

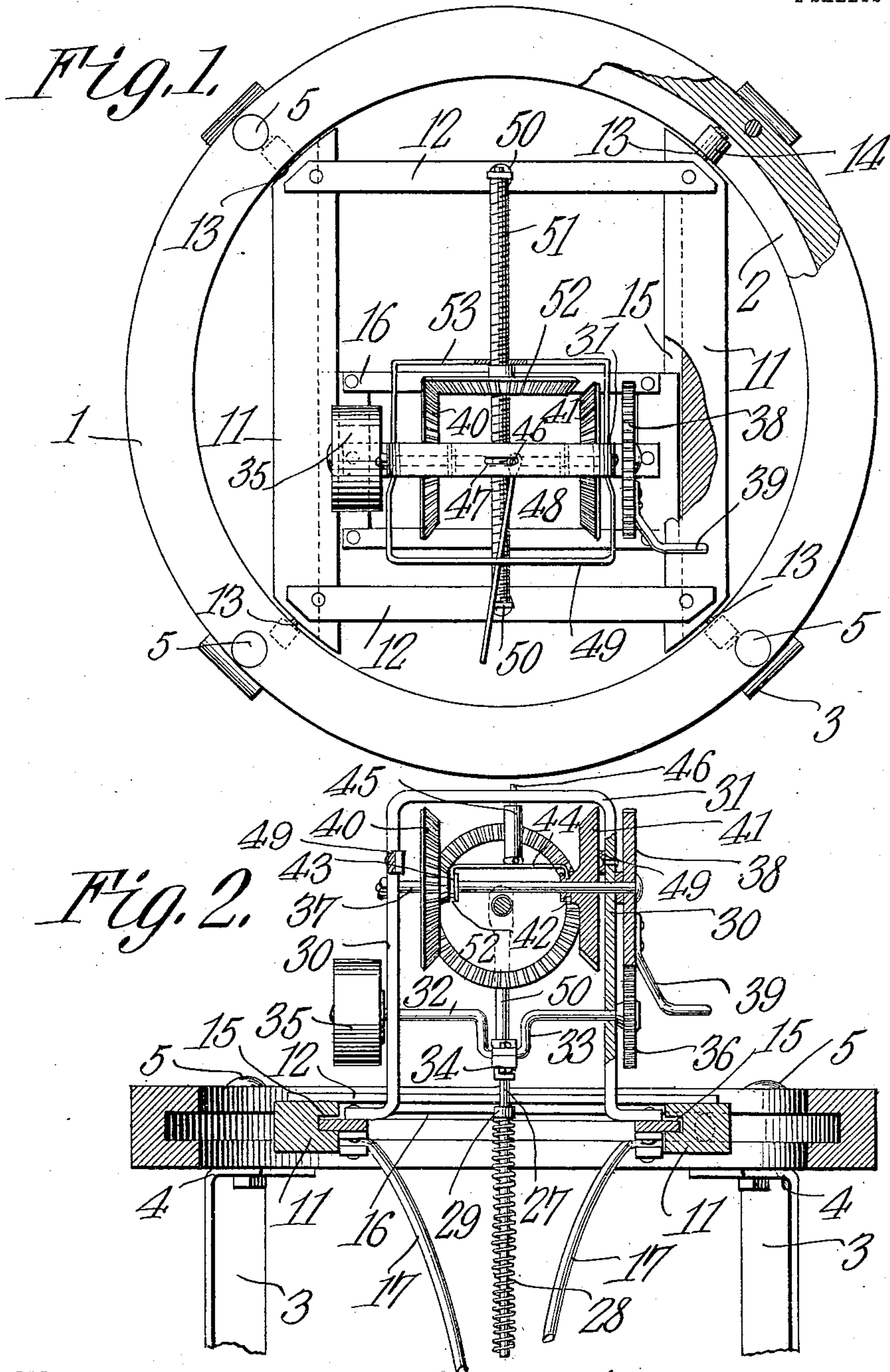
No. 868,090.

PATENTED OCT. 15, 1907.

R. C. HELMS.
MILLSTONE DRESSING MACHINE.

APPLICATION FILED APR. 4, 1907.

