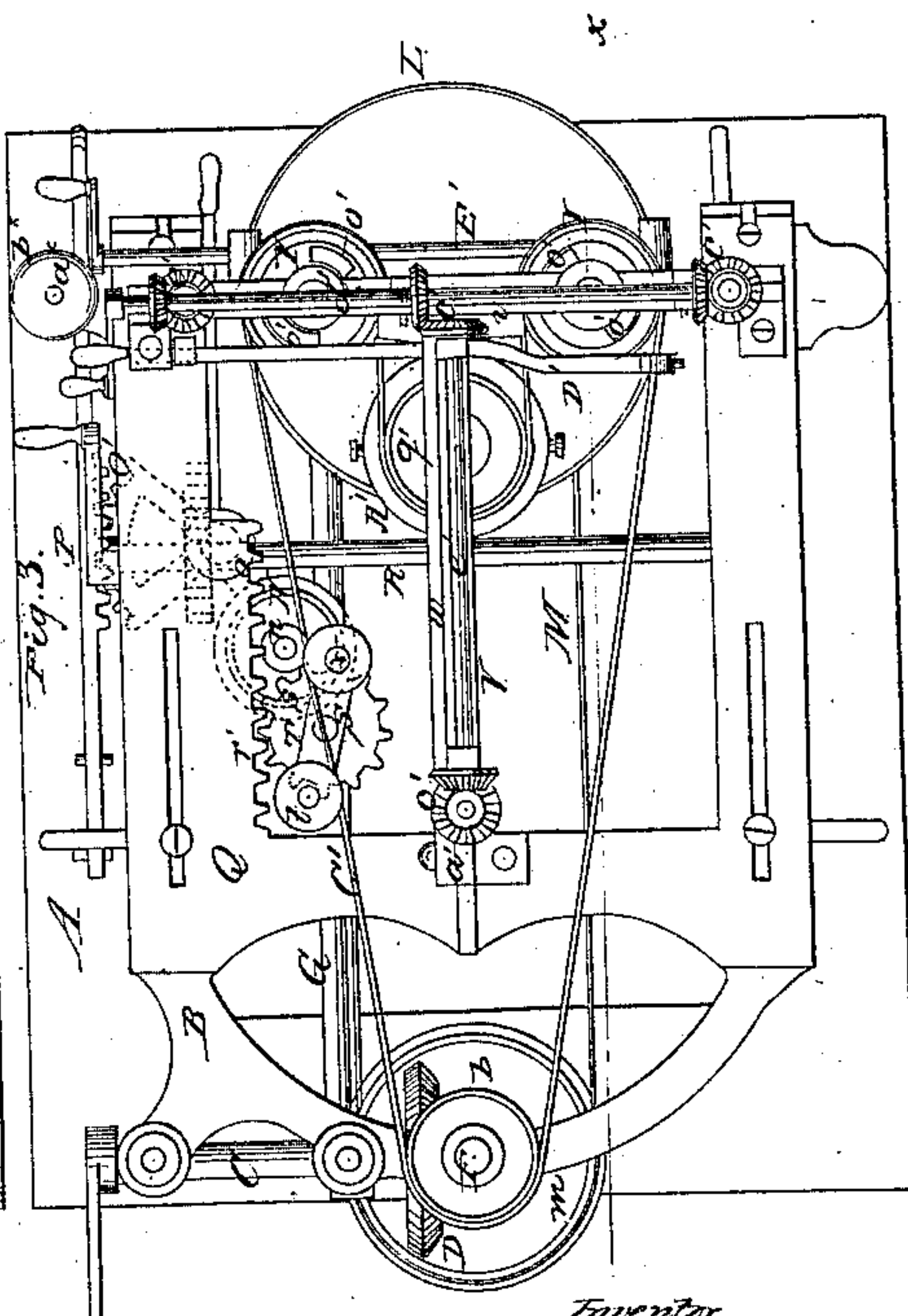
