J. T. GILMORE.

Dressing Millstones.

No. 36,776.

2 Sheets—Sheet 1.

Patented Oct. 28, 1862.

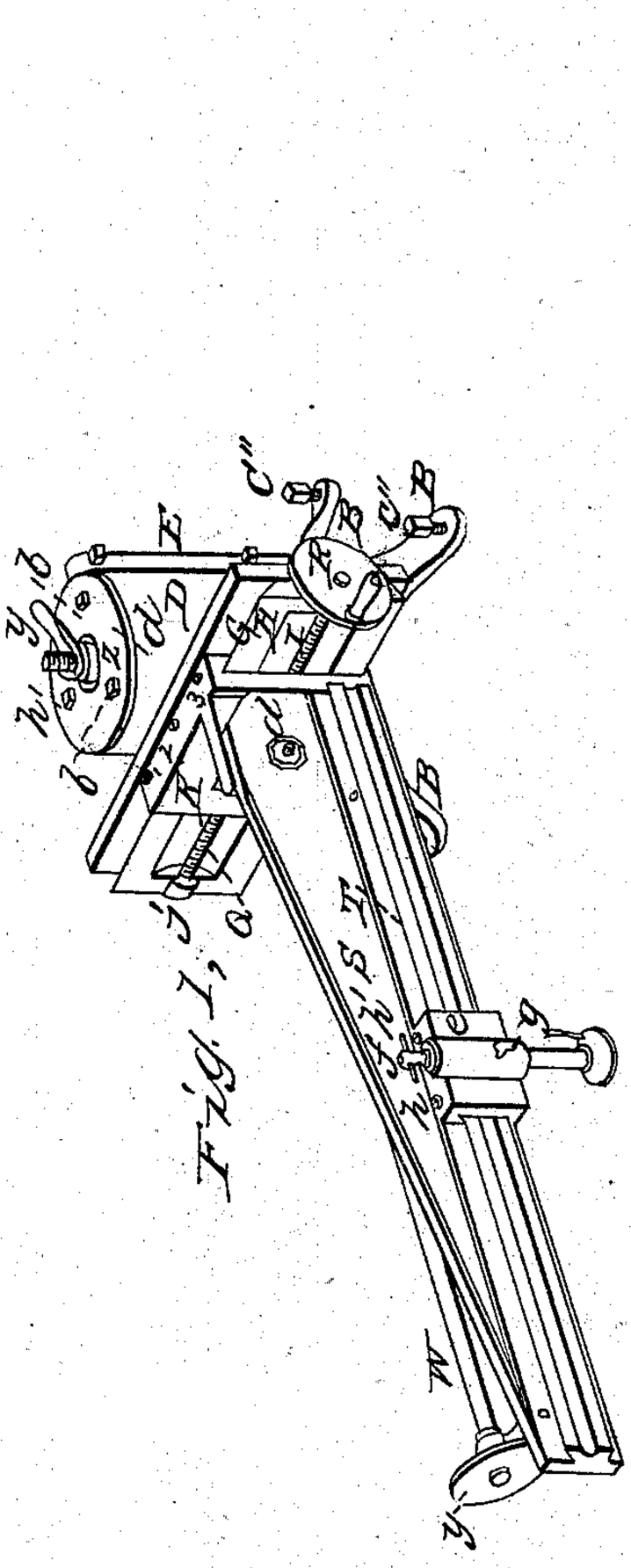

Fig. 1,

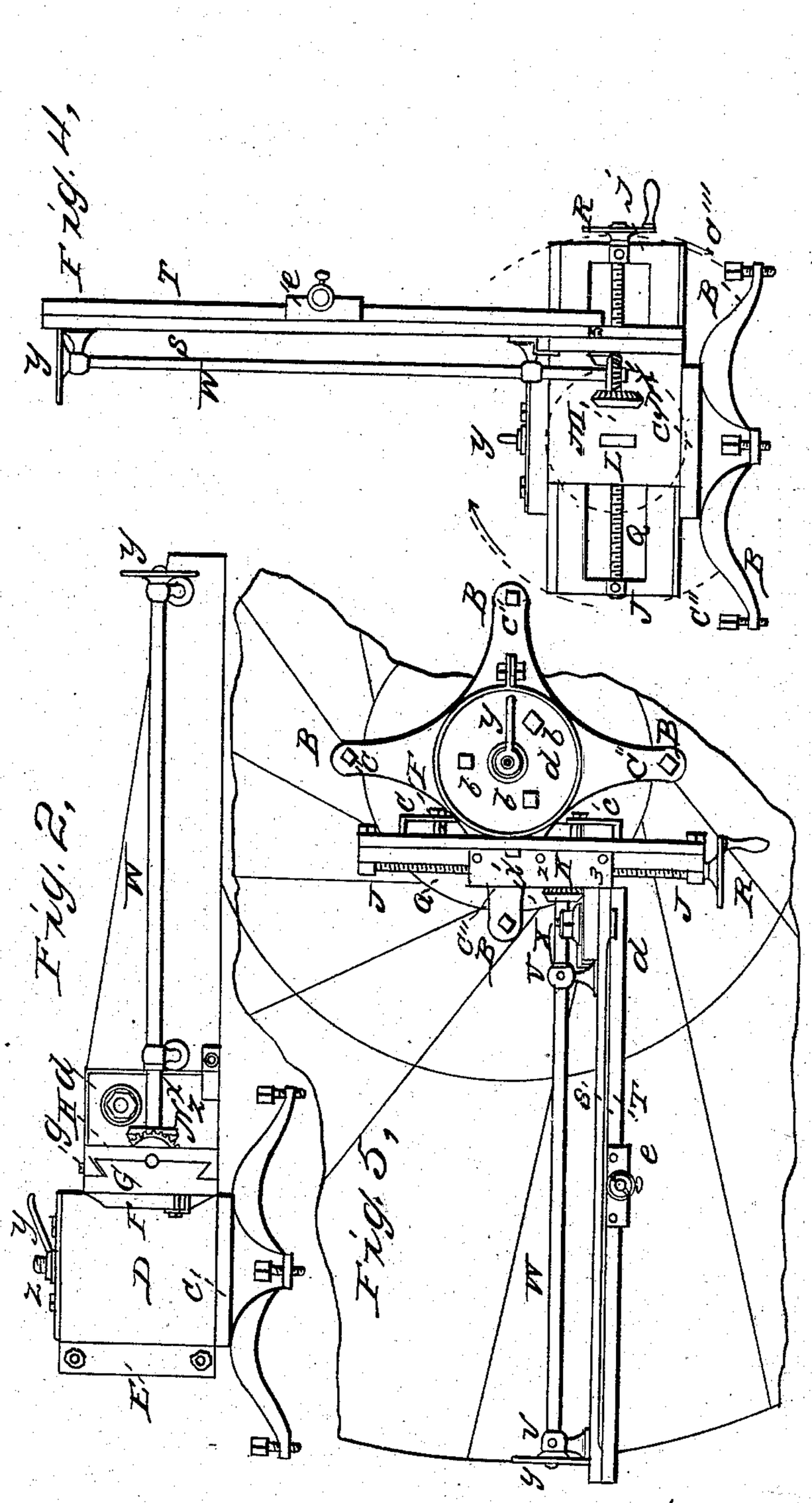

Fig. 2,

Fig. 5,

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Inventor:
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2 Sheets—Sheet 2.

