

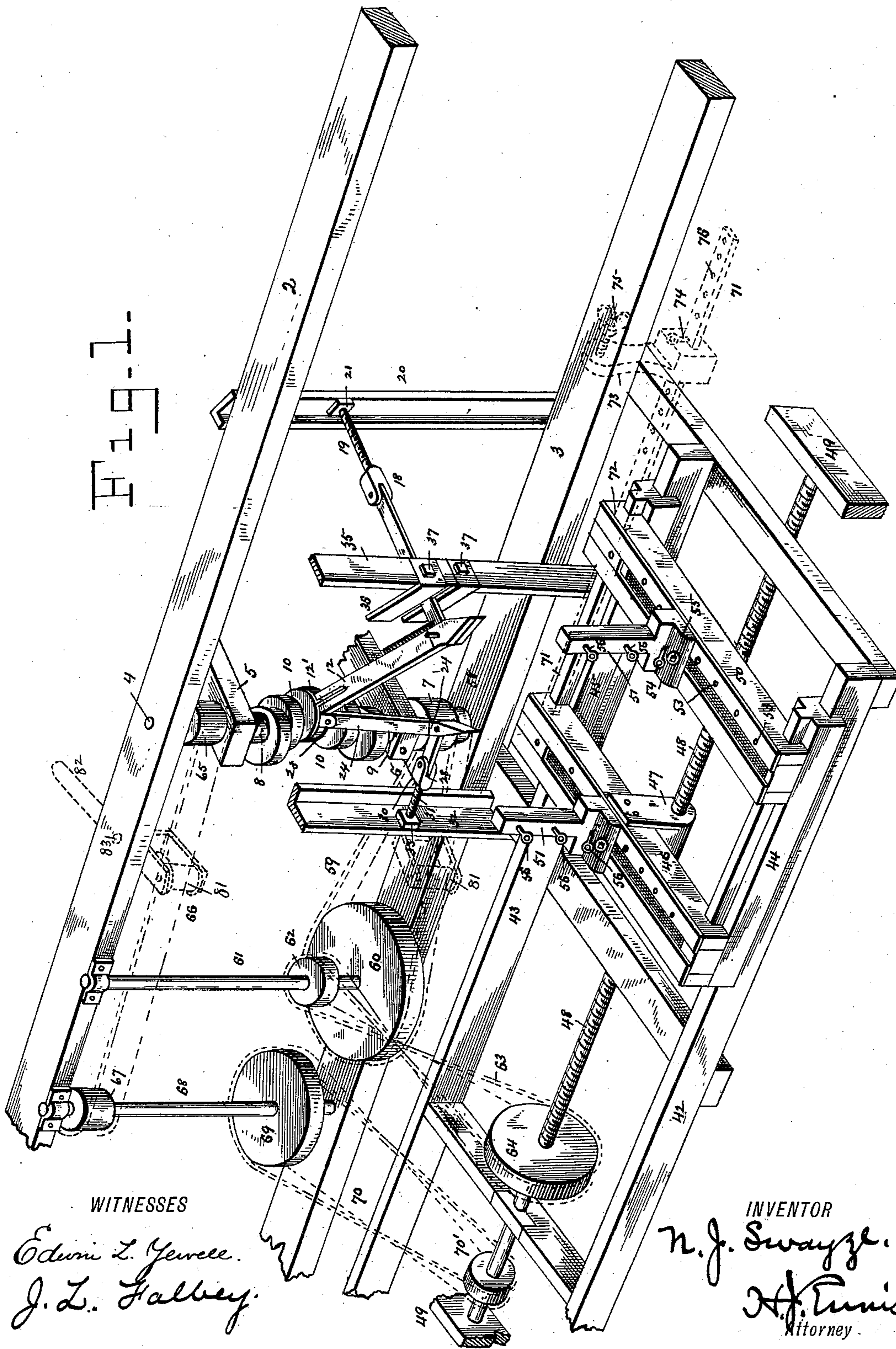
(No Model.)

4 Sheets—Sheet 1.

N. J. SWAYZE.
STONE DRESSING MACHINE.

No. 298,132.

Patented May 6, 1884.



(No Model.)