2 SHEETS—SHEET 1.



WITNESSES:

E. J. Stewart
F. T. Chapman

Robert C. Helms,

INVENTOR

By

C. A. Snow & Co.

ATTORNEYS

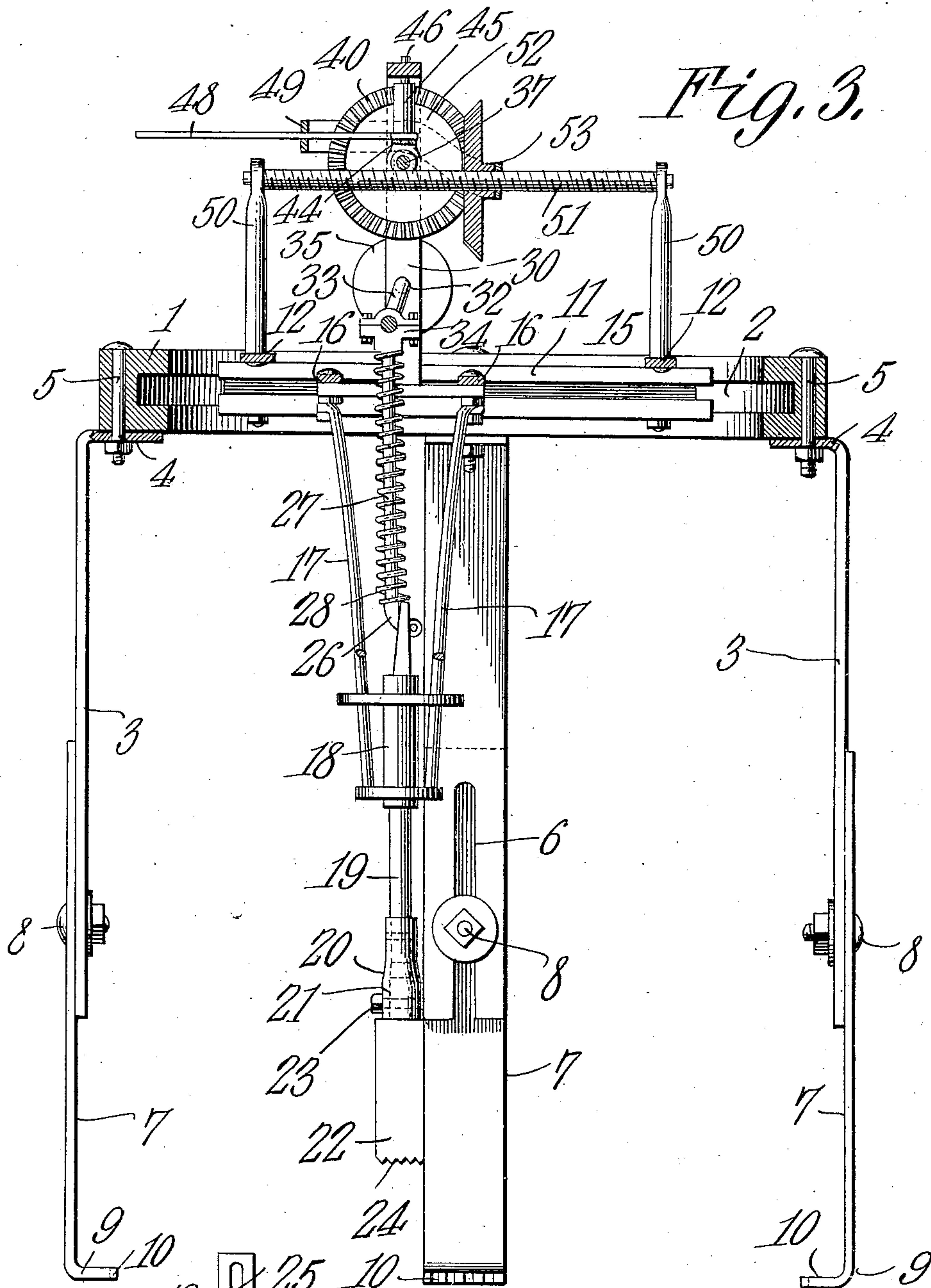
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Fig. 4. By *CA Snow & Co.*
ATTORNEYS

UNITED STATES PATENT OFFICE.

ROBERT C. HELMS; OF DOTHAN, ALABAMA, ASSIGNOR OF ONE-HALF TO HENRY A. PEARCE,
OF DOTHAN, ALABAMA.

MILLSTONE-DRESSING MACHINE.

No. 868,090.

Specification of Letters Patent.

Patented Oct. 15, 1907.

Application filed April 4, 1907. Serial No. 366,362.

To all whom it may concern:

Be it known that I, ROBERT C. HELMS, a citizen of the United States, residing at Dothan, in the county of Houston and State of Alabama, have invented a new and useful Millstone-Dressing Machine, of which the following is a specification.

This invention has reference to improvements in mill-stone dressing machines, and its object is to provide a machine wherein the pick or dressing tool may be brought into operative relation with any face of the stone to be operated upon in any direction so that when the machine is once placed in operative position with relation to the stone the latter may be suitably formed without the necessity of again adjusting the machine.