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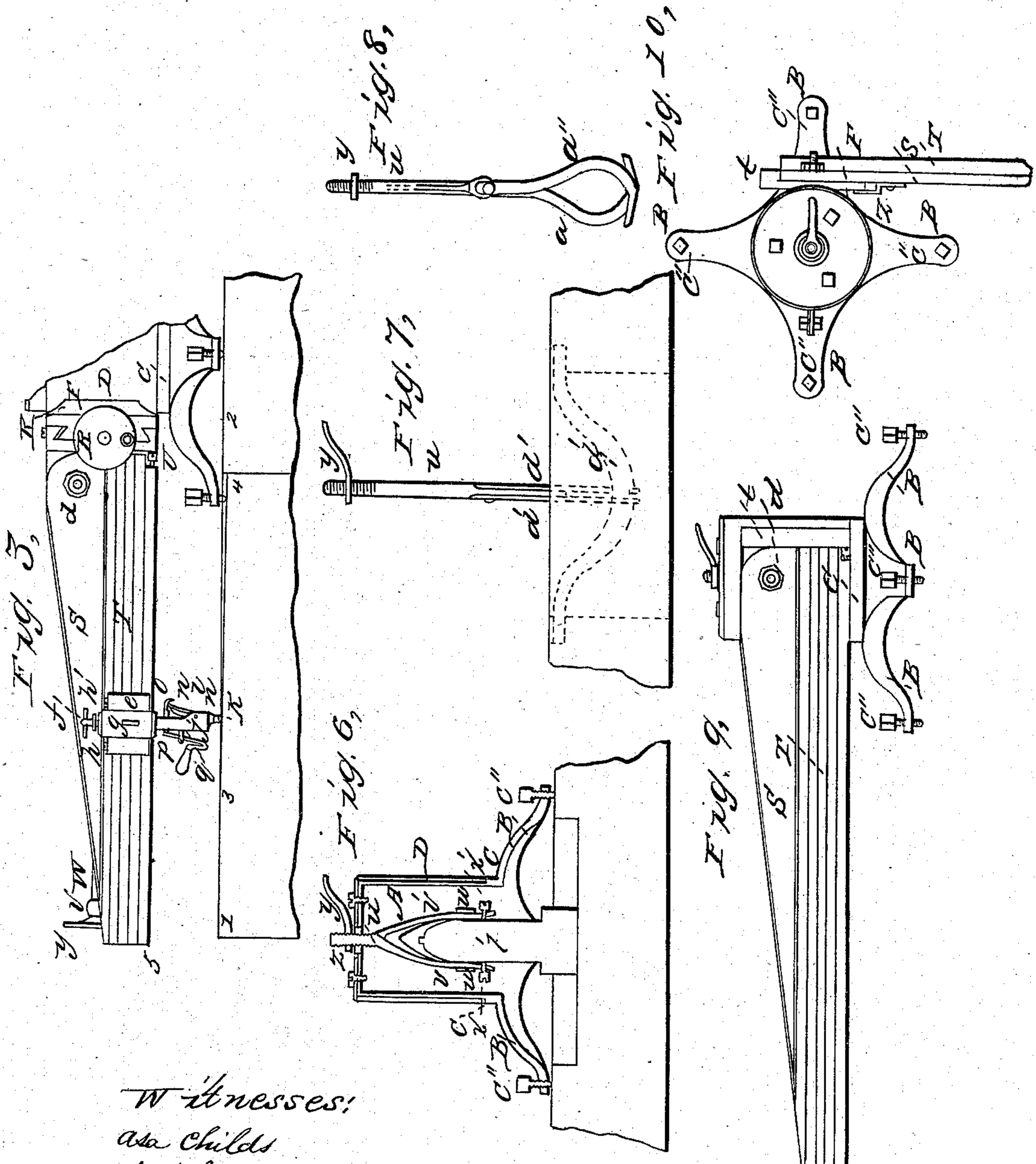

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UNITED STATES PATENT OFFICE.

JAMES T. GILMORE, OF BURTON, OHIO.

IMPROVEMENT IN MACHINERY FOR TRAMMING, STAFFING, AND FINE-DRESSING OF MILLSTONES.

Specification forming part of Letters Patent No. **36,776**, dated October 28, 1862.

To all whom it may concern:

Be it known that I, JAMES T. GILMORE, of Burton, in the county of Geauga and State of Ohio, have invented certain new and useful Improvements in Tramming, Staffing, and Fine-Dressing of Millstones; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a view in perspective of my improved machine; Fig. 2, an elevation of one side of the machine; Fig. 3, a partial elevation of its opposite side; Fig. 4, a front elevation with the arm turned up; Fig. 5, a plan view. Figs. 6, 7, and 8 exhibit the apparatus for securing the machine to the bed and runner stones, Fig. 6 being a central section; Figs. 9 and 10, side and plan views showing the arrangement of the machine when not required for the parallel movement, as will be explained, the letters of reference marked thereon indicating similar parts in all the figures.