4 Sheets—Sheet 2.

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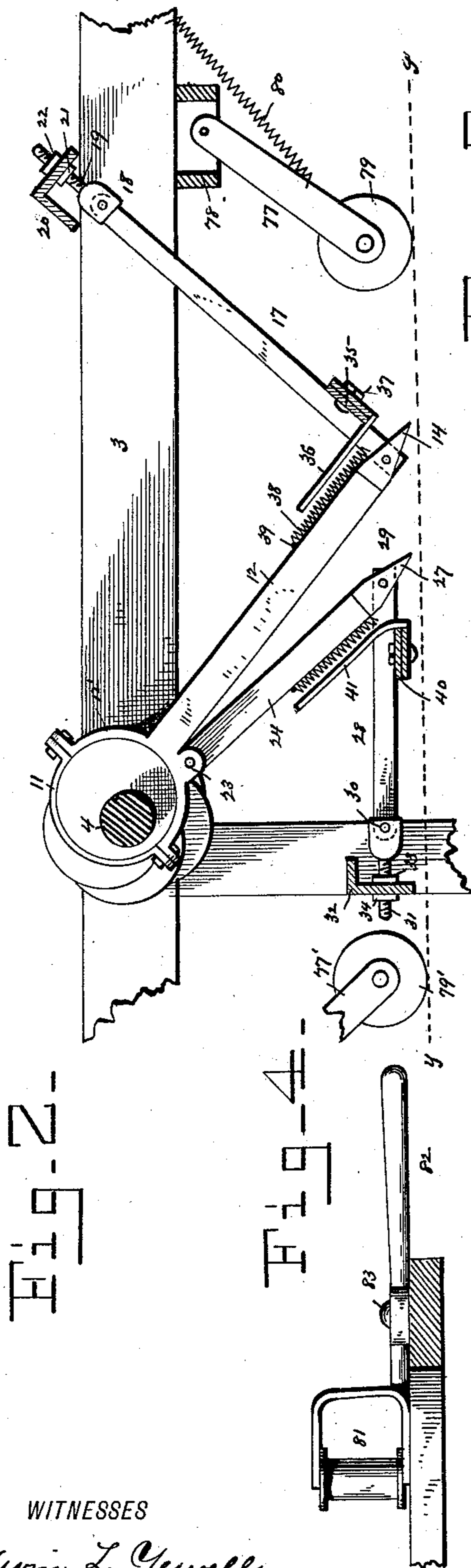
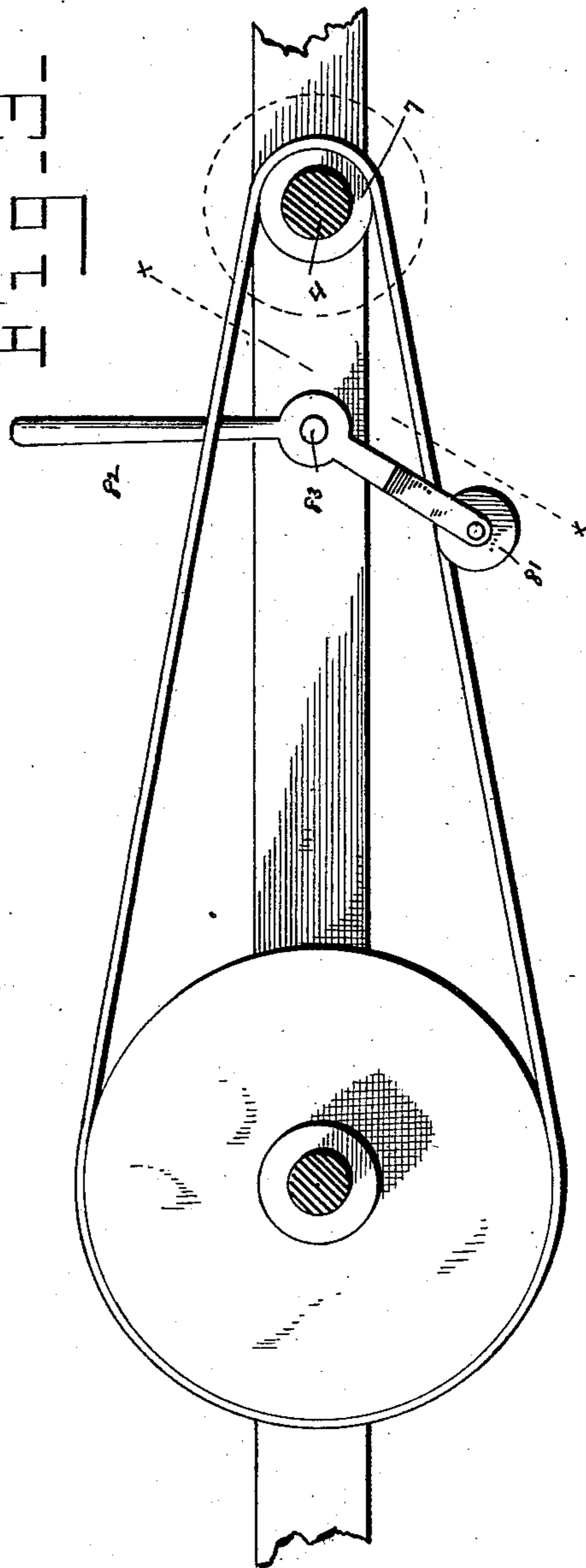


