

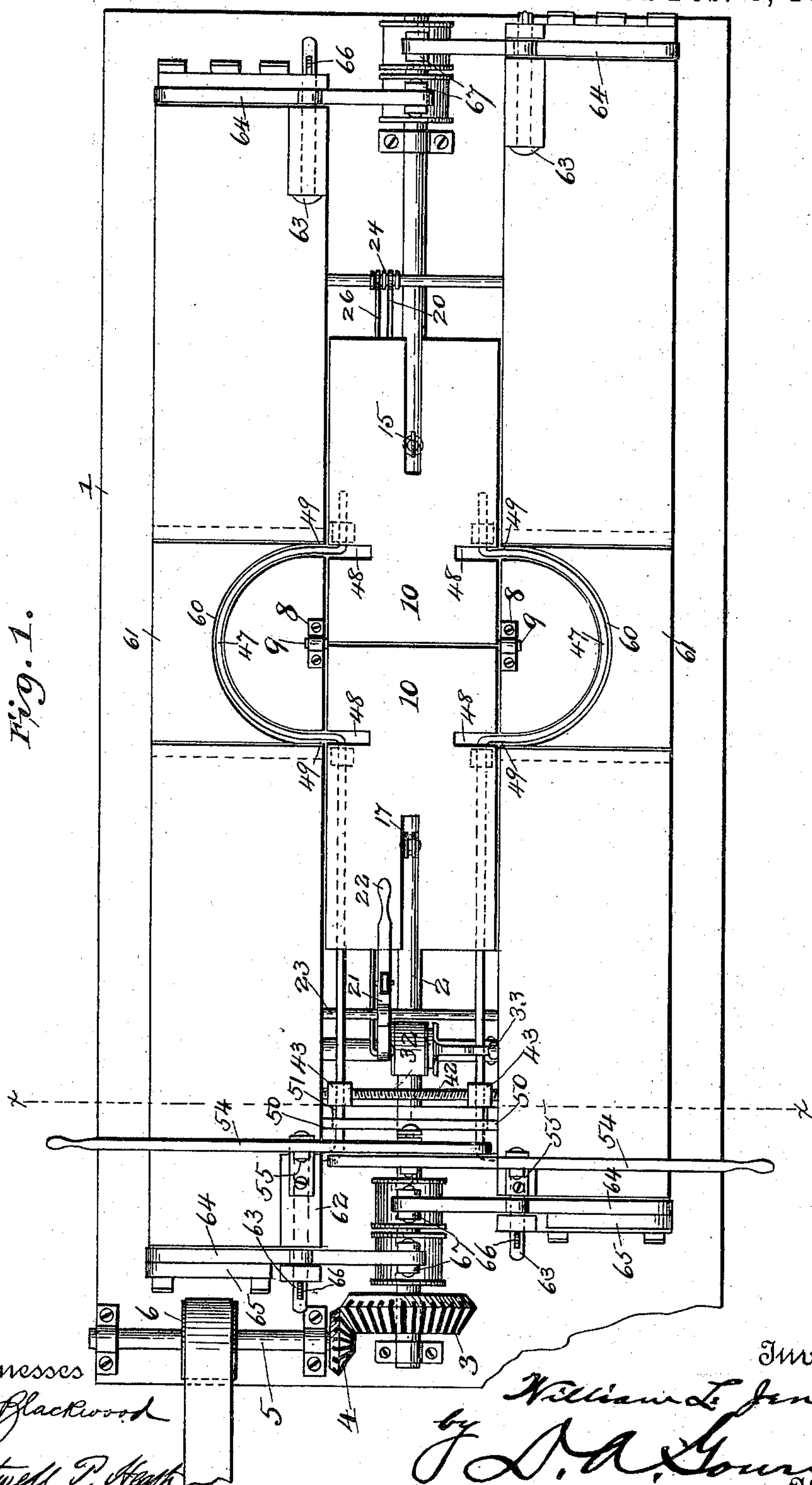
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4 Sheets—Sheet 1

W. L. JENKINS.
MACHINE FOR DOUBLING METAL PLATES.

No. 598,663.

