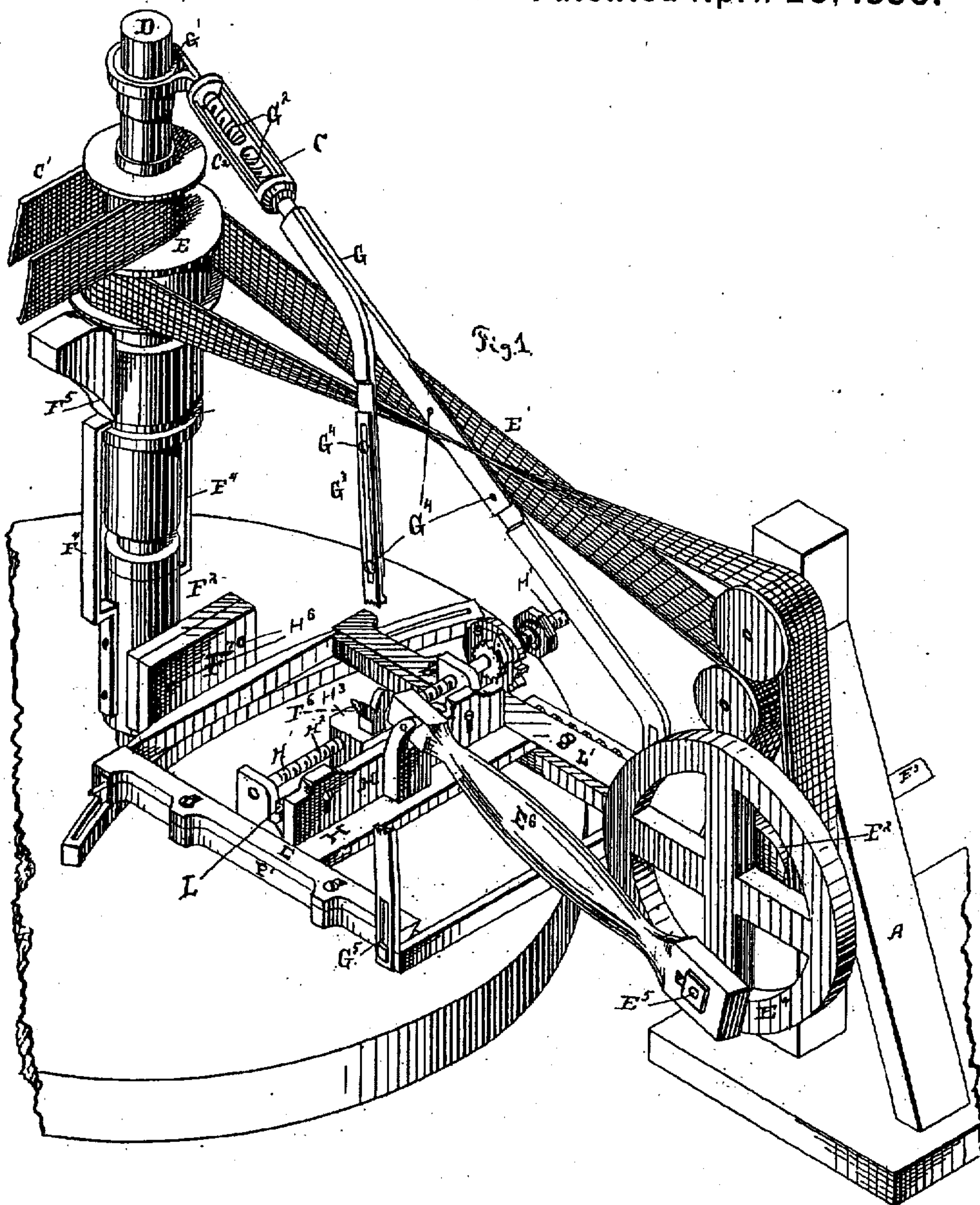


D. S. GREENWALD.
Millstone-Dresser.

No. 226,610.

