

(No Model.)

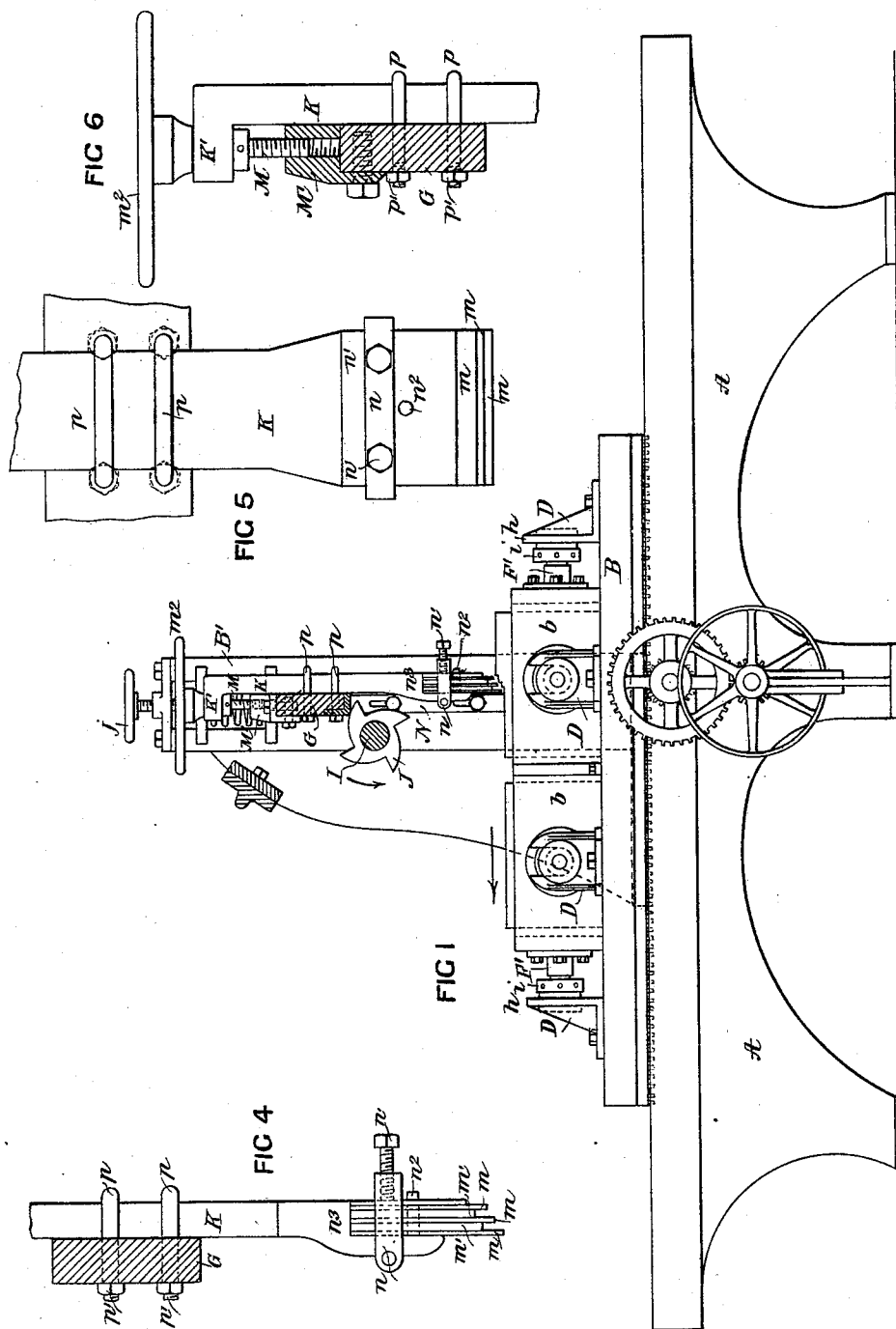
3 Sheets—Sheet 1.

O. T. DUTRO & T. McFEELY.

MACHINERY FOR DRESSING SURFACES OF STONE BLOCKS.

No. 542,186.

