

T. S. Howard.

Stone Cutting Mach.

No 92,827.

Patented Jul. 20, 1869.

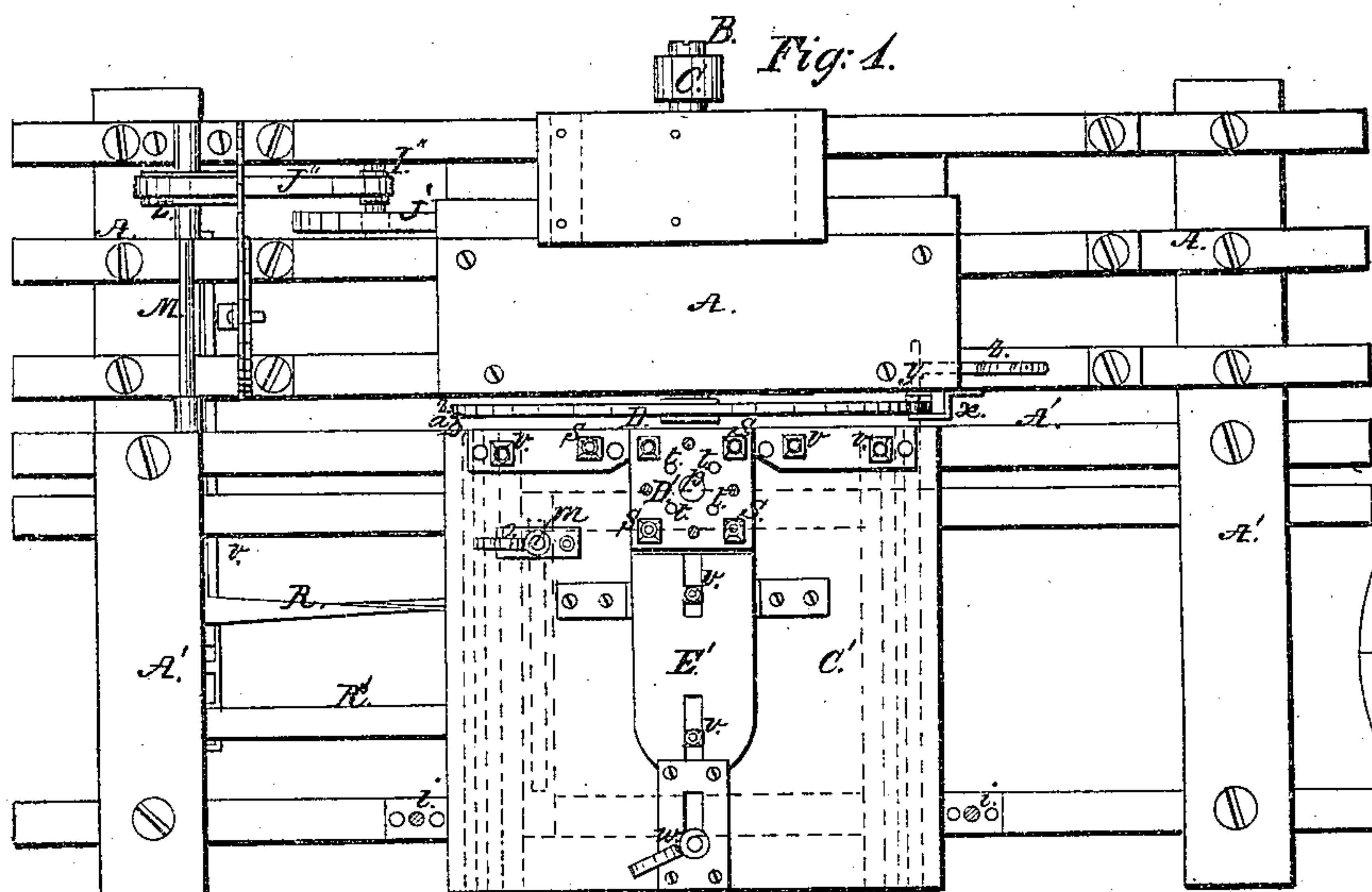
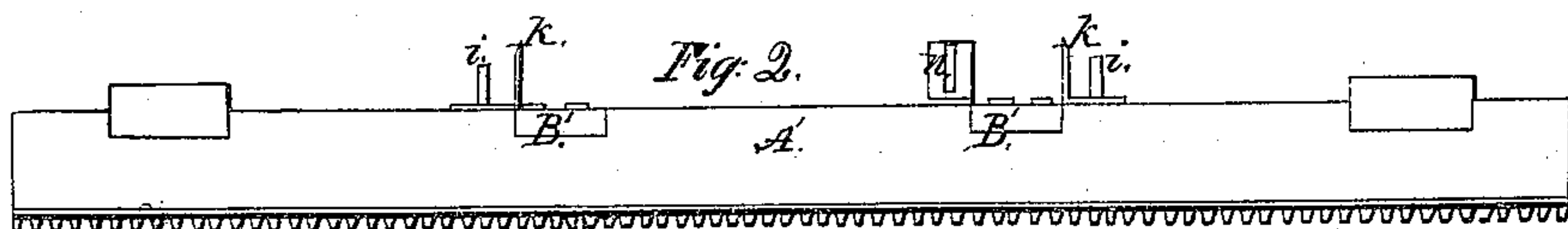


