the saw-blade is obtained and the motion thereof more readily controlled. These several objects above enumerated I attain by the construction substantially as shown in the drawings, and hereinafter described and claimed.

In the accompanying drawings, A represents the frame of the machine of any desirable form and construction, and is provided, near one end, with the usual pulleys, *a b B*, over and around which pass driving-belts *c d*. The

arrangement of the pulleys and belts is of the common form, and therefore I lay no claim thereto, and, if preferred, any suitable or well-known driving mechanism may be employed.

Within the frame A is supported the sashes C, by means of the rollers *e*, working on short tracks *f*, secured to the inner sides of the frame of the machine. Below the tracks *f*, at a suitable distance therefrom, are guides *g*, to guide the sashes in their reciprocating motion. If preferred, the lower ends of the sashes, and also the top, may be connected together by suitable braces, *h i*, respectively, as shown in Figs. 1 and 2. Any suitable means, however, may be employed for connecting the sashes together, as found most preferable.

The saw-blade D may be of any suitable construction usually employed for sawing stone, either a plain cutting-edge or diamond saw-teeth being used, as desired. The ends of this saw-blade are connected to carriers E, of the construction shown in either Figs. 4 or 6, the same having rollers *j* upon their sides, which bear upon upright guides *k*, upon the inner sides of the sashes C. The carrier, as shown in Fig. 4, at its back end is cast with transverse bars *l*, through which pass the screw-threaded ends of the usual saw-buckles, *m*, and receive upon their screw-threaded ends the usual tightening-nuts, the opposite ends of said buckles being attached in the ordinary manner to the saw-blade. These buckles are of the usual construction, and are for the purpose of tightening the saw-blade, said blade at its extremities passing between lugs *n* upon the interior top and bottom of the carrier, as shown.

The carrier E is cast with an opening, *o*, of any preferred shape to correspond with the shape of the sectional nut F, said nut having wings *p*, which fit in lateral grooves *q* of the opening *o*, for the purpose of retaining the nut in a more steady position. I have shown this nut on an enlarged scale and square in cross-section, and therefore it should be understood that it is not of natural size or shape compared with the opening *o*, as both the sectional nut with its wings and an opening to correspond therewith, in which the nut is to be inserted, is common in this class of machines, and therefore many modifications can be made therein without departing from the principle of my



invention. The feed-screws G pass loosely through holes *r* in the carriers and engage with screw-threaded holes *s* of the nuts F, whereby the carriers are moved up and down.

5 In Fig. 6, which is a modification of the saw-blade carrier, in place of the lugs *n* transverse plates H are employed, having notches *t*, in which passes the extremity of the saw-blade. These plates are made vertically ad-  
10 justable, also horizontally adjustable, by means of slots and set-screws, or in any other well-known and preferred manner, thereby enabling the saw-blade to be kept in a true vertical line by the adjustment of the plates, and  
15 also adapting the carriers to saws of different widths. The lugs *n*, as well as the notches *t*, are for the purpose of steadying the saw-blade while in motion.

The upper ends of the feed-screws G are  
20 provided with gear-wheels I, with which engage the teeth of pinions *u*, said pinion terminating at its upper end in a beveled gear-wheel, *v*. These pinions are mounted upon  
25 suitable studs projecting upwardly from a central brace, *w*, secured to the upper ends of the sashes C, as shown more clearly in Fig. 2. The gear-wheels *v* engage with similar gear-wheels, *x*, upon the ends of a horizontal shaft,  
30 *a'*, which has its bearings in the central brace between the sashes. The inner extremity is formed square or flat-sided, as shown at *b'*, and passes through a similarly formed sleeve,  
35 *c'*, upon the end of which is rigidly connected to or formed with a beveled gear-wheel, K, with which engage gear-wheels *d'* *e'*, upon the inner ends of transverse shafts *f'* *g'*.

