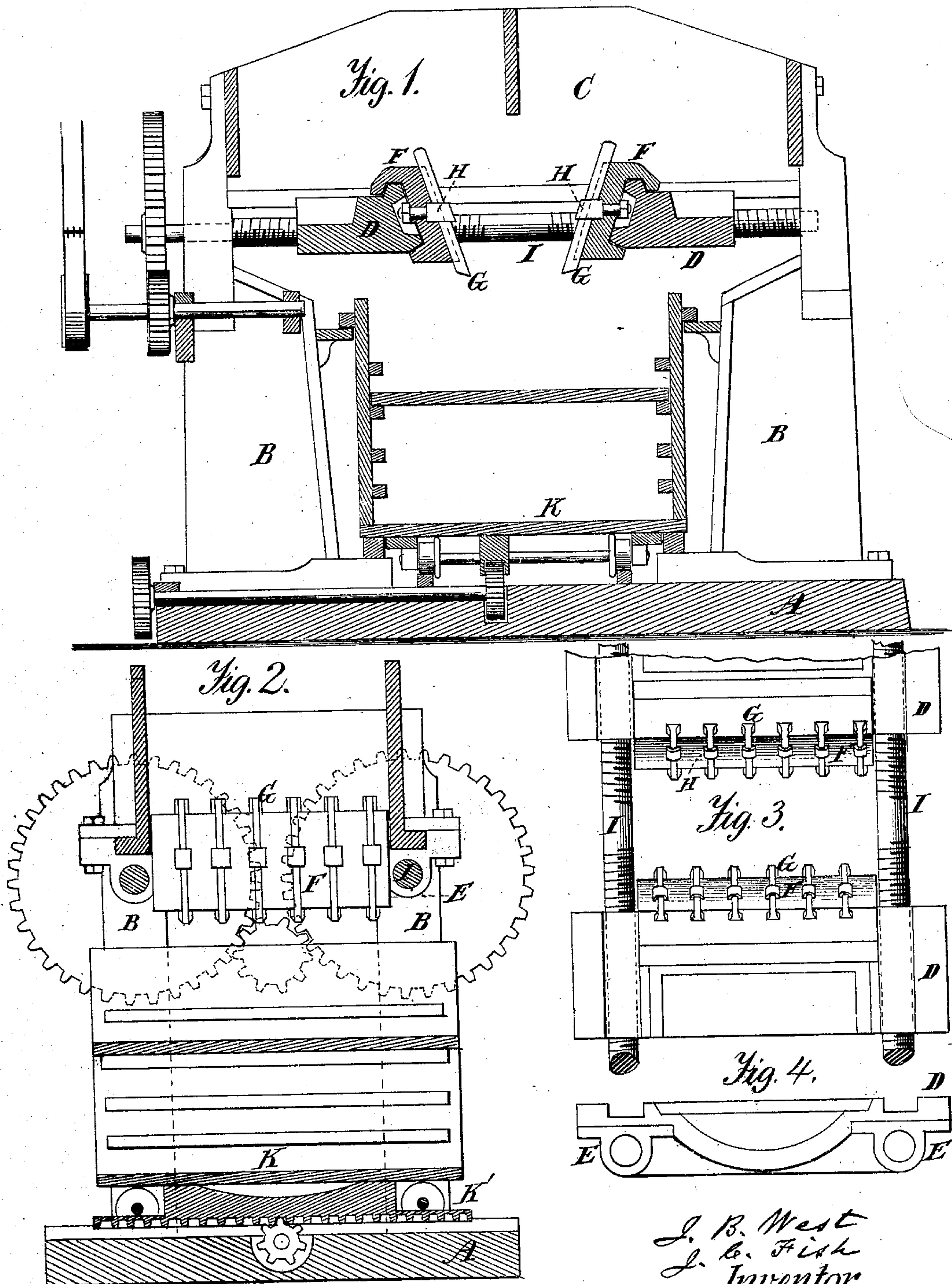


J. B. WEST & J. C. FISH.

Machines for Cutting and Dressing Stone.

No. 145,376.

Patented Dec. 9, 1873.