Fig. 4.

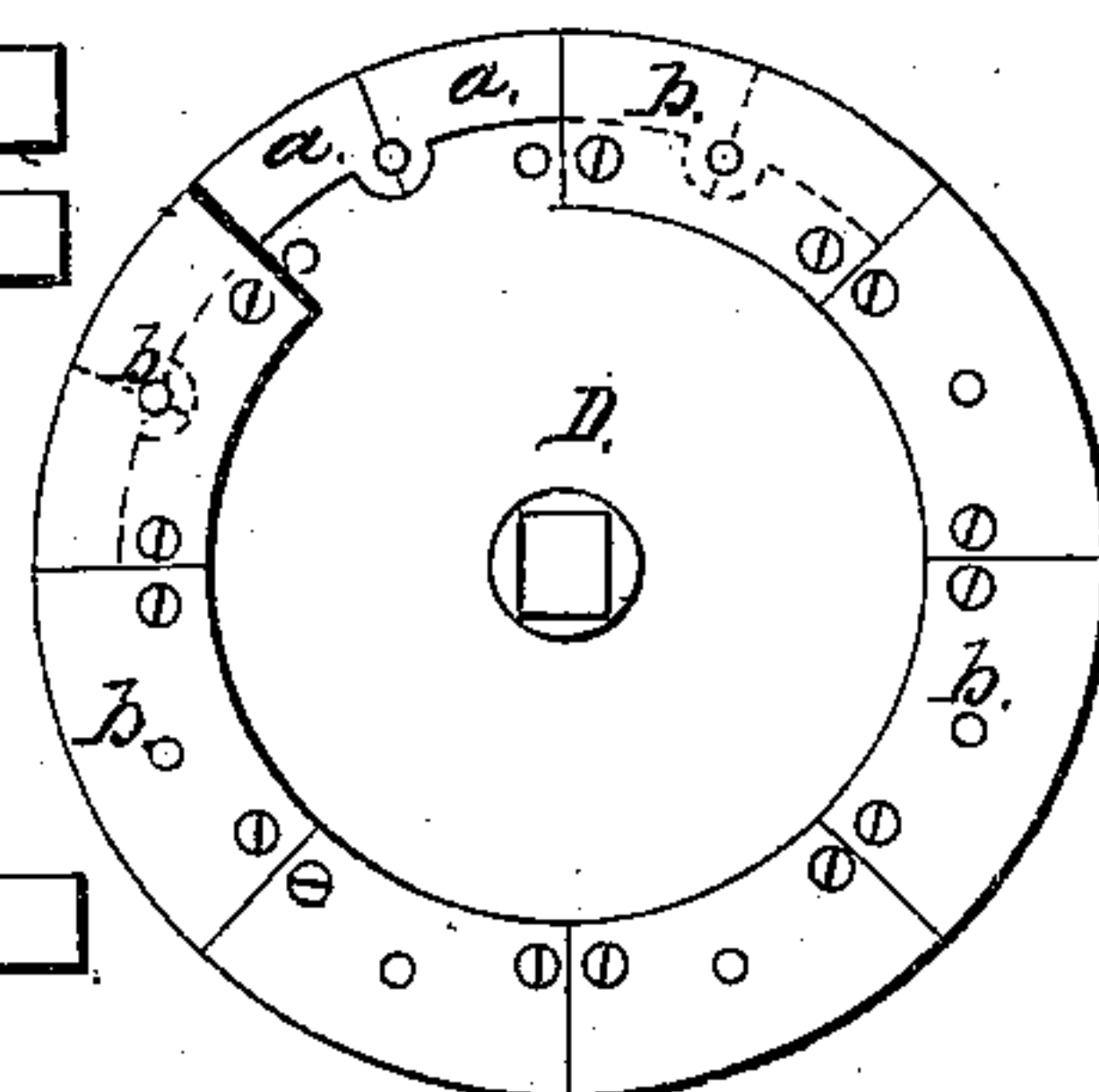


Fig. 5.