The crank-shaft *h'* of the belt or driving pulley B is connected to the shaft *f'* by means of  
40 pitman *i'*, ratchet-wheel *j'*, and pawl *k'*. The shaft *g'* is provided upon its outer end with the pulley *a*, hereinbefore described, and also with two loose pulleys. (Shown in dotted lines, Fig. 1.) The driving-shaft or crank-shaft *h'* is provided with a crank, *l'*, to which is attached the  
45 pitman L, said pitman in turn being connected in any suitable manner to the sashes C. The shaft *h'* is also provided with a second crank, *m'*, to which is connected a pitman, M, the opposite end of said pitman being con-  
50 nected in any suitable manner to a longitudinally-sliding block, N, said block having a horizontal slot, *n'*, with which engages a crank-pin, *o'*, on the crank-wheel O.

To the crank-wheel O are connected the ends  
55 of rods P Q, the opposite ends thereof being attached in any preferred manner to arms *p'*, upon a screw-sleeve, R—one upon each of the feed-screws G. The screw-sleeves R extend  
60 over the smooth portion of the feed-screws G, at the upper ends thereof, and move independent of said feed-screws, and around the sleeves are nuts or boxes S, as shown in Fig. 3, which engage with the threads thereof. Suitable  
65 nuts are employed to keep the sleeves R in position on the feed-screw. The block N slides between incline-faced guides T U, whereby the block N is given a downward motion as it is

projecting forward in a longitudinal direction and brings or carries the crank-wheel O partially around.

70 In the operation of the machine motion is imparted to the saw-blade D by means of the driving-pulley B, belt *d*, and pitman-connection L with the sashes C, carrying the sashes and saw-blade forward to cut the stone. At  
75 the completion of the stroke the crank-and-pitman connection M *m'* with the block N move the block forward, and by means of the pin *o'* of the crank-wheel O will be turned, and through the medium of the rods P Q and arms  
80 *p'* the screw-sleeves R will be turned, and thereby lift the feed-screws G with it, and in turn the feed-screws lift the carriers E and saw-blade D while the latter is coming back. When the saw is cutting the stone, the blade  
85 is fed downwardly by means of the shaft *f'* and gear-wheel *d'*, engaging with the gear-wheel K, turning the shaft *a'*, and by means of the gear-wheels *x* thereon engaging with the gear-wheels *v*, and the pinions *u*, engaging  
90 with the gear-wheels I, the feed-screws G are turned in the proper direction to lower the carriers E and feed the saw-blade, as required while cutting the stone. By means of the shaft  
95 *g'*, the belts and tight and loose pulleys, hereinbefore described, and the gear-wheels *e'* K, with the gearing above described for feeding the saw-blade, said blade may be raised or lowered while the saw is not in motion, to ad-  
100 just the blade to the varying heights of the stone to be sawed, and to raise the blade out of the stone after it has been cut. It should be understood that the manner of connecting the gear-wheel K to the shaft *a'*, as hereinbefore  
105 described, admits of the shaft moving longitudinally in the sleeve *c'* of said wheel without interfering therewith; but when turned the shaft will turn with it. When it is de-  
110 sired to have the saw cut both ways when moving both backward and forward, the block N, guides T U, and the crank-and-pitman connection M *m'* are dispensed with and a slotted plate, W, substituted, said plate being made  
115 stationary on the frame of the machine in any well-known manner. This plate W has an inclined slot, *r'*, which terminates at its end in inclined extremities *s'*, the crank-pin *o'* of the crank-wheel O engaging with the slot *r'*. The  
120 inclination of the slot will cause the crank-wheel to turn downward at each end of the stroke when the sashes are moved forward and backward.

In order to feed at each end of the stroke, the crank at the extremity of the shaft *h'* is removed and the cam A' substituted, and a  
125 bracket, *t'*, is secured to the frame A, which has pivoted thereon an arm, B', slotted at its upper end for attachment thereto of the pitman *i'*, a spring, *u'*, upon the bracket keeping the lower end of the arm B' pressed against  
130 the cam A'. When the shaft *h'* is rotated, it carries with it the cam A', which is brought in contact twice in its revolution against the pivoted arm B', thereby giving the required



motion to the pitman *i'* to feed the saw-blade downward at each end of the stroke.