Fig. 2-

Fig. 4-



WITNESSES

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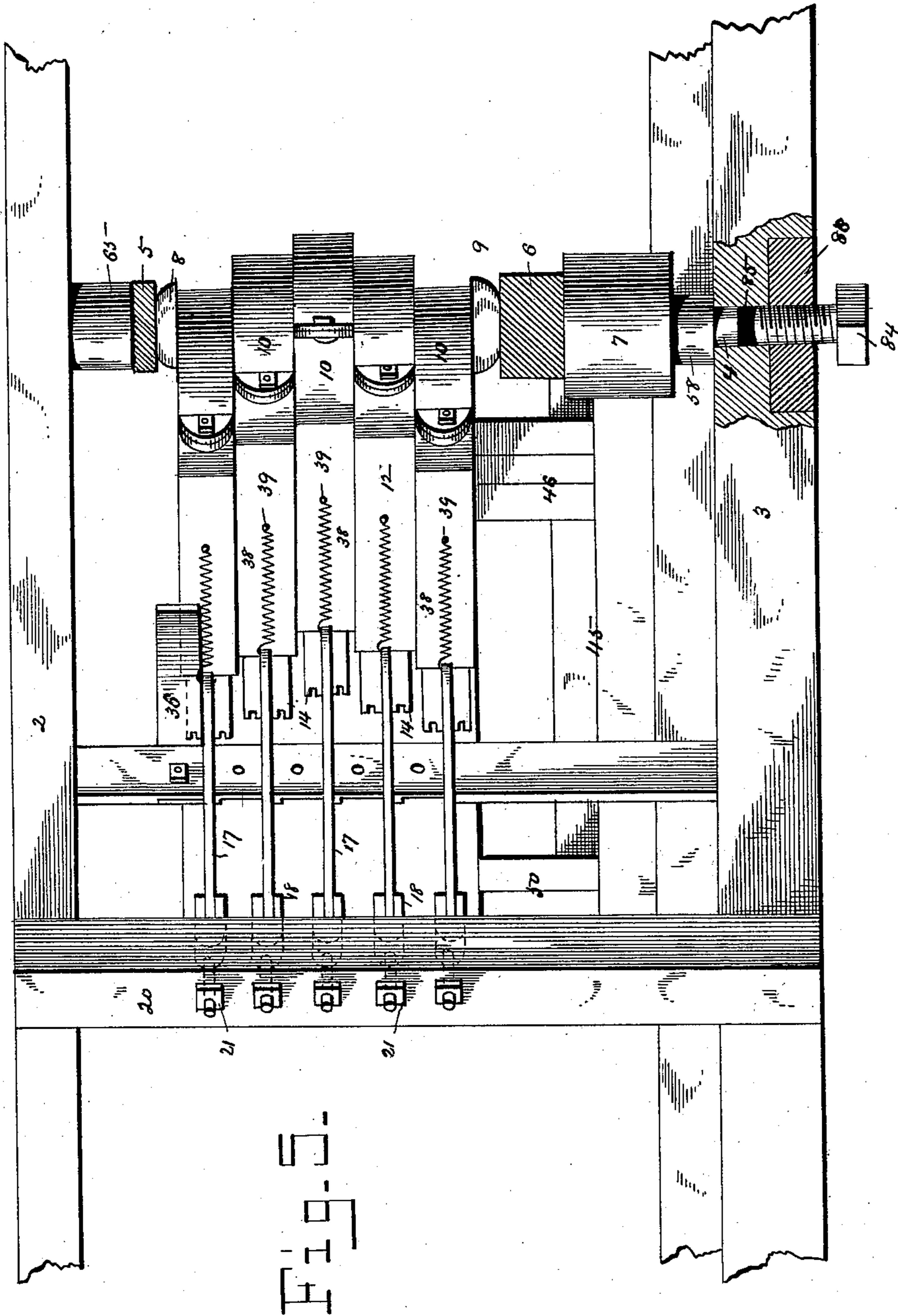
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Fig. 6.

