

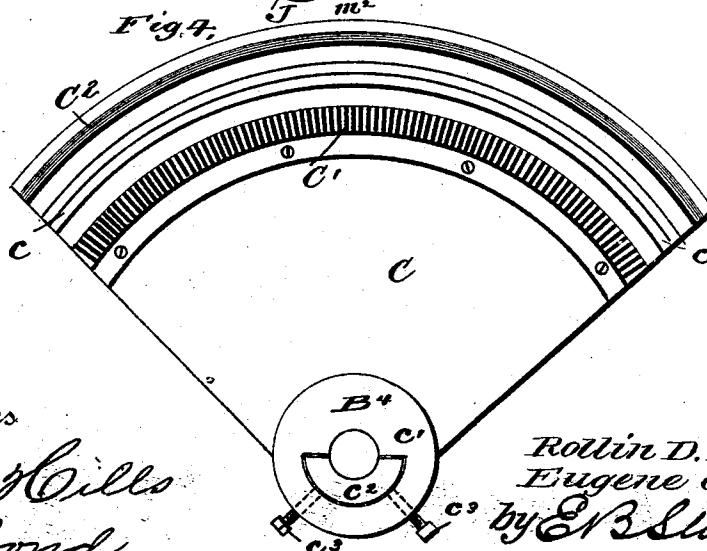
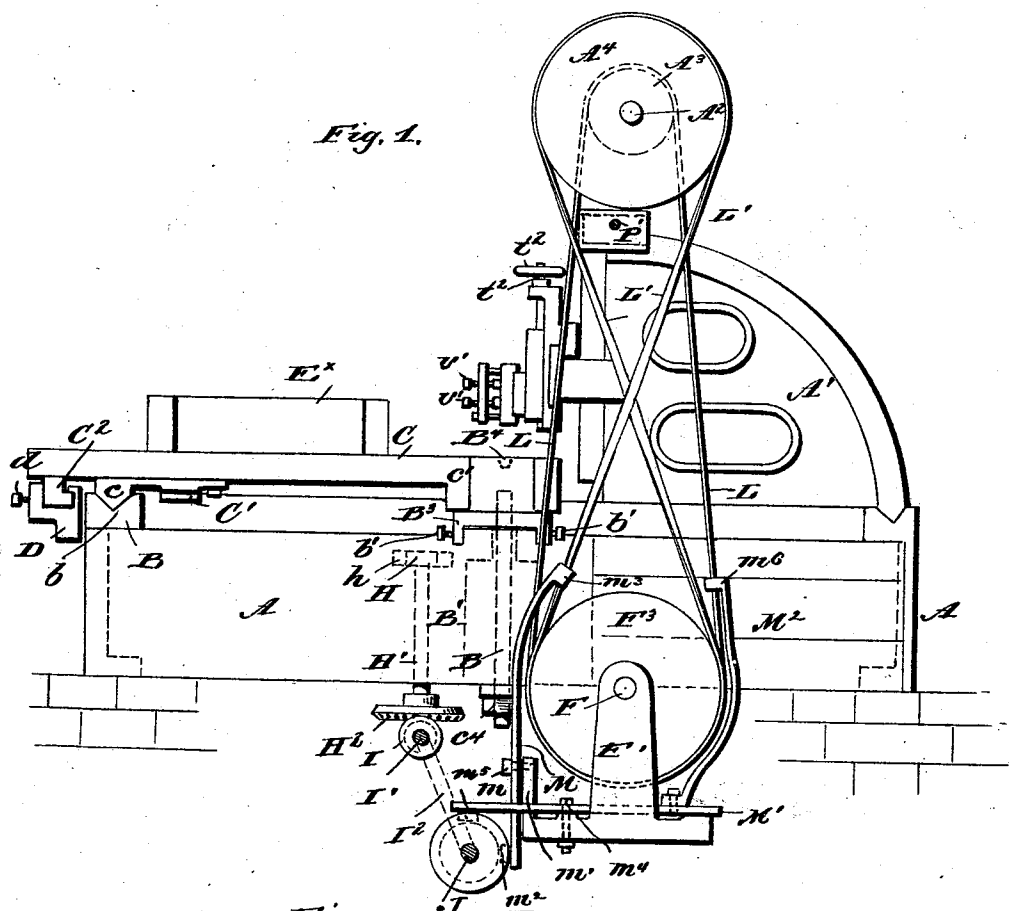
(No Model.)