Patented April 20, 1880.



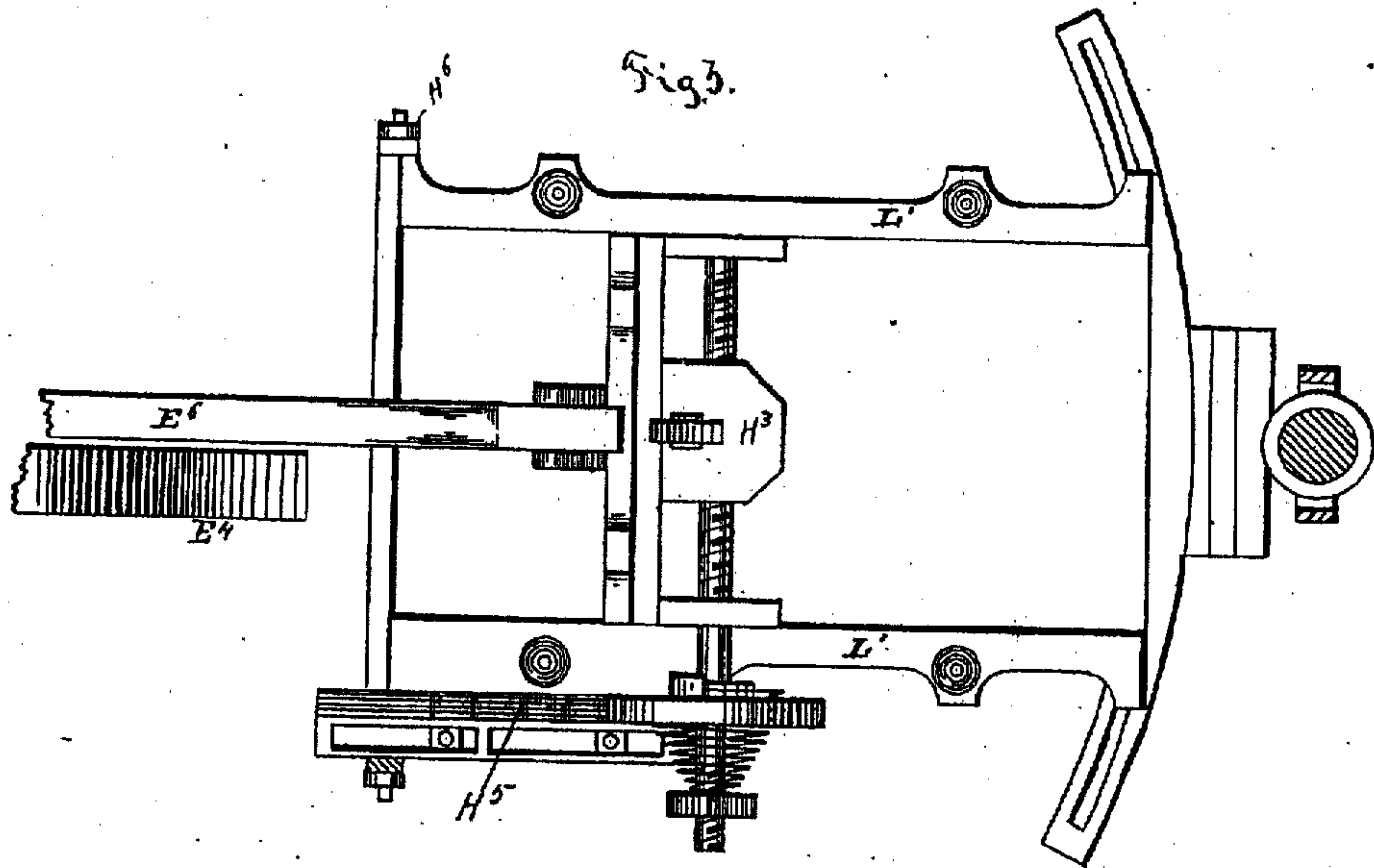
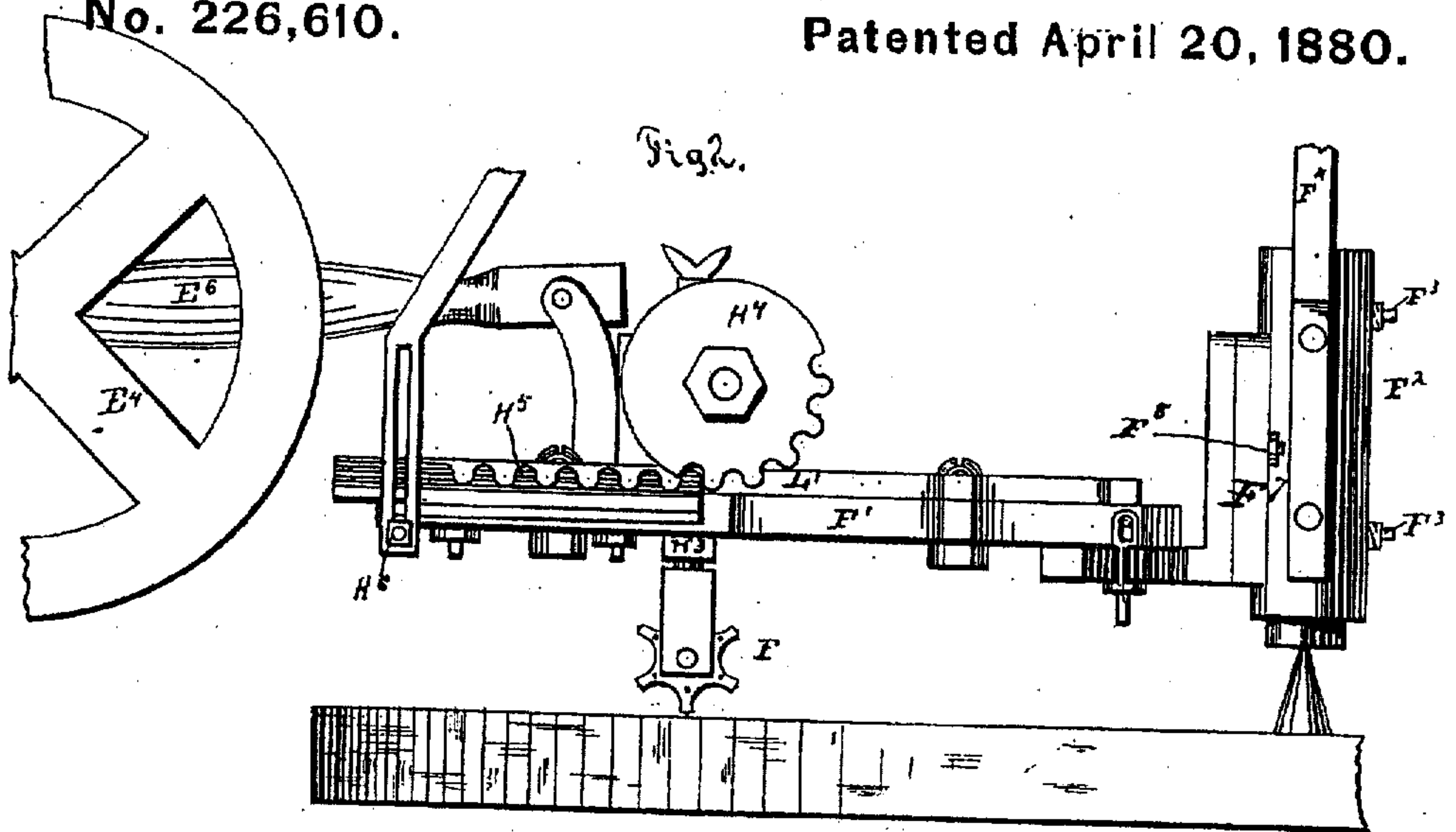
Witnesses
Frank M. Faber
W. E. Donnelly

Inventor.
W. S. Greenwald.
By Suggatt & Suggatt.
Attys.

