2 Sheets. Sheet 1.

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Fig: 2

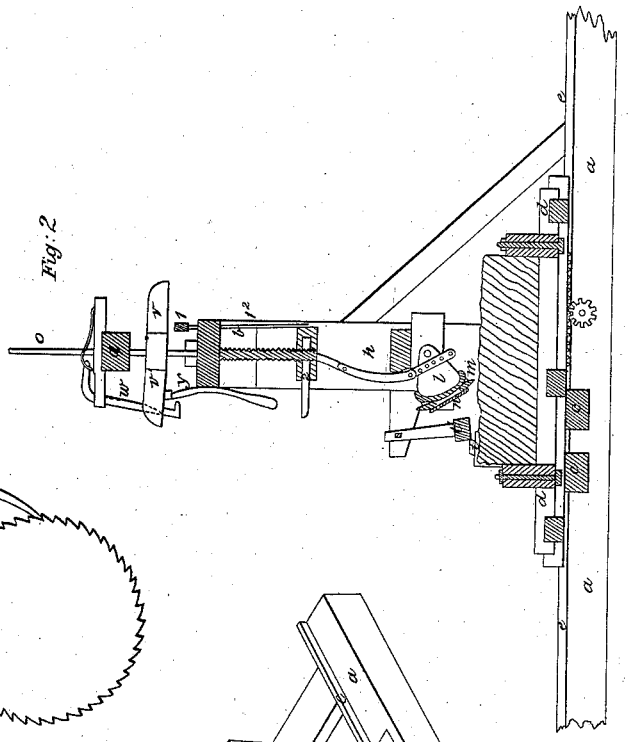


Fig: 6.

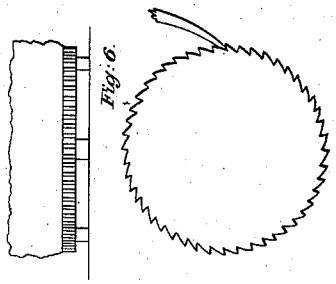
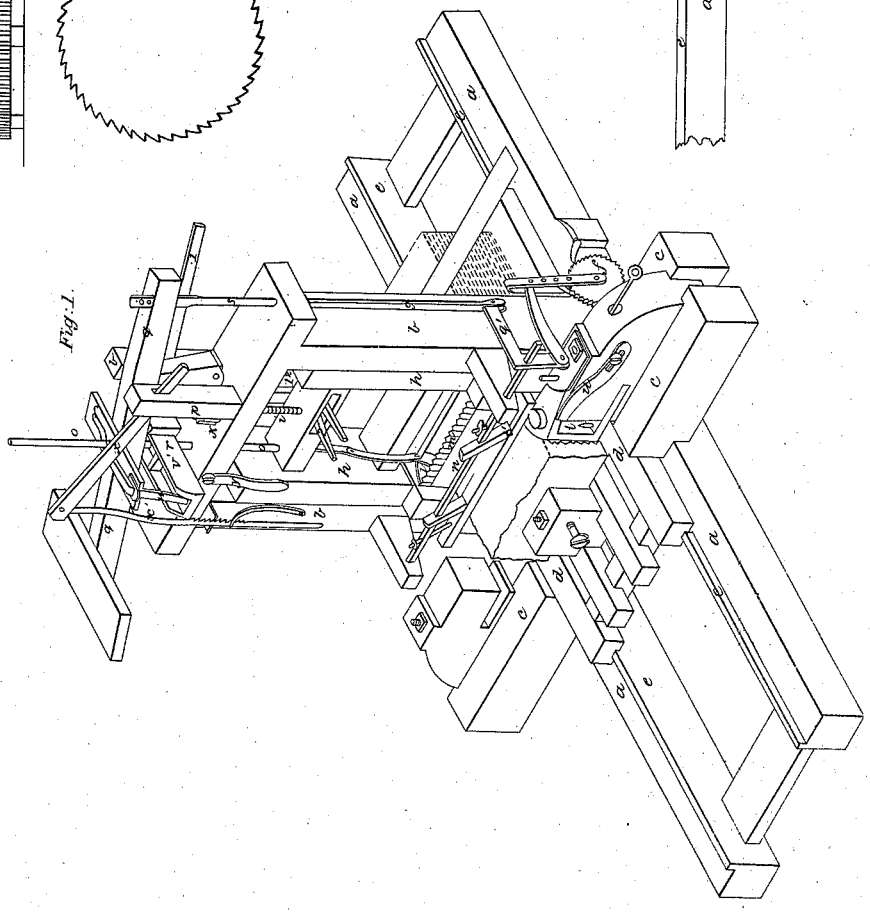


