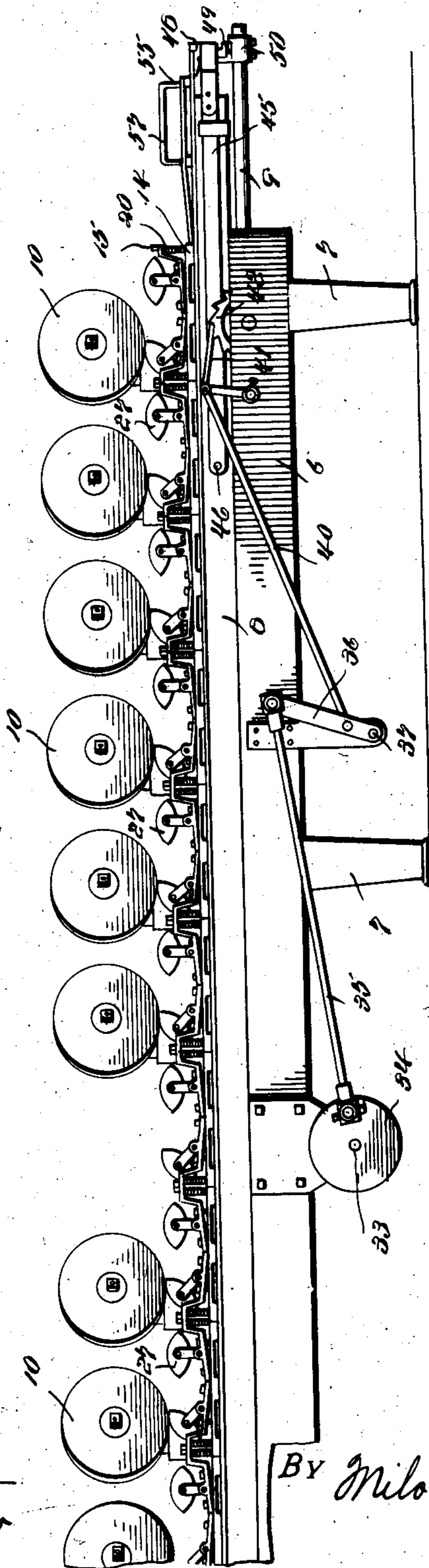


No. 834,421.

PATENTED OCT. 30, 1906.

O. TVERDAHL.