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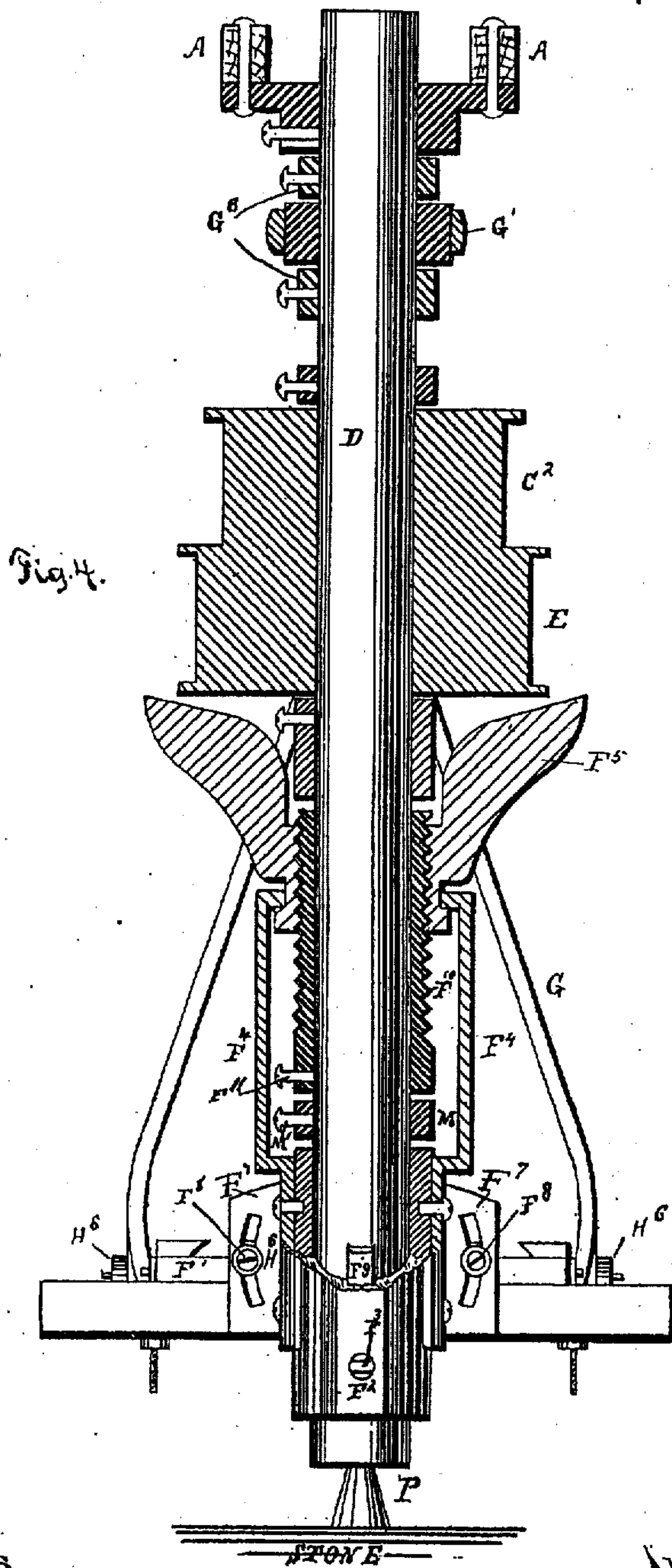
Witnesses.
Frank M. Jaber.
W. E. Donnelly.

Inventor.
D. S. Greenwald.
By Sargent & Sargent
Attys.

D. S. GREENWALD.
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Witnesses.
Frank M. Yabro.
W. E. Donnelly

Inventor
D. S. Greenwald.
By Sargent & Sargent.
Attys.

UNITED STATES PATENT OFFICE.

DANIEL S. GREENWALD, OF WARREN, OHIO.