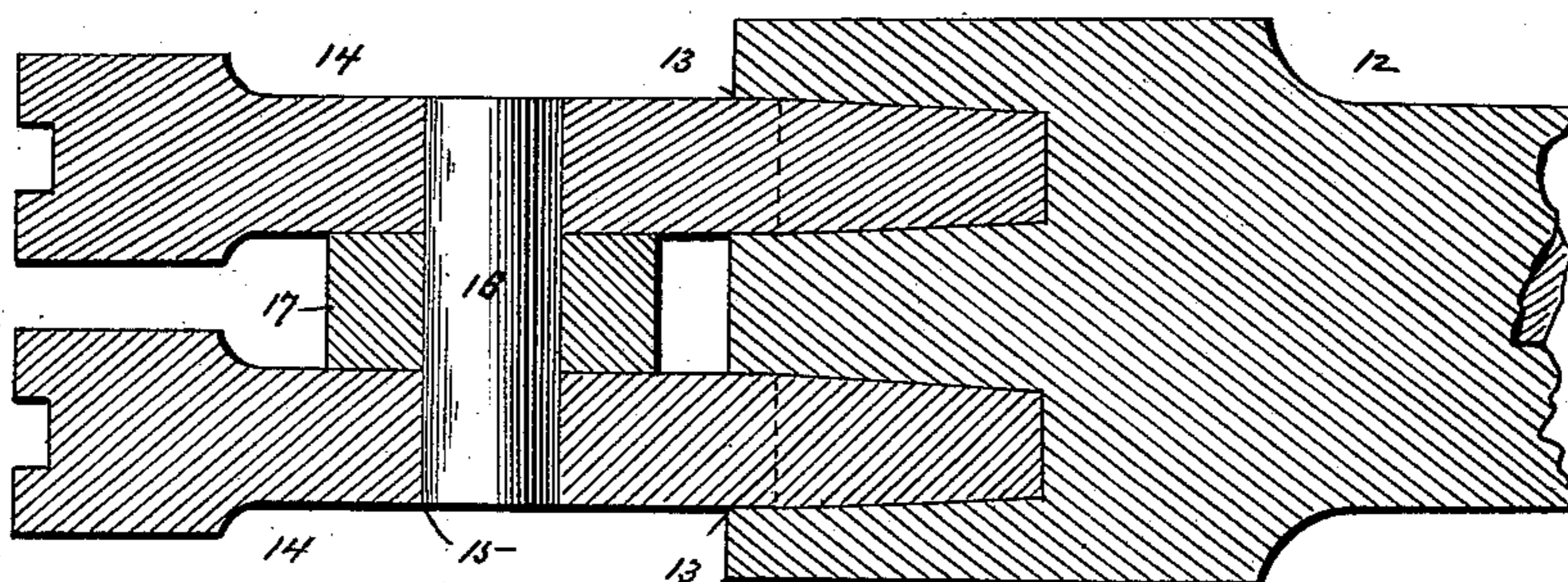


Fig. 7.

