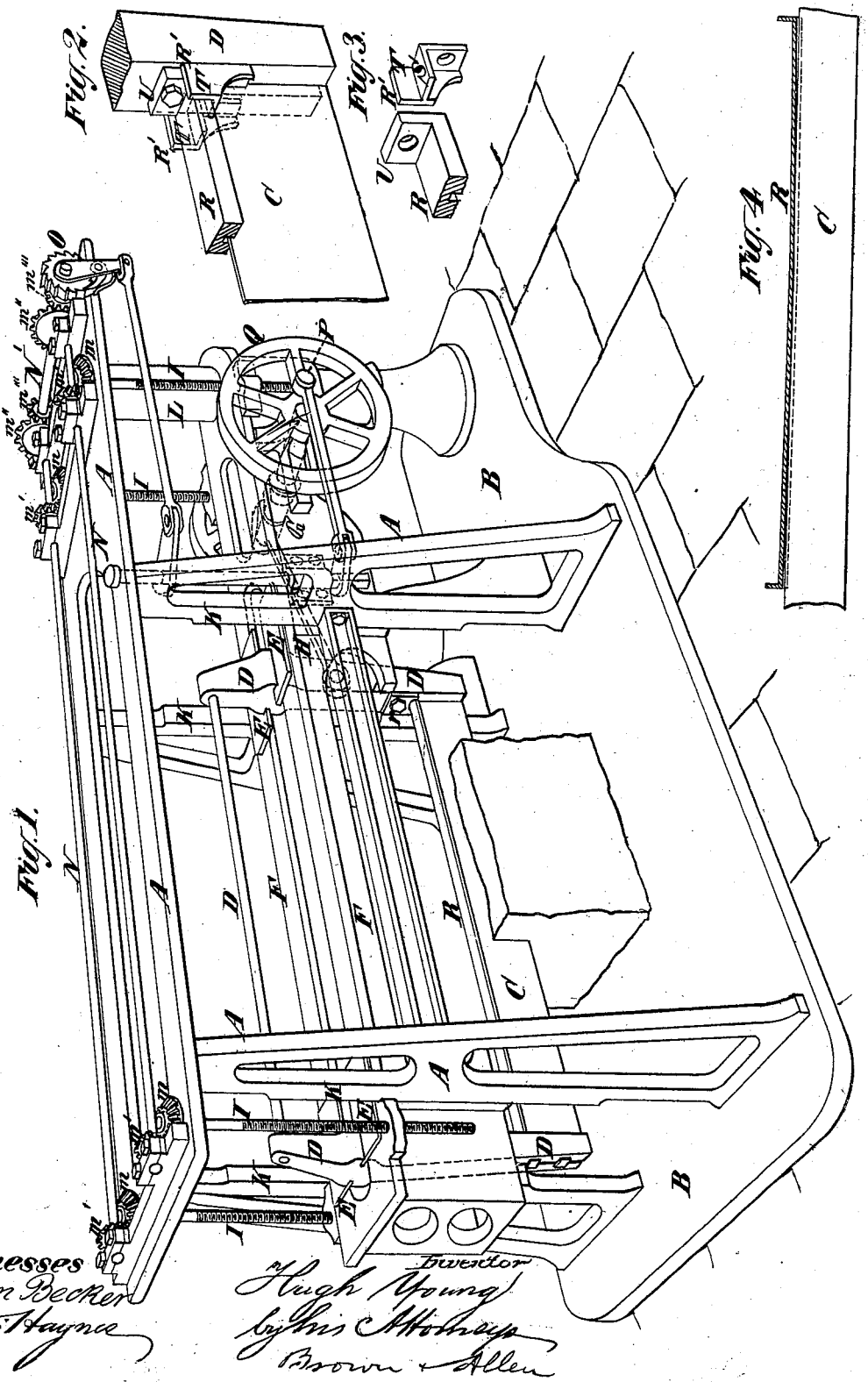
H. YOUNG.

Stone-Sawing Machine.

No. 200,594. Patented Feb. 19, 1878.



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UNITED STATES PATENT OFFICE.

HUGH YOUNG, OF NEW YORK, N. Y., ASSIGNOR TO WILLIAM RADCLIFF, OF SAME PLACE.

IMPROVEMENT IN STONE-SAWING MACHINES.

Specification forming part of Letters Patent No. **200,594**, dated February 19, 1878; application filed November 22, 1877.

To all whom it may concern:

Be it known that I, HUGH YOUNG, of the city, county, and State of New York, have invented an Improvement 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 accompanying drawing, forming part of this specification.

My invention relates to that class of stone-sawing machines which employ reciprocating saws running on parallel slides or guideways; and it has for its objects to secure greater compactness in such machines, and greater stiffness in the saw-blades thereof.

Figure 1 in the accompanying drawing is a perspective view of a machine constructed in accordance with my invention. Figs. 2, 3, and 4 are, respectively, representations of details in the construction of said machine.

A is the main frame or support for the working parts of the machine. Said frame-work rests upon and is supported by a suitable bed-plate, B. C is the saw, strained in the ordinary way, or in any other suitable manner, in the saw gate or sash D. Said saw gate or sash is guided in its reciprocation by parallel guides or slides E. Said slides E are attached to a secondary and movable frame, F, which also carries the crank-shaft G, from which the said sash receives its reciprocating movement through the pitman H. The said secondary frame is suspended from the main frame or support by male screws I, all of which have the same pitch.

