(No Model.) 2 Sheets—Sheet 1.

F. H. MARSH, G. H. WILLIAMS & J. S. MacCOY.

STONE DRESSING MACHINE.

No. 549,273. Patented Nov. 5, 1895.

Fig. 1.

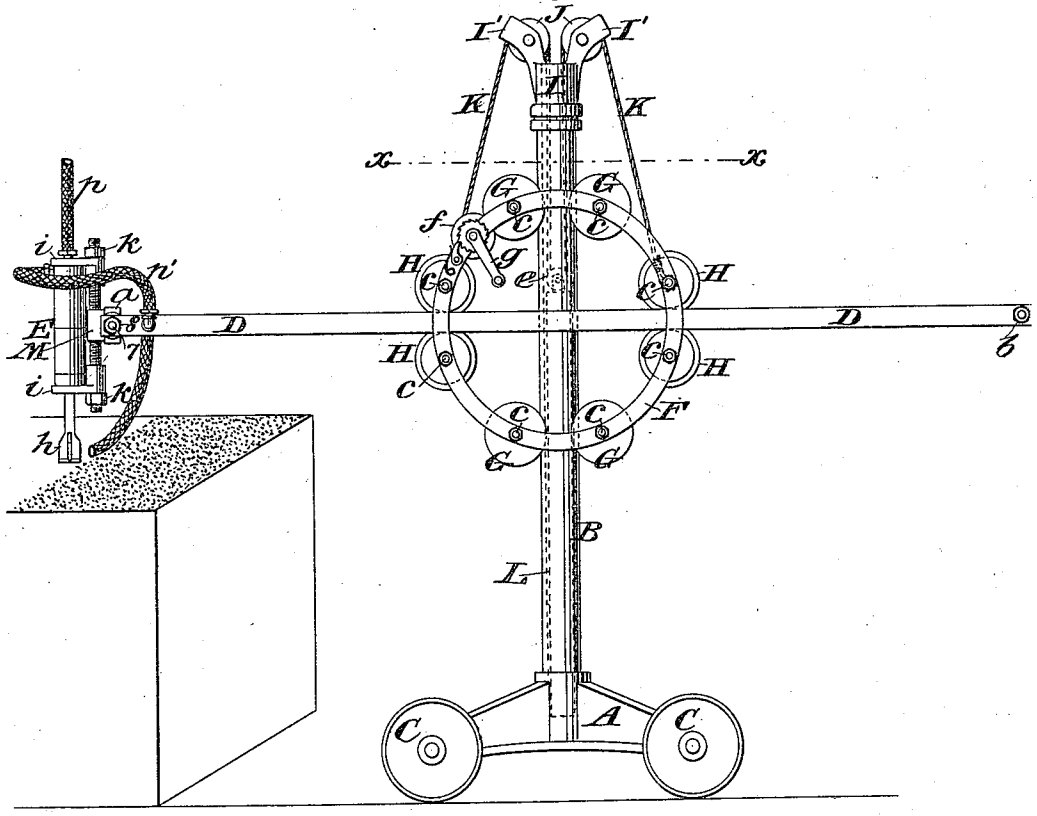

Fig. 6.

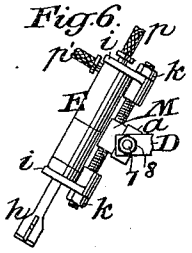

Fig. 2.

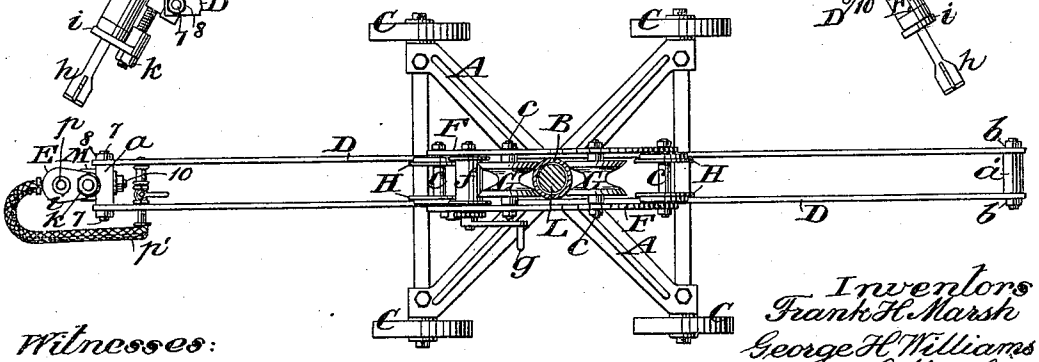

Fig. 7.