Patented Feb. 8, 1898.



Witnesses
Jas. H. Blackwood
Hartwell P. Heath

Inventor
William L. Jenkins
by
J. D. A. Tourick
Attorney

(No Model.)

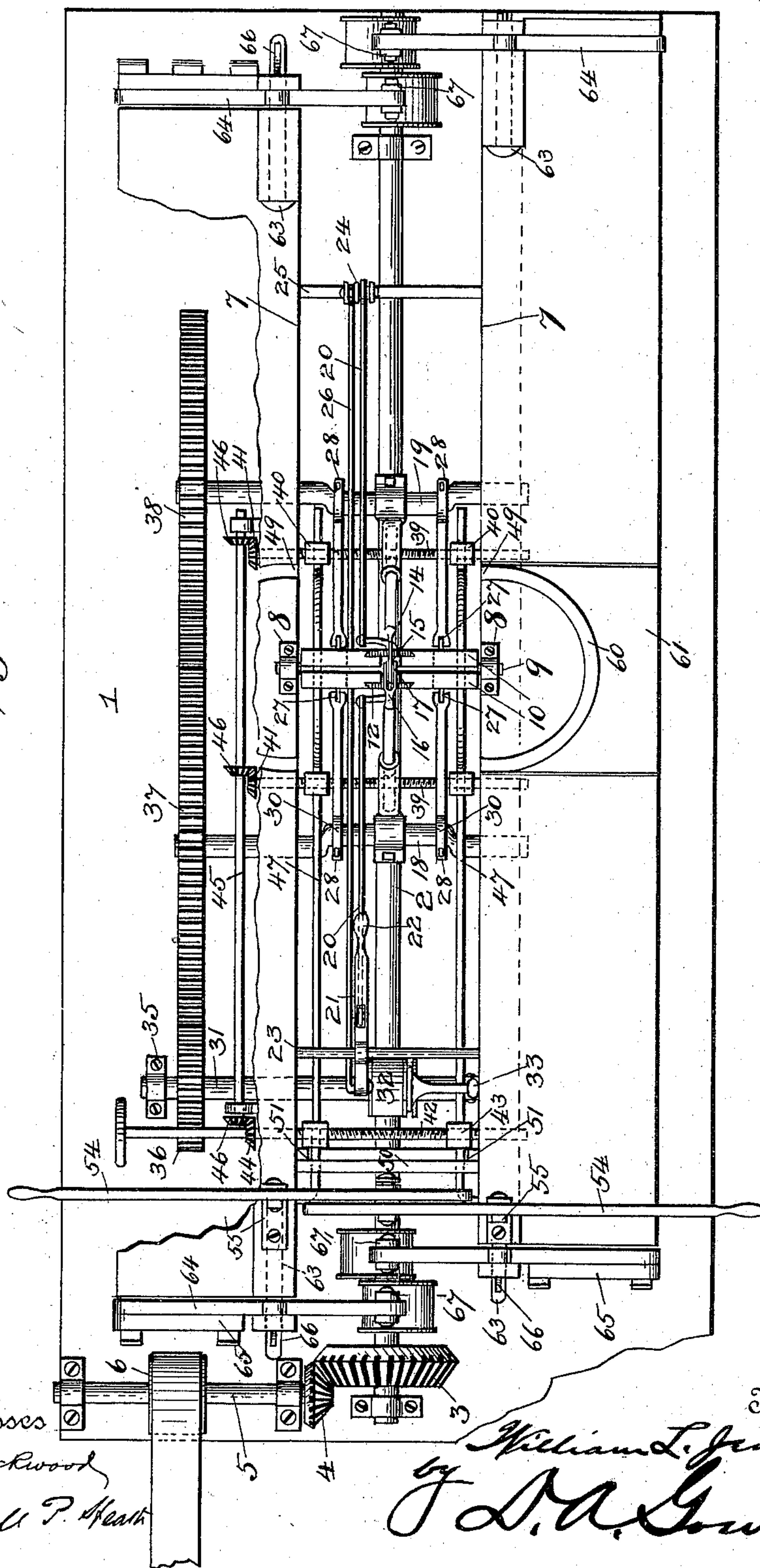
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Fig. 2.