Patented July 2, 1895.



WITNESSES

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(No Model.)

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FIG 2

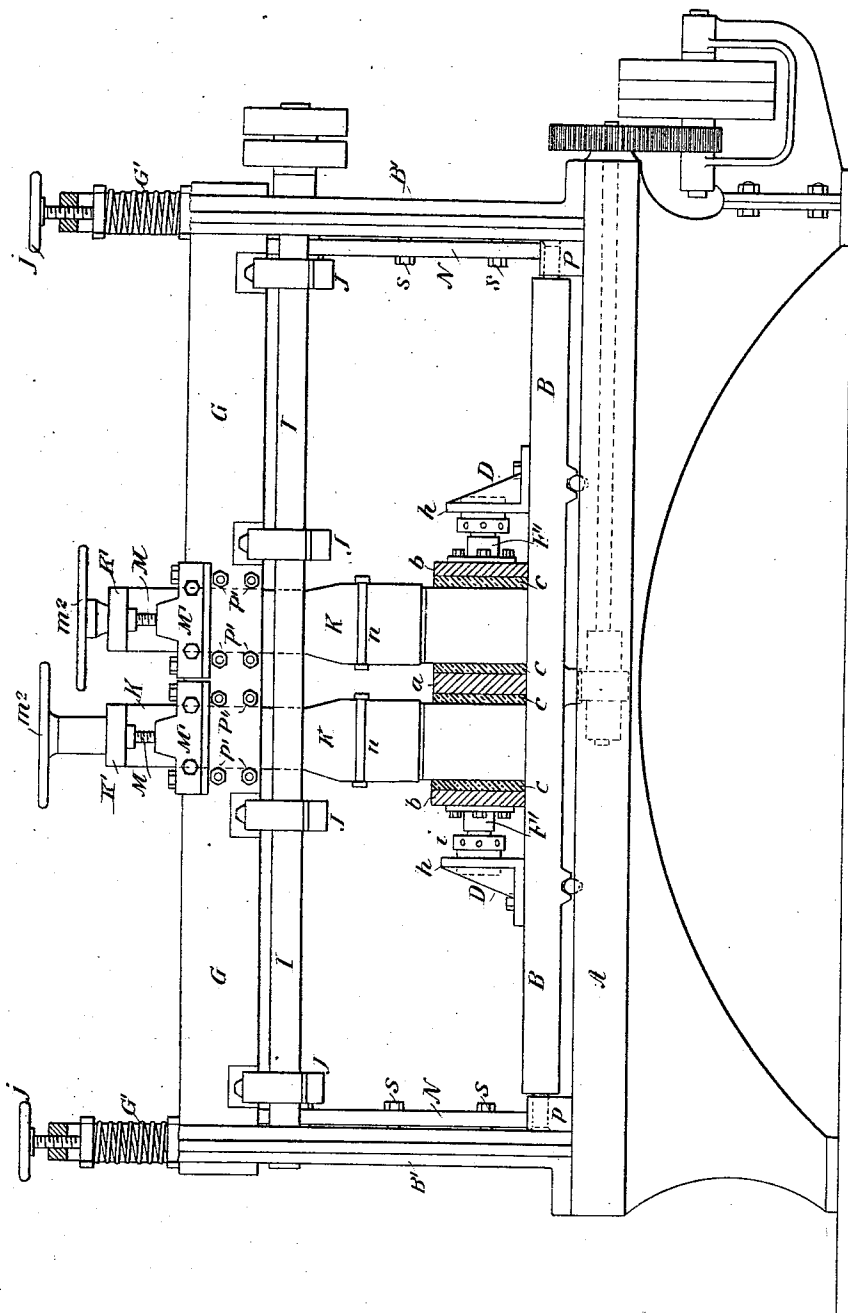
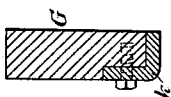


FIG 10



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3 Sheets—Sheet 3.