The invention consists essentially of a suitable frame, preferably circular in outline and supported upon a number of uprights so adjustable as to regulate the distance between the frame and the stone. The circular frame is provided with a circular track upon which is mounted another frame so as to be capable of complete rotation within the main frame or support, and the second frame is provided with a carrier for a pick or dressing tool so arranged as to be fed radially across the circular supporting frame on any radius desired and at the same time cause the tool to strike the stone rapid blows to produce the desired cut on the face thereof in accordance with the configuration wanted.

The invention will be fully understood from the following detailed description taken in connection with the accompanying drawings forming part of this specification, in which,—

Figure 1 is a plan view of the machine, with parts shown in section; Fig. 2 is a vertical section, with parts in elevation and other parts broken away, taken on a line parallel with the drive shaft; Fig. 3 is a vertical section taken on a plane at right angles to the section of Fig. 2, also showing some parts in elevation; and Fig. 4 is a detail view of the upper end of the tool holder rod.

Referring to the drawings, there is shown an annulus 1 constituting the main circular frame of the machine, which frame is approximately the size of the mill-stone it is desired to dress, and since mill-stones are of various sizes, the machines will be made of sizes to conform to the variations in size of the mill-stones. The inner edge of the annulus 1 is provided with an annular groove 2 constituting a circular track which will be hereinafter referred to.

Fast to the frame 1 are two pairs of legs 3 arranged in diametric planes at right angles to each other, and these legs may consist, as shown, of flat strips of metal having their upper ends bent at right angles, as shown at 4, to form supports upon which the frame 2 rests and to which this frame is secured by bolts 5 passing through the frame and the ends 4 of the legs 3. Each leg 3 has its lower end slotted, as shown at 6, and there

receives a supplemental leg or extension 7 fast to the leg 3 by a bolt 8 passing through the slot 6, and the lower ends of these supplemental legs or extensions 7 are turned at right angles, as shown at 9, and have their extreme ends formed with teeth or serrations 10 to bite into or under a mill-stone and so hold the structure in place. By making these legs of flat strips of metal they will be sufficiently elastic to permit of their being spread apart at their lower ends to pass over the edge of a mill-stone and snap against it under the same. Within the circular frame there is another or supporting frame consisting of two side bars 11 and two end bars 12, the frame being practically square in outline.

The ends of the side bars 11 are appropriately curved on a radius struck from the axis of the annulus 1, and from each of these curved ends there projects a pintle 13 carrying a roller 14 adapted to enter the track 2 before mentioned and traveling therein. The frame 11—12 is therefore supported by the frame or annulus 1 and is capable of moving entirely around the same upon the axis of the annulus 1 as a center. The side bars 11 of the frame are provided on their inner faces with longitudinal grooves 15 in which engage the ends of a rectangular frame or carriage 16 capable of longitudinal movement in said supporting frame composed of the bars 11—12.

Fast on the frame 16 near its ends are four pendent hangers 17 carrying at their lower ends a vertically-disposed hollow guide 18 for a vertically reciprocating tool-carrying rod 19 having at its lower end a tool-receiving head 20, the latter being socketed at its lower end for the reception of the stem 21 of a pick or dressing tool 22 held to the socket of the head 20 by a suitable screw or bolt 23. The lower face or end of the tool 22 is provided with cutting teeth 24 of appropriate shape. The tool 22 shown in the drawings is only indicative of the tools or bits that may be used, and it will be understood that the shape of these tools or bits may be varied as desired according to the character of the work they are to perform. The upper end of the reciprocating rod 19 is provided with an elongated slot or eye 25 in which engages one end 26 of a pitman rod 27, which latter is encircled by a helical spring 28. This spring 28 bears at its lower end against the upper end of the tool-carrying rod 19, and at its upper end the spring bears against a fixed collar 29 on the pitman 27. This spring is under normal stress tending to hold the rod 19 in the position where the end 26 engages the upper end wall of the slot 25. When, however, the pitman is actuated as will hereinafter appear to cause the reciprocation of the rod 19, the stoppage of the latter by the engagement of the tool or bit 22 with the face of the stone being dressed will cause the spring 28 to be compressed to an extent permitted by the length of the slot 25 and also by the relation of the extent of downward movement of the pitman 27 to the point in

its downward movement when the bit 22 is stopped by engagement with the mill-stone. This prevents any undue strain of the parts and causes the bit 22 to strike the stone a yielding blow.