In the manner of carrying out my invention shown in the drawing, said secondary frame is guided by ways K, formed upon the main frame or support, and by the pillar L; but any other means or arrangement of parts for guiding the vertical motion of the secondary frame may be adopted. The male screws I are fitted into female screws in or on the said secondary frame, and each of said male screws has attached to it a bevel-gear, *m*. Said bevel-gears *m* mesh with bevel-bears *m'*, keyed to the horizontal shafts N, which have bearings in suitable boxes upon the top of the principal frame A. Said shafts N have also keyed to them bevel-gears *m''*, which mesh with the beveled gears *m'''*, keyed to the shaft N'. The beveled gears *m* have each the same number of teeth. The beveled gears *m'* have each the same number of teeth also. Likewise the beveled gears *m''* have each the same number of teeth, and the beveled gears *m'''*, keyed to the shaft N', have each the same number of teeth. It follows that any motion of the shaft N' must impart an equal motion to the shafts N, and also an equal motion to the screws I, and that the secondary frame F must be uniformly and equally lifted or lowered in all its parts by such motion of the shaft N'.

I do not confine myself to the precise means described for raising and lowering the secondary frame F. Other means may be adopted for the same purpose, it being only essential that the said secondary frame should be raised equally and uniformly in all its parts. Neither do I confine myself to an integral secondary frame for carrying both the crank-shaft and sash. The said frame may be divided into separate frames for carrying the sash-slides and the crank-shaft, it being only essential that the framing which carries the several sash-slides and the crank-shaft, whether in one or in separate parts, be raised or lowered, or moved to and from the stone to be cut, uniformly in all its parts, in order that the said crank-shaft may always maintain a constant relation with the slides E, that guide the reciprocation of the sash. This feature of maintaining a fixed relation between the said crank-shaft and slides E secures the great advantage that a very short pitman may be employed for connecting the said crank-shaft with the said sash, thus enabling me, in actual practice, to shorten the machine more than one-third of the length heretofore required, and to lessen the power and repairs needed, a long pitman having been heretofore required by the feeding up and down of the said saw and sash, which necessitated great length in the machine, and caused great strain on the parts of the same. Moreover, by the shortening of the machine, I am enabled to place the whole machine on a single bed-plate or foundation, which was heretofore impracticable, and thus can secure a permanent alignment of the parts.

I impart motion to the shaft N′ by means of a ratchet-wheel and pawl, O, which derives its motion, through connecting-rods and a rock-shaft, from a crank-pin, P, projecting from the pulley Q, attached to the crank-shaft G; but I do not limit myself to this precise means of imparting motion to the said shaft N′, as various devices may effect the same purpose.

In further carrying out my invention, I place upon the back of the saw a detachable bar or stiffening-back, R. Said stiffening-back is grooved on its inner side to admit the back margin of the said saw, and when placed upon the said saw it may be held in place by plates *r*, Fig. 1, resting upon the extremities of said bar, and bolted to the inner sides of the end pieces of the sash. Said bar is employed to stiffen the saw C for the short period while it is commencing to cut its kerf in the stone, and may be detached after the said kerf has been accurately started, if the cut is to be deeper than the width of the saw-blade below said stiffening-back.

In another way of carrying out this feature of my invention, I attach to the inner sides of the end pieces of the sash the supports R′, Figs. 2 and 3. Said supports are so formed as to provide a ledge, S, Fig. 3, for the support of the ends of the stiffening-back R, and also to provide projections T, Figs. 2 and 3, which hold the said stiffening-back from lateral movement. Said supports serve to keep the stiffening-back in such relation with the blade as to permit a free working of the blade in the groove of the stiffening-back, when the blade has a push or lift motion imparted to it. In such case it is desirable that the groove in the stiffening-back be of such depth and the ledges in such position that the push or lift of the blade shall neither disturb the support of the stiffening-back on the ledges S, nor carry the blade out of the groove. The stiffening-back may rest on the middle part of the saw-blade; but, by reason of its flexibility, it yields to the push or lift motion of said blade without disturbing its bearings on the ledges S.

I claim—

1. The combination, in a stone-sawing machine, of a fixed main frame or support and movable framing, which carries parallel guides or slides for directing the reciprocation of the saw-gate, and which also carries the bearings for the shaft for driving the said saw-gate, and which is adjustable in a direction perpendicular to the stroke of the saw, whereby the said shaft and said guides or slides are always maintained in a fixed relation with each other in said adjustable framing, substantially as and for the purpose described.

2. The combination, in a stone-sawing machine, of a fixed main frame or support, movable framing, which contains parallel guides or slides for the saw-gate, and bearings for the shaft which drives the saw, and automatic means for moving the said movable framing, shaft, guides, and saw together, for the purpose of feeding the saw to the work, substantially as and for the purpose set forth.

3. The combination, with the movable framing, holding in fixed relation the parallel guides for the saw-gate D, and the bearings for the shaft G, which drives the saw, of a system of male screws, I, of equal pitch, fitted to female screws in said frame, supported in bearings on the main frame or support, and actuated equally and uniformly by a system of bevel-gearing and shafts through a ratchet-and-pawl movement driven by the said shaft G, substantially as and for the purpose specified.

4. The combination, with the saw-blade, of the detachable stiffening-back, constructed and applied substantially as and for the purpose specified.

HUGH YOUNG.

Witnesses:
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