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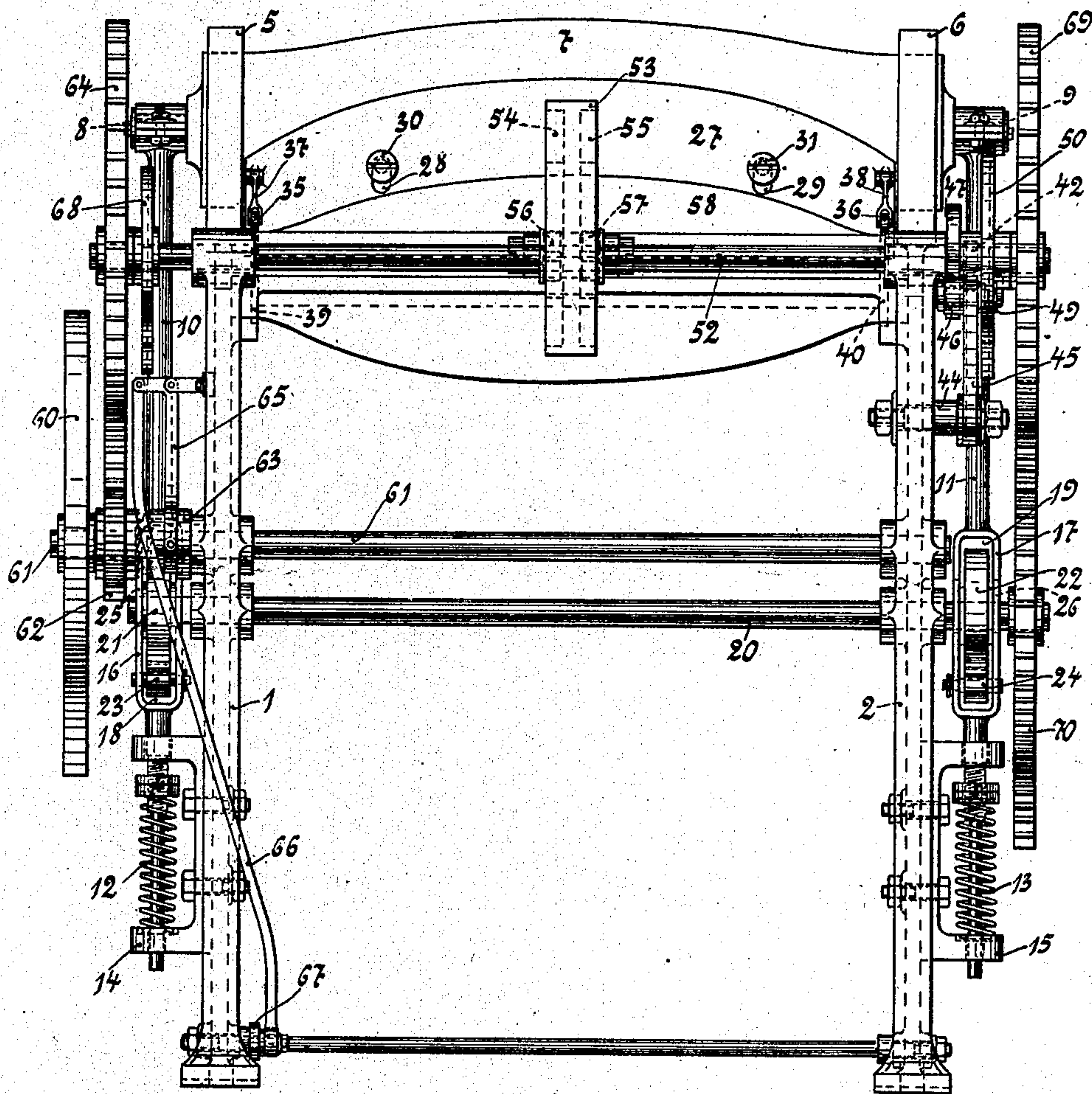
PATENTED APR. 28, 1908.

M. WINKELSTRÖTER.  
APPARATUS FOR MANUFACTURING COMPOUND PLATES OR TABLETS.

APPLICATION FILED APR. 30, 1907.