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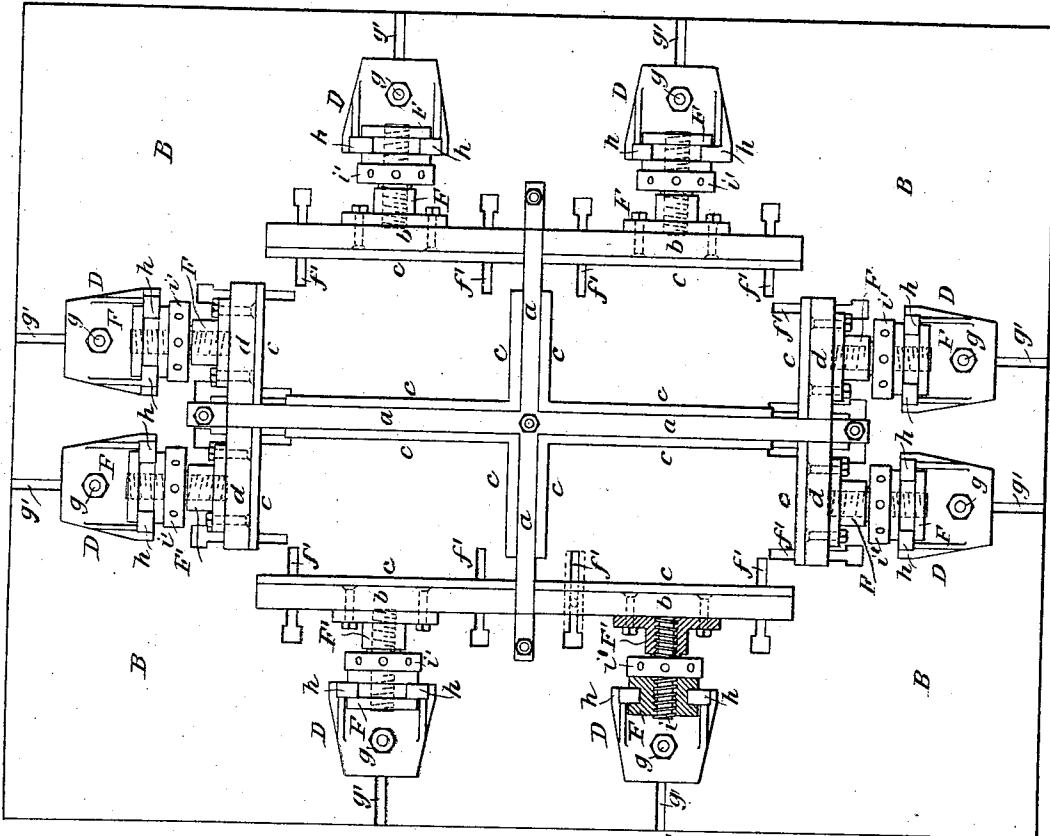


FIG 3

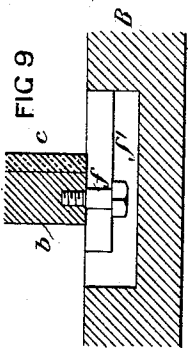


FIG 9

FIG 7

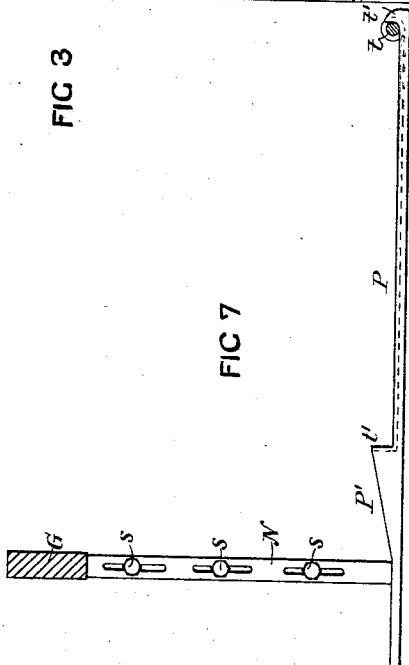
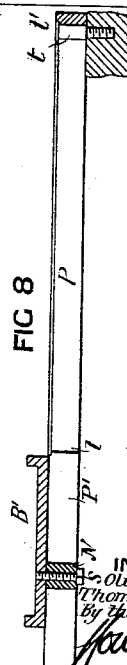


FIG 8



WITNESSES

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OLIVER T. DUTRO, OF BUFFALO, NEW YORK, AND THOMAS McFEELY, OF PHILADELPHIA, PENNSYLVANIA.