Witnesses
 Jas H. Blackwood
 Hartwell P. Heath

Inventor
William L. Jenkins
by
J. A. Gorrick
Attorney

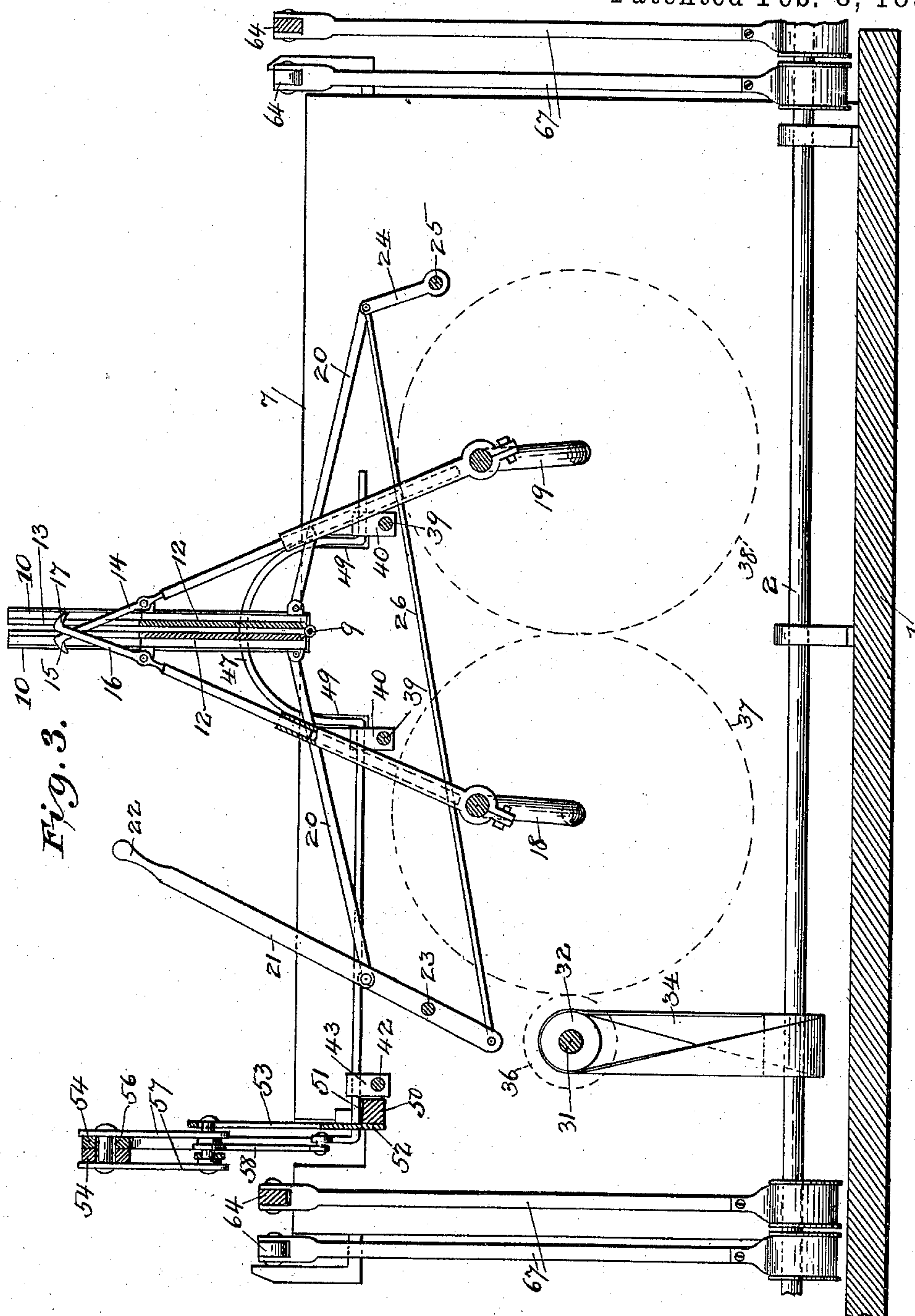
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Jas. H. Blackwood
Hartwell P. Heath