4 SHEETS—SHEET 1.

*Fig. 1*



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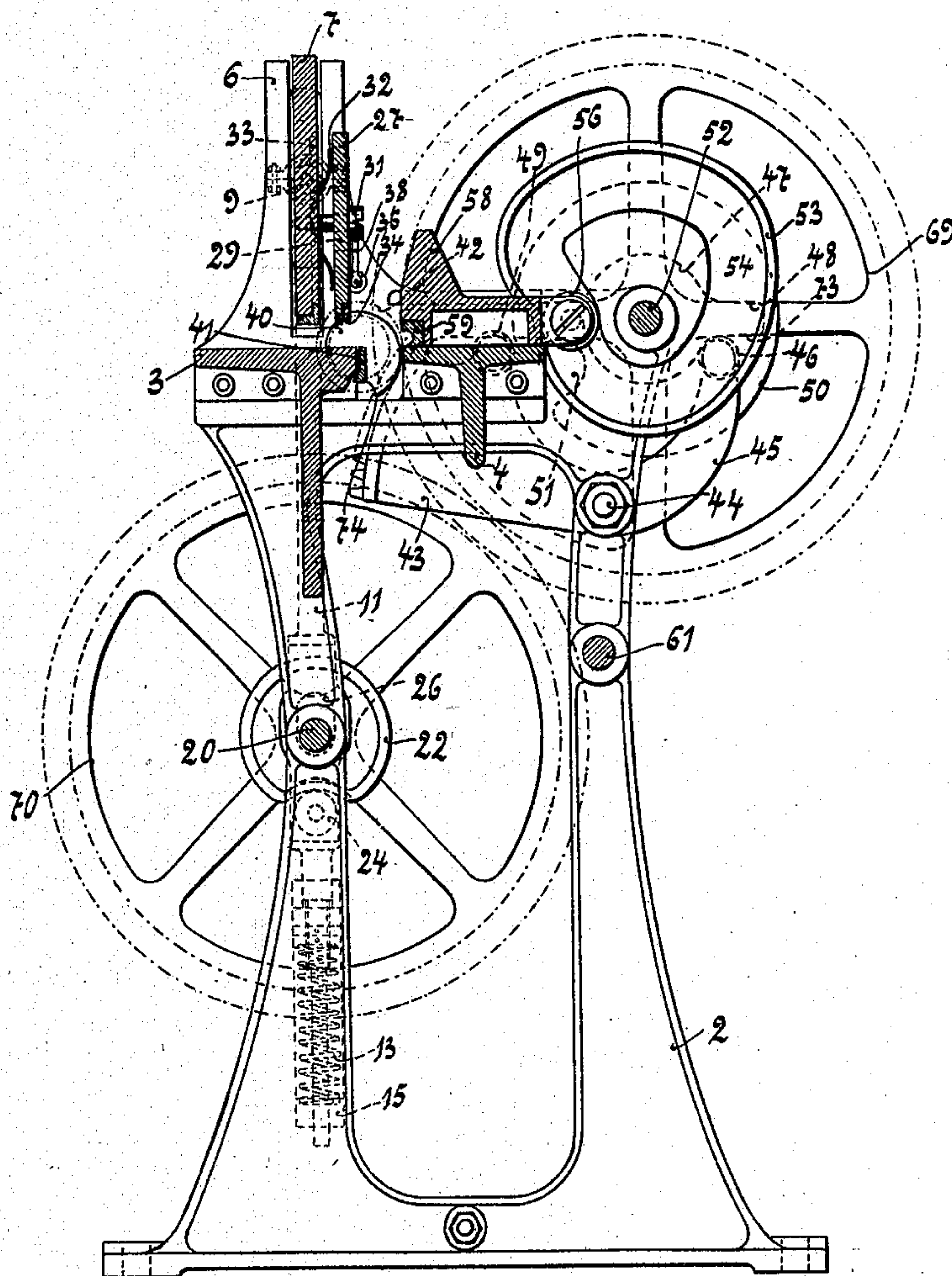
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4 SHEETS—SHEET 2.