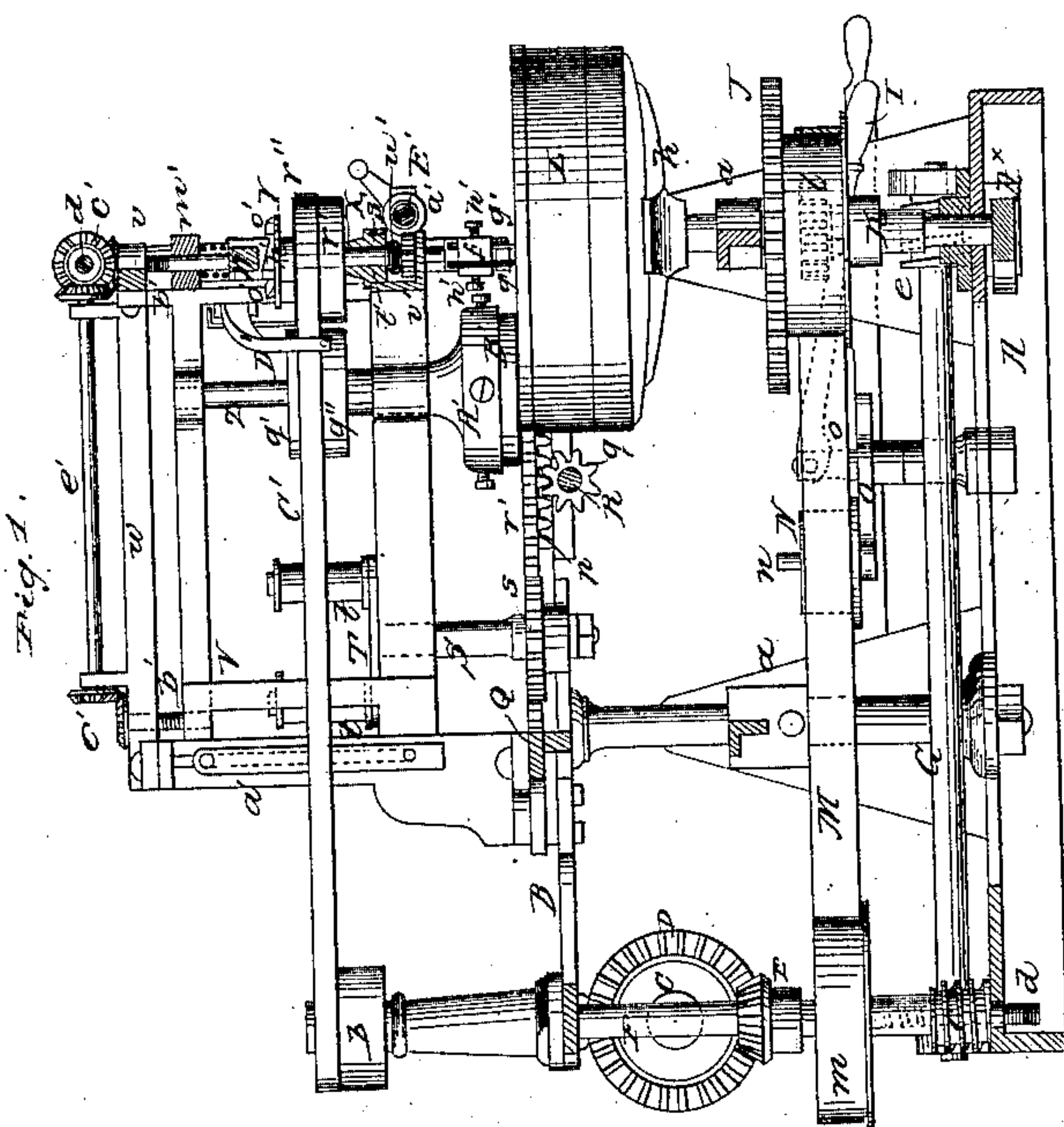
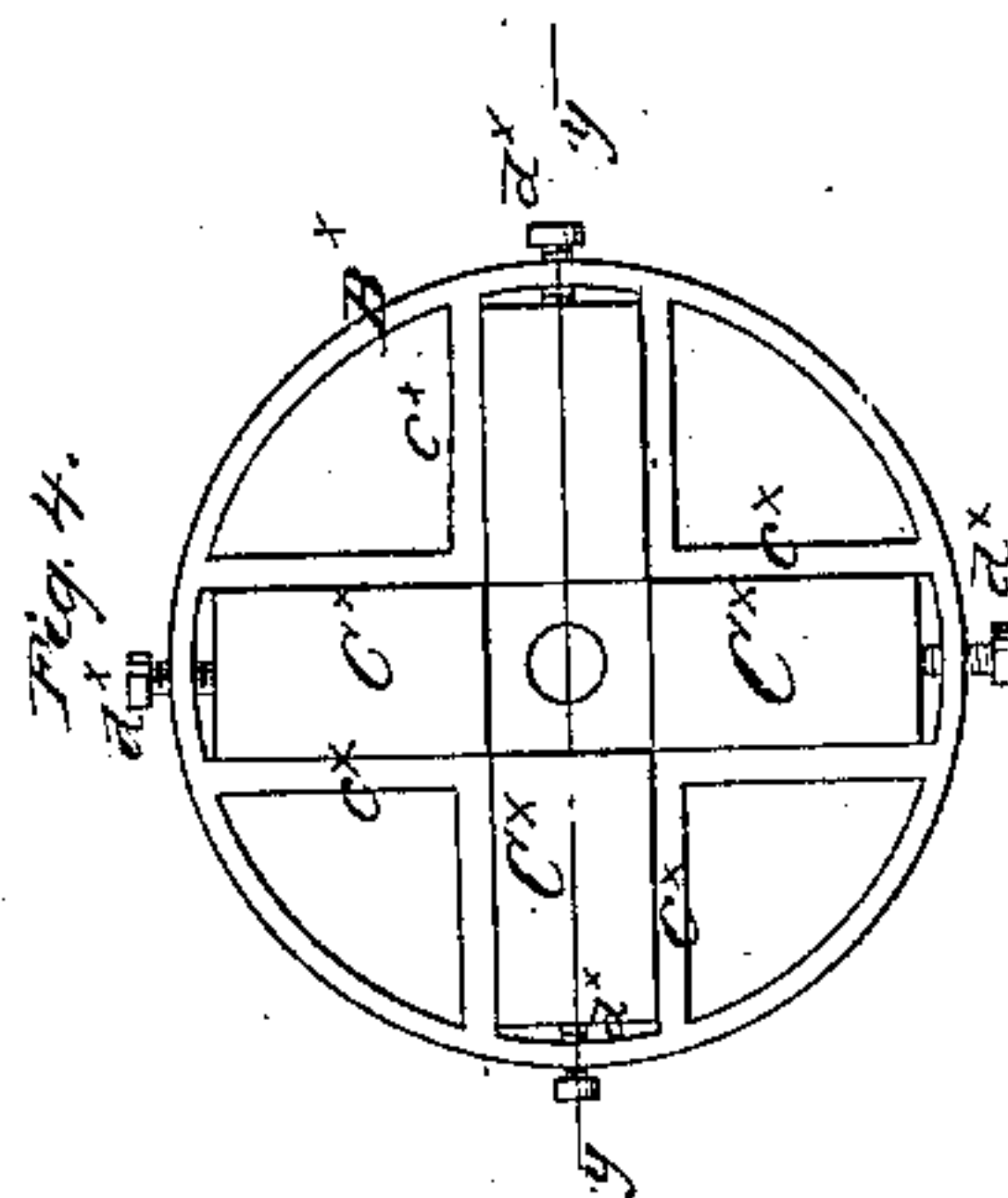