MILLSTONE-DRESSER.

SPECIFICATION forming part of Letters Patent No. 226,610, dated April 20, 1880.

Application filed September 16, 1879.

To all whom it may concern:

Be it known that I, DANIEL S. GREENWALD, of Warren, in the county of Trumbull and State of Ohio, have invented certain new and useful
5 Improvements in Millstone-Dressers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being
10 had to the accompanying drawings, which form part of this specification.

My invention relates to millstone-dressers, and particularly to that class of millstone-dressers designed to work automatically and
15 driven or operated from a single point; and it consists in the construction and combination of parts, substantially as hereinafter specified and claimed.

In the drawings, Figure 1 is an isometric
20 view of my device. Fig. 2 is a detached view, in side elevation, of the dressing or cutting tool and its immediately adjacent mechanism. Fig. 3 is a plan view of the mechanism operating the cutter or dresser. Fig. 4 is a view in longitudinal section of the vertical shaft D and
25 the parts directly attached to and surrounding it.

In the said drawings, A is a frame, of any suitable structure, dimensions, or material, to
30 which the operative elements of my device are attached. The driving-belt C' connects with the pulley C², fixed on the shaft D. To the shaft D is also fixed the pulley E for driving the cutting mechanism. This is done
35 through the belt E' and pulley E². The pulley E² is fixed upon a suitable shaft, E³, journaled in the frame A, to which shaft is fixed a balance-wheel, E⁴, for imparting a steady motion to the shaft E³ and to the cutting mechanism. Upon the balance-wheel E⁴ is fixed a
40 crank or eccentric, E⁵, which, through the pitman E⁶, imparts a reciprocating motion to the cutter F, and which also controls the operation of the automatic feeding mechanism associated with said cutter. The cutter F and
45 its feeding mechanism are arranged and constructed upon a suitable frame, F', which frame is revolvably attached to the vertical shaft D by a sleeve, F².

50 F³ are set-screws, and may be one, two, or more in number, whereby the sleeve and cut-

ter-frame F' may be affixed at any adjusted height. From the sleeve F² proceed one, two, or more arms, F⁴, which extend upward and engage in an annular groove formed on the
55 adjusting-nut F⁵. This adjusting-nut is provided with a female screw-thread engaging with a male thread formed upon a sleeve around the vertical shaft D. By turning the nut F⁵ in one direction or the other it will be raised
60 or lowered in its position on the shaft D, and will carry with it through the arms F⁴ the frame F', with its cutter and attached mechanism. Thus, by turning the nut F⁵ the cutter F may be adjusted as necessary, and when
65 adjusted it may be fixed in position by the set-screw F³.

The sleeve F², being, as heretofore stated, revolvably attached to the vertical shaft D, permits of the cutter-frame F' and its attached
70 mechanism to remain stationary while the stone to be dressed is revolved beneath it, or, as might be arranged without departing from my invention, the cutter-frame F' might be constructed to move over the stone and the
75 stone held stationary.

G is an adjustable brace or support connecting the outer end of the frame F' with the upper portion of the shaft D by a ring or collar, G', loosely fitting upon the shaft D. G² is a
80 right-and-left-hand screw. G³ is a slip-joint, provided with a set-screw, G⁴, and G⁵ is a slot in the lower portion of the brace G.

The elements G², G³, G⁴, and G⁵, just specified, are all adapted in an apparent manner
85 to permit of adjusting the length of the brace or support G to suit any height or position to which the cutter-frame F may be fixed.

Coming now to a more specific description of the cutter F, its frame F', and attached mechanism, it will be observed, as already stated,
90 that motion is imparted to this portion of my device by the crank E⁵ and pitman E⁶.

The movement which I design to give the cutter F is a reciprocating one, either radial
95 or tangential in direction as related to the stone upon which it is to operate, as circumstances may require. A lateral feeding motion transverse to its cutting direction is also imparted to the cutter. The reciprocating or
100 cutting movement is imparted by the connection of the pitman E⁶ to the cutter-block H.