Inventor
William L. Jenkins
by J. A. Gourick
Attorney

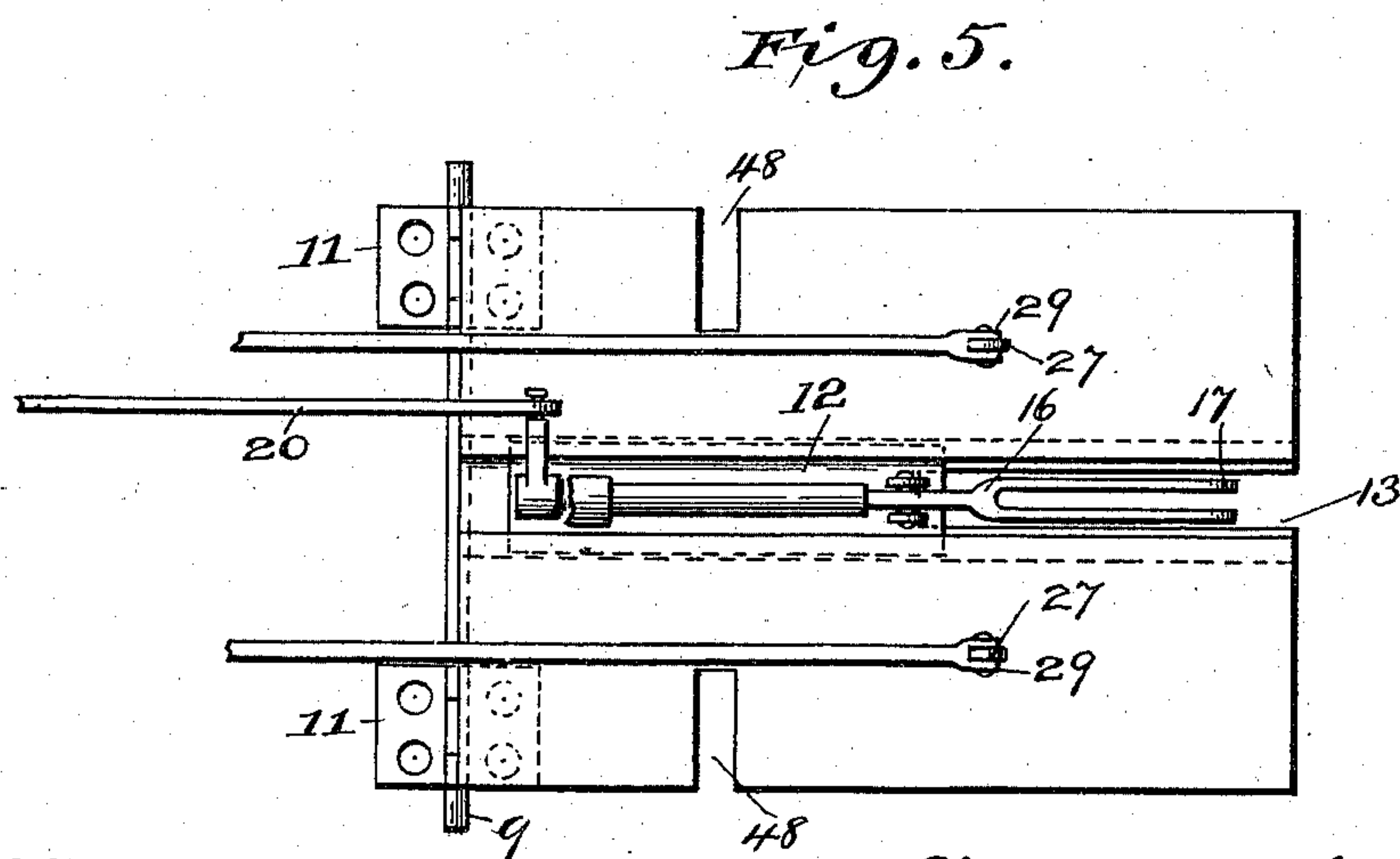
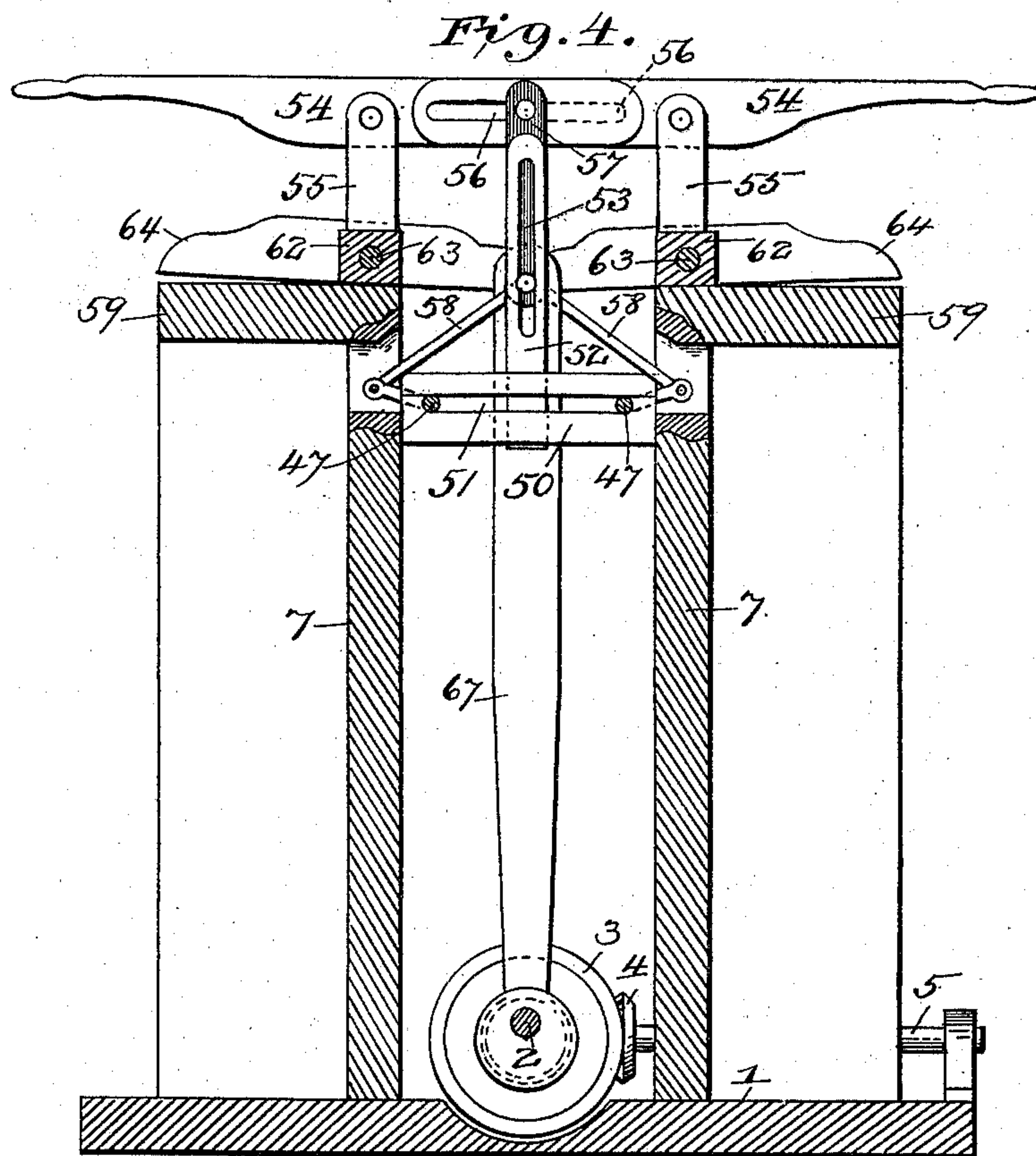
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Witnesses
Joseph H. Blackwood
Hartwell P. Heath