POLISHING MACHINE.
APPLICATION FILED OCT. 4, 1905.

6 SHEETS—SHEET 1.



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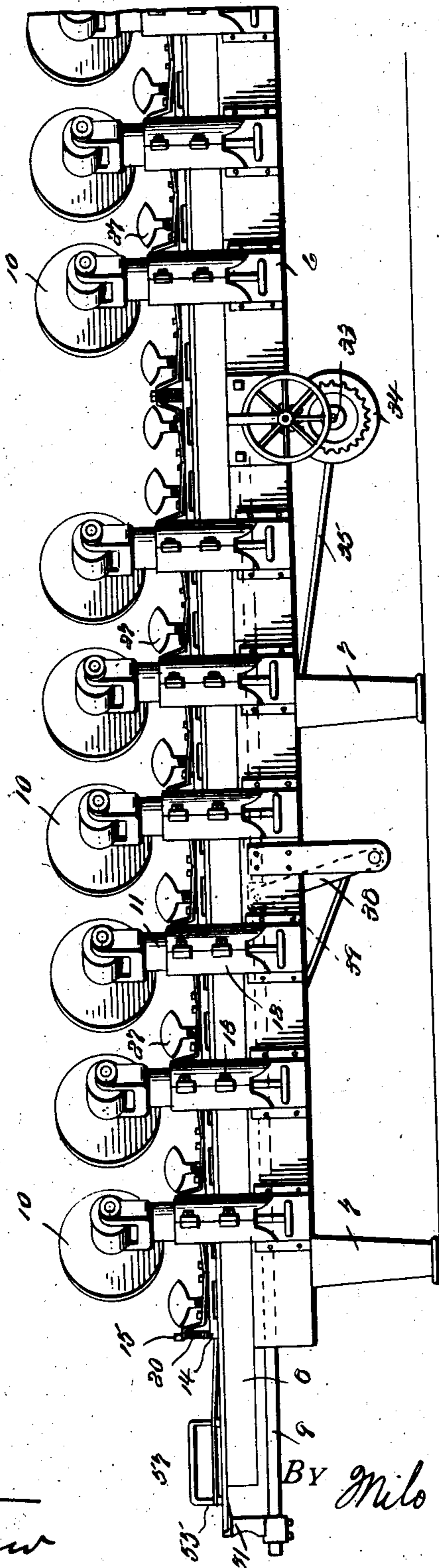
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