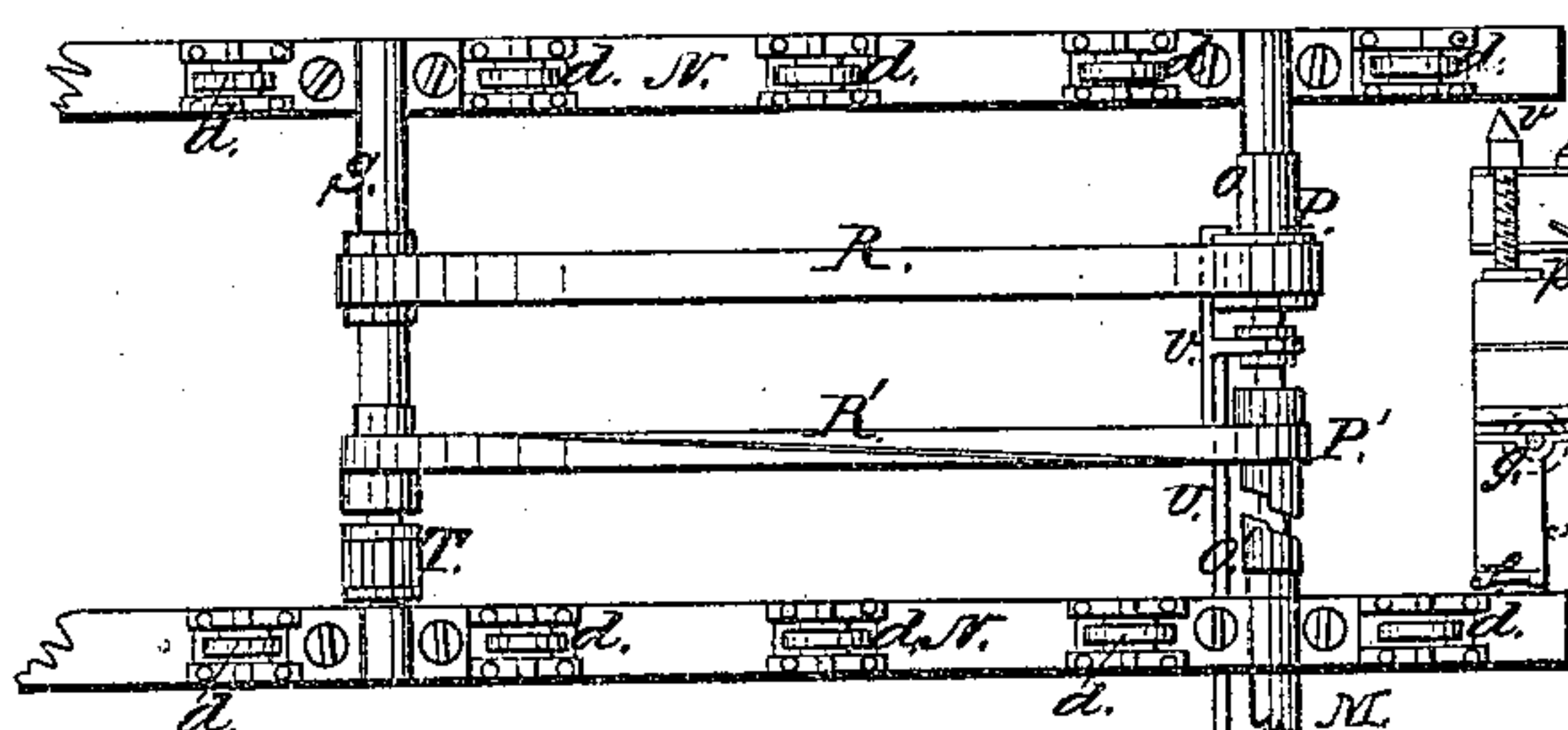


Fig. 3.