William L. Jenkins Inventor
J. D. A. Gouvier Attorney

UNITED STATES PATENT OFFICE.

WILLIAM L. JENKINS, OF NEW CASTLE, PENNSYLVANIA.

MACHINE FOR DOUBLING METAL PLATES.

SPECIFICATION forming part of Letters Patent No. 598,663, dated February 8, 1898.

Application filed October 30, 1897. Serial No. 656,931. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM L. JENKINS, a citizen of the United States, residing at New Castle, in the county of Lawrence and State of Pennsylvania, have invented a certain new and useful Machine for Doubling Metal Plates, of which the following is a specification.

My invention relates to machines for doubling black plates or iron or steel plates, and has for its object to provide a machine which will do more steadily, more quickly, more accurately, and with less labor the work now done by hand. This object I accomplish in the manner and by the means hereinafter more fully described in detail, and particularly pointed out in the claims, reference being had to the accompanying drawings, in which like numerals indicate like parts in all the figures.

Figure 1 is a top plan view of my invention in position to receive the plates. Fig. 2 is a top plan view of my invention, partly broken away, just as it completes doubling the plates. Fig. 3 is a side elevation, partly in section, of my invention with the near side removed. Fig. 4 is a vertical sectional view of my invention on the line $x x$, Fig. 1. Fig. 5 is a detail view of the under side of one leaf of the doubling-table.

My invention consists of a rectangular base 1, of any suitable material, preferably iron, firmly secured to the floor of the rolling-mill by suitable means, preferably bolts. Lengthwise said base 1, in its center, is suitably mounted in journals a shaft 2. Said shaft 2 has at one end a bevel cog-wheel 3, which gears with a bevel cog-wheel 4, about one-third as large as cog-wheel 3. Said cog-wheel 4 is mounted on the end of a counter-shaft 5, mounted in journals across the end of said base 1 and provided with a pulley 6, to which pulley 6 is attached a belt from the main shaft. The power may be transmitted to shaft 2 in any of the usual ways instead of that described, provided due regard is had to the speed required. On each side of said shaft 2 and parallel thereto rises vertically from said base 1 a wall 7, of any suitable material, preferably iron, said walls 7 7 being far enough apart to receive the widest black plate be-

tween them. On top of each of said walls 7 7, at the center, is secured in the usual way a journal-box 8. In said journal-boxes 8 8 is mounted a rod 9. Two rectangular leaves 10 10, of any suitable material, preferably iron, long enough when placed end to end to extend beyond the longest black plate at each end and wide enough to fit snugly between said walls 7 7, are mounted on said rod 9 in such a way as to admit of their lying flat in the same horizontal plane or being folded together. This may be done by forming on or securing to the end of one of said leaves 10 10 part of a hinge 11 and to the end of the other of said leaves 10 10 the complementary part of the hinge 11 and then passing said rod 9 through said parts, completing said hinge 11. On the back or under side of said leaves 10 10 are slides 12 12, running from end to end along the center of said leaves 10 10. From the outer ends of said leaves 10 10, in a line with the center of said slides 12 12, slots 13 13 are cut, so that when the leaves 10 10 are in the same horizontal plane the inner ends of said slots 13 13 will be distant from each other the length of the shortest black plate. At the outer ends of said slides 12 12 is pivotally secured on one side a single piece 14, having a hook 15 on its end, which projects through said slot 13, and on the other side a bifurcated piece 16, each end of which projects through said slot 13 and is provided with a hook 17. The other ends of pieces 14 and 16 are suitably connected with the cranks 18 and 19, hereinafter described, preferably by two lengths of pipe each, the upper lengths sliding in the lower and welded at their upper ends to the ends of said pieces 14 and 16 and the lower lengths strapped in the ordinary way to said cranks 18 and 19, the object of connecting said hooks 15 and 17 to cranks 18 and 19 being to permit said hooks 15 and 17 to retain their relative position with regard to the pieces 10 10 as the same are folded together. To the inner end of said slides 12 12 are pivotally secured rods 20 20, which are pivotally secured at their other ends, the one to a lever 21 above its fulcrum, which lever 21 extends above the walls 7 7, where it is provided with a handle 22, and which is fulcrumed on a bar 23, secured at each end in the walls