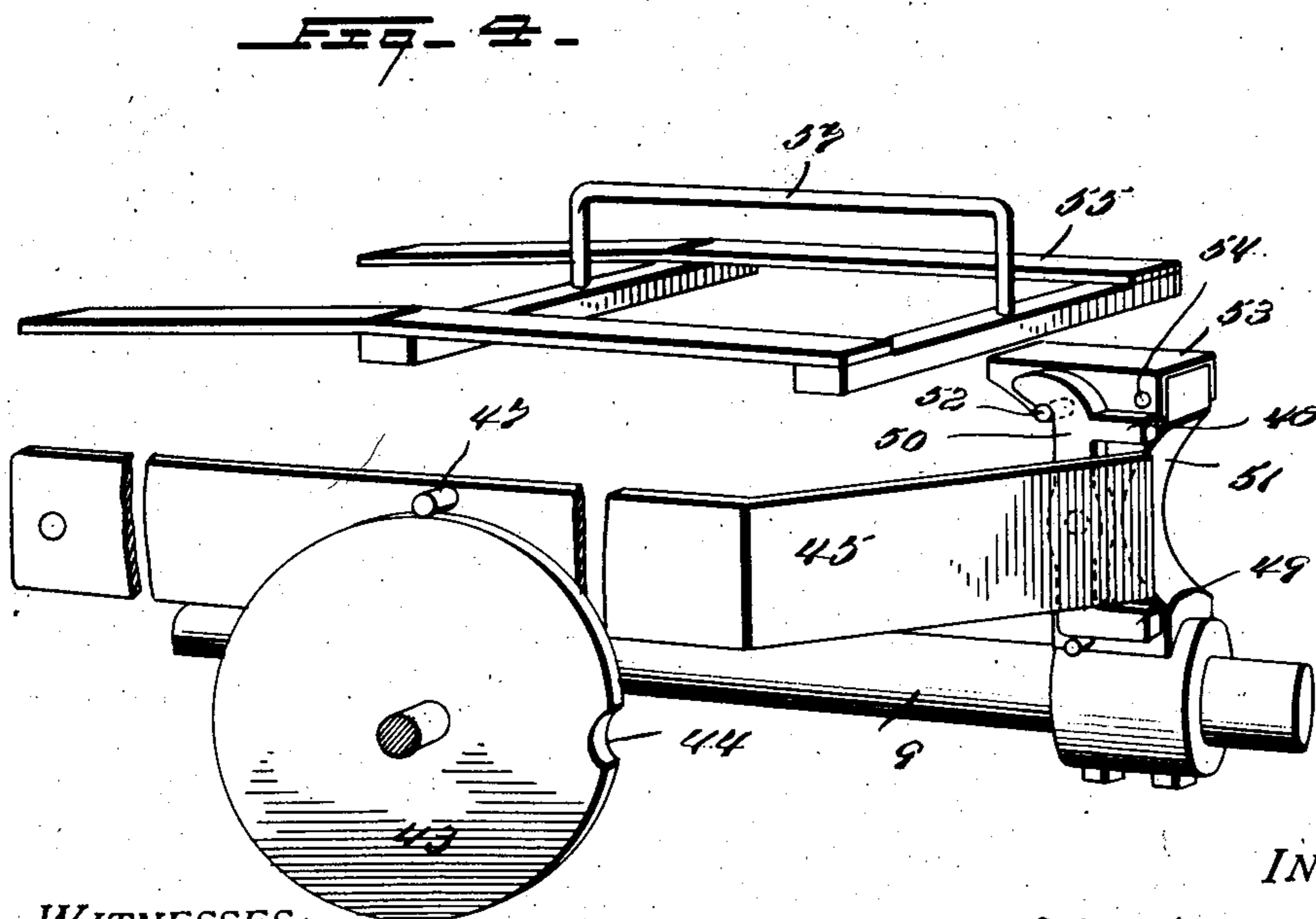
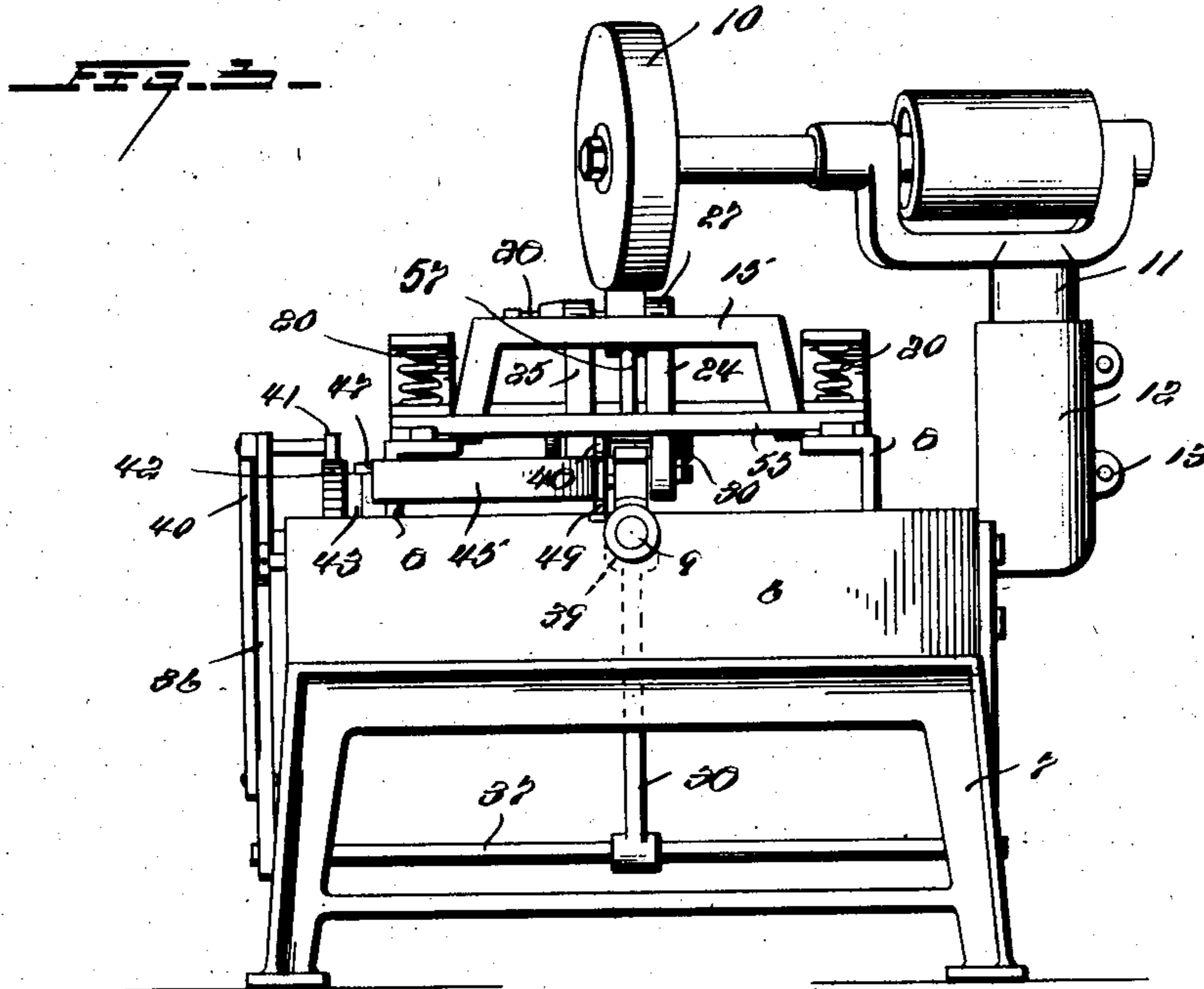