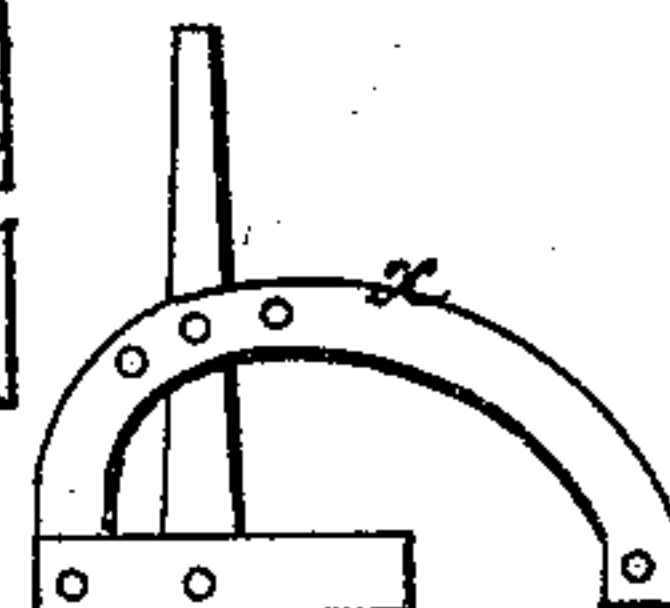
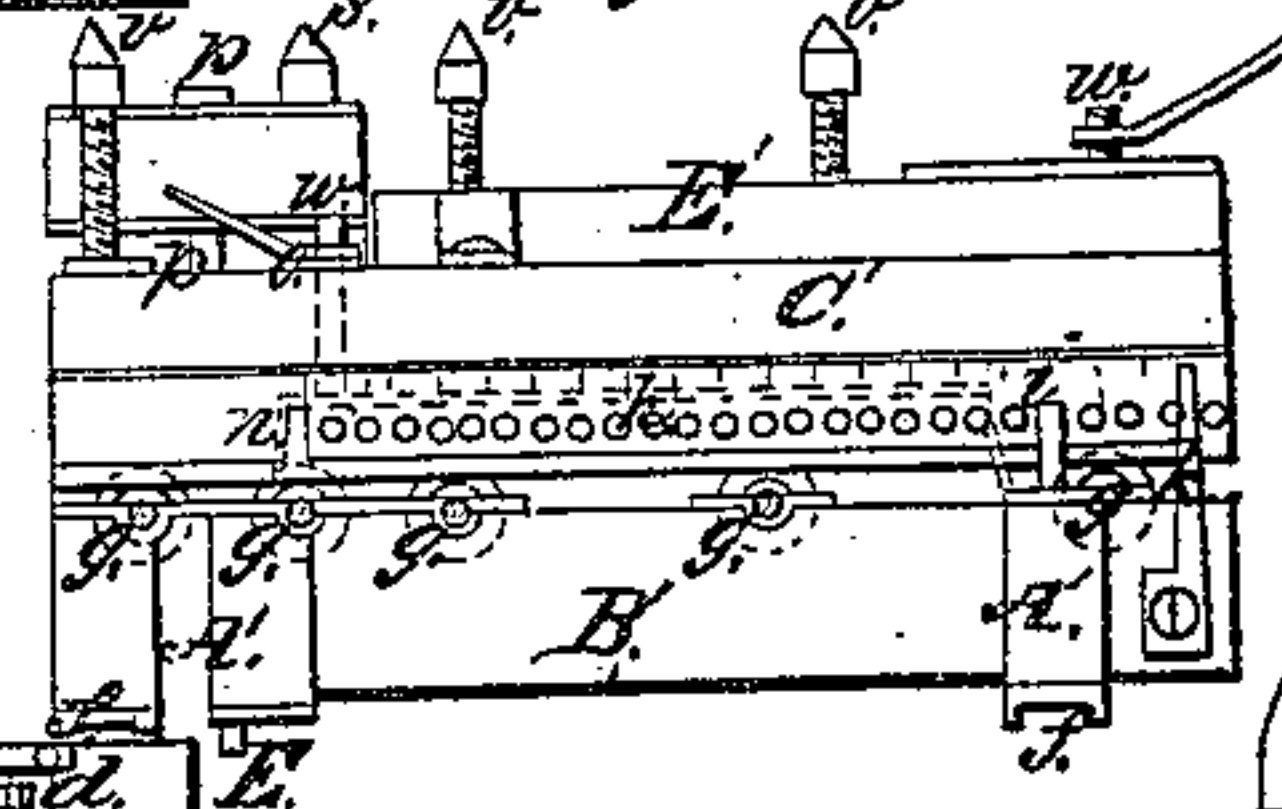


Fig. 7.