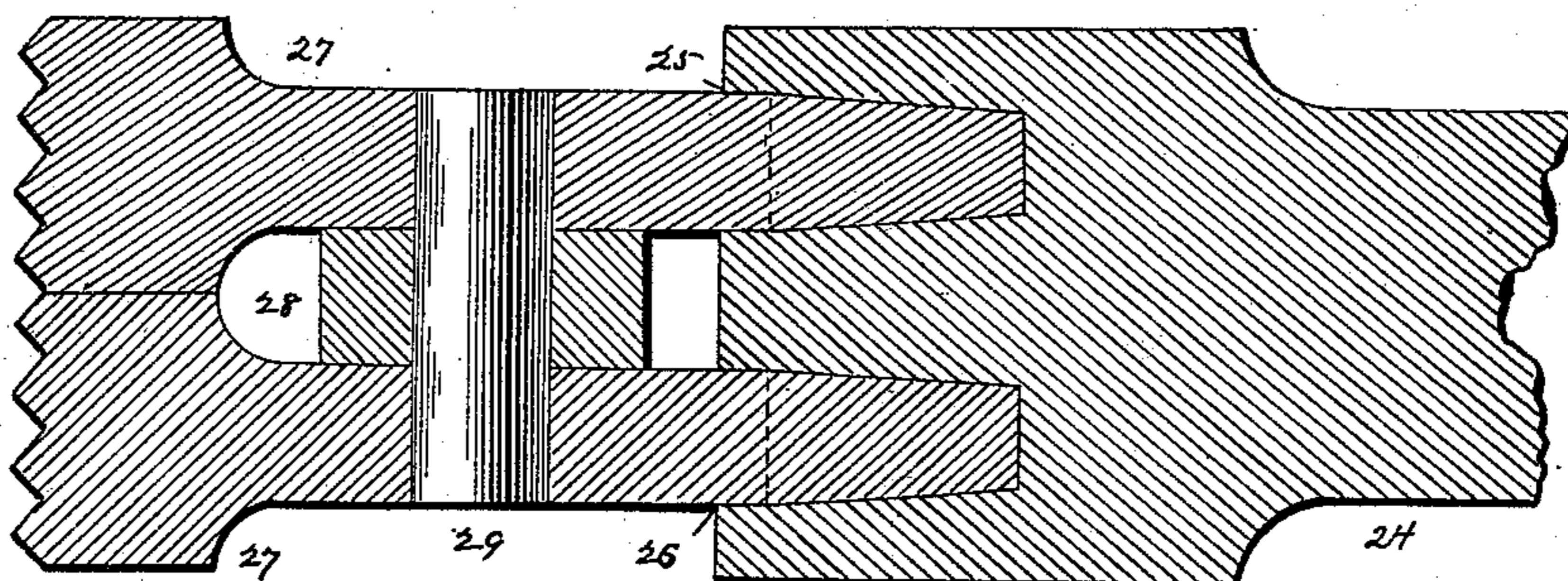
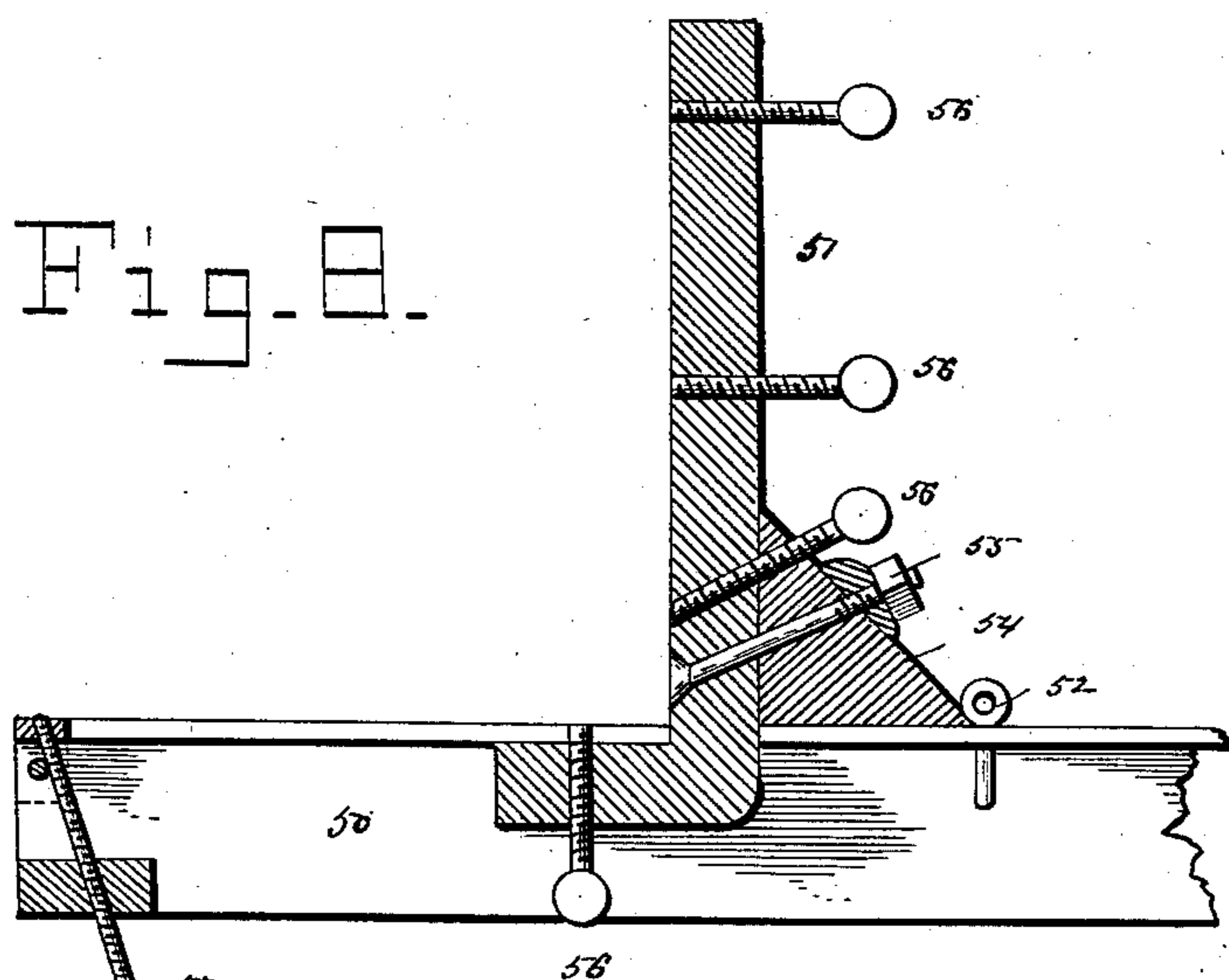