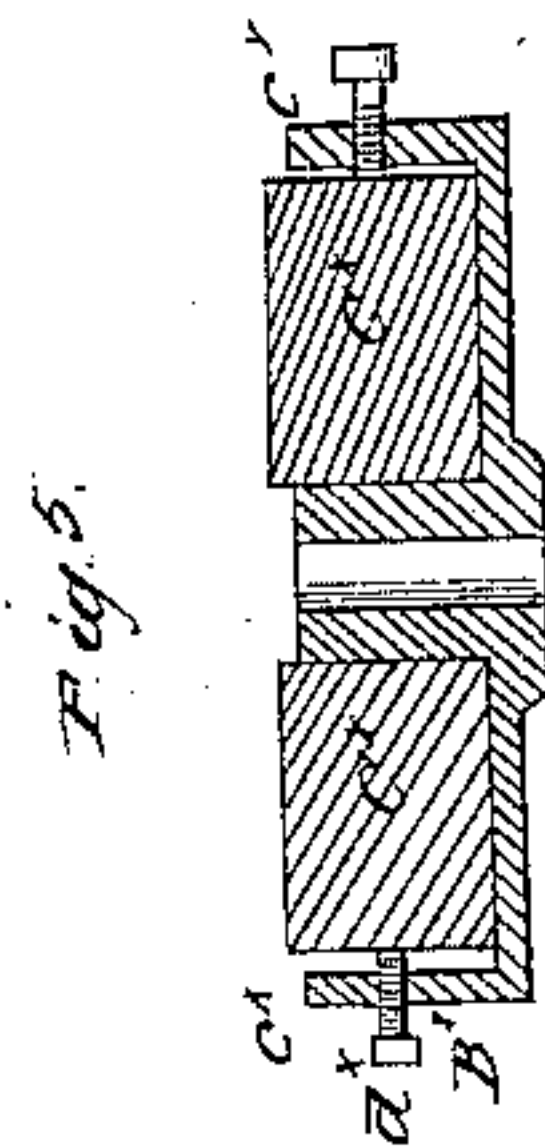