Within the cutter-block H is journaled on a line transverse to the direction of motion of the cutter F a feeding-shaft, H', having a screw-thread, H², cut upon it. Engaging with the screw-thread H² is the shank or stem H³ of the cutter F.

The cutter-block H has a tongue-and-groove or equivalent connection with the frame F', whereby its motion imparted by the pitman E⁶ is permitted.

Attached to the feeding-shaft H' is a pinion or segmental gear, H⁴, adapted to engage with the adjustable rack H⁵. According as the rack H⁵ is adjusted nearer to or farther from the vertical shaft D will the lateral feed of the cutter F be respectively increased or diminished, because when moved, say, nearer to the shaft D, a longer engagement between the rack H⁵ and segmental gear H⁴ will be had and a consequently increased turn of the feeding-shaft H', which will result in a more extended lateral or feeding movement of the cutter F.

The adjustable rack H⁵ may be formed in any suitable manner to permit of longitudinal movement and adjustment upon the frame F'. The form herein illustrated is that of the ordinary well-known slot and set-screw connection, too common to need specific mention.

In order to enable the cutter properly to move along the grooves of the stone, the frame F' is adjustably attached to the sleeve F² by means of the circular slot and set-screw connection H⁶. By adjusting the frame F' through the agency of this circular-slot arrangement H⁶, the cutter or dresser F may be made to traverse the stone either radially to and from its center or at a tangent thereto, as may be necessary.

I have spoken of the adjusting-nut F⁵, and it is through this device that the coarser adjustment of the dresser F to the stone is effected. It is necessary, however, that a nicer adjustment should be had than can be readily effected by the nut F⁵, and for this purpose the nut or thumb-screw F⁶ is provided, whereby a finer and more delicate adjustment between the dresser F and the stone upon which it is to operate can be effected.

It is important that the dresser F should have a steady and firm movement and be prevented from wobbling while in operation, and to contribute to this end its shank or stem should be held as firmly as possible. It has dovetail tongue and groove connection with the frame F', and for this reason should always have its bearings kept snug and free from lost motion, and to accomplish this the adjustable upper bar, L, is provided. This, by its slot and set-screw connection with the frame F', enables it to be firmly adjusted and secured in such a manner that the shank or stem H³ is always held firm and steady, and as wear occurs this bar L may be readjusted and lost motion thereby always taken up.

The plates L', which constitute a portion of the grooves in the frame F', are also adjust-

bly attached in substantially the same manner and for the same reason as already specified for the bar L.

In dressing beveled surfaces—such as furrows and the like—it is necessary that the frame F' and the feeding-shaft H³ should be set at an incline corresponding to the surface to be dressed, so as to enable the dresser F to properly traverse said surface. To accomplish this inclined adjustment of the cutter-frame F' and its attached parts, I construct the shank F' of the frame F' of two plates, united, as shown, by the ordinary slot and set-screw arrangement, the slot being formed on the arc of a circle concentric with the longitudinal axis of the frame F'. By loosening the set-screws F⁸ the frame F' may be tilted to any desired angle and then adjusted.

In order at the same time to increase the effectiveness of the set-screws F³ in retaining the cutter-frame F' in position, and also to prevent any injurious effect to the shaft D from said set-screws, the friction-bar F⁹ is provided, directly against which the set-screws F³ impinge, and by pressing the bar F⁹ between them and the vertical shaft D a very firm adjustment is secured without injury to the parts.

M is a jam-sleeve, secured in position by the set-screw M' upon the vertical shaft D. This jam-sleeve assists in keeping the sleeve F² and its attached parts firmly in their adjusted position, and prevents accidental yielding or displacement of the dresser F' during its operation.

As illustrated in Fig. 4 of the drawings, the vertical shaft D is pivotally attached to the spindle P, upon which the running millstone hangs and turns. This illustrates the manner of adjusting my device in dressing the bed-stone.