3 Sheets—Sheet 1.

R. D. FIELD & E. O. PRATT.
STONE WORKING MACHINE.

No. 517,742.

Patented Apr. 3, 1894.



Witnesses
L. C. Hills
E. H. Bond

Inventors
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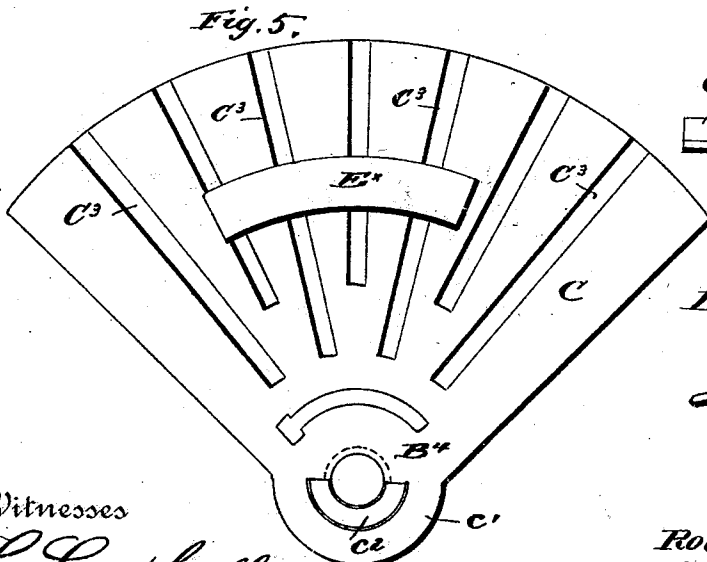
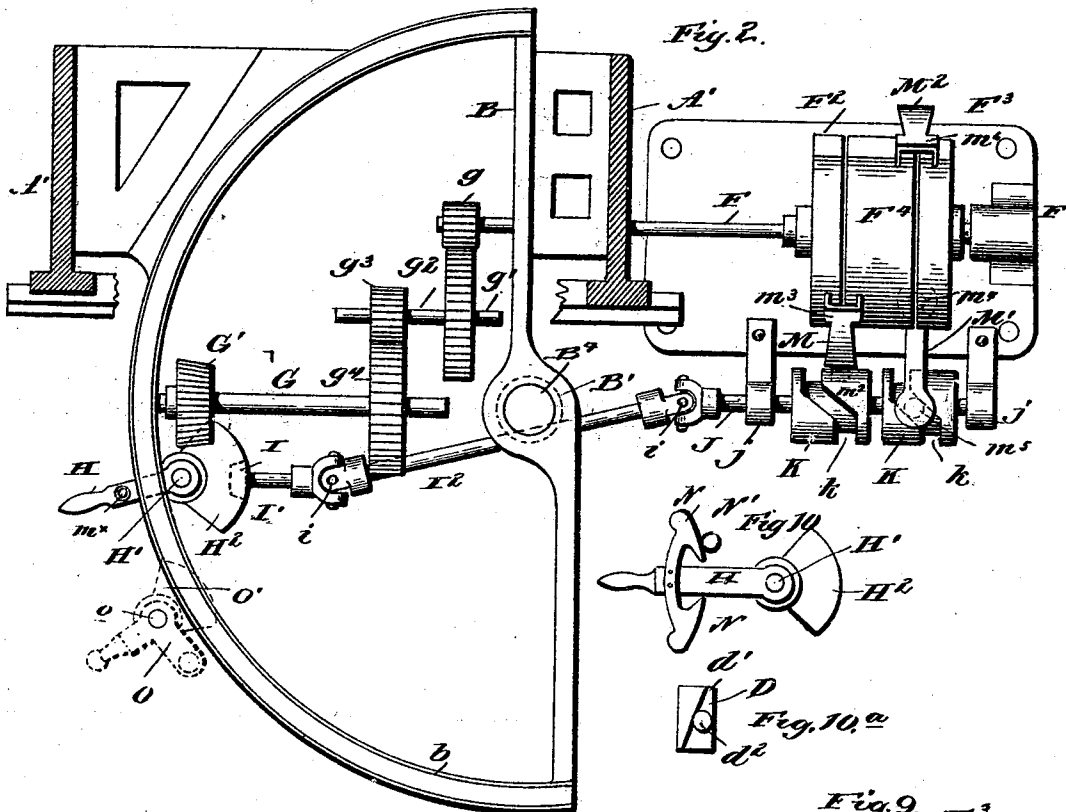