Fig. 8.



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UNITED STATES PATENT OFFICE.

NELSON J. SWAYZE, OF COTTONWOOD FALLS, KANSAS.

STONE-DRESSING MACHINE.

SPECIFICATION forming part of Letters Patent No. 298,132, dated May 6, 1884.

Application filed February 14, 1884. (No model.)

To all whom it may concern:

Be it known that I, NELSON J. SWAYZE, a citizen of the United States, residing at Cottonwood Falls, in the county of Chase and State of Kansas, have invented certain new and useful Improvements in Stone-Dressing Machines; and I do 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 appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention has relation to stone-dressing machinery; and its object is to take the rough blocks and rapidly and expeditiously dress or plane them to given sizes; and to that end the novelty consists in the construction, combination, and arrangement of the machine, as will be hereinafter more fully described, and particularly pointed out in the claims.

In the accompanying drawings the same letters of reference indicate the same parts of the invention.

Figure 1 is a perspective view of my improved stone-dressing machine, showing the relative position of parts. Fig. 2 is a horizontal section of the main operating-shaft between two of the eccentrics. Fig. 3 is a plan view of the main driving-shaft, with belt to the operating-shaft, and showing the belt-tightener in position; and Fig. 4 is a section on the line *x x* of Fig. 3, showing the said tightener in elevation. Fig. 5 is an elevation of the main operating-shaft and its connected mechanism. Fig. 6 is a section of one of the forward chisel-arms with the roughing-chisels in place. Fig. 7 is a similar view of the finishing or "bush-hammer" chisels, and Fig. 8 is a section of one of the carriage-standards.

2 and 3 are heavy timbers, suitably erected to form a frame corresponding to the size of the machine.

4 is the main operating-shaft, and it is mounted in suitable bearing-boxes, 5 and 6, secured to timbers. (Not shown, but which are rigidly attached to the frame 2 and 3.) The shaft 4 is provided with a pulley, 7, which drives it by a belt (not shown) from the engine.

8 and 9 are collars upon the shaft 4, and 10 are a series of eccentrics, said shaft, collars, and eccentrics being forged or cast in one piece and afterward finished. This obviates keying or otherwise securing them to the shaft, and consequently all danger of their working loose is avoided. Each eccentric 10 is provided with a strap, 11, the lower half, 12, of which is cast integral with the cutter-arm 12, and the end of the arm 12 has two socket-holes, 13, which receive the taper ends of the cutter-bits 14, which have transverse holes 15, through which are inserted the ends of the stud 16, rigidly secured to the lower end of the pitman 17, and the upper end of this pitman is pivoted in the socket 18 on the regulating-screw 19, adjustably secured to the girder 20 by nuts 21 22. The object of this arrangement is to regulate the depth of the cut to be taken by the bits 14, for it will readily be seen that by adjusting the pitman 17 by means of the screw 19 and nuts 21 22 the bits 14 will be raised or lowered and will cut more or less, as required.