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UNITED STATES PATENT OFFICE.

J. BURNS WEST AND JOHN C. FISH, OF GENESEO, NEW YORK, ASSIGNORS OF ONE-HALF THEIR RIGHT TO WILLIAM H. KELSEY, OF SAME PLACE, AND JOSEPH C. McKIBBIN, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN MACHINES FOR CUTTING AND DRESSING STONE.

Specification forming part of Letters Patent No. **145,376**, dated December 9, 1873; application filed December 3, 1873.

To all whom it may concern:

Be it known that we, J. BURNS WEST and JOHN C. FISH, of Geneseo, in the county of Livingston and State of New York, have invented certain Improvements in Stone-Dressing Machines, of which the following is a specification:

This invention relates to that class of machines which are used for dressing stones of different kinds by planing their surfaces; and it consists, first, in constructing a machine for that purpose with two distinct sets of cutters, arranged to commence their cutting operations at each side or end of the stone, and travel thence toward the center thereof, at or near which point the cutting ceases; and it further consists in the combination and arrangement of some of the parts of which the machine is composed, as will be more fully set forth hereinafter.

Figure 1 is a longitudinal section of our improved machine. Fig. 2 is a central transverse section. Fig. 3 is a plan view. Fig. 4 is an end view of one of the cross-heads, with the nuts through which the feeding-screws pass attached.

Corresponding letters refer to corresponding parts in the several figures.

One very serious objection which has heretofore existed to machines designed for planing stones has been that when the tool or cutter was made to enter the stone to any considerable depth, and to move from end to end thereof, it would, upon leaving the same, or upon arriving at the side or end opposite to that where the cutting commenced, break away the corners thereof, and thus leave them in a rugged condition, which unfitted them for making face-walls, or for any other purpose where stones with full corners were required. Our invention is designed to remedy this defect, and at the same time to produce a machine which is adapted for rapidly and smoothly dressing granite and all other kinds of stone which are capable of being cut with a tool moving across their surfaces or through their substance.

In constructing machines of this type we use any suitable foundation, A, for holding it in position. Upon this foundation are secured

four uprights, B, to the upper ends of which a cross beam or beams are attached, as seen in Fig. 1. These uprights also serve as bearings for the ends of the feeding-screws, and, to some extent, as supports for the bed upon which the stone rests while being dressed. The cross-beam or upper portion of the frame, in the present case, consists of a single piece of metal, C, closely fitted to the upper ends of the uprights B, and securely bolted thereto. It has projecting flanges upon its under surface, which are to be dressed so as to be smooth and parallel with each other, in order that they may serve as ways upon which the cross-heads D D can move. The cross-heads are to be of any suitable kind of metal, and so constructed that they shall extend transversely across the machine. Their outer ends extend far enough beyond the flanges formed on the cross-beam C to permit clamps to be attached thereto, for the purpose of holding said cross-heads to the ways upon which they travel. To the outer ends of said cross-heads, and preferably at a point directly beneath the flanges or ways upon which they move, nuts E E are secured, through which the feeding-screws pass. The form of the cross-heads is shown in Figs. 1 and 4, where it will be seen that that portion thereof which is between the longitudinal bars of the cross-beam C is adapted to receive and hold the chisel-stocks F F, a projection being raised upon the upper surfaces thereof for that purpose. They are also provided with a groove in their inner faces, for the reception of the nuts which secure the chisels in their places. In order that the chisel-stocks may be adapted to the cross-heads, and be firmly held in position while the chisels are cutting, but may be allowed to have a swinging movement while being moved back preparatory to commencing a new cut, and for the further purpose of ready detachment to permit the removal and replacement of the chisels, they are constructed as shown in Fig. 1, where it will be seen that they are hooked upon the projections on the upper surface of the cross-heads, while a projection upon their lower surfaces fits upon a beveled portion of said cross-head, in such a manner as to prevent any jarring of the cutters, or any pos-

sibility of their being moved out of position, while they and the stocks are at liberty to swing forward when the chisels are being returned to the edge of the stone, in order that the points of the chisels may not be dulled or broken by such movement.