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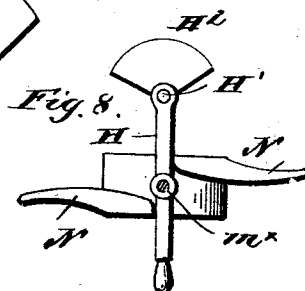
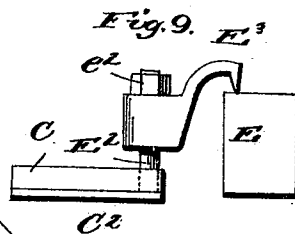
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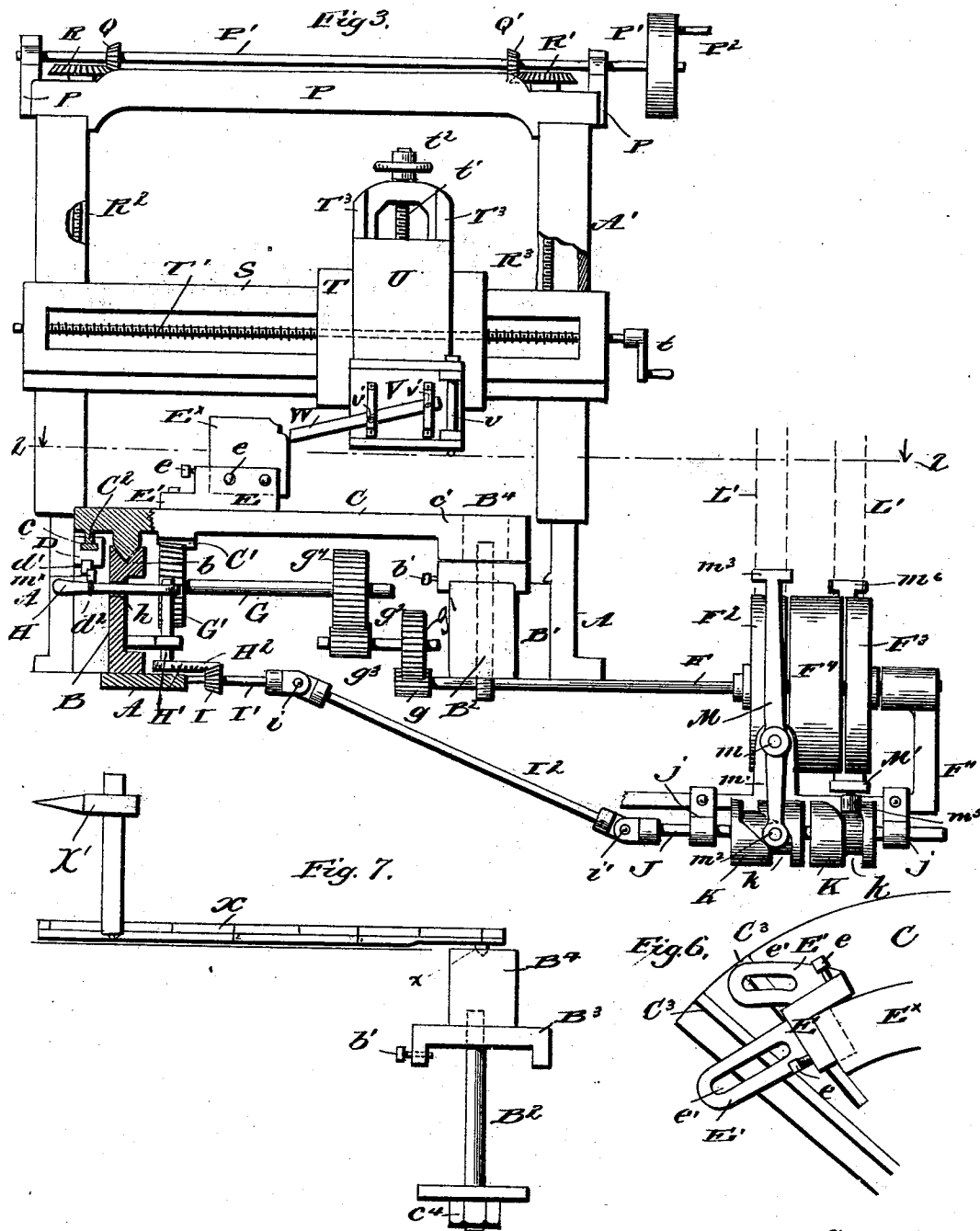
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3 Sheets—Sheet 3.