Fig: 1.



2 Sheets. Sheet 2.

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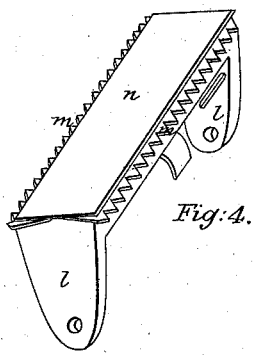
Fig: 4.



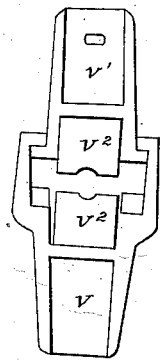


Fig: 5.

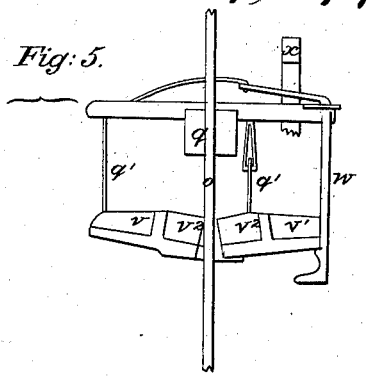
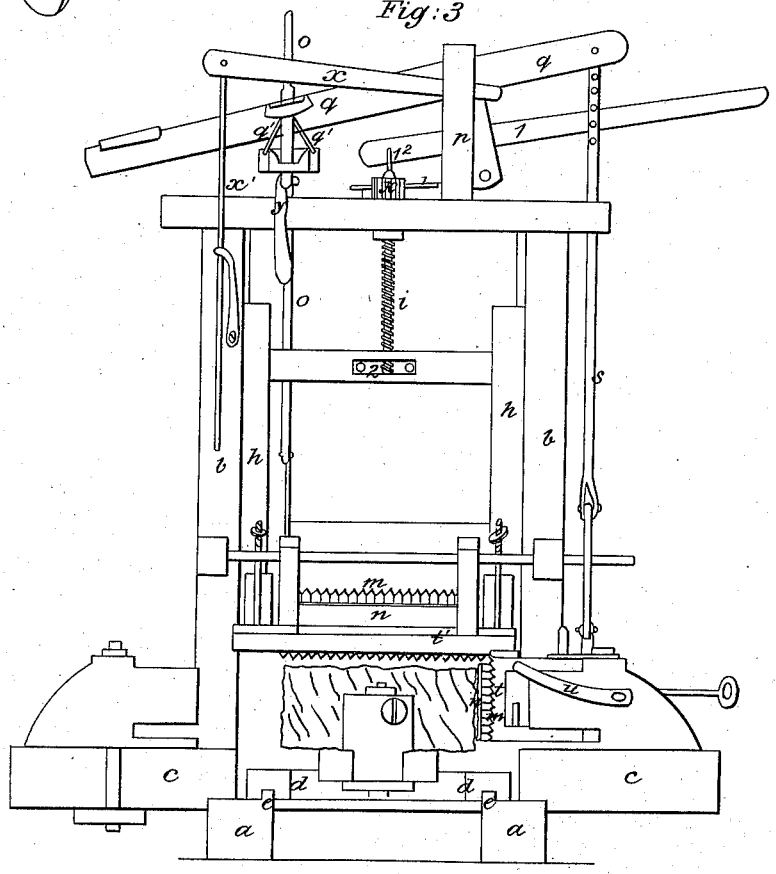


Fig: 3



UNITED STATES PATENT OFFICE.