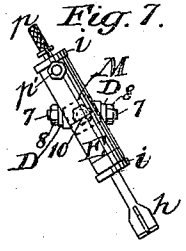

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Fig. 3.

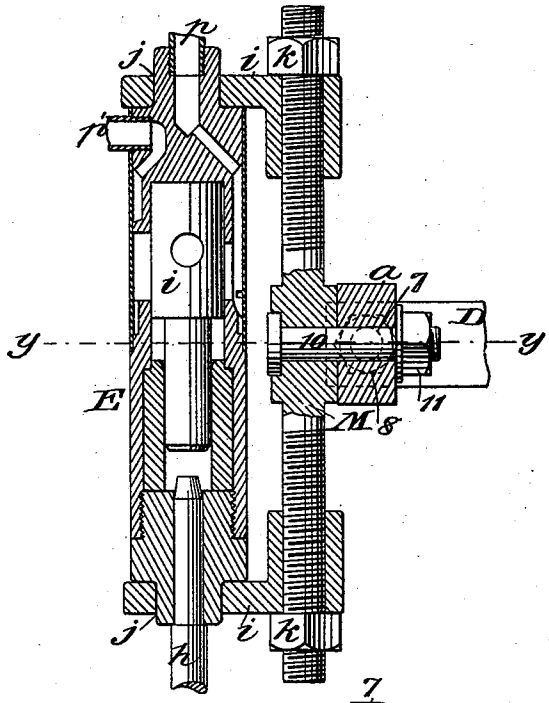


Fig. 4.

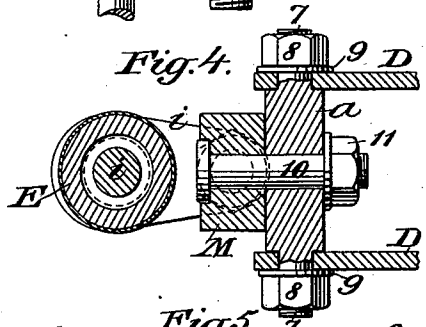
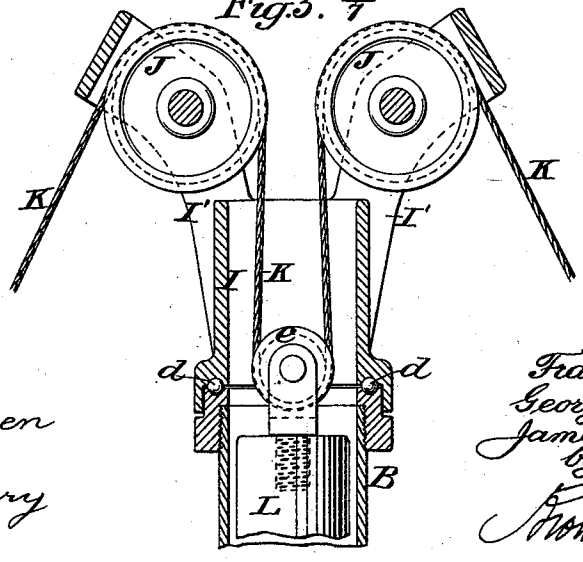


Fig. 5.



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UNITED STATES PATENT OFFICE.

FRANK H. MARSH, OF NEWARK, NEW JERSEY, AND GEORGE H. WILLIAMS AND JAMES S. MACCOY, OF NEW YORK, N. Y.

STONE-DRESSING MACHINE.

SPECIFICATION forming part of Letters Patent No. 549,273, dated November 5, 1895.

Application filed March 30, 1894. Serial No. 505,707. (No model.)

To all whom it may concern:

Be it known that we, FRANK H. MARSH, of Newark, Essex county, New Jersey, and GEORGE H. WILLIAMS and JAMES S. MACCOY, of New York, county of New York and State of New York, citizens of the United States, have invented a new and useful Improvement in Stone-Dressing Machines, of which the following is a specification.

This invention relates to stone-dressing machines in which a power-operated tool, consisting of a power-operated hammer and a chisel or cutter, is movable relatively to the stone on which it is to operate. Heretofore the adaptability of such tools has been practically limited to light work.

The primary object of this invention is to adapt such tools to heavier classes of work by providing a carrier or support in or on which the power-operated tool is so supported and counterbalanced and easily movable in all directions as to relieve the operator from the weight of the said tool, and to give him such control of it as to render it adaptable to stone-work of all grades, and to enable such work to be performed with a great saving of labor.