*Fig. 2*



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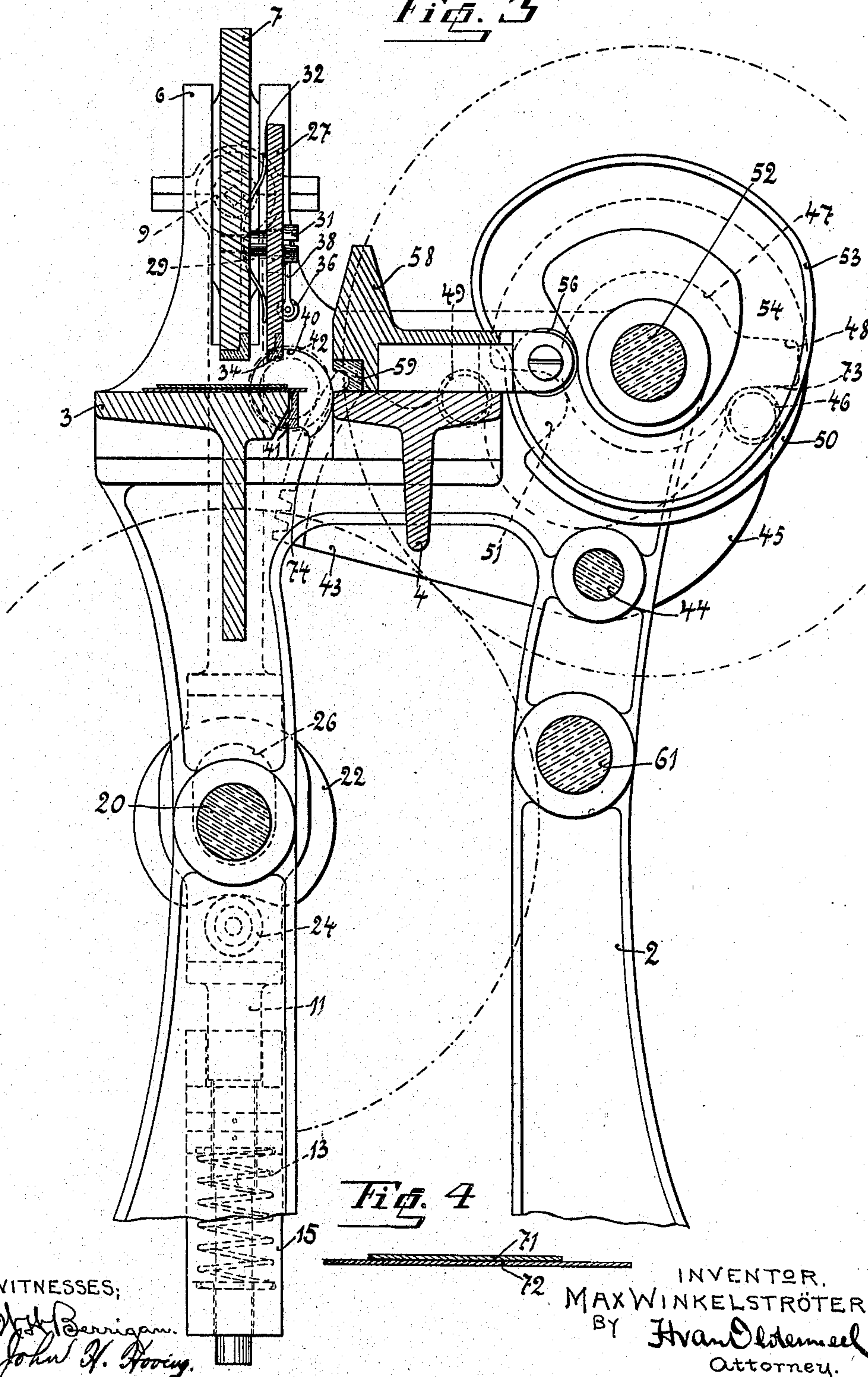
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4 SHEETS—SHEET 3.