The object of my improvements is the embodying in one and the same machine an arrangement of parts by which the various operations of tramming, staffing, and fine cracking and laying out the principal and subordinate furrows on the surface of millstones can be done with great accuracy, ease, and dispatch, the said parts possessing the quality of accurate adjustability, so as to insure the certainty of the various operations mentioned.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A, Fig. 6, is an upright hollow cast-iron journal with four branching feet, B, as seen in Fig. 5. The upper portion of said journal is thinner, which leaves a shoulder, C, Fig. 6, around its base. Said journal is closed at the top, which is perforated with a central and three other holes. The extremities of the feet are provided with set-screws C′, Fig. 5.

D, Fig. 2, is a sleeve, also of cast-iron. Said sleeve is provided with a double flange, E, Fig. 5, through which tightening-bolts are put. On the side opposite said flange is a circular plate, F. (Shown by the dotted lines in Fig. 4.) Said sleeve, with the flange and plate, are formed of one casting. The flange E, after the inside is turned true, is cut through longitudinally, forming a double flange, as before mentioned. From the center of the circular plate F projects a pin, (not seen,) on which to pivot a cross-plate, G. The form of this plate will be seen by reference to Fig. 1.

H, Fig. 1, is a dovetailed guide running the whole length of the said plate.

I is a hollow circular recess. This, with the bearings J and J′, Fig. 4, are cast in one piece.

K, Fig. 1, is a dovetailed slide fitting on the dovetailed guide H.

L and M, Fig. 4, are openings through said slide K, which allow a small beveled geared wheel, N, and a nut, O, to come through. Said slide has also a flange, P, Fig. 1, projecting at right angles from its outside face, and is cast on it, leaving a space, P′, as shown. The upper part of the said slide is pierced with three screw-holes for set-screws 1, 2, and 3, Fig. 5.

Q, Fig. 4, is a long screw supported on the bearings J and J′. On said screw are placed the beveled geared wheel N and the nut O, before mentioned. On the right-hand end of said screw Q is fixed a crank-plate, R, as seen in Fig. 4.

S, Fig. 1, is an arm, and is bolted through the flange P, so that it can be turned up, as will be hereinafter explained.

T is a dovetailed guide cast on said arm, and is formed as shown in Fig. 1. The lower corner of said arm, at the end next to the slide K, is notched out to admit a set-screw, U, Fig. 3. On the back of said arm are fixed two supports, V and V′, Fig. 5, through which is inserted a long shaft, W, and is secured by a collar, X. At the end of the said shaft is a small beveled geared wheel, X′, Fig. 4, meshing into the beveled geared wheel N, the other end being provided with a crank-plate, Y. Z, Fig. 2, is a clip bolted to the lower part of said arm, as shown in Fig. 2.

a, Fig. 5, is a cap-plate fitted to the top of the hollow journal A, Fig. 6, to which it is secured by screw-bolts *b*.

The above-described parts are put together as follows: The sleeve D, Fig. 2, is put around the hollow journal A and secured thereto by the plate *a* and screw-bolts *b*, the screw-bolts of the double flange being turned just enough to hold the sleeve snugly to the journal, on which it turns. The dovetailed slide K is now put on the cross-plate G, which plate is piv-

oted to the circular plate F of sleeve D, and secured thereto by two clips, *c* and *c'*, Fig. 5, so that said plate will turn on the central pivot of said circular plate. The long arm S is now secured to the flange P by the bolt *d*, the beveled geared wheel X' meshing into the other wheel, N.