Figure 1 in the drawings represents a side elevation of a machine embodying our invention. Fig. 2 represents a plan of the same with all the parts represented above the line *x x* in Fig. 1 omitted. Fig. 3 represents a vertical section of the tool and a portion of the carrier to which it is attached. Fig. 4 represents a horizontal section in the line *y y* of Fig. 3. Fig. 5 represents a vertical section of the upper part of the column on which the tool-carrier is supported. Figs. 6 and 7 represent part of the carrier with the tool at different angles.

A is the base, upon which is erected a cylindrical column or standard B, which constitutes a central support for all the operating parts of the machine, about which they are capable of adjustment vertically and in all directions horizontally. The base A is represented as mounted on wheel C for the purpose of enabling it to be moved easily from place to place. The standard is represented (see Figs. 2 and 5) as hollow, for the purpose to be hereinafter explained.

D *a a' b* designate the tool-carrier, consisting of two parallel side bars D, spacing pieces or blocks *a a'* between said bars, and nuts *b b*, applied to screw-threads on the ends of the said spacing-pieces. The spacing pieces or blocks hold the bars at such a distance apart that they may move vertically or horizontally on the standard B. The spacing piece or block *a* at one end of the carrier serves also for the adjustment of the power-operated tool E.

F *c* designate what may be called the "tool-carrier" frame surrounding the column or standard B. This frame is represented as consisting of two rings F, arranged on opposite sides of the standard B, and carrier D and shafts *c*, which serve to hold the rings, at the proper distance apart, close to the sides of the carrier, and serve, also, as the axles for rollers G G and H H, of which there are four pairs, viz: two pairs G G, arranged, respectively, in the upper and lower parts of the frame F *c* and so spaced as to travel upon opposite sides of the standard B, and the other two pairs H H, arranged in front and rear of the frame and so spaced that the side bars D of the carrier may run back and forth between them. The top and bottom rollers G G are grooved to fit the standard, and the front and rear rollers H H are here represented as flanged at their inner edges to fit within the side bars D of the carrier for the purpose of preventing any lateral displacement of the said bars.

On the top of the standard B is a revolving cap or collar I, in the lower part part of which is a groove corresponding with a groove in the top of the standard for the reception of a number of balls *d*, which constitute an antifriction-bearing. The cap I has on opposite sides two brackets I' to contain bearings for the axles of two pulleys J J, over which runs a rope or chain K, the opposite ends of which are connected with the front and rear parts of the carrier-frame F *c*. From a loop or bight of this rope or chain, depending between the pulleys, there is suspended a weight L, contained within the standard B, which is made hollow for the reception of the said weight. The weight is hung in the bight of the rope or chain by a

pulley *e*, attached to the upper end of the weight. The weight serves as a counterbalance to the tool-carrier D, the power-operated tool E, and the frame F *c*.

One end of the rope or chain K is fastened permanently to some part of the carrier-frame F *c*—as, for instance, to one of the axles *c*—and the other end is attached to a windlass *f*, the axle of which turns in bearings in the carrier-frame and is provided with a hand-crank *g*, by which the rope or chain may be lengthened or shortened between the carrier-frame and the weight to vary the limit of play of the carrier-frame and the upward and downward movement of the carrier-frame and tool-carrier upon the hollow standard B.

By the provision of the revolving cap I on the top of the hollow support or standard B and the conforming of the rollers G G to the cylindrical body of the said standard or support B, the carrier-frame and tool-carrier are free to be laterally turned upon the support or standard in such manner as to permit the tool to operate upon work within the radius of the bars D of the tool-carrier without moving the machine, while the counterbalancing of the carrier-frame, carrier, and tool by the weight L allows the tool to be easily raised and lowered by the operator, according to the height of the work.

The power-operated tool which I have selected for the illustration of my improvement is not of itself a part of the present invention, and therefore needs no particular description further than to say that it is what is commonly known as a "pneumatic tool," consisting in part of a cylinder E, to the lower end of which is fitted a bit or cutter *h*, and which contains a piston *i*, which is made to operate as a hammer upon the said bit or cutter by the induction and eduction of compressed air or other fluid under pressure above and below the said piston alternately. To permit this operation of the piston as a hammer, it is obvious that the bit or cutter *h* must be so fitted loosely to the socket or holder in the lower end of the cylinder that it may rest upon the stone independently of the cylinder and piston.