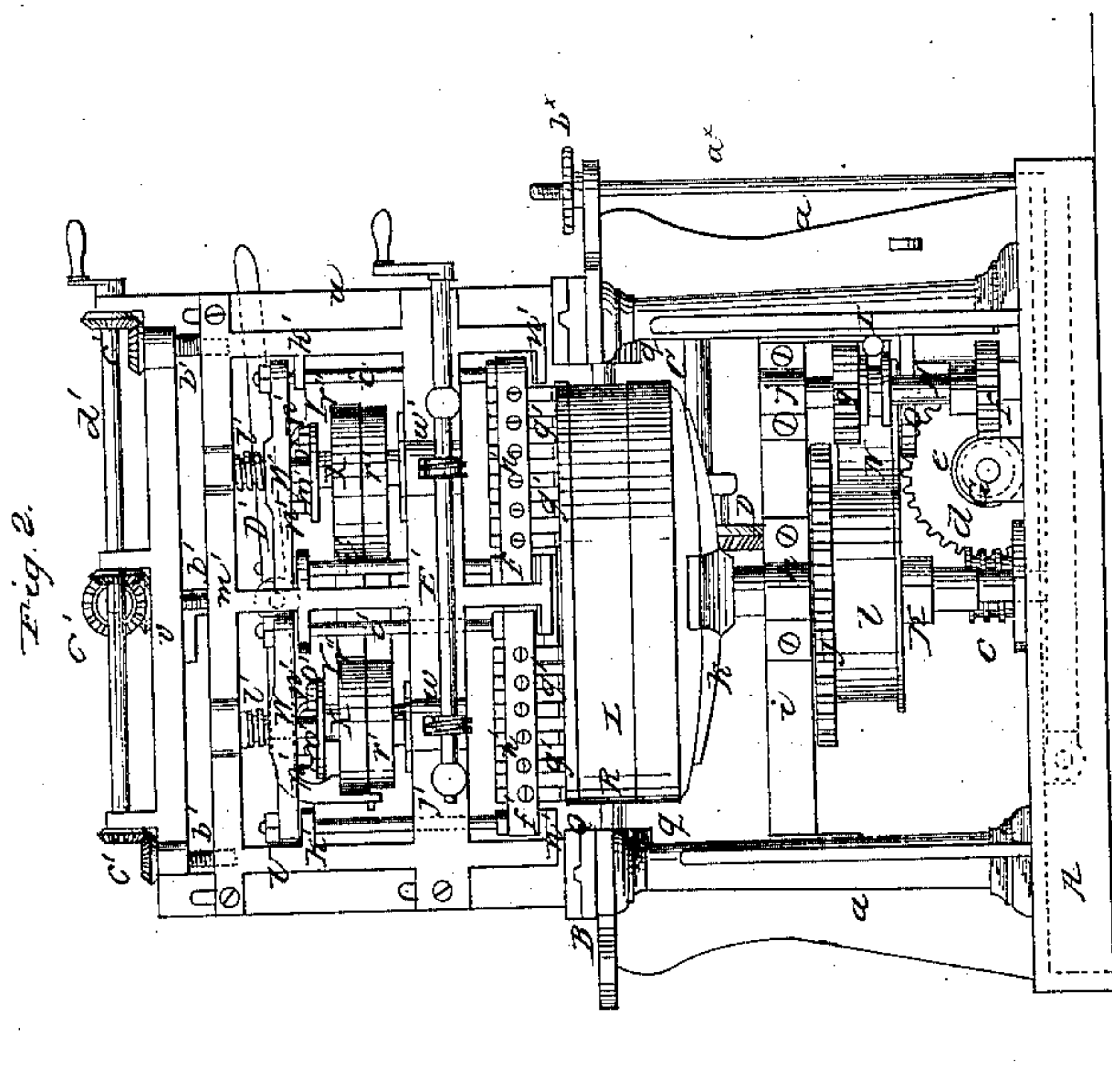