I will now proceed to describe the construction and putting together the device for holding the staffing-block, tramming-quill, and diamond for fine-cracking.

e, Fig. 1, is a dovetailed slide having a hollow socket, into which, on the top, is inserted a set-screw, *f*, and on the side a tightening-screw, *g*. Said slide is secured on the dovetailed guide of arm S by means of set-screws *h* and *h'*. To aid the close-fitting of said slide to the guide, a gib or thin piece of metal, as seen in Fig. 2, and marked *g'*, is placed between the upper dovetailed surfaces.

The staffing-block *i*, Fig. 1, is a small circular head, about two inches in diameter, and is attached to a short shaft, which is inserted into the socket of slide *e*, as seen in Fig. 1.

The mechanical device for using a cracking-diamond is fully delineated in Fig. 3. *j* is a stock fitting into the socket of slide *e*; *k*, a diamond secured in a handle, *l*, said handle being pivoted to the stock *j* at *m*. A flat spring, *n*, is secured in said stock, impinging on the upper part of the diamond-handle, as shown. A hooked finger, *o*, passes through a hole in said stock and catches on the top of the diamond-handle. The opposite end of the said hooked finger is pivoted to a short lever, *p*, which has its fulcrum on a bearing, *q*, projecting from said stock. The lever is turned back from its bottom, as shown, and the end furnished with a convenient handle, *r*.

Figs. 9 and 10, one being a side elevation and the other a plan view, represent the machine as fitted without the mechanism for the parallel movement of the arm, as hereinafter explained, the long arm S being pivoted to the circular plate E, on which is cast a shoulder, *t*.

The devices for securing the above-described machine to the millstones are constructed and arranged as follows: *u*, Fig. 6, is a stem or shaft having a screw-thread cut on its top. The lower part branches into two straps, *v* and *v'*. *w* is a collar or hoop, and *x x'* tight screws passing through holes in the lower part of said branching straps. *y* is a lever-nut, and *z* a washer. This is the arrangement for fastening the machine to the bed-stone. For the runner-stone grappling-arms *a'* and *a''*, pivoted to the shaft *u*, (which is somewhat lengthened for the purpose,) are used.

To put my above-described machine into operation the first thing is to secure it to the stone. For the bed-stone the branched-strap arrangement is used. These are placed on the spindle *b'*, Fig. 6, and the collar *w* driven on. The screws *x x'* are then turned, causing them to impinge on the side of the spindle, and to keep the branched straps firm and steady. For the runner-stone the grappling-arms are passed under the bail *d'*, Fig. 7. The machine is now to be secured to the stone by allowing the shaft *u* to come through the hole on the top of the hollow journal, securing it for the present somewhat loosely by means of the lever-nut *y*. The body of the machine is then adjusted vertically to the general surface of the stone by moving the arm S at intervals on all parts of the surface, tramming it by means of the guide in the staffing-head, the slide *e* being moved back and forth on the guide. These movements are made in connection with the raising or depressing of the branching feet by means of the set-screws. When the machine is found to stand true to the general surface of the stone, it is firmly secured in its position by tightening the lever-nut *y*. The machine is now ready for the operation of staffing. This is effected by moving the arm horizontally over the stone and operating the slide with the staffing-head back and forth, the face of said staffing-head being previously rubbed with the usual coloring. The arm S can be turned up when necessary, as seen in Fig. 4, so that the staffing-head can be replenished with color without disturbing its fixed position.

One of the important operations in dressing millstones is the cutting or "cracking" fine lines or furrows on the "land" surfaces between the deep furrows, and a diamond is now often employed for this purpose.

My arrangement of a stock, provided with the mechanism as described, inserted into the socket of the slide *e*, admits of a diamond being used to greater advantage than by any other known method. In using this device, the operator holds the stock *j* by the handle *r*, and pushes it from him, which releases the point of the diamond from contact with the stone, by the hooked finger *o* drawing back the diamond-handle I. The operator now draws the diamond-stock toward him, causing the hooked finger to release its hold of the diamond-handle, which allows the diamond-point to touch the face of the stone, by means of the pressure of spring *n*, thus making a cut or crack on its way back. This movement is repeated for every cut, the arm S moving in a parallel course during the operation. The parallel movement of the arm is effected by turning the crank-plate R. The space turned of course regulates the space between each cut. Sometimes it will be more convenient to operate the movement of the said arm by using the other hand. For such purpose a crank-plate is attached to the long shaft W.