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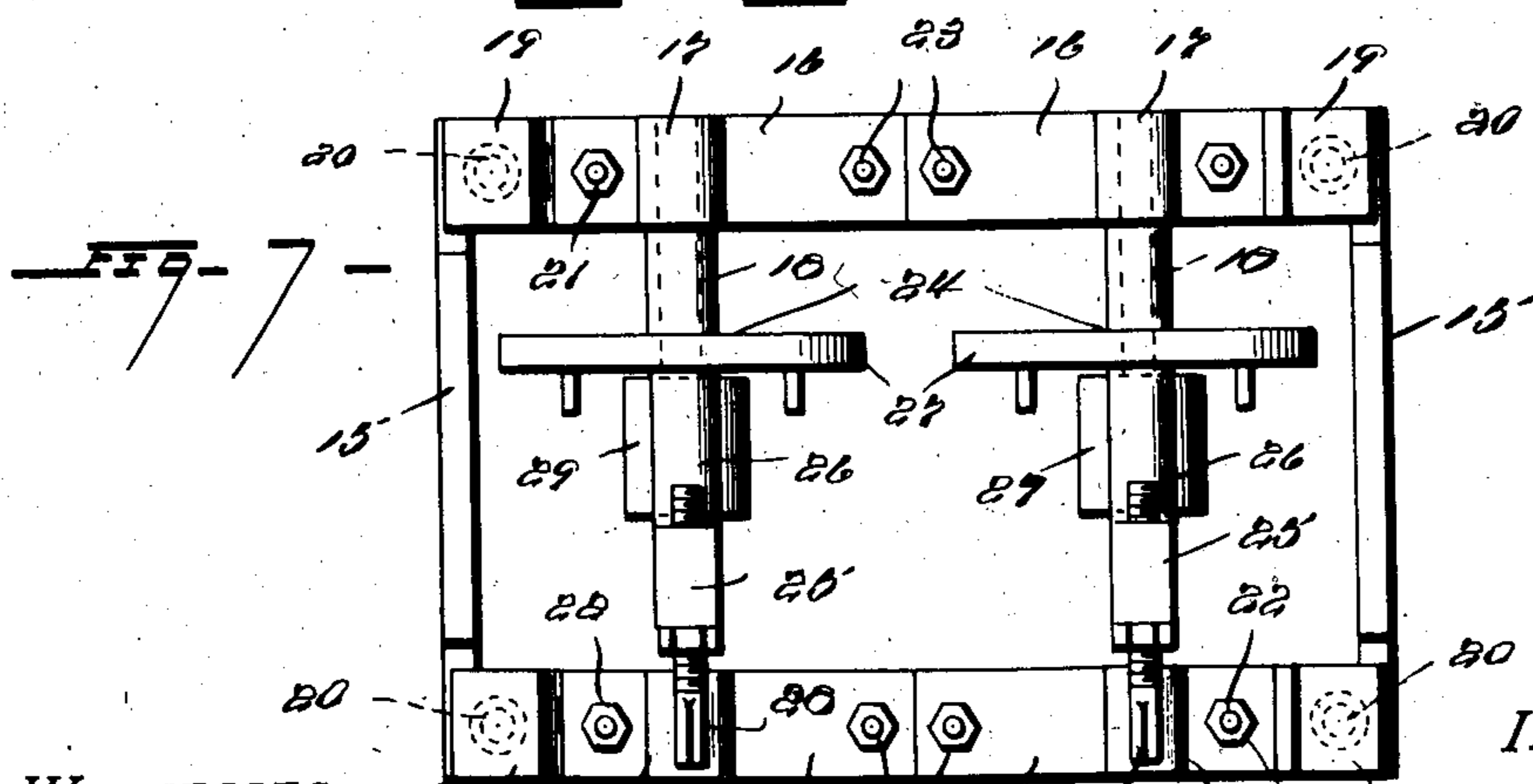
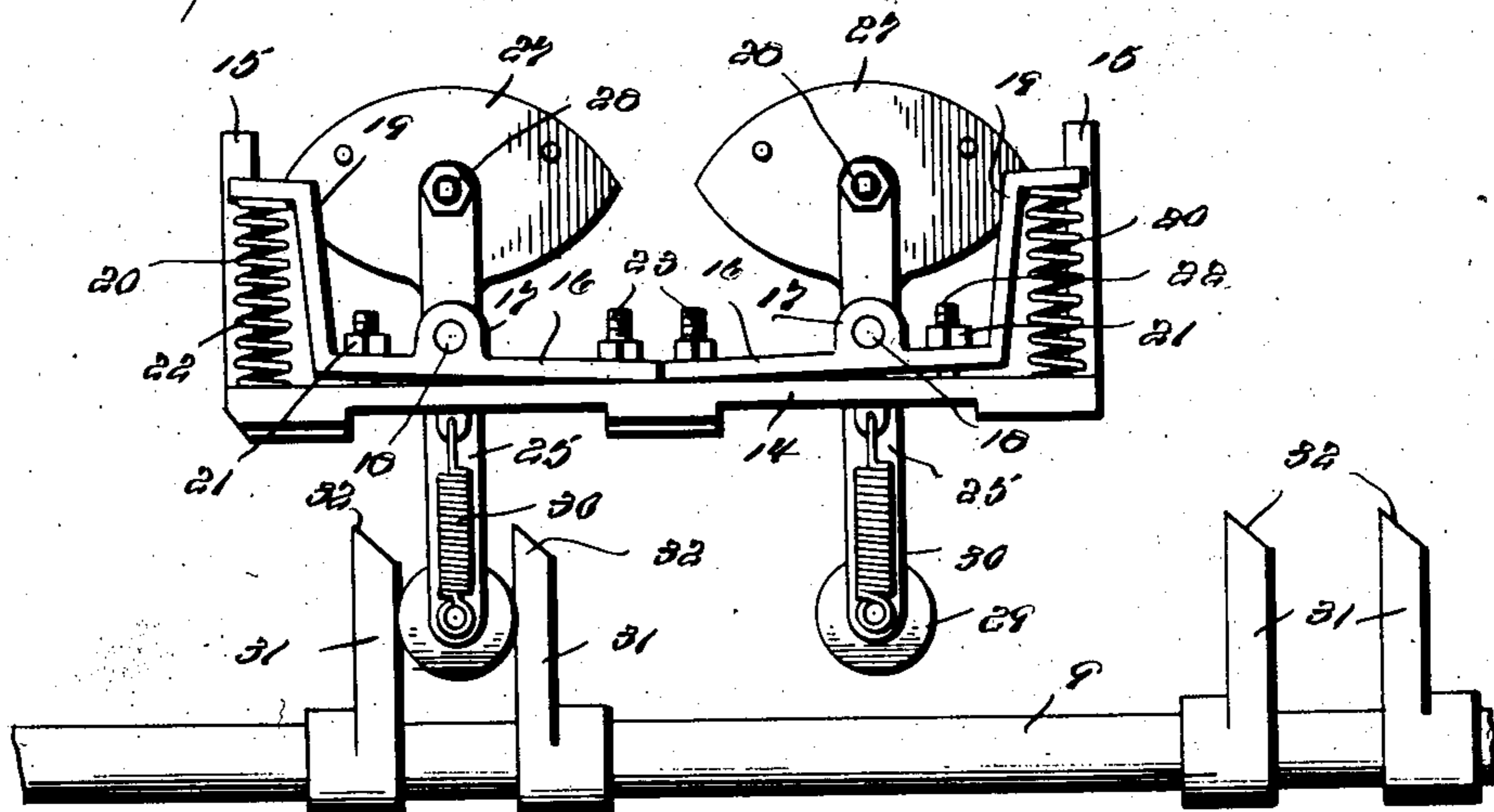