*Fig. 3*



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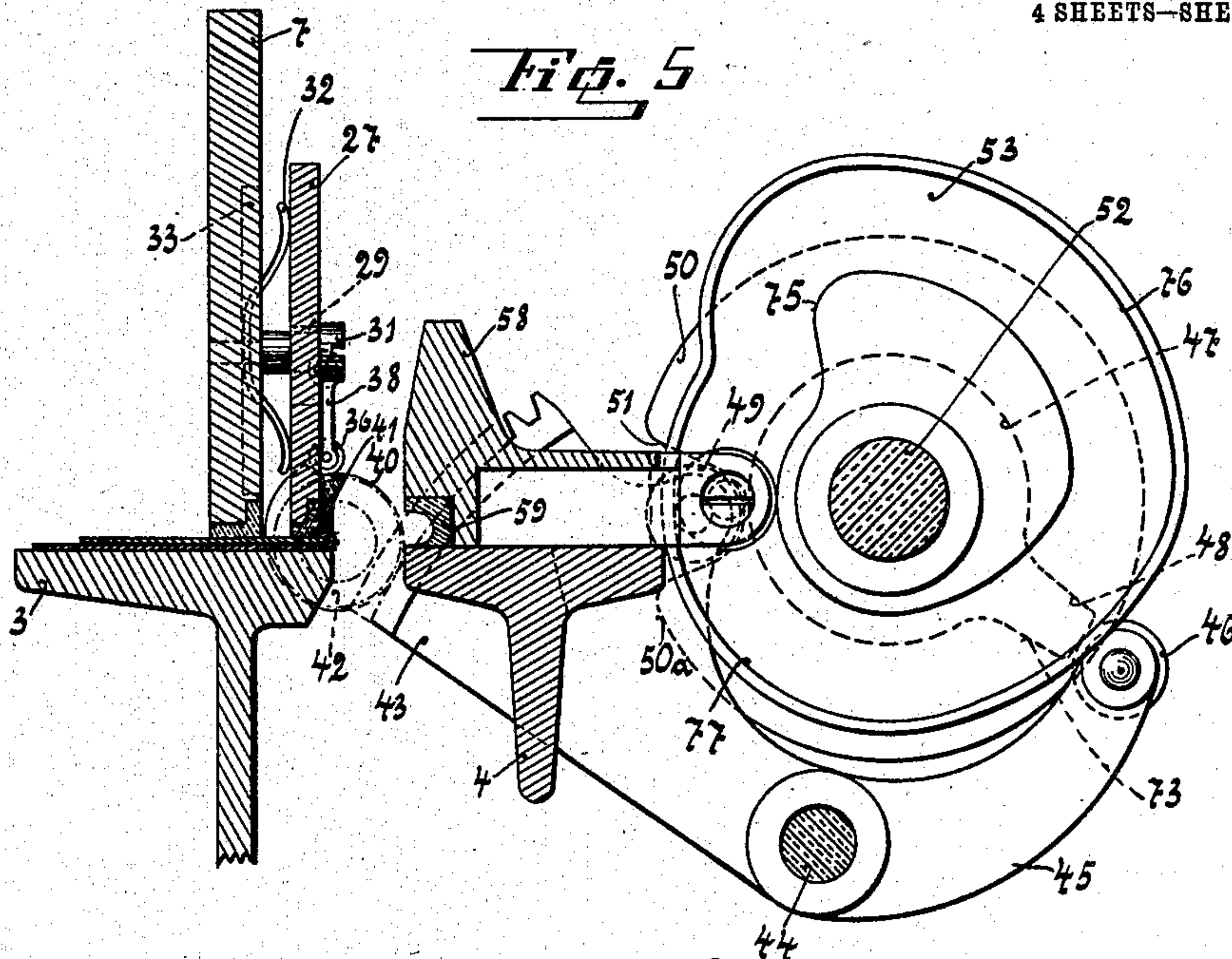
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