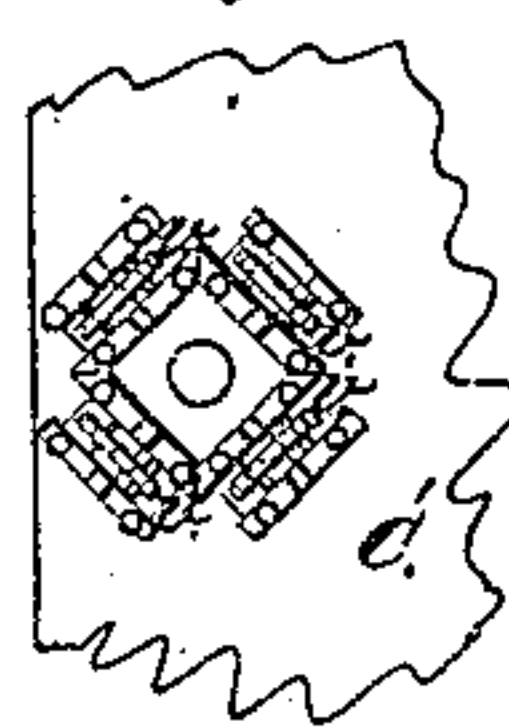
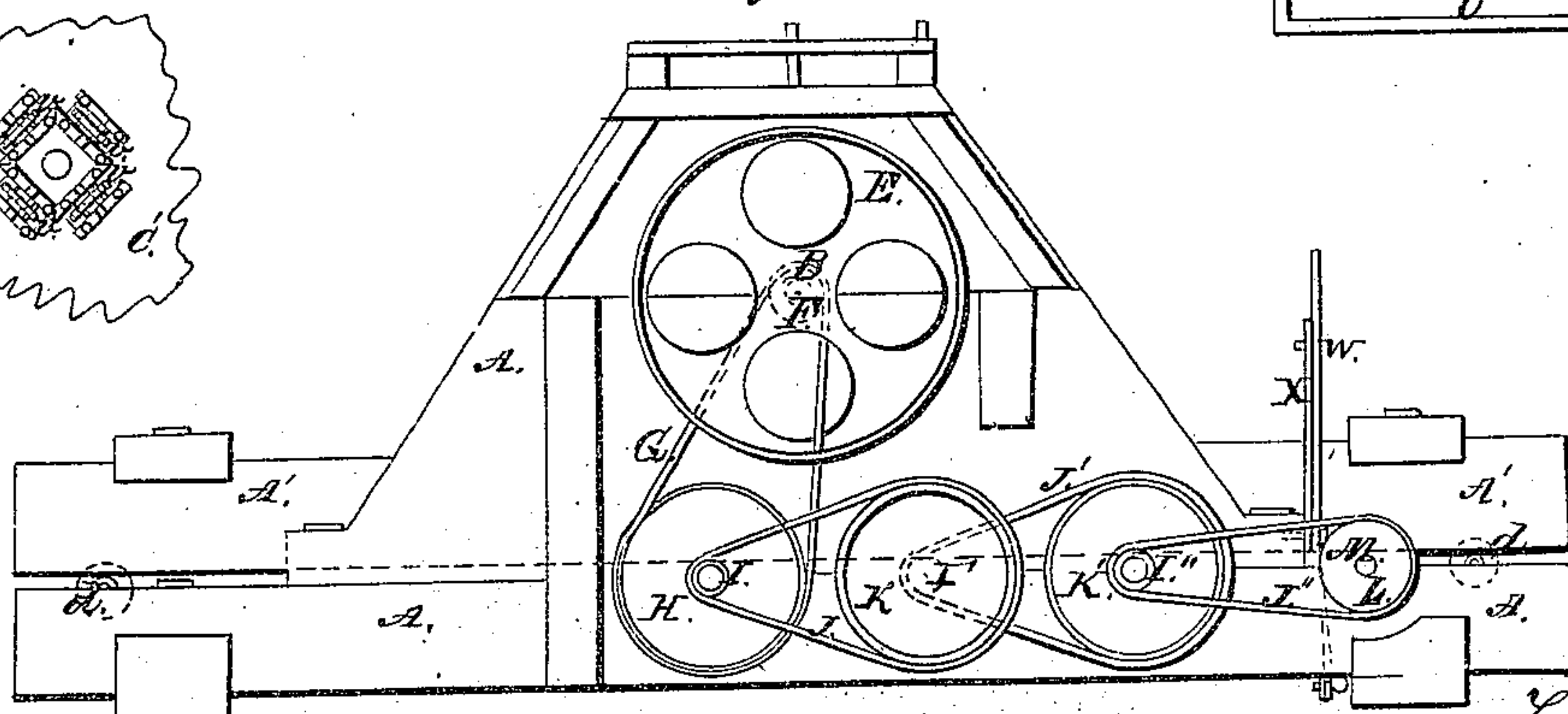