It will be noticed that the boxes *S* are stationary at all times in the sashes *C*, said boxes being connected thereto by transverse braces *w'*, as shown in Fig. 3, and the screw-sleeve *R*, which fits loosely over the smooth end of the feed-screw *G*, is turned by means of the arms *p'*, which are connected to the mechanism hereinbefore described, and the screw-threads on the sleeve, engaging with the interior screw-threads on the boxes *S*, will cause the feed-screw to be raised or lowered as desired.

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

1. In a machine for sawing stone, the sashes *C*, provided with guides *k*, in combination with the saw-blade *D* and carriers *E*, having notches or lugs and rollers, and the feed-screws *G*, extending through the carriers, and mechanism, substantially as described, for operating the screws to raise or lower the carriers, substantially as and for the purpose set forth.

2. In a machine for sawing stone, the combination, with the saw-blade carriers provided with lugs or notches for receiving the ends of the blade and opening *o*, having transverse slots *q*, of the sectional boxes *F*, having transverse wings *p*, substantially as and for the purpose described.

3. In a machine for sawing stone, the combination, with the movable sashes *C* and saw-blade *D*, connected to suitable carriers, of the feed-screws *G*, screw-sleeves *R*, engaging with the interior screw-threads on stationary boxes *S*, and means for operating said sleeve, whereby the saw is raised or lowered, substantially as and for the purpose set forth.

4. In a machine for sawing stone, the shafts *f' g'*, provided on their inner end with gear-wheels *d' e'*, the former one of the shafts connected to a crank on the driving-shaft by means of the pitman *i*, ratchet *j*, and pawl *h*, and the former-mentioned shaft connected to the driving-shaft by means of belts and pulleys, in combination with the shaft *a'*, having a flat-sided extremity, *b'*, and the gear-wheel *k*, provided with sleeves *c'*, adapted to slide thereon, and operating as described, and the gear-wheels *x v*, pinions *u*, and gear-wheels *I*, and suitable mechanism for operating the several shafts, whereby the feed-screws are also operated, substantially as and for the purposes specified.

5. In a machine for sawing stone, the combination, with the inclined guide blocks *T U*,

of the slotted guide-block *N* and the crank-wheel *O*, engaging with the slot by means of pin *o'*, and suitable devices connected with the crank-wheel for operating the screw-sleeves *R*, substantially as and for the purpose set forth.

6. In a machine for sawing stone, the feed-screws *G*, screw-sleeves *R*, and stationary boxes *S*, in combination with arms *P Q*, crank-wheel *O*, and suitable mechanism for operating said crank-wheel, substantially as and for the purpose specified.

7. In a machine for sawing stone, the combination, with the crank-wheel *O*, of the stationary plate *W*, having inclined slot *r'*, and inclined extremities *s'*, whereby the saw is made to cut both ways, or in both directions, substantially as and for the purpose specified.

8. In a machine for sawing stone, the shaft *f'*, connected with suitable gearing for operating the shaft *a'*, and the pitman *i'*, in combination with the pivoted arm *B'*, spring *u'*, and cam-wheel *A'*, the latter being connected to the extremity of the shaft *h'*, substantially as and for the purpose set forth.

9. In a machine for sawing stone, the movable sashes *C*, saw-blade *D*, and carriers *E*, to which they are connected, in combination with the feed-screw *G*, provided at their upper end with gear-wheels *I*, screw-sleeves *R*, and boxes *S*, inclosing the sleeves, and the pinions and gear-wheels *u v x*, the latter being connected to the ends of the shaft *a'*, and means for operating said shafts, substantially as and for the purpose set forth.

10. In a machine for sawing stone, the sashes *C*, provided with suitable guides *k*, and having connected thereto stationary screw-boxes *S*, in combination with the feed-screws *G*, screw-sleeves *R*, carriers *E*, provided with wheels *J*, and the wheels or rollers *e*, supported on tracks *f*, secured to the frame of the machine, substantially as and for the purpose set forth.

11. In a machine for sawing stone, the crank-wheel *O*, an inclined slotted plate, *W*, in combination with the pivoted arm *B'*, spring *u'*, and cam-wheel *A'*, and suitable intermediate connections for operating the shaft *a'*, and the sleeves *R*, 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.