*E. Munson,
Polishing Millstones.*

N^o 31,255.

Patented Jan. 29, 1861.



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UNITED STATES PATENT OFFICE.

EDMUND MUNSON, OF UTICA, NEW YORK.

MACHINE FOR FACING AND POLISHING MILLSTONES.

Specification of Letters Patent No. 31,255, dated January 29, 1861.

To all whom it may concern:

Be it known that I, EDMUND MUNSON, of Utica, in the county of Oneida and State of New York, have invented a new and Improved Machine for Facing and Polishing Millstones; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a side sectional view of my invention taken in the line x, x , Fig. 3; Fig. 2, an end view of the same; Fig. 3, a plan or top view of the same; Fig. 4, a detached face view of a chuck or holding plate pertaining to the same; Fig. 5, a section of the latter taken in the line y, y , Fig. 4.

Similar letters of reference indicate corresponding parts in the several figures.

This invention consists in a novel arrangement of cutters, polishing device and gearing, substantially as hereinafter fully described, whereby mill stones may be faced and polished very expeditiously and in a perfect manner, and the individual blocks of a stone also roughed off and faced, before being connected together, by simply using a chuck or holding plate.

The invention obviates the necessity entirely of manual labor so far as the facing and polishing is concerned, the cementing and binding of the blocks together to form the stone of course being done by hand, but the latter is comparatively light labor, while the manual cutting of the French bur blocks is very laborious the material being so very hard.

To enable those skilled in the art to fully understand and construct my invention I will proceed to describe it.

A, represents a bed plate on which uprights a , are secured, said uprights supporting a horizontal frame B, which is parallel with the bed plate A.

C, is the driving shaft of the machine which has its bearings in pendants projecting from the frame B. On the inner end of shaft C, there is placed a bevel toothed wheel D, which gears into a bevel pinion E, on a vertical shaft F, the lower end of shaft F, being stepped in a bridge tree A^x , adjusted by a screw and nut a^x, b^x , the bed plate A, and its upper end passing through the back part of the frame B, and having a pulley b , on its upper end. On the lower part of the shaft F, there is a screw c , which

gears into a worm wheel d , at the back end of a horizontal shaft G, the bearings of which are on the bed plate A. On the front end of the shaft G, there is placed a screw e , which gears into a worm wheel f , on the lower part of a vertical shaft H. On the shaft H, there is placed a pinion g , which is allowed to slide freely up and down on its shaft but always turns with it on account of a feather and groove connection. This pinion g , is connected to a lever I, by actuating which the pinion g , may be adjusted in or out of gear with a toothed wheel J, on a vertical shaft K, the lower end of which is stepped in the bed plate A, its upper bearing h , being attached to a traverse bar j , as also is the upper bearing j , of the shaft H, see Fig. 2.