MACHINE FOR DRESSING SURFACES OF STONE BLOCKS.

SPECIFICATION forming part of Letters Patent No. 542,186, dated July 2, 1895.

Application filed June 12, 1894. Serial No. 514,311. (No model.)

To all whom it may concern:

Be it known that we, OLIVER T. DUTRO, of Buffalo, New York, and THOMAS McFEELY, of Philadelphia, Pennsylvania, citizens of the United States, have invented certain Improvements in Machinery for Dressing the Surfaces of Stone Blocks, of which the following is a specification.

The object of our invention is to provide a machine for rapidly and effectively dressing the surfaces of stone blocks, the invention having been devised especially for the dressing of small blocks such as are used for paving purposes, but being applicable as well for curbing or for building purposes.

The special features of the machine constituting the subject of our invention are fully explained hereinafter and form the subject of specific claims. Hence any preliminary description of the same will be unnecessary.

In the accompanying drawings, Figure 1 is a longitudinal section of a stone-dressing machine constructed in accordance with our invention. Fig 2 is an end view of the same. Fig. 3 is an enlarged view illustrating the mechanism for clamping the blocks to the table of the machine. Figs. 4 and 5 are respectively a side view and a front view of the tool and tool-stem of the machine. Fig. 6 is an enlarged section illustrating the mechanism for adjusting the tool-stem. Figs. 7 and 8 are respectively a side view and a sectional view illustrating the mechanism for lifting the tool free from the surface of the block on the backward movement of the table. Fig. 9 is an enlarged sectional view illustrating the means for vertically confining the clamp-plates to the traveling bed, and Fig. 10 is an enlarged view of the transverse lift-bar of the machine.

A represents an ordinary framework, and B a traveling table mounted thereupon and caused to move back and forth thereon by any of the combinations of mechanism usually employed in planing-machines, such mechanism forming no part of our invention, and hence requiring no detailed description.

Carried by the reciprocating bed B are clamping devices for retaining the blocks which are to be acted upon. The number

and arrangement of these clamping devices may be varied without departing from our invention, being governed largely by the character of the work to be done. For instance, the blocks may be arranged in a row extending throughout the length of the traveling bed, or there may be a series of such rows of blocks side by side, a cutting tool or tools being employed for each row, or, on the other hand, the clamping devices may secure but a single block in cases where the blocks are of large size. In the present instance we have shown the clamping devices adapted for securing in place four blocks arranged in two rows of two blocks each, each clamp having two fixed sides and two movable sides. The fixed sides of the clamps constitute a cruciform rib *a*, suitably secured to the traveling bed B of the machine, the remaining elements of each clamp being the side plate *b* and the end plate *d*. Each of these plates is vertically confined to the traveling bed by means of one or more stud-bolts *f*, screwed into the bottom of the plate and adapted to the usual T-shaped slot *f'*, formed in said bed, as shown in Fig. 9, the slot being enlarged at one end, as shown in Fig. 3, so as to permit of the introduction or removal of the bolts in applying or removing the clamp-plates. To other T-shaped slots *g'*, extending to the edges of the table B, are adapted the heads of bolts *g*, whereby sliding heads D are secured to the table B, each of said sliding heads D having vertical ribs or flanges *h*, adapted to grooves in the opposite edges of a vertically-adjustable nut F, which can thus be raised or lowered to suit clamps of different heights.

On the back of each movable clamp-plate *b* or *d* is secured a nut F', threaded in the reverse direction for the nut F, and to these nuts is adapted the reversely-threaded screw-stem *i*, which has a central wheel or disk *i'*, so constructed as to be conveniently manipulated by the attendant of the machine, the disk, in the present instance, being provided with a series of openings for the reception of the pin or bar, whereby it may be readily turned in one direction or the other.