In dressing the runner-stone the stone is removed, and after being turned over and leveled the stationary shaft D is adjusted to the bail in substantially the same manner as illustrated in Fig. 1 of the drawings.

Before the device is set in operation for facing a stone the stone itself should be leveled, and likewise the frame F', and when this is done and the cutter or dresser F properly adjusted a true face may be obtained with ease and certainty. This leveling of the frame F' is accomplished by the right-and-left-hand screw G² or the slot and set-screw arrangement G⁵, or both.

I prefer forming the male screw-thread upon which the adjusting-nut F⁵ turns upon an independent sleeve surrounding the vertical shaft D, and fixed thereto in any adjusted position by a set-screw, F¹¹. By loosening the set-screw F¹¹ the screw-sleeve F¹⁰ may be moved up or down upon the shaft D and the entire dressing or cutting mechanism thereby vertically adjusted.

The ring or collar G' of the brace G is held between two jam-collars, G⁶, held in any adjusted position by set-screws. By means of

these jam-collars the upper-ring terminus G' of the brace G can be fixed at any desired point on the shaft D.

In order to accommodate various adjustments, the pitman E⁶ should be formed in two or more parts, with swiveled-joint connections or the like, so that its length may be adjusted as required, and so that it may be otherwise adjusted to afford a suitable connection between the wrist-pin E⁵ and the cutter-bar F'.

I do not limit myself to any exact construction of the parts E², E³, E⁴, E⁵, and E⁶. This portion of my device may be varied at pleasure, and may be placed either upon the same side of the shaft D that the cutter-frame is located or upon the opposite side; and when placed upon the opposite side the pitman E⁶ should be forked and made to straddle the vertical shaft D. In case of extreme vertical adjustment of the cutter-bar F' it may at times be necessary to also vertically adjust the parts E¹, E², E³, E⁴, and E⁵, and for this purpose the frame-work in which they are placed may be constructed to be bodily lifted or lowered until the belts shall be properly stretched.

What I claim is—

1. In a millstone-dresser, the combination, with the cutter or dresser F and its frame F', of the adjusting-nut F⁵, whereby the frame F' may be vertically adjusted, substantially as and for the purpose shown.

2. The combination, with the cutter F, of the adjusting-screws F⁵ F⁶, the former being for coarse and the latter for fine adjustment, substantially as and for the purpose shown.

3. The cutter-frame F' and shaft D, in combination with the circular slot and set-screw connection F⁸, whereby the cutter may be made to traverse the stone either horizontally or at any angle to a horizontal plane, substantially as and for the purpose shown.

4. The combination, with a feed-shaft on

which the cutter-stem is threaded, of a rack adapted to be secured in desired longitudinal adjustment, and having gear engagement with said feed-shaft, substantially as set forth.

5. The combination, with the segmental feeding-gear H⁴, of rack H⁵, said rack H⁵ being made longitudinally adjustable, whereby it may be brought more or less into engagement with the gear H⁴, and thereby impart to said gear a greater or less feeding movement, substantially as and for the purpose shown.

6. In a millstone-dressing machine, the combination, with a cutter-stem provided with a lateral projection, and a cutter-block on which the latter fits, of a transverse bar which clamps said projection firmly in place, together with slot-and-bolt connection which secures said bar in vertical adjustment to the cutter-block, substantially as set forth.

7. The adjustable rack H⁵, in combination with suitable mechanism for imparting to it a to-and-fro motion, substantially as and for the purpose shown.

8. In combination with the brace or support G, the ring G' and the shaft D, substantially as and for the purpose shown.

9. The combination, with the adjustable brace or support G, of the slip-joint G³ G⁴ and the cutter-frame F', substantially as and for the purpose shown.

10. The brace or support G, bifurcated at its lower portion and provided with the slots G⁵, in combination with the cutter-frame F', substantially as and for the purpose shown.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

DANIEL S. GREENWALD.

Witnesses:

JNO. CROWELL, Jr.,
W. E. DONNELLY.