JACOB JENKS, OF ROSCOE, ILLINOIS.

STONE-CUTTER.

Specification of Letters Patent No. 3,642, dated June 24, 1844.

To all whom it may concern:

Be it known that I, JACOB JENKS, of Roscoe, in the county of Winnebago and State of Illinois, have invented a new and useful Improvement in Cutting Stone; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, which forms a part of this specification, in which—

Figure 1, is an isometrical view; Fig. 2, a vertical longitudinal section; Fig. 3, a cross vertical section; Fig. 4, cutter head detached; Fig. 5, clutch detached; Fig. 6, rotary bed for circular work.

The nature of my invention consists in a cutting tool that extends across the stone, said tool having a row of picks on its front edge and just behind them a broad chisel, the tool is vibrated, and, by its weight and momentum cuts the stone which passes under it on a carriage; side cutters of a similar construction are attached and vibrate horizontally to cut the sides of the stone; several important parts and modifications will be hereafter described.

In the construction of this machine, two sills (*a*) are placed side by side, a sufficient distance apart to form ways for the stone carriage to run on. They are connected by proper cross ties, and are long enough to allow the carriage above named a sufficient motion to and fro thereon.

Two upright posts (*b*) are framed, at their lower ends into the sills (*a*). These are sustained firmly in their position by diagonal braces extending from the sills to the posts on one side; a cross cap unites the posts at top and supports a post of the machinery; just in front of the posts (*b*) are cross pieces (*c*) halved into the sills at right angles to them. The upper portion of said pieces between the sills is cut out down to a level with the sills for the carriage to pass over the two ends projecting beyond on each side are thick enough to have their upper surface on a level with, or above, the top of the carriage on these, slides are affixed, to which the side cutters are connected, which are hereafter described.

The carriage is a stout oblong frame (*d*) which can be made to slide or run on rollers on ways (*e*) that are fastened to the sills (*a*); the carriage moves back and forth similar to that of a saw-mill by means of a rag wheel (*f*) and hand (*g*) the hand being worked by the motive power and operating like common saw mills, or the carriage may be moved with a screw as will be readily seen by competent mechanists.

Between the side posts (*b*) there is a gate (*h*) or frame, which the cutter is suspended in that can be raised or lowered by means of a screw (*i*) that extends down through the cap of the posts and through the upper cross bar of the gate in which there is a divided nut (2) of common construction that will pinch or release the screw as required; the upper end of the screw rises sufficiently above the cap to have a ratchet pinion (*k*) on it. The horizontal cutter head or cutting tool (*l*) (see Figs. 2, 4,) is a segment of a hollow cylinder, the two arms by which it is suspended only extending to the center and expanding at the periphery as broad as the segment. Onto each edge of the cutter head there is a row of picks (*m*) attached (in any convenient way for replacing) which extends across the whole width of the machine. Just behind the picks, there is a broad chisel (*n*) that is as broad on the edge, as the width of the stone to be cut. This can be made in sections if desired. This cutter-head is raised and swings down against the stone, the picks striking first and chipping off the rough stone, and the chisels after, smoothing the face in the most perfect manner. Motion is communicated to this cutter-head by means of a connecting rod (*o*) that runs up through the cap, on which the fulcrum posts (*p*) of a horizontal lever (*q*) are fastened; the rod (*o*) runs up also through this lever and it is connected with, and detached from the rod (*o*) by means of a clutch (*r*) hereafter described, or the cutter may be moved by any convenient connection, with the motive power many of which could easily be devised by a competent mechanic. The lever (*q*) is moved by the bent lever (*q'*) with which it is connected, by rod (*s*), and which is itself directly connected with the motive power. The cutters act on the stone somewhat similar to an adze on wood. They can be raised or lowered for any thickness of stone by means of the screw (*i*). It will be obvious that the picks or chisels can either be used separate or together as the nature of the stone and work to be done requires. Side cutter heads (*t'*) can be employed which vibrate horizontally the cutters standing vertical at right angles to the one first de-

scribed, in other respects they are like it, (one of these is removed in the drawings). They are forced back by the cam (t') and thrown forward by a spring (u). The motion of the carriage and stone is proportioned to that of the cutter according to the quality of the work to be done and the texture of the stone.