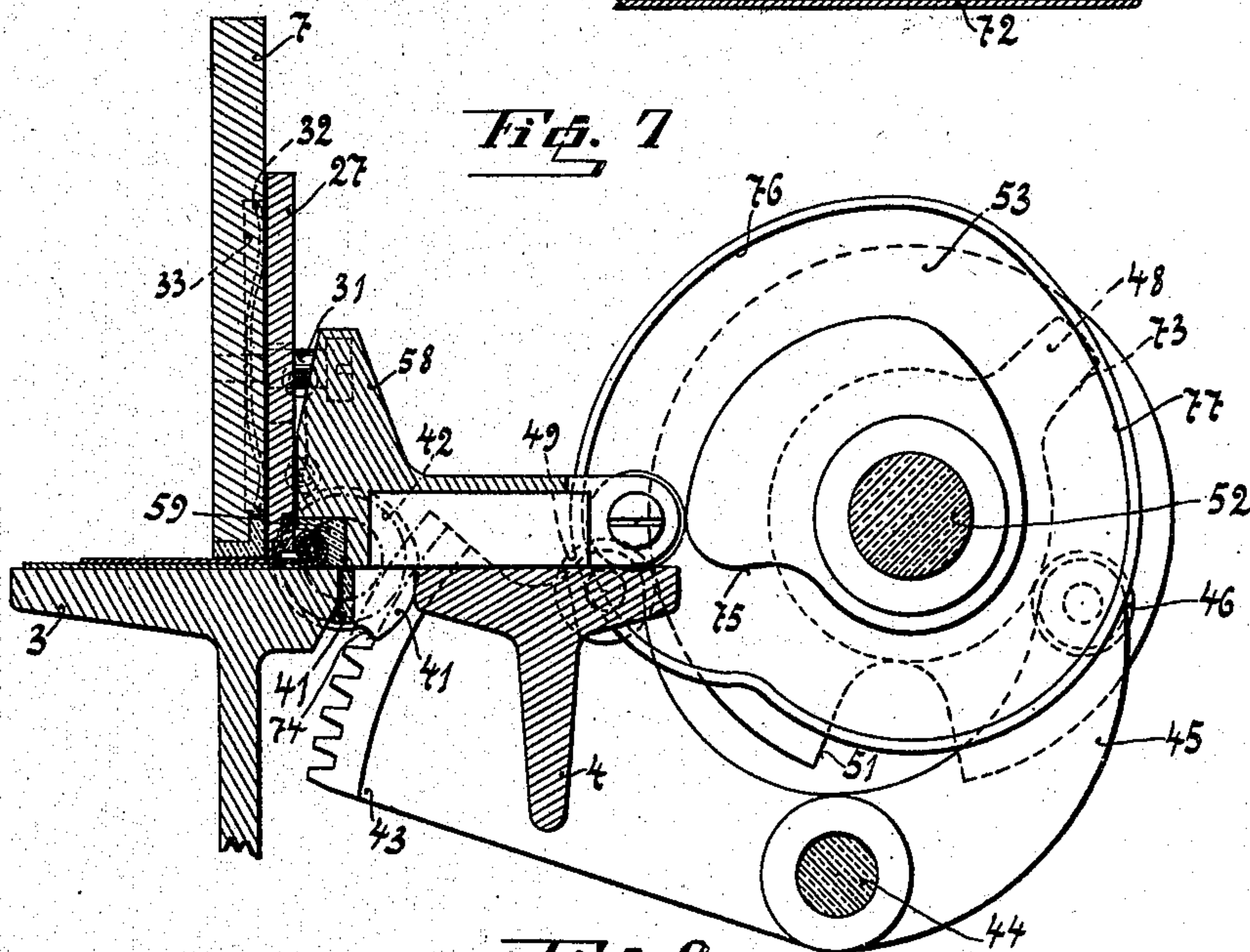
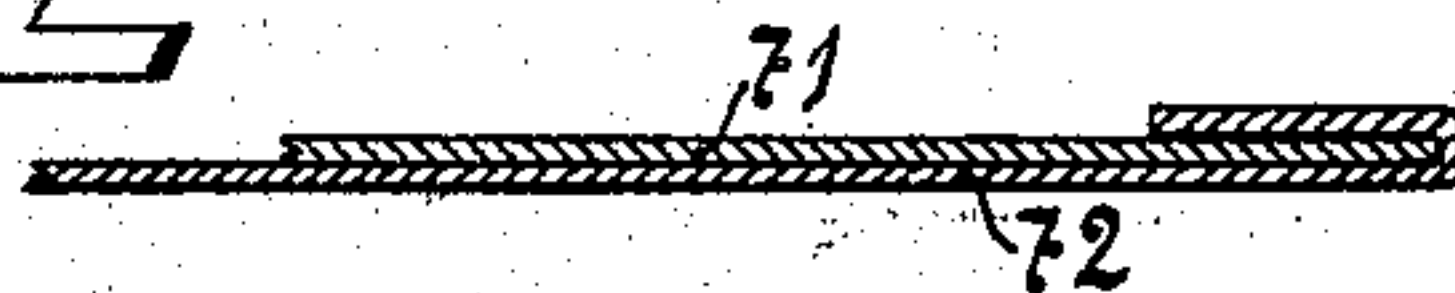
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4 SHEETS—SHEET 4.