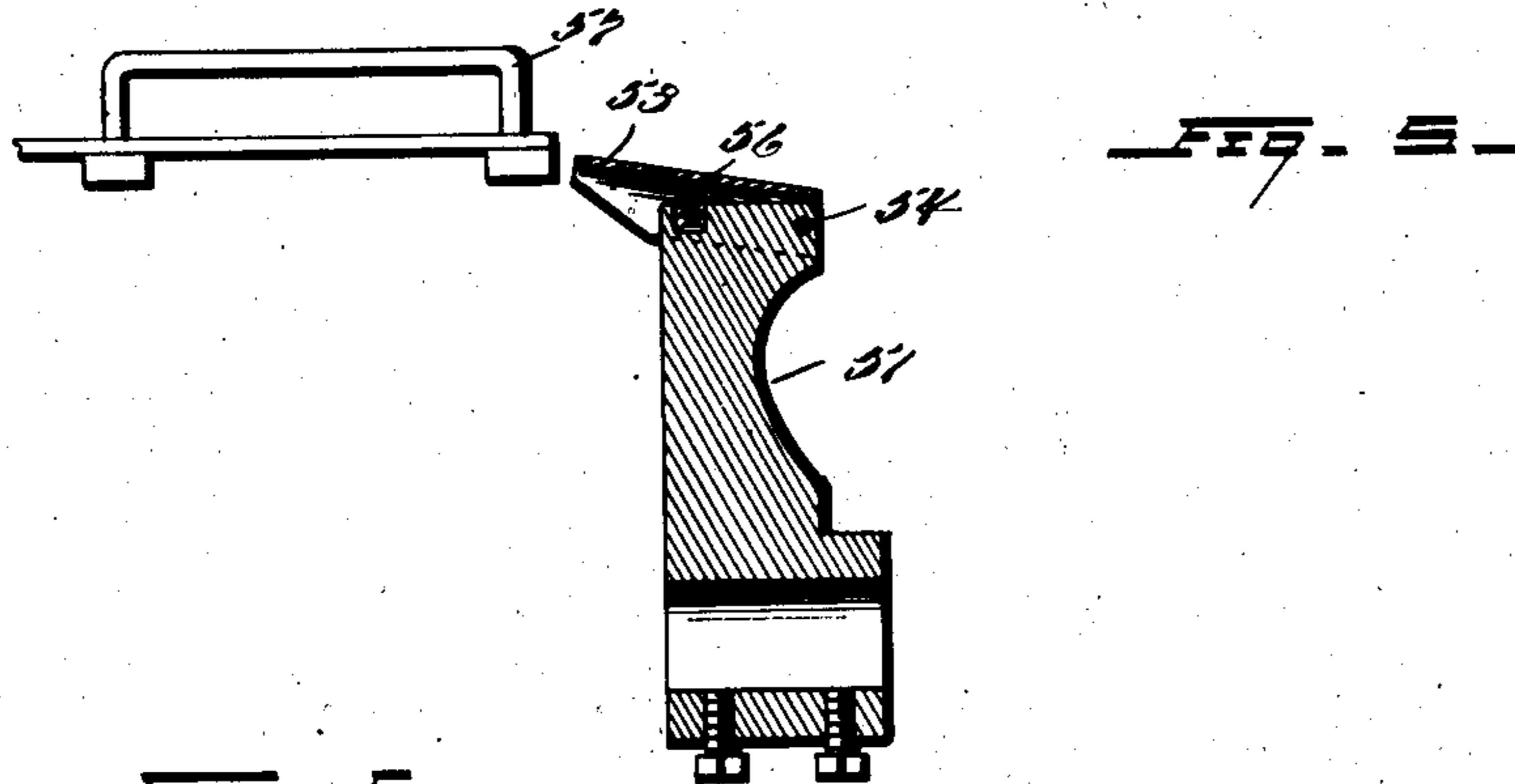
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