By the use of the duplex reversely-threaded screw-stem, in combination with the two nuts, very rapid movement of the adjustable clamp-

ing-plates can be effected, as the stem is screwed into or unscrewed from both nuts simultaneously. Hence the movement of the clamp-plate is equal to the combined pitch of both threads.

Both the fixed sides *a* and the movable plates *b* and *d* of each clamp are preferably faced with rubber or other elastic or semi-elastic material *c*, so as to conform to the irregular surfaces of the blocks, and thus insure the firm clamping and holding of the same.

The clamp-plates are of such height that they will extend almost to the top of the block which is to be acted upon, as shown in Figs. 1 and 2, so that chipping or splintering of the corners of the block will be prevented.

In standards *B'*, at the opposite sides of the bed-frame *A*, are guided the ends of a transverse bar *G*, which is acted upon by springs *G'*, tending to depress the bar, the tension of these springs being governed by regulating-screws *j* at the tops of the standards. To bearings on the standards *B'* is adapted a shaft *I*, driven in any suitable manner, and having a series of cams *J*, which act upon bearing-plates *k*, secured to the under side of the transverse bar *G*, as shown in Fig. 10, each of said plates *k* being hardened so as to resist wear. As the cams are rotated in the direction of the arrow, Fig. 1, therefore, rapid vertical reciprocating motion will be imparted to the bar *G* and to the tool-posts or stems *K* carried thereby, there being one or more of these tool-posts for each row of blocks to be acted upon.

Each tool-stem is recessed at its lower end, as shown in Fig. 4, for the reception of the cutting-tool, which, in the present instance, consists of a series of hard metal blocks or plates *m*, suitably separated by filling-pieces *m'*, so as to form a succession of cutting-edges, the plates being of different lengths, the front plate being shortest and the rear plate longest, whereby the cutting-edge of the tool is stepped in order to divide the work of the tool, each plate effecting only its proportionate reduction of the surface of the block. For instance, if it is desired to make a cut of three-eighths of an inch in depth on the face of the block exposed to the action of the tool, each of the plates of the tool, supposing that there are three of such plates, will make a cut of but an eighth of an inch, the first cut being formed by the first or highest plate of the tool, the second cut by the second or intermediate plate, and the third cut by the rear or longest plate. By thus distributing the work of the tool an exceedingly rapid reciprocation of the same is rendered possible, and also a rapid feeding of the block beneath the tool, so that the action of the machine is expedited and its capacity for work increased, this being an important consideration in a machine intended for dressing paving-blocks, as such operation, in order to be commercially practicable, must be performed with a minimum of expense.

The various plates and filling-pieces constituting the cutting-tool are secured to the tool-stem *K* by means of a clamping yoke *n*, provided with set-screws *n'*, and in order to facilitate the proper assembling of the cutting-plates and filling-pieces before clamping the same, as well as to prevent the dropping or scattering of the various parts when the clamp is removed, the lower end of the tool-stem *K* has a projecting pin *n²*, and the various parts of the tool are provided with openings, so that they can be strung upon said pin preparatory to being clamped in position. The pin, however, is not subjected to the strain resulting from the blow of the tool upon the stone, as the recessing of the tool-stem *K* forms a shoulder *n³*, against which the upper ends of the plates *m* and filling-pieces *m'* bear when the tool is in use.

The tool-stem is securely clamped to the transverse bar *G* by means of yokes or stirrups *p*, passing around said stem and through openings in the transverse bar, the ends of these yokes being provided with nuts *p'*, as shown in Fig. 4.

In order to provide for the vertical adjustment of the tool-stem on the transverse bar *G* to compensate for wear of the tool, the upper end of said tool-stem *K* has a rearward projection *K'*, to which is vertically confined the upper end of a screw-stem *M*, said stem, however, being free to turn in the projection *K'*.

The lower end of the threaded stem *M* is adapted to a threaded opening in a block *M'*, suitably bolted to the upper portion of the transverse bar *G*, so that by turning the screw-stem *M* in one direction or the other, by means of a suitable hand-wheel *m²* at the upper end of the same, the tool-stem *K* can be raised or lowered and thus adjusted to any desired vertical position, it being, of course, understood that the clamping-yokes *p* are loosened prior to such adjustment and tightened again after the adjustment has been made, so as to secure the tool-stem firmly to the transverse bar *G*.