**Fig. 6**



**Fig. 8**



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# UNITED STATES PATENT OFFICE.

MAX WINKELSTRÖTER, OF HANOVER, GERMANY.

## APPARATUS FOR MANUFACTURING COMPOUND PLATES OR TABLETS.

No. 885,901.

Specification of Letters Patent.

Patented April 28, 1908.

Application filed April 30, 1907. Serial No. 371,173.

*To all whom it may concern:*

Be it known that I, MAX WINKELSTRÖTER, a subject of the King of Prussia, residing at No. 3 Stadtstrasse, in the city of Hanover, Province of Hanover, Kingdom of Prussia, Germany, have invented certain new and useful improvements in apparatus for manufacturing a compound plate or tablet made up of a sheet of metal and a sheet of celluloid, paper, or the like, of which the following is a specification.

The present invention relates to apparatus for manufacturing a compound plate or tablet made up of a sheet of metal and a sheet of celluloid, paper or the like. The apparatus operates in such a manner that the sheet of celluloid or the like which projects over the edge of the sheet of metal is first bent round over the metal sheet and held by a bar in the bent position. The edge of the sheet of metal which is thus covered at both sides with celluloid or the like is then beaded by a bar provided with a groove, whereby the top sheet is held on the sheet of metal and is stretched smooth.

In order that the invention may be clearly understood reference is made to the accompanying drawing in which one embodiment of a machine in accordance with the present invention is shown by way of example, and in which:—

Figure 1 is a front elevation of the machine; Fig. 2 is a side elevation of the same; and Figs. 3 to 8 show various positions of the tools with their driving mechanisms in vertical sectional elevation, and enlargements of the edge of the tablets in three different stages in section.

Similar reference numerals indicate similar parts in all views.

The machine consists of two frames 1 and 2 which are connected with one another by a table-slab 3, 4 which has a slot in the same. A beam or press-stamp 7 is mounted displaceably in the supports or brackets 5, 6 which project over the table 3, 4. The stamp 7 has trunnions 8, 9 to which rods 10, 11 are pivoted, which hold the stamp 7 in an elevated position by means of springs 12, 13. The springs are supported on brackets 14, 15 which are attached to the frames 1, 2, and the brackets also serve for guiding the rods 10, 11.

In the rods 10, 11 there are expanded parts 16, 17 having openings 18, 19 in which the cams 21, 22 keyed on the shaft 20 and the

rollers 23, 24 mounted revolubly in the rods 10, 11 are arranged. In the sides 16, 17 of the openings 18, 19 there are likewise longitudinal slots 25, 26 provided through which the shaft 20 passes.

A second bar or stamp 27 is held on the stamp 7 by means of two screw-bolts 30, 31 which pass through longitudinal slots 28, 29 of the bar 27. The bar 27 is pressed away from the stamp 7 by springs 32 which are held by the screws 30, 31. In the stamp 7 there are grooves 33 cut away into which the springs 32 fit. Further, short bars forming holders 37, 38 carrying rollers 35, 36 are pivoted to the bar 27 which is stepped at its bottom face.

When the machine is in operation the rollers 35, 36 run on cams 39, 40 which are connected with one another by a bar 41 which is journaled in the frames 1, 2 and which serves for folding the edge of the tablet. When at rest this bar 41 is normally in the slot in the table immediately adjacent to the edge of part 3 of the table. On one side the folding-bar 41 which is provided with the cams 39, 40 there is a toothed wheel 42 which engages in the segment 43 of a toothed wheel. This segment or curved ratchet 43 is mounted revolubly on a pivot 44 on the frame 2. The segment has an arm 45 which carries a roller 46. The latter runs on a disk 47 which has a nose 48. The curved rack 43 which is revoluble round the pivot 44 has, besides the roller 46, another roller 49 which runs on the disk 50 which has a part 51 cut away from the same. The disks 47 and 50 are on the shaft 52 which is journaled in the two side frames 1, 2. Further, a cam 53 is keyed on the shaft 52 and has grooves 54, 55 on both sides for the rollers 56, 57. These rollers 56, 57 are mounted revolubly on a carriage 58 which is displaceable on the part 4 of the table. In the displaceable carriage or slide 58 there is inserted a bar 59 which is provided with a groove of approximately semi-circular cross-section.

The machine is driven by a belt, for example, which runs on the pulley 60 which is on the shaft 61. A toothed wheel 62 loose on the shaft 61 can be connected by a coupling 63 with the shaft 61, when it meshes with the wheel 64 which is keyed on the shaft 52. The part 63 of said coupling is pivoted to a bell-crank lever 65 mounted on frame 1, and said lever is connected by a rod 66 with a foot-lever 67. A disk 68 which is on the



shaft 52 and which is provided with a tappet or the like likewise serves for moving the bell-crank lever 65. The rotation of the shaft 52 is transmitted by the toothed wheels 69, 70 to the shaft 20.