5 Mounted upon the frame 16 are two uprights 30 connected by a cross-piece 31. Journaled in the uprights 30 near their lower ends is a power shaft 32 formed at about its middle into a crank 33 to which the pitman 27 is connected by a journal box 34. One end of the
10 power shaft 32 exterior to the corresponding standard 30 carries a belt pulley 35, and the other end of the power shaft exterior to the upright 30 carries a gear pinion 36.

Journaled in the two uprights 30 above the power
15 shaft 32 is another shaft 37 carrying on one end exterior to its corresponding upright 30 a gear wheel 38 meshing with the gear pinion 36 and also provided with a manipulating handle 39.

Mounted upon the shaft 37 for rotation therewith
20 but movable longitudinally thereon are two bevel gear wheels 40—41, each having its hub formed with an annular groove 42 in which engage the respective bifurcated ends 43 of a fork 44 to the center of which is fastened a pin 45 extending upward and having a reduced
25 end 46 extending through a slot 47 in the cross-piece 31 connecting the two standards 30. Connected to the fork 44 at its point of junction with the pin 45 is a lever arm 48 extending through a yoke 49 fast at its two ends to the uprights 30. The lever 48 is movable
30 about its point of passage through the yoke 49 as a fulcrum so that when this lever is moved in one direction the fork 44 will carry the bevel gears one way on the shaft 37, and when the lever is moved in the other direction the bevel gears 40 and 41 will be carried the
35 other way on the shaft.

Erected upon each end bar 12 of the supporting frame about midway of its length is a standard 50, and in these two standards 50 are fixed the ends of a threaded rod 51 carrying a bevel gear wheel 52 having an axial
40 nut formed through its hub, so that this bevel gear wheel, when rotated, will be moved along the rod by the threads thereon. This gear wheel 52 is suitably journaled in a yoke 53 connected to the uprights 30 so that when rotated it will cause the feeding of the
45 frame 16 along its track in the side bars 11.

By power applied through a belt to the pulley 35 or by hand to the crank 39 rotative motion is given to the shaft 37, and by an appropriate movement of the lever 48 one or the other of the bevel wheels 40 and 41 is
50 brought into engagement with the bevel gear 52. This latter then rotating will be fed along the rod 51 in one

direction or the other and will carry the frame 16 with it. At the same time the power crank shaft 32 will cause a reciprocation of the pitman 27 and through it of the tool-carrying rod 19 and the tool 22 on the end
55 thereof so that the tool will be caused to engage the mill-stone along a radial line, and by suitably turning the frame 11—12 on its vertical axis the entire surface of the mill-stone may be reached. Also, the cuts produced by the dressing tool may extend all the way
60 across the stone or part of the way across according to the wish of the operator who, by suitably manipulating the lever 48 and by turning the frame 11—12 may direct the cutting of the face of the stone by the tool or bit 22 in any manner that he desires. 65

I claim:—

1. A mill-stone dressing machine comprising a suitable support, a frame therein rotatable in a horizontal plane on a vertical axis, another frame movable radially across said first-named frame with relation to its axis of rotation,
70 a power shaft carried by said last-named frame, a bit or dressing tool carried by said last-named frame, connections between the bit or dressing tool and the power shaft for reciprocating the tool, and feeding means between the power shaft and the rotatable frame for causing the progressive feeding of the second frame across the rotatable frame during the reciprocation of the bit or dressing tool. 75

2. A mill-stone dressing machine comprising a support provided with a circular track, a frame supported by said track and rotatable in a horizontal plane about a vertical
80 axis, another frame supported by the rotatable frame and movable across the latter in a line radial to the axis of the rotatable frame, a milling tool or bit and actuating means therefor carried by the radially movable frame, and feeding means for the radially movable frame comprising
85 a fixed screw carried by the rotatable frame, a bevel gear on said screw, a shaft carried by the radially movable frame, bevel gear wheels mounted on said shaft, means for moving either but not both of said gear wheels into mesh with the gear wheel on the screw, and connections between the tool-actuating means and the shaft carrying the bevel gear. 90

3. A mill-stone dressing machine comprising a frame, adjustable legs or supports for the same, another frame rotatably supported by the first frame, a third frame
95 movable in said second frame in a line radial to the axis thereof, a reciprocating holder for a stone-dressing tool or bit carried by the sliding frame, actuating means for the tool holder carried by the sliding frame, a feeding means for the sliding frame carried by the rotatable
100 frame, and gearing carried by the sliding frame connected to the tool-actuating means and connectible to the feeding means to feed the frame in either direction.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two
105 witnesses.

ROBERT C. HELMS.

Witnesses:

LESLIE LONG,
C. E. HARMON.