The forward movement of the traveling table *B* in the direction of the arrow, Fig. 1, is a comparatively slow one in order that the cutting-tools may properly act upon the upper surfaces of the blocks, but after the surfaces of the blocks have been properly dressed a quick backward movement of the table takes place in order to bring the blocks again into position to be acted upon by the tool.

After the upper surface of the first block has been dressed, and while the tool is acting upon the second block, time is afforded for loosening the clamps of the first block and readjusting the same for the next action of the tool, or removing it and inserting a new block in its place, and on the next forward movement of the table, while the tool is acting upon the first block time is likewise afforded for the readjustment or replacing of the second block, so that the action of the machine is practically continuous.

As it is advisable to prevent any action of

the tool upon the blocks during the quick backward movement of the table, we provide for raising the tool out of action during such movement. The mechanism for accomplishing this is shown in Figs. 2, 7, and 8, on reference to which it will be seen that upon the inner side of each end standard B' of the machine is vertically guided a bar N, which is slotted for the reception of securing-bolts s, so that while it is confined laterally to the standard B' it is free to move vertically thereon to a slight extent.

Guided on the bed-frame A, at each side of the traveling table B, is a bar P, having a cam P', and projecting from said traveling table B is a pin t, which, by contact with the shoulders t' of the bar, effects a movement of the same as the traveling bed reaches the limit of its movement in either direction. The opposite ends of the transverse bar G rest upon the upper ends of the bars N, and when the table B reaches the limit of its forward movement its pins t strike the shoulders t' in the rear of the cams P', and the bars P are thus moved forward so as to cause the cams P' to raise the bars N and thus lift the transverse bar G, the lift being preferably to such an extent as to remove the bar from the influence of the cams J, so that there will be no reciprocation of the tools during the backward movement of the table. When the table reaches the limit of its backward movement the pins t strike the shoulders t' at the rear ends of the bars P, and the cams P' are thereby withdrawn from beneath the bars N, so as to permit the transverse bar G to again drop into operative position.

It should be understood that the bar G, in its descent, is arrested by contact with a suitable stop or seat at each end, in order to limit the descent of the tool and prevent any undue depth of cut thereby, and in order to prevent shock or jar, caused by the contact of the transverse bar with its stops or seats, the latter, or the bar, may be provided with cushions of rubber or other elastic or semi-elastic material.

Having thus described our invention, we claim and desire to secure by Letters Patent—

1. The combination of the traveling bed of the machine having clamps for securing thereon one or more rows of blocks, with a transverse bar carrying a tool stem for each row of blocks, and rotating cam mechanism for operating said bar, substantially as specified.

2. The combination of the movable bed of the machine, with a clamping device comprising a cruciform rib or bar and a series of movable side and end clamps co-operating therewith so as to constitute a clamp for holding four blocks, substantially as specified.

3. The combination of the table or bed of the machine with the clamps having movable sides and ends, and adjusting mechanism therefor, comprising the duplex reversely threaded screw stem and the two nuts adapted to said stem, one of said nuts being carried by the adjustable plate of the clamp, substantially as specified.

4. The combination of the movable jaw of the clamp, with the adjusting screw stem and the two nuts, one of said nuts being carried by the adjustable clamp and the other nut being vertically guided on a block secured to the table or bed of the machine, whereby it is adapted for use in connection with clamps of different heights, substantially as specified.

5. The combination of the transverse bar of the machine carrying the tool stem or post, means for vertically reciprocating said bar, the reciprocated bed carrying the blocks to be acted upon, bars for lifting the transverse bar out of operative position, cam bars for acting upon said lifting bars, and means whereby said cam bars are shifted at each end of the reciprocating motion of the table, whereby the tools are operative during one movement of the table, and inoperative during the reverse movement, substantially as specified.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

OLIVER T. DUTRO.
THOMAS McFEELY.

Witnesses:

FRANK E. BECHTOLD,
WILLIAM H. BARR.