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UNITED STATES PATENT OFFICE.

ROLLIN D. FIELD AND EUGENE O. PRATT, OF RUTLAND, VERMONT.

STONE-WORKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 517,742, dated April 3, 1894.

Application filed April 20, 1893. Serial No. 471,131. (No model.)

To all whom it may concern:

Be it known that we, ROLLIN D. FIELD and EUGENE O. PRATT, citizens of the United States, residing at Rutland, in the county of Rutland and State of Vermont, have invented certain new and useful improvements in Stone-Working Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to certain new and useful improvements in stone working machines, designed primarily for planing or working or forming moldings or analogous designs upon the stone, upon greater or less arcs, and it has for its objects among others to provide an improved machine in which provision is made for the easy and ready adjustment of the parts for operation upon stones of varying sizes and upon varying arcs.

20 It has for a further object to provide improved belt-shifting devices operating in conjunction with and by devices on the movable table. The belt-shifting devices are so arranged that the belts are shipped one in advance of the other so that the one will leave the tight pulley before the other belt goes on. This is accomplished by the peculiar construction and arrangement of the cams by which the belt-shifter is actuated.

30 Other objects and advantages of the invention will hereinafter appear and the novel features thereof will be specifically defined by the appended claims.

35 The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification, and in which—

Figure 1 is an end view of our improved stone planing machine. Fig. 2 is a section on the line 2—2 of Fig. 3 looking down, with the platen and other parts removed. Fig. 3 is an elevation with parts in section. Fig. 4 is a bottom plan of the platen removed. Fig. 5 is a top plan of the same with a stone shown in position thereon. Fig. 6 is a detail in plan of one form of clamp for holding the stone on the platen. Fig. 7 is a detail in side elevation showing the gage for setting the stone to different circles or arcs on the platen. Fig. 8 is a plan of the shipping dogs. Fig. 9 is a side elevation of one of the clamping dogs. Fig.

10 is a plan of shipping dogs carried by the shipping lever and designed to be actuated by a pin on the platen. Fig. 10^a is a detail showing one of the dogs and the co-operating pin of the shipping lever.

Like letters of reference indicate like parts throughout the several views in which they appear.

Referring now to the details of the drawings by letter, A designates a suitable base or support, from which rise the uprights A'.

A² is a horizontal shaft suitably journaled designed to receive its motion from any suitable source, not shown, and on which shaft are the pulleys A³ and A⁴ as seen in Fig. 1.

Supported upon the base is the substantially semi-circular bed B which is practically hollow as shown to provide space for other parts as will soon appear. This bed has upon the upper face of its curved portion a substantially V-shaped groove *b* as seen best in Fig. 3 in which travels a substantially V-shaped depending rib *c* from the underside of the platen. At the center of the straight side of the bed there is formed a boss B', through which passes the vertical center pin B² held by the clamp B³ which is provided with adjusting screws *b'* on the boss B' and carrying at its upper end a boss B⁴ over which is designed to fit so as to readily revolve thereon the collar *c'* of the platen C. This platen is segmental in shape as seen in Figs. 4 and 5 and this collar is formed at the point representing the center from which the arc is taken and is provided with an adjustable semi-circular box or bearing *c*² as seen best in Fig. 4, set screws *c*³ being provided for permitting the necessary adjustment as is also shown in said Fig. 4. The center pin B² is screw threaded at its lower end and is there provided with a nut *c*⁴ as shown.

Upon the under side of the platen near its outer edge is the depending substantially V-shaped rib *c* which rides in the channel or groove *b* of the bed B as seen in Figs. 1 and 3, and C' is a rack following the curve of the platen and arranged inside the said rib, that is, nearer the center as seen in Figs. 1 and 3. This rack may be integral with the platen as seen in Fig. 3, as may also the rib *c*, or either or both may be made separate therefrom, and