On the upper end of the shaft K, there is placed a socket formed of arms k , to receive the mill stone L, to be operated upon, the back of the stone being on the arm k and its face consequently uppermost. The mill stone L, may be secured on the arms k , by any proper means. On the shaft K, just below the wheel J, there is a pulley l , around which a belt M, passes, said belt also passing around a pulley m , on shaft F.

N, is a friction pulley which is placed on a vertical pin n , attached to a lever O, which has its fulcrum at o . The outer part of the lever O is a toothed segment O' , into which a sliding rack P, gears as shown clearly in Fig. 3.

On the horizontal frame B, there is placed a sliding frame Q, which may be adjusted back and forth on frame B, by means of racks p, p and pinion q, q , the racks being attached to the under side of the frame Q, and the pinions q , being on a shaft R, which is placed transversely at the under side of the frame B, and has a crank at one end.

At one side of the frame Q, there is a rack r , into which a pinion s , on a vertical shaft S, gears, the upper end of said shaft having a cross head T, on it with a vertical roller t , at each end.

At the front end of the sliding frame Q, there are two uprights u, u , one at each side, and the upper ends of these uprights are connected by a traverse bar v , to the center of which and at its back side there is attached a horizontal bar w , the bar w , projecting at right angles from the back v , and having its back end attached to an upright a' , at the back part of the frame Q.

Between the uprights u, u , there is placed an upright sliding frame U, and to the back side of this frame there is attached at right angles a frame V, the back end of which works on the upright a' , which is a guide for it. The frames U, V, may be raised and lowered by means of vertical screws b' , which are turned by means of bevel gears c' , and shafts d', e' , all the screws being turned simultaneously by turning shaft d' , as will be seen by referring to Fig. 3.

In the lower part of the frame U, there are placed two horizontal cutter heads f', f' . These cutter heads are simply rectangular bars placed in a horizontal position with vertical cutters g' , fitted in them and secured by set screws h' , there being two rows of cutters in each cutter head and several cutters secured side by side in each hole or aperture in the heads f' . The cutters g' , in one row of a head f' , are opposite the spaces between the cutters of the other row. To each end of each cutter head f' , there is attached a vertical rod i . These rods extend up through a traverse bar j' , of the frame U, and through guides k' , attached to said frame and the upper ends of the rods i' , are connected by cross bars W.

In the frame U, and directly over each cutter head f' , there is a vertical shaft X. These shafts X, pass through the cross bars W, and have spiral springs l' , on them said springs being between the bars W, and top cross bar m' , of the frame U, see Figs. 1 and 2. The springs l' , have a tendency to keep the cutter heads f' , down on elastic stops n' , at the lower part of the frame U.

On the shafts X, X, there are secured horizontal disks Y, Y, one on each shaft and to the upper or face side of each disk Y, there are secured two cam projections o', o' , which as the shafts X, X, rotate act against pendent projections p', p' , at the under sides of the cross bars W.

In the frame V, there is placed a vertical shaft Z, which has a working pulley q' , on it, and an idle pulley q'' , and also a bell-shaped socket A' , at its lower end. Within the socket A' , the polisher B' is secured, said polisher being of stone or any suitable material.

C' is a belt which passes around the pulley b , of shaft F, between the rollers t, t , around the pulley q' , of shaft Z, and also around the working or the idle pulley r', r'' , of the shafts X, X, said belt C', being placed on either by means of a shipper D'.

The lower parts of the shafts X, X, are fitted in steps s' , and rest on rods t' , the lower ends of which have screw threads on them and are fitted in female screw threads or nuts u' , at the upper part of worm wheels v' , into which screws w' , on a shaft E', gears see Figs. 1, and 2.