The clutch T above named, consists of two parts (v) shown in plan and section in detached Fig. 5 the two side pieces are made with a recess at their center where they clutch together; one of these pieces is held in a level position and rises and falls regularly with the lever (q) by being suspended thereto by rods (q') the other (v') has a catch (w) extending down through a hole in its end which when the end is raised catches it and holds it up, in the recesses above named at the inner ends of the clutches there is a square piece (v^2) in each that fill said recesses a semicircular channel being cut down through each through which the rod that works the cutter head passes; when the end (v') of the clutch is down the clutch slides up and down on the rod without lifting it but if the said end be raised and held up by the catch (w) it will seize the rod and draw it up till the catch is tripped which is effected at any height by striking an adjustable bar (x) that may be held to any height above the cap by rod (x') (see Fig. 3); in the downward descent of the lever (q) the clutch strikes a stationary catch (y) see also Fig. 2, which raises it up to the notch in the catch to the point where it is again ready to draw up the rod; by repeating this operation the cutter head raises and falls; in the operation of drilling, a drill rod is substituted for that of the cutter head, and the stone to be drilled being brought under it the operation will be readily understood.

When the end of the stone is to be cut it is brought to a proper position to be acted on by the cutter head (l) that as it acts thereon is made to descend by means of the screw that suspends the gate to which it is hung this screw is turned by means of a rack (z) that is connected with a stud (z') projecting from the lever (q) which acts on the ratchet pinion (k) before described; when the cuter is run down the divided nut is opened and the gate drawn back by a hand lever (1,) situated on the cap and connected with the gate by a rod (1^2).

When the cutter head is put into operation on the upper surface of a stone it is raised up so that the cutters shall be about level with the axle or fulcrum by which it is suspended it is then made to descend (either by its own weight, or the additional force of a spring which it strikes in ascending) and strikes the stone and cuts to a line under the axis, beyond which it is not allowed to pass being arrested by a stop it is thus made to hew off the surface by striking the stone on a line with the surface or a very little inclined thereto instead of striking down onto the surface nearly at right angles thereto as is the usual practice; the stone is thus cut, with a precision and certainty never before effected the feeding of the stone on the carriage is regulated according to the speed with which the cutters art and the power of the blow can be regulated by means of the springs to suit the kind of stone to be cut, by cutting across the whole width of the stone, a steadiness, and force is attained, to overcome every obstacle occasioned by spots of unequal hardness.

For cutting circular stones such as grindstones &c. we have a revolving bed on which it is placed to present to the cutters; the apparatus for effecting this is similar to that for progressing the carriage, a pawl or hand working into a rack around the periphery of the revolving bed. The side cutters can be placed at any angle to the top cutter in my first machine, and can be so formed as to cut surfaces other than plane if desired. It will be obvious that this machine can be adapted to many kinds of work by slight alterations of parts, but these I deem all substantially the same as that described for plain work, if the cutters are made and operate on the same principle as mine. The stone is to be fastened in any known way by which it can be secured to the carriage firmly. Any number of cutter heads may be put into one machine one operating after another when required.

Having thus fully described my machine what I claim therein as my invention and desire to secure by Letters Patent is—

1. The cutter head constructed and arranged as herein described having chisels and picks attached thereto enough to extend across from one side of the stone to the other in a line and all operating at once the whole width of the stone in the manner and for the purpose herein described.

2. I also claim in combination therewith the side cutters constructed and arranged as above specified.

JACOB JENKS.

Witnesses:
J. J. GREENOUGH,
LAFAYETTE CALDWELL.