7 7, and the other to an arm 24, journaled on a bar 25, also secured at each end in the walls 7 7. From the point where said rod 20 is pivoted to said arm 24 a rod 26 extends to the lower end of the lever 21, with which it is pivotally connected. Said leaves 10 10 are provided on their under sides on either side of the slides 12 12 with lugs 27 27 27 27, of suitable material, preferably metal, having holes through their ends. Connecting-rods 28 28 28 28 of the ordinary engine type, of any suitable material, preferably metal, have at one end ears 29 29, which pass on either side said lug 28, to which they are pivotally connected, and at the other end the usual strap 30, by which they are secured to the cranks 18 and 19. A shaft 31 extends across between said walls 7 7, in both which said walls 7 7 it is journaled and provided with a suitable pulley 32, operated from above the walls 7 7 by the lever 33 and by means of which pulley 32 and said shaft 31 may be connected with the shaft 2 by the belt 34. One end of said shaft 31 is journaled on a standard 35, rising from the rectangular base 1, and the shaft 31 has near that end, just outside said wall 7, a cog-wheel 36, which gears with cog-wheel 37, which operates crank-shaft 18, journaled in said walls 7 7, said cog-wheel 37 also gearing with cog-wheel 38, which operates crank-shaft 19, also journaled in said walls 7 7. On either side of the center and a short distance therefrom and below the top of said walls 7 7 a rod 39, screw-threaded right and left from its center, extends across between walls 7 7, carrying two blocks 40 40, screw-threaded, respectively, left and right and journaled in both said walls 7 7, one end projecting beyond one of said walls 7 7 and provided with a small bevel cog-wheel 41. At a sufficient distance toward the same end to clear lever 21 when pulled back another rod 42, likewise right and left screw-threaded from its center, carrying two blocks 43 43, screw-threaded left and right, respectively, extends across between said walls 7 7, in which it is journaled and beyond one of which it is provided with a bevel cog-wheel 44 and extends outward a convenient distance, its end being provided with a crank or other means of turning said rod 42. Along the outside of said wall 7 is journaled a small shaft 45, carrying three bevel cog-wheels 46 46 46, adapted to gear with cog-wheel 44 and cog-wheels 41 41. Mounted in said blocks 40 40 40 40 and 43 43 on either side of the opening between the walls 7 7 is a square iron rod 47, bent upward in a semicircle between the rods 39 39 on either side the center, so as when raised vertically to rise above said walls 7 7 and extending along the inside of walls 7 7 toward the ends thereof pass the blocks 43 43, where its end is bent at right angles in the same plane as the semicircle at the center. Slots 48 48 48 48 are cut into the leaves 10 10 to admit the semicircle of rod when said rods