Fig. 6.



Witnesses.

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Atty.

United States Patent Office.

T. S. HOWARD, OF SAVANNAH, MISSOURI.

Letters Patent No. 92,827, dated July 20, 1869.

IMPROVED MACHINE FOR CUTTING STONE AND MARBLE.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, T. S. HOWARD, of Savannah, in the county of Andrew, and in the State of Missouri, have invented certain new and useful Improvements in Machine for Cutting Marble and Stone; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of my invention consists in the construction and general arrangement of a "machine for cutting marble and stone," which will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawings, which form a part of this specification, and in which—

Figure 1 is a plan view of the machine;

Figure 2, a side view of the main carriage, which feeds the stone to and from the saw;

Figure 3 is an end view of the main carriage, with side view of the carriage, which moves the stone, at right angles, to or from the saw;

Figure 4 is a side view of the saw;

Figure 5 is a plan view of a portion of the main carriage-bed;

Figure 6, a longitudinal vertical section, showing the feed-works;

Figure 7 is a plan view of a portion of the carriage, which moves the stone, at right angles, to and from the saw, showing the bed for the small revolving carriage on which the stone is placed; and

Figure 8 is a side view of the reversing apparatus.

A represents the frame-work of the machine, at a suitable point in which the main driving-shaft B is placed, said shaft having a pulley, C, outside of the frame A, which, by means of a belt, or otherwise, is connected with an engine.

Inside of the frame A, and on the shaft B, are placed the fly-wheel E and a pinion, F, the latter of which, by means of a belt, G, is connected to a wheel, H, in the lower part of the frame.

The wheel H is then, by a series of pinions, I I' I'', belts J J' J'', and wheels K K', connected with a pulley, L, on a shaft, M, which has its bearings in the frame A, and extends across the main-carriage bed N.

That part of the shaft M which extends across the carriage-bed N, is provided with two notched stationary collars, O O', placed at a suitable distance apart, and between these are two correspondingly-notched movable collars, P and P'.

The collar P is connected by a straight belt, R, to a pulley on a shaft, S, which extends across the centre of the carriage-bed N, and the collar P' is connected to another pulley on the same shaft by a twisted belt, R', so that, by moving the movable collars into gear

with the stationary collars, the shaft S is turned either way, as may be desired.

The shaft S has a pinion, T, which gears into a rack-bar on the main carriage, so that the main carriage will be moved to either side, as one or the other of the movable collars P P' is thrown into gear with the stationary collars O or O'.

The feeding-apparatus thus described is arranged so as to feed or move the carriage any desired distance at each revolution of the main shaft B. Generally the distance which it is so moved is from the one hundred and twenty-eighth to the thirty-second part of an inch, and can easily be regulated by the size of the wheels and pulleys, through the medium of which the main shaft B is connected with the shaft M.

The movable collars P P' are thrown in and out of gear with the stationary collars O O' by means of a rod, U, which, at one end, has a T-shaped arm, V, embracing the two stationary collars, and at the other end is pivoted to the lower end of a lever, W.

This lever is pivoted to a cross-bar on the side of the frame A, and is held in the position desired by means of a pin on its rear side, which is put into holes on a circular, X, as shown in fig. 8.

The saw D, which is secured to the inner end of the main shaft B, is made of steel, about one-fourth of an inch in thickness, and of any size desired, although I have found that a saw of about four feet six inches in diameter is most suitable.

This saw is provided with a movable rim, consisting of a centre-piece, a, and two side-pieces b b, which rim does the cutting.