The tablet provided with a cover is made on the machine in the following manner: The flat sheet of metal 71 with the sheet of celluloid 72 under it is placed on the part 3 of the table (Fig. 4), in such a manner that the edge of the celluloid projecting beyond the metal projects over the slot in the table and over the folding-bar 41. By depressing the treadle 67 the coupling is inserted by means of the rod 66 and the bell-crank lever 65 and the driving gearing is rotated. This rotation moves the rollers 23, 24 downwards by means of the cams 21, 22, and the rollers pull downwards the rods 10, 11 and with them the stamp 7, so that the latter holds the celluloid and the metal firmly on the table 3. As soon as the sheets 71, 72 of the tablet are held together, the roller 46 and with it the arm 45 is moved downwards by the one side 73 of the nose 48 which is on the disk 47 when the shaft 52 rotates further, so that the segment 43 is rotated. In consequence of the segment meshing with the toothed wheel 42 the folding-bar 41 is rotated 180° and bends over the part of the celluloid which projects over the edge of the metal sheet (Fig. 5). When the bar 41 is rotated the cams 39, 40 raise the bar 27 by means of the rods 37, 38, so that the celluloid edge can be at once bent over. When the bar 41 has been rotated 180° from its normal position of rest, the bar 27 falls in consequence of its own weight on to the bent celluloid edge and holds the same fast. The latter is effected by the cams 39, 40 being provided with a step 74 (Fig. 7), so that the rollers 35, 36 are suddenly withdrawn from the surfaces on which they run and the bar falls. Thus the machine comes into the position shown in Fig. 5 and the side of the tablet is bent according to Fig. 6.

The roller 46 runs on the outermost face of the nose 48, whereas the roller 49 which entered into the hollow 51 of the disk 50 when the segment 43 was moved, moves towards the face 50<sup>a</sup> and then runs on it, whereby the segment 43 and with it the toothed wheel 42, the bar 41 and the cams 39, 40 are rotated back again into their commencing position. As the rollers 35, 36 are pivoted to the bar 27 by the rods 37, 38 they offer no obstacle to the bar 41 when it rotates backwards. The rollers 35, 36 are swung out with their rods so that the bar 27 remains on the celluloid. When the shaft 52 is rotated further the

rollers 56, 57 run at 77 in the grooves of the disk 53, whereby the carriage or slide 58 with the grooved bar 59 is displaced towards the bar 27. The edge of the metal with the celluloid bent over it is seized by the lowest part of the groove of the bar 59, and when the slide 58 is pushed further the edge is rolled up (Figs. 7 and 8). When the slide is pushed forward the spring-pressed bar 27 is pressed to the press-stamp 7 so that sufficient material for beading the edge is released. After the bend is formed by rolling up the edge the slide is returned into its commencing position by the rollers 56, 57 running on the surfaces 75. The coupling is hereupon automatically disconnected by the tappet of the disk 68, after the springs 12 and 13 have also lifted the stamp 7, so that the machine stops automatically. The stamp 7 can be raised because the rollers 23, 24 go into parts cut away in the cams or disks 21, 22 when the latter are rotated.

What I claim as my invention and desire to secure by Letters Patent is:

1. In apparatus for manufacturing a compound plate or tablet, a stamp for holding and releasing a compound plate or tablet, means for raising and lowering said stamp as desired, an oscillatory folding bar for bending the rim of a plate, when held by the stamp, and means for rotating said bar 180° forwardly and backwardly, and comprising a toothed wheel and a segment meshing with said toothed wheel and means for intermittently operating said parts, in combination with a grooved bar for curving the bent rim, and means for advancing and retracting said grooved bar.

2. In apparatus for manufacturing a compound plate or tablet, a stamp for holding and releasing a compound plate or tablet, means which include cams, rolls and rods for pressing said stamp upon the compound plate or tablet, a bar flexibly connected with said stamp, a separate bar for bending the rim of a plate when held by the stamp, means for rocking said second-named bar forwardly and backwardly, a pair of cams operating with said bending bar, and engaging means carried by the bar flexibly connected with the stamp as aforesaid, a grooved bar for curving the rim when bent by the bending bar, and means for advancing and retracting said grooved bar.

In witness whereof I have hereunto set my hand in presence of two witnesses.

MAX WINKELSTRÖTER.

Witnesses:

ROBERT BÜLOW,  
R. PAUL THOMPSON.