secured thereto in any suitable manner; the rib and rack may be integral with each other if desired, as seen in Fig. 1. Near its outer edge upon the under side the platen is provided with a flange C² as seen in Figs. 1, 3 and 4 which may be L-shaped or T-shaped as shown, it being designed to support the shipper dogs which are adjustable thereon. These dogs may assume any desired form, some of which are shown. As seen in Fig. 1 the dog D consists of a suitable casting having a groove to conform to the shape of the flange and held in its adjusted position by a set screw *d* or any other suitable means. There are to be two of these dogs on the platen, one near one end of the curved side and the other near the other end; they are made adjustable to change the time of shifting of the belts in accordance with the shape and size of the stone being operated upon. These dogs have a cam-shaped portion as seen at *d'* in Fig. 10^a which is designed to engage a pin *d''* on the shipping lever as seen in Fig. 3 to move the latter and through the mechanism hereinafter described shift the belts. The upper face of the platen is provided with a plurality of radial slots or grooves C³ as seen in Fig. 5 for the reception of the clamps which are employed for holding the stone on the same. These clamps may be of any well known or preferred form. As seen in Fig. 6 the clamp consists of the angular portion E adapted to engage the corner of the stone and is provided with set screws *e* for engaging the stone which is represented by E^x and with the horizontal arms E' which are slotted as seen at *e'* through which slots pass suitable means into the grooves for adjustably yet rigidly holding the clamp in place and the stone in position. Another form is shown in Fig. 9 in which the shank E² is held in the groove of the platen and the hook or dog E³ is made adjustable thereon vertically by a nut *e*² to enable it to engage the top of the stone as seen in said Fig. 9.

F is a shaft parallel with the shaft A² and suitably journaled on a lower plane as shown, having a bearing at one end in a standard F' suitably supported, and on this shaft are the loose pulleys F² and F³ and the intermediate fast pulley F⁴.

G is a shaft suitably journaled in a plane parallel with the shaft F and having upon its outer end a bevel pinion G' designed to mesh with the rack C' upon the under side of the platen as seen in Figs. 1 and 3. Motion may be conveyed from the shaft F to the shaft G and the bevel pinion in any suitable manner. In Figs. 2 and 3 we have shown one form of gearing for this purpose; it consists of a small gear *g* on the outer end of the shaft F which meshes with a larger gear *g'* on a shaft *g*² which carries a small pinion or gear *g*³ which meshes with the gear *g*⁴ on the shaft G thereby giving motion to said shaft and to the bevel pinion thereon.

It now remains only to describe the devices

for actuating the belt shifter, and the shifter mechanism itself. It comprises a shipper lever H working through a slot or opening *h* in the curved side of the bed as seen in Figs. 2 and 3, and at its inner end secured to a vertical shaft H' mounted to revolve in suitable bearings within the space inclosed by the bed, and carrying at its lower end a segmental plate H² which is provided upon its under face with bevel gear teeth as seen in Fig. 3 which are designed to mesh with a bevel pinion I carried by the horizontal shaft I', which is journaled in suitable bearings and at its other end is connected by swivel joint or connection *i* with one end of the inclined rod or bar I² the other end of which is similarly connected by swivel joint or connection *i'* with the horizontal shaft J mounted in suitable bearings *j* as seen best in Fig. 3 and fast on this shaft are the collars K provided with the cam grooves *k* as seen best in Figs. 2 and 3, the cam grooves of the two collars being so arranged relatively to each other as seen in Fig. 3 that one is enough ahead of the other to cause the one belt to leave the fast pulley before the other belt moves on to it.

L and L' are the belts, one a straight and the other a crossed belt as seen in Fig. 1; they pass over the pulleys A³ and A⁴ as seen in Fig. 1 and over the pulleys on the shaft F as shown.

M is a lever pivoted at *m* on an upright *m'* and carrying at its lower end a roller *m*² adapted to travel in the spiral groove of one of the collars and at the other end provided with a loop or analogous device *m*³ to receive one of the belts as seen best in Fig. 1.

M' is another lever arranged horizontally and pivoted at *m*⁴, having at one end a roller *m*⁵ adapted to travel in the groove of the other collar as seen in Figs. 1, 2 and 3 and its other end provided with an upwardly-extending arm M² having a loop or analogous provision *m*⁶ to receive the other belt as shown in Figs. 1, 2 and 3.

Instead of having the cams on the platen and a pin on the lever to be engaged thereby as seen in Figs. 2 and 3 in which *m*^x designates the pin on the lever, we may reverse the arrangement, having the pin on the platen and the cams on the shipping lever as seen in Fig. 10 wherein the cams are designated by the letter N, being fast upon the lever in such a position as to be engaged by the pin N' which is supposed to be depending from the under side of the platen and operating upon one cam as the platen moves in one direction, and upon the other cam as the platen moves in the opposite direction. Or, the cams may be of the shape seen in Fig. 8. Or, we may arrange the shipping lever outside the bed as shown by dotted lines in Fig. 2, in which case it will be in the form of a two-armed lever O mounted on the vertical shaft or pin *o* which carries at its lower end the segmental gear O' designed to mesh with the bevel gear I on the shaft I' and to be actu-

ated by a pin on the platen. The shaft I' will of necessity be made somewhat longer than where the shipping lever is arranged inside the bed.