47 47 are raised, and slots 49 49 are cut in the tops of said walls 7 7 to admit said rods 47 47 when turned down. Between said walls 7 7 and nearer the ends than the rod 42 is secured a cross-piece 50, provided with slots 51 51, through which the rods 47 47 pass and in which they can be moved backward and forward. Secured to the center of said cross-piece 50 and rising upward therefrom is a guide 52, of any suitable material, preferably iron, with a vertical slot 53 in its center to serve as a guide. Levers 54 54 are fulcrumed upon standards 55 55, secured to and rising from either wall 7, said levers 54 54 having in the ends of their short arms slots 56 56, through which a link 57 is pivotally secured. The other end of said link 57 is pivotally secured to the ends of the arms 58 58 and the guide 52 by bolt in slot 53. The other ends of the arms 58 58 are pivotally secured on opposite sides to the ends of the rods 47 47, the walls 7 7 being cut away sufficiently to admit the play of the ends of said rods 47 47. From the top of said walls 7 7 extend outwardly horizontally on either side the table-tops 59 59, said table-tops 59 59 having at the center of the inner side a semicircular slot 60 and a slide 61 outwardly from said slot 60 to permit the use of rods 47 at varying widths of plates. On top said walls 7 7, at the ends, are secured blocks 62 62 62 62, which serve as guides and seats for the bolts 63 63 63 63, which secure the shears 64 64 64 64, said bolts 63 63 63 63 being keyed, not nutted. At one end the shears 64 64 64 64 are mounted on either side with guards 65 65, fastened to their outside, but at the other end no guards are used. The shears 64 64 64 64 are the ordinary shears used in iron-plate mills and are secured by the bolts 63 63 63 63 to the ends of said walls 7 7, the keys 66 66 66 66 allowing adjustment, said shears 64 64 64 64 having their inner ends pivotally secured to the connecting-rods 67 67 67 67, which are eccentrically mounted on the shaft 2.

The operation of my invention is as follows: The leaves 10 10 being in a horizontal position, the levers 54 54 being level, throwing the semicircle on rods 47 47 into a horizontal position, and the lever 21 drawn back, the plates, having had their ends trimmed by the shears 64 64, without guards 65 65, are laid upon the leaves 10 10. When as many plates as it is desired to bend at once are piled up, the levers 54 54 are pressed down, thereby raising the semicircles on rods 47 47, which have previously by means of rod 42 been adjusted to the width of the plates and the plates squared as to the sides. Lever 21 is then pressed forward until the pile is squared at its ends too, the hooks 15 and 17 still overlapping the ends of the plates. Handle 33 is pressed, the pulley 32 put into operation, the power applied, and leaves 10 10 are folded together, bending the plates between them.

When they open again, the power is thrown off, the pile of bent plates removed, the ends trimmed, if necessary, at shears 64 64, with the guards 65 65, and they are ready for the rolls again.

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

1. In a machine for automatically doubling plates, the combination with folding-leaves, of means for automatically squaring the sides and ends of said plates, and holding them in position while being doubled, substantially as shown and described.

2. In a machine for doubling plates, the combination with the leaves for folding said plates, of the curved rods for squaring the sides of two or more plates and means for operating same, substantially as shown and described.

3. In a machine for doubling plates, having folding-leaves, rods for squaring the sides of the plates, and means for adjusting said rods laterally, substantially as shown and described.

4. The combination in a machine for doubling plates with the leaves for doubling said plates, of hooked arms for forcing the ends of said plates into position and holding them in

place, and means for operating same, substantially as shown and described.

5. A machine for doubling plates, consisting of folding-leaves, rods for squaring the plates sidewise, hooked arms for squaring the plates endwise and holding them in place on said folding-leaves, and means for operating same, substantially as shown and described.

6. A machine for doubling plates, consisting of a base and side walls, folding-leaves pivotally mounted on said side walls for doubling said plates; rods for squaring the sides of said plates; hooked arms for squaring the ends of said plates and holding them in position on said leaves, and means for operating same, substantially as shown and described.

7. A machine for doubling plates, consisting of folding-leaves, rods for adjusting the sides of the plates, hooked arms for adjusting the ends of the plates and holding them in position, shears for trimming the ends of the plates, and means for operating same, substantially as shown and described.

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

WILLIAM L. JENKINS.

Witnesses:

HARRY K. GREGORY,
J. W. NELSON.