The manner in which we prefer to attach the tool to the carrier is as follows and will be best understood by reference to Figs. 3 and 4: The spacing piece or block *a*, hereinbefore described as placed between the parallel bars D of the carrier, has threaded extensions 7, which extend through openings in the said bars and is clamped between said bars by means of nuts 8 and washers 9 upon the said threaded extensions 7. The said block has in it a transverse central opening for the passage through it of a clamping-bolt 10, which also passes through a transverse central opening in the tool-clamp M. The tool-clamp M consists of a bar having its upper and lower ends screw-threaded. These screw-threaded ends receive upon them brackets or lugs *i'*, which are provided with openings to receive the upper and lower ends of the cylinder of the power-operated tool E, as shown at *j j* in Fig. 3. These brackets or lugs are clamped upon the ends of the cylinder by means of nuts *k* upon the screw-threaded ends of the clamp M. By this adjustment of the tool-clamping bar to the block *a* of the carrier the power-operated tool may be adjusted to any desired lateral angle, as indicated in Fig. 7, and clamped at the desired adjustment by means of the nut 11 on the clamping-bolt 10. The angular adjustment of the tool in a backward and forward direction, as indicated in Fig. 6, is provided for by the threaded extensions 7 of the block *a* and the nuts 8 and washers 9 thereon. The pipe *p* for the induction of the compressed air or other fluid to the tool has a flexible connection with the source of supply. The eduction-pipe *p'* is represented as adapted to discharge the exhaust-fluid at a point adjacent to the surface under operation, and thus blow away the dust and débris as the work progresses.

Owing to the freedom with which the carrier-frame and tool-carrier may run up and down and turn upon the support or standard B and to the freedom with which the carrier D may run through the carrier-frame, the operator is free to guide the movements of the tool as may be required. The vertical adjustment of the tool is effected by a slight upward or downward pressure upon the bars D of the carrier, the said adjustment being permitted by the freedom with which the rollers G are capable of traveling up and down the standard B. The horizontal adjustment of the tool is effected in part by drawing or pushing the bars D in a longitudinal direction between the rollers H H and in part by slightly pushing or pulling the said bars laterally, the lateral adjustment being permitted by the turning of the cap I on the support or standard and by the turning of the rollers G G on the latter, though the flexibility of the rope or chain may permit the turning of the carrier-frame and carrier on the standard to a limited extent without the turning of the cap I.

It may here be stated that the successful operation of this machine depends very largely on the co-operation of two things, viz: the cutter being loosely inserted into the lower end of the hammer-cylinder, and the counterbalancing of the hammer. If the cutter should be rigidly attached to the hammer, the hammer and the cutter would either not rebound at all or would rebound together after every blow, according as the hammer were rigidly supported or counterbalanced, and the machine would in either case be unserviceable for the principal work for which the machine is designed, viz: the production of finished surfaces. It is necessary to the successful operation of the cutter that it should rebound freely, and yet that the hammer should not be rigidly supported, but should be supported or suspended in such manner as to

be to some extent yielding, and it is only by counterbalancing it that the yielding action is obtained. This yielding action and the loose fit of the cutter give the machine a flexible quality, by which it is enabled to do very fine work and is rendered more durable than a more rigid machine.

We do not claim as part of the joint invention herein described any provision for the turning of the cutter or bit *h* in the socket or chuck provided for it in the lower end of the cylinder, nor do we claim as part of the said joint invention the cross-bit *h* herein represented or described, the said cross-bit, the provision for its turning in the said socket or chuck, and the means for turning it therein being part of the invention of James S. MacCoy, which is the subject of his application for United States patent, Serial No. 518,807, filed July 28, 1894.

What we claim as our invention is—

1. In a machine for surfacing stone, the combination with a power-operated surfacing tool, of a carrier to which said tool is attached consisting of two parallel bars and means of securing them together, a supporting standard on opposite sides of which said bars are situated, and a frame within which said carrier is adjustably supported and which is suspended directly from said standard, substantially as herein set forth.

2. In a machine for surfacing stone, the combination of a supporting column, a carrier frame which surrounds the said column and is movable both around and up and down the same, and a tool carrier comprising two parallel bars which are situated on opposite sides of said column and within the said frame and are movable lengthwise in the said frame in horizontal directions, substantially as herein set forth.

3. The combination of a base, a standard supported thereon and provided at its upper end with a cord pulley, a counterbalanced roller frame and a carrier suspended from said pulley, and a hammer adjustably secured to one end of the carrier, substantially as described.

4. The combination with a standard, of a frame and a tool carrier supported on said standard and provided with a cord and weight, rollers arranged on said frame to travel on the standard, and rollers carried by said frame and adapted to receive and support the tool carrier, substantially as described.

5. The combination with the standard and carrier, of a suspended frame for supporting said carrier provided with counterbalancing devices within the standard, rollers mounted in the sides of said frame, a tool carrier supported by said rollers, and a hammer secured to one end of the carrier, substantially as described.

6. The combination of a base, a standard erected on said base, a carrier having attached to it a power-operated hammer and suspended from said standard by a counterbalance, and a cutter loosely inserted in a socket in the lower end of the hammer cylinder, substantially as herein described.

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