The object of the screw and beveled gear arrangement is for the purpose of obtaining a parallel movement of the arm S, and is used mainly for cracking the fine furrows between the principal and subordinate furrows, by means of a diamond, as before explained. This parallel movement is of use in setting the arm S to any required draft when laying out the dress.

Sometimes it is required to have a slight

concave surface on the face of the stone, commencing a short distance from the skirt and deepening toward the eye. To meet this requirement, the arm S is provided with a setting-screw, U, Fig. 3, as stated, which impinges on the shoulder P′ of slide K, said screw being regulated by the depth of the concavity. Fig. 3 explains this arrangement. 1 to 2 is a horizontal line; 3 to 4, the concavity, and 5 the elevation of the arm S from a horizontal line. Again, it might be required to have the tool of the socket-slide *e* stand in an oblique position with respect to the horizontal surface of the stone, in order to operate on the inclined sides of the deep furrows. To effect this the cross-plate G, which, as before stated, is attached to the circular plate F, can be turned in the direction of the arrows seen in Fig. 4, so as to incline the tool, the clips *c* and *c′* being loosened for the purpose.

The arrangement for holding, guiding, and using the diamond is such that after the stock is adjusted in the socket of the slide *e*, so that the point touches the more elevated parts of the stone, it can be secured firmly in its position, so as to avoid the possibility of its touching the lower portions of the stone or dropping into holes. Should the diamond-point, however, by mistake or chance strike against an abrupt part—as the edge of a hole, for instance—the spring *n* would cause it to give way, the handle being pivoted to the stock, as explained. The diamond will always move in a steady and direct line as it passes over the surface of the stone, the tension of the spring being just enough to keep it to its work and to yield laterally while making the cut.

Unlike the old method of staffing with the common long straight-edge, which has frequently to lie on the whole diameter of the stone, my machine will accurately staff any one portion of the stone from its center, independent of its opposite portion. This is due to the rigid movement and exact level position of the arm over all parts of the surface.

Having thus fully described the nature, construction, and operation of my machine, what I claim therein as new, and desire to secure by Letters Patent, is—

1. The employment of the arm S, with its dovetailed guide T, and the socket-slide and set-screws *e*, *f*, and *g*, constructed and operating as and for the purpose set forth.

2. In combination with the said arm, the shaft W, with its crank-plate Y, beveled geared wheel X′, and set-screw U, the same being attached to and used in combination with the other parts of the machine—to wit, the slide K, cross-plate G, dovetailed guide H, screw-shaft I, nut O, beveled geared wheel N, and crank-plate R′—said several parts connecting with the circular pivot-plate F, clips *c* and *c′*, sleeve D, double flange E, hollow journal A, branch feet B, set-screws *c″*, cap-plate *a*, screw-bolts *b*, and lever-nut *y*, the whole constructed and operating as described, and for the purpose specified.

3. The mode described for attaching the machine to the bed and runner stones by means of the branched straps and grappling-arms, secured as described, for the purpose set forth.

4. The employment of the small tramming and staffing block *i*, with its shaft fitting into the socket slide *e*, and adjusted and secured by the screws *f* and *g*, as described, and operating in combination with the horizontal movement of the arm S, for the purpose specified.

5. The peculiar arrangement for using and controlling the diamond, in combination with the said arm S, the parts constituting said arrangement being formed of the stock *j*, diamond-handle *l*, pivoted to said stock at *m*, spring *n*, hooked finger *o*, lever *p*, and handle *r*, constructed and operating as set forth, and for the purpose specified.

6. Attaching the arm S, with its dovetailed guide T, socket-slide *e*, and screws *f* and *g*, to the circular plate F, said plate having a shoulder, *t*, as shown in Fig. 9, and using the same in combination with the sleeve D and hollow journal A, as described, and for the purpose stated.

JAMES T. GILMORE.

Witnesses:
ASA CHILDS,
J. F. SINGLE.