When it becomes necessary to remove the stocks for the purpose of removing the chisels therefrom, it is only necessary to swing their inner ends inward, so as to cause the projection upon their lower edges to clear the cross-heads, when they may be lifted out by any suitable apparatus to be provided for the purpose.

The chisels or cutters G G are secured to their stocks by means of loops H H, which pass around them, and which are provided with shanks that pass through the stocks, upon the outer sides of which nuts rest, which are screwed upon said shanks, thus confining the chisels in any desired position. The arrangement of these chisels in their stocks is such that, as the cross-heads approach the center of the machine, but before they come in contact with each other, the points of the chisels in one of the stocks shall pass between the points of those in the other stock, which arrangement provides for passing the chisels over the entire surface of the stone; and in order that this result may be secured, and the further one of giving to the chisels a proper cutting angle, their stocks are made to stand at an angle, as shown in Fig. 1. It is to be understood that the number of chisels used is to vary, according to the kind of work to be done, or the dimensions of the stone to be dressed, the width of the machine to be varied according to such work, and the form of the tools according to the character of the work and the quality of the stone.

For giving motion to the cross-heads, chisel-stocks, and chisels, we use upon each side of the machine right and left hand screws I I, they having their bearings in the uprights B B, while one end of each is provided with a gear-wheel or pulley for giving motion thereto, the power being supplied from any prime mover. In order that the motion of these screws may be properly reduced, and that the requisite amount of force may be applied, it will be found advantageous to use a small gear-wheel, as shown in Fig. 1, and to place the pulley upon the same shaft; and, should it be desirable to turn the screws at a greater rate of speed when the chisels are being returned than when they are cutting, a smaller pulley may be placed upon the driving-shaft, and a separate belt may be used, which will accomplish the result; or any other suitable means may be employed for that purpose.

It will be seen that, as a consequence of the use of right and left hand screws, and of the arrangement of the chisels and the parts which move with them, we are enabled, at all times, to commence the cutting of the stone from its outer corners, and to terminate it at or near

the center thereof. As a consequence thereof, all danger of chipping or of breaking off the corners is avoided; and a stone dressed in this machine will always be left in a condition for being placed in face-walls, or in any other position where accurate cutting is required.

In order that the proper facilities may be afforded for placing the stones to be operated upon in proper position, and of securing them there, a bed, K, is provided, upon the under surface of which there is fixed a rack, K', which meshes into a pinion secured to a shaft having its bearings in the bed-plate A of the machine, so that by intermittently rotating said shaft and pinion the bed K may be moved across the machine, and thus a new portion of the stone's surface be brought under the chisels whenever it is desirable to do so. The movement of the bed for that purpose is effected by a lever placed upon the shaft carrying the pinion, or by a ratchet-wheel placed thereon, to be operated by a pawl attached to any of the moving parts of the machine. To prevent the bed K from being moved longitudinally, projecting ways are fixed upon the uprights in such a manner as to fit snugly against the sides thereof at the bottom, and at or near its top, those at the bottom being extended, if desirable, far enough outward to constitute rails, upon which the bed may be run, in order that the stone may be placed in or upon it when it is clear of the other parts of the machine, it being provided with flanged wheels for that purpose, as shown in Figs. 1 and 2. In order that this bed may be adapted to the reception of stones of varying thickness, the inner vertical surfaces of the bed K are provided with cleats or projections, upon which a plate of metal rests, which plate may be raised or lowered at pleasure by placing it upon more or less elevated cleats, thus adapting it to the different kinds of stones.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. A stone-dressing machine having two separate and distinct sets of cutters, arranged to commence cutting at the edges or ends of the stone, and to terminate at or near the center thereof, said cutters having a simultaneous movement, the purpose being substantially such as is herein set forth.

2. The combination of the frame B C, cross-heads D D, chisel-stocks F F, chisels G G, holders H H, screws I I, and driving mechanism, the parts being constructed and arranged to operate substantially as and for the purpose set forth.

3. The bed K, when constructed and arranged to operate substantially as and for the purpose set forth.

Dated November 26, 1873.

J. BURNS WEST.
JOHN C. FISH.

Witnesses:

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