The operation is as follows. The mill

stone L, is adjusted on the arms z , and the cutters g' , are adjusted as required near the surface or face of the stone by raising or lowering the frame U, which is done by turning the shafts $d' e'$. The frame Q, is moved forward by turning the shaft R, so that the cutters g' , will be over the center of the mill stone and the belt C', is cast on the working pulleys r' , of the shafts X, X. The pinion g , of shaft H, is also moved up and thrown in gear with the wheel J. The shaft C, is then rotated by any convenient power and the mill stone L, is slowly rotated through the medium of the screw c , on shaft F, the wheel d , and screw e , on shaft G, the wheel f , pinion g , on shaft H, and the wheel J, on shaft K, and at the same time a reciprocating motion is given the cutters g' , in consequence of the belt C', rotating the shafts X, X, and the cam projections o' , of the disks Y, raising the cross bars W, and consequently the cutter heads f' , and cutters g' , the springs l' , forcing the cutters down as the projections o' , pass the projections p' , of the bars W. The length of the stroke of the cutters may be regulated by adjusting the shafts X, X, raising or lowering them through the medium of the screws w' , on shaft E', the worm wheels v' , and screw rods s' , on which the shaft X, rests; and the cutters may be regulated in a vertical position relatively with the mill stone by adjusting frame U, as previously stated. The action of the cutters g' , face the stone and unnecessary concussions are avoided as the cutter heads f' , strike the elastic stops n' , at the termination of their descent. When the mill stone is faced the belt C', is cast on the idle pulleys r'' , of the shafts X, and on the working pulley q' , of shaft Z, and the latter with polisher B', is rapidly rotated. The pinion g , on shaft H, is thrown out of gear with the wheel J, and the pulley N, by actuating the rock bar P, is adjusted against the belt M, and the latter tightened so that the shaft K, will be rotated directly from shaft F, and the mill stone L, thereby rapidly rotated while the polisher B', acts upon it. When the mill stone is polished the frame Q, is moved back by turning the shaft R, so as to leave the mill stone perfectly free from all obstructions, the cutters, frame, etc., and admit of its ready removal from the arms z , and the adjustment thereon of another mill stone for a succeeding operation.

I would remark that when the belt C', is on the working pulleys r' , of the shafts X, X, it is on the idle pulley q'' , of the shaft Z, and when on the latter pulley it is off the former ones. I would also remark that the mill stone L, may be adjusted vertically as occasion may require while being operated upon through the medium of the bridge tree A'.

In order to face the individual blocks of

a mill-stone before being adjusted together I use a chuck or holding plate B^x , see Figs. 4 and 5. This chuck or holding plate is a hollow cylinder open at the top and provided with four radial sockets c^x , in which the blocks C^x , are placed and secured by set screws d^x . This chuck is fitted on the arms k , of shaft K, precisely the same way as the face of the mill stone. This previous facing of the blocks C^x greatly facilitates the subsequent operation of facing the mill stone.

The rollers t , t , being attached to the cross head T, and the latter secured to the shaft S, which is turned by the rack and pinion r' , s , as the frame Q, is moved, serve to keep the belt C' , always taut or at a proper tension in whatever position the frame Q, may be in the scope of its movement.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:—

1. The employment or use of the cutters g' , placed in suitable cutter heads f' , having a rising and falling movement in connection with the rotary mill stone shaft K, arranged for joint operation with the cutters g' , substantially as and for the purpose set forth.

2. The arrangement of the adjustable

frame U, V, and frame Q, substantially as shown so that the former frames U, V, may be raised or lowered and adjusted relatively with the mill stone as desired and the latter frame Q, moved horizontally so that the frames U, V, may be drawn back from above the surface of the mill stone when desired.

3. In connection with the cutters g' , the rotary polisher B' , placed in the frame V, and arranged substantially as shown so as to be operated by the same belt C' , which rotates the shafts X, X, in the frame U, that assist in operating the cutters g' .

4. The arrangement of the sliding pinion g , on shaft H, the belt M, wheel J, on shaft K, the shaft G, with its screw c , and wheel d , and the shaft F, with its screw c , and belt C' , passing around the pulleys on the shafts X, X, Z, all being arranged substantially as and for the purpose set forth.

5. The chuck or holding plate B^x , provided with the radial sockets c^x , and so arranged as to be applied to the rotary shaft K, for the purpose specified.

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Witnesses:

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