5 P is a cross head secured to the upper ends of the uprights A' as seen in Fig. 3, and mounted in suitable bearings *p* on this cross-head or cap is the horizontal shaft P' provided with a suitable handle P² by which it
10 may be turned when desired to raise or lower the frame carrying the tool or tools. This shaft carries the oppositely disposed bevel gears Q and Q' as seen in Fig. 3, which mesh with the bevel gears R and R' on the screw
15 shafts R² and R³ which are mounted in the tool-carrier frame S which is designed to be moved vertically upon the uprights A' by the turning of the shaft P' as will be readily understood. On this frame is mounted the
20 tool-carrier T which is adapted to be moved horizontally thereon by the screw T' which is extended at one end and provided with a crank handle *t* by which the screw may be turned to move the carrier in either direction
25 desired. In the carrier T is vertically adjustably mounted a slide U which is rendered adjustable by means of a screw rod *t'* with a hand wheel *t''* as seen best in Fig. 3, the slide being movable in guides T³ on the carrier T
30 as shown in said Fig. 3 and also in Fig. 1. On this slide U is pivotally supported on a vertical pivot *v* a plate V upon which is held the tool or cutter W in any suitable manner, being adjustable by means of set screws *v'*
35 as seen in Figs. 1 and 3. By this means the tool can be adjusted to suit the character of work or the size of the stone being operated upon. Other means may be provided for holding the tool or cutter.

40 X, Fig. 7, represents a gage designed for removable placement on the platen for setting the stone to different circles on the platen. It is provided with a centering pin or projection *x* for setting the same and with a clamp or dog X' for engaging the stone to hold the
45 same as will be understood from Fig. 7.

The operation will be readily understood, and is substantially as follows: The stone is placed upon the platen and there held in any
50 of the suitable ways; the tool is adjusted in its support or holder and motion is imparted to the shaft F through the medium of the belts, and this, through the medium of the compound gearing, will impart motion to the
55 bevel pinion G' which meshing with the rack upon the under side of the platen will cause the same to move in the one direction or the other until the belts are shifted by the shipper lever and the means on the platen engaging the same, when the belts are automatically
60 shifted and the motion of the platen reversed.

The tool is adjusted according to the character of the work to be done.

Modifications in detail may be resorted to without departing from the spirit of the invention or sacrificing any of its advantages.
65 The bed may assume other shape than semi-circular; it may be a greater or less segment.

What we claim as new is—

1. The combination with a platen provided
70 with radial slots, of a clamp having an angular body portion and provided with slotted arms extending in different directions from different sides thereof, substantially as specified.
75

2. The combination with a platen provided with radial slots, of a clamp having an angular body portion with integrally slotted arms extending in different directions from different sides thereof and set screws passed
80 through the body portion upon different sides and extended at right angles to said slots, substantially as specified.

3. The combination with a platen and platen operating means, and a belt-shifting mechanism, of a shipper lever provided with a segmental gear for actuating the belt-shifting mechanism, the shaft with its cam grooves, the inclined rod having swivel connection with said shaft and with the shaft of the gear
85 meshing with the segmental gear and cooperating cam and cam-actuating devices interposed between said lever and platen, substantially as specified.
90

4. The combination with the belt-pulleys
95 and the belts, of the shaft with its spiral cams, arranged so that the belt will be removed from one pulley before the other belt is moved thereon, the levers with their rollers working in the grooves of the cams, and
100 carrying belt-engaging devices, the adjustable work holding clamps the platen and intermediate mechanisms for actuating said levers by the movement of the platen, substantially as specified.
105

5. The combination with the shipping lever, of a vertical shaft to which it is secured, a segmental gear carried by said shaft, belt-shifting devices actuated by said gear, a
110 platen, having a rack upon its under side, the cooperating gear actuated from the power shaft and devices intermediate of the platen and said lever whereby the belt-shifting devices are automatically actuated by the movement of the platen, substantially as specified.
115

In testimony whereof we affix our signatures in presence of two witnesses.

ROLLIN D. FIELD.
EUGENE O. PRATT.

Witnesses:

JOHN B. MOORE,
EDMOND G. MASON.