The centre-piece a I prefer making about three inches wide, and the side-pieces b b six inches, making the whole saw about five feet in diameter.

The rim of the saw is made in twelve sections, and of any thickness desired.

In fig. 4, I have shown one of the side-pieces removed. The ends of each section of the centre-piece of the rim has a rounded ear, c, sunk into the edge of the main part of the saw.

The sections of the side-pieces b b are put on so as to lap joints with the sections of the centre-piece a.

The fastening through the ends of the inside sections is a rivet, with a countersunk head on each side. The other fastenings for the rim are bolts, with countersunk head and top, and the outside pieces are sunk so as to meet in the middle of the main part of the saw.

The carriage-bed N is provided with a number of rollers, a a, on which the main carriage A' moves.

This carriage A' is provided, on its under side, with a rack-bar, e, which, as already mentioned, gears into the pinion T, on the shaft S, so that the carriage may be moved in either direction.

The carriage is also provided with two grooved rails f f, in which the rollers d d fit, so as to move easily.

At suitable points on the main carriage A' are two

cross-bars B' B', on which are placed a number of rollers, *g g*.

On these rollers is placed the carriage C', which is used to move the stone at right angles to and from the saw. This carriage C' is also provided with grooved rails, in which the rollers fit so as to be moved easily.

On each side of the carriage C' are placed plates *h h*, which are provided with holes, as shown in fig. 3, for the purpose of inserting the end of a lever, which is then braced against a pin, *i*, on the main carriage A', so that by this means the carriage C' can be moved any distance desired.

The plates *h h* are, at their upper edge, graduated, or marked in inches, so as to show the distance the carriage C' is moved.

For this purpose I place pointers *k k* at the side of the carriage C', on the main carriage A'.

When the carriage C' has been placed in the position desired, it is secured by means of a bolt, *m*, passing up through a slotted bar, *n*, fastened to the main carriage under the carriage C'. This bolt, passing up through said carriage, is tightened by a screw, *o*, thus holding the carriage C' at any distance desired from the saw.

In the centre of the inner edge of the carriage C' is placed a small carriage, D', on which the stone is placed.

The carriage D' turns on a centre-pin, *p*, and rests on four rollers *r r*, placed on the carriage C' in such a manner that the carriage D' can easily be turned around, and thus allow the stone to be dressed on all four sides without lifting it off its carriage.

In each corner of the carriage D is a set-screw, *s*, for the stone to rest upon, and through the carriage are also four holes *t t*, to insert other set-screws in, in dressing different-sized stone.

On the carriage C' are also a number of set-screws, *v v*, of the same height as the set-screws *s s*, to rest larger stones on, and hold them in position.

E' is a brace to hold the carriage D' square to the saw, and is secured by a screw *w*, as seen in fig. 1.

On the side of the frame A is placed a bent bar, *x*, which

extends on the outer edge of the saw, and from the inside of the frame an adjustable pin, *y*, projects against the inner side of the saw, so as to keep the edge of the saw from springing.

A screw, *z*, holds the pin *y* in position, when once placed as desired.

On top of the frame A, which should be as high as the upper edge of the saw, I place a water-cask, to which I attach a rubber tube, with a stop-cock on the end for the purpose of applying water to the saw-edge when cutting stone or marble.

Having thus fully described my invention,

What I claim as new, and desire to secure by Letters Patent, is—

1. The saw D, constructed as described, having a movable rim made in sections, and consisting of centre-piece *a* and side-pieces *b b*, all arranged and combined substantially as shown and described.

2. The arrangement of the wheels, belts, and pulleys herein described, for the purpose of imparting the necessary degree of rotary motion to the shaft S and pinion T, whereby the main carriage A' is moved either to or from the saw, substantially as herein set forth.

3. The arrangement of the carriage C' with its graduated plates *h h*, provided with series of holes, pins *i i*, pointers *k k*, slotted bar *n*, bolt *m*, and screw *o*, all substantially as and for the purposes herein set forth.

4. The combination of the carriage D', turning upon its centre-pin *p*, and rollers *r r*, and having set-screws *s s*, with the brace E', substantially as and for the purposes herein set forth.

5. The combination of the carriages A', C', and D', all constructed and arranged to operate substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing, I have hereunto set my hand and seal, this 18th day of December, 1868.

T. S. HOWARD. [L. s.]

Witnesses:

D. VAN BUSKIRK,
RUFUS VAN BUSKIRK.