23 is a socket cast upon the lower half, 12, of the eccentric-straps, and pivoted to it is a finishing-cutter arm, 24, which follows behind the roughing-cutters above mentioned, and the lower end of this arm is provided with taper socket-holes 25 26, which receive the correspondingly-shaped ends of the finishing-cutters 27.

28 is a pitman having rigidly secured to its end a stud, 29, which receives the cutters 27, and its other end is hinged to a socket, 30, formed integral with the regulating-screw 31, passing through the girder 32, and provided with adjusting-nuts 33 34.

35 is a bar extending across the frame from side to side, and it is provided with a series of angle-guards, 36, secured thereto by bolts 37 in such a manner that a guard extends between each pair of the pitmen 17, so as to prevent any lateral play of the cutter-arm 12. One end of a spiral spring, 38, is connected to the lower end of the pitman 17, and its other end to a stud, 39, upon the cutter-arm 12, which serves to keep the cutter-bits in place. A bar, 40, is likewise secured to the frame-work, and it is provided with angle-guards 41, which extend between each pair of the pitmen 28, to prevent any lateral play of the finishing-cutters.

42 and 43 are rails, upon which slide the bed-pieces 44 45, and upon the tops of these bed-pieces at one end is secured a cross-rail, 46, to the under side of which is secured a screw-box, 47, through which passes the feed-screw 48, which is suitably mounted in boxes secured to the frame-work 49. A similar cross-rail, 50, is mounted upon the bed-pieces 44 and 45, so as to be adjusted with reference to the rigid rail 46, and this may be moved to or fro to correspond to the size of the stone to be cut.

51 51 are standards upon the cross-rails 46 50, and may be adjusted thereon by means of the eye-pin 52 being set in the holes 53, said pin acting as a stop against the angle-brace block 54, extending across the rails and rigidly secured to the standard by the bolt 55.

56 56 are adjusting-screws on the standard, and serve to adjust the stone and form a firm bed for it when its surface is irregular. A similar adjusting-screw, 57, is mounted in the forward ends of the cross-rails 46 50, to furnish a bearing for the forward edge of the stone under the same condition. Of course, after one side of the stone has been dressed, these adjusting-screws are not necessary, as the dressed side rests evenly upon the carriage, and they are then turned so that their ends are below the level of the carriage and standards.

58 is a pulley on the shaft 4, from which a belt, 59, runs to the pulley 60 on the counter-shaft 61, journaled in boxes on the timbers 2 and 3. Upon this shaft 61 is a smaller pulley, 62, from which a cross-belt, 63, runs to a pulley, 64, on the feed-screw 48, and when the main shaft 4 is set in motion the carriage is moved forward.

65 is a pulley on the shaft 4, from which a belt, 66, runs to the pulley 67 on the counter-shaft 68, journaled in boxes upon the timbers 2 and 3. On the lower end of this shaft 68 is a large pulley, 69, having a cross-belt, 70, to the smaller pulley 70' on the feed-screw 48. The proportions of these pulleys are such that in practice the stone will be fed forward at a speed of, say, twelve to eighteen inches per minute, in proportion to the solidity of the stone, and it will be run back to take a new cut at, say, twenty or thirty times the speed that it is fed forward; and, likewise, the general proportions of the various parts of the machine will be varied according to the size of the machine and the kind of work it is to perform. In Fig. 1 I have only shown a single pair of cutting-arms, to avoid complication; and in the plan view I have shown five sets of them, of course it being understood that the number of these cutters will correspond, as above indicated, to the rest of the machine.

71 is a bar, one end of which is rigidly secured to the cross-rails 46, and it passes through an opening, 72, in the rail 50, and extending a suitable distance beyond. 73 is an adjustable standard sliding upon the bar 71, and it may be secured at any desired point by the pin 74 in one of the holes 76.

75 is an adjusting-screw in the top of the standard, to bear against the end of the stone.

88 is a nut in the beam 3, through which passes a stud, 81, on the end of which is a loose steel disk, 85, which forms a thrust-bearing for the end of the shaft 4.

The belts 63 and 70 are provided with tighteners, (not shown,) which are similar to the one 82 shown in Fig. 4, which consists of a flanged roller, 81, mounted in frame 82 and pivoted to the timber by screw-bolt 83.

In Fig. 2 the line Y Y represents the surface of the stone, and 79 is a roller which bears against the face of the stone. This roller is journaled in a frame, 77, hinged to the cross-timber 78, and a spiral spring, 80, serves to keep it in contact with the face of the stone, and thereby keep the stone rigidly against the standards 51 51. A similar roller, 79', is mounted in a similar frame, 77', and it operates in the same manner as the roller 79.

In operating the machine the carriage is first adjusted to suit the size of the stone about to be dressed, and the stone is then placed thereon and made solid by means of the adjusting-screws 56, 57, and 75. The regulating-screws 19 and 31 are then adjusted so that the cutters 14 and 27 are all uniform, and the belt from the engine to the pulley 7 is tightened, which starts the shaft 4 revolving and sets the cutters in motion. At the same time the belt 63 is tightened, which starts the carriage forward. While the carriage is being moved forward, the belt 70 is slack. While the stone is being fed forward, the cutters 14 cut the surface nearly to the proper size, and the following bush-hammer bits 27 take off a light cut for finishing. After the finishing-bits have reached the end of the stone, the belt 63 is slackened and the other belt, 70, tightened, which rapidly runs the carriage back to the starting-point, where another cut may be taken, or the stone turned and a new surface presented for cutting.

In practice the bed of the machine is suitably built upon a bed of masonry in such a manner that the rails 46 and 50 are at an angle of about fifteen degrees. This allows the spalls to fall by gravity to the ground. Consequently the surface of the stone is kept clean and the labor of one hand dispensed with.

Where irregular work is to be done—such as recessing, molding, or paneling the surface of the stone—the cutter-bits are adjusted one below the other, to correspond to the design to be cut; and in fluting or otherwise ornamenting the stone, the plane-bits are removed from the cutter-arms, and fluting or molding bits inserted; and by varying the shape of the bits and regulating the depth of their cutting it will readily be seen that any variety of work can be performed.

In practice the main operating-shaft is set at an angle of about ninety degrees to the carriage; but this will be varied, under certain conditions, to suit a particular kind of work, should occasion require—as, for instance, in

cutting window-sills or other work which requires the sides and base to be right-angular, while the top is sloping. In some cases this may be accomplished by elevating the end of the stone by the adjusting-screws 57, and in others the position of the shaft 4 may be varied, as before set forth.

Having thus fully described my invention, what I claim as new and useful, and desire to secure by Letters Patent of the United States, is—

1. In a stone-dressing machine, a main operating-shaft provided with a series of eccentrics having arms 12, and pitmen 17, having one end pivoted to the cutter-arms, and the other end pivoted to the frame of the machine, substantially as and for the purpose set forth.

2. In a stone-dressing machine, a main operating-shaft provided with a series of eccentrics having cutting-arms 12, and pitmen 17, pivoted to the cutting-arms, and having adjustable screws 19, secured to a fixed part of the frame, as and for the purposes set forth.

3. The combination, with the shaft 4, eccentric 10, and cutter-arm 12, of the pitman 17, one end connected to the cutter-arms and the other to the frame, and having guards 36 on each side thereof, as and for the purpose set forth.

4. The combination, with the shaft 4, having eccentric 10, provided with a cutter-arm, 12, having removable bits 14, secured to the lower ends thereof, of the pitman 17, having one end pivoted to said arm, and the other to the girder 20, and provided with spring 38, as and for the purposes set forth.

5. The combination, with the shaft 4, and eccentric 10, and cutter-arm 12, having removable bits 14 secured thereto, of the pitman 17, one end of which is secured to said arm, and the other end to the adjusting-screw 19, mounted in the girder 20, and having the spring 38, removably secured to the lower end of said pitman, as and for the purposes set forth.

6. The combination, with the main shaft 4, having pulleys 58 65, and eccentric 10, rigidly secured thereto, of the cutter-arm 12, secured to said eccentric, and provided with pitman 17, its lower end connected to said arm, and its upper end to the adjusting-screw 19, secured to the frame.

In testimony whereof I affix my signature in presence of two witnesses.

NELSON J. SWAYZE.

Witnesses:

CHAS. H. BAKER,
H. J. ENNIS.