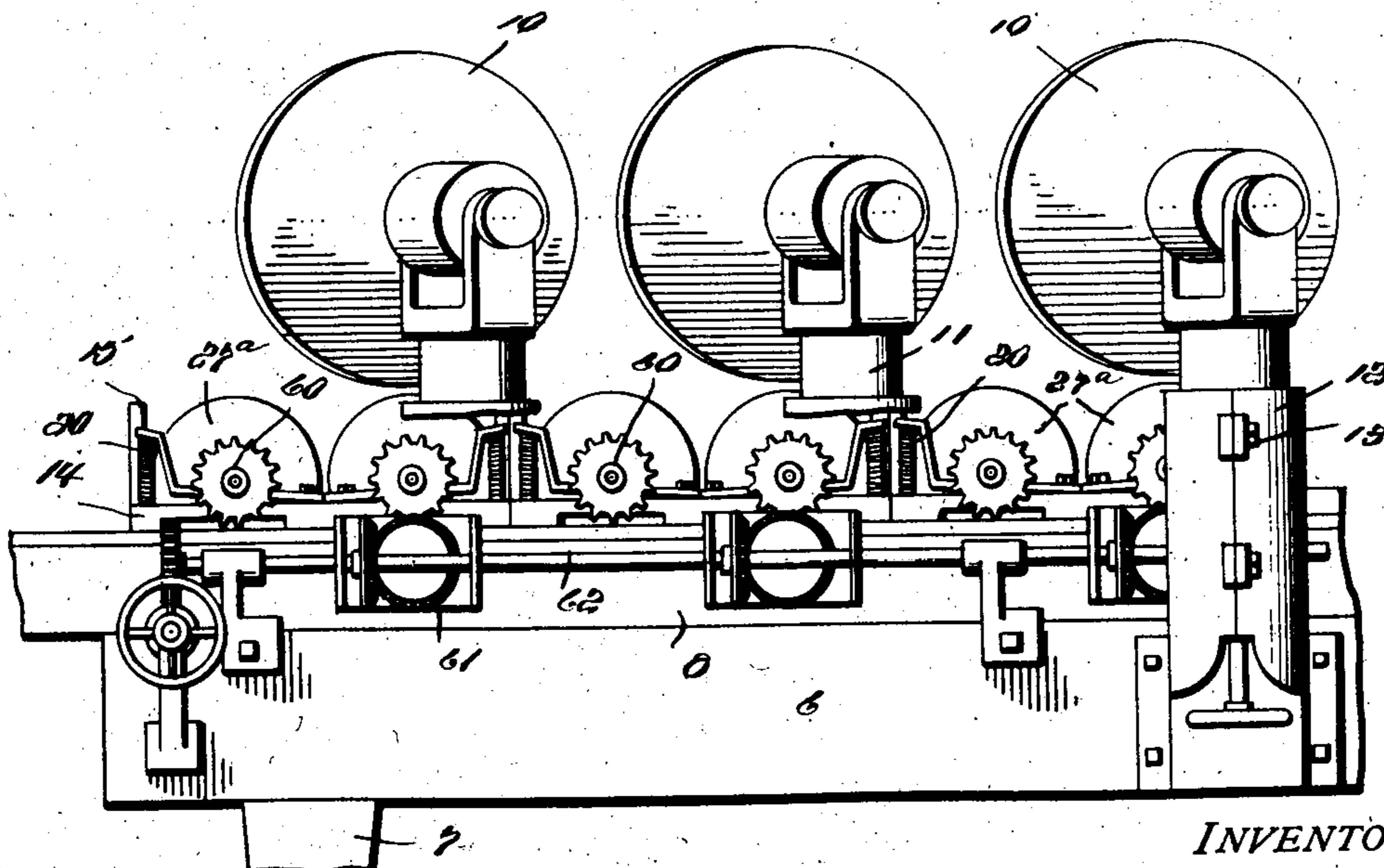
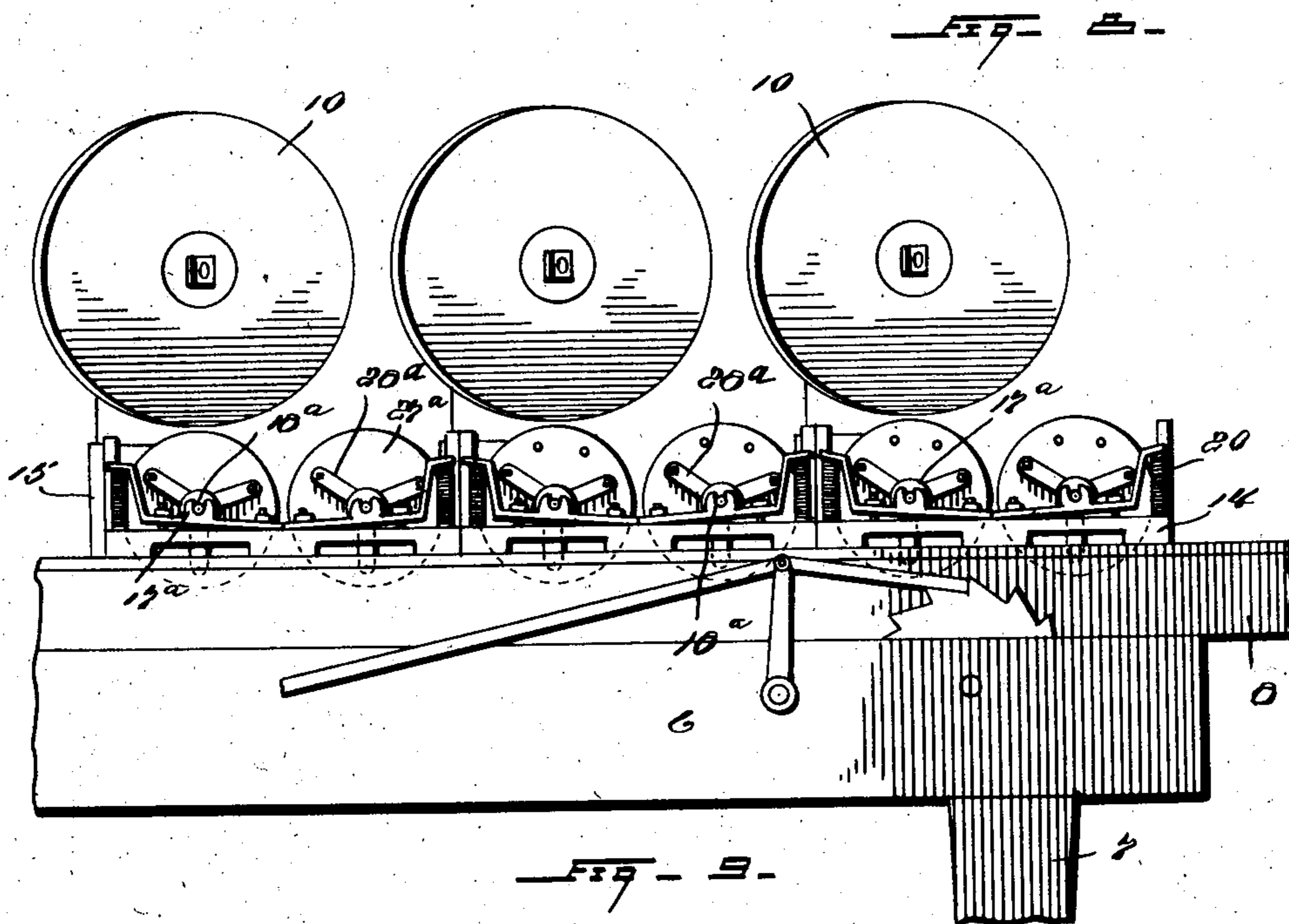
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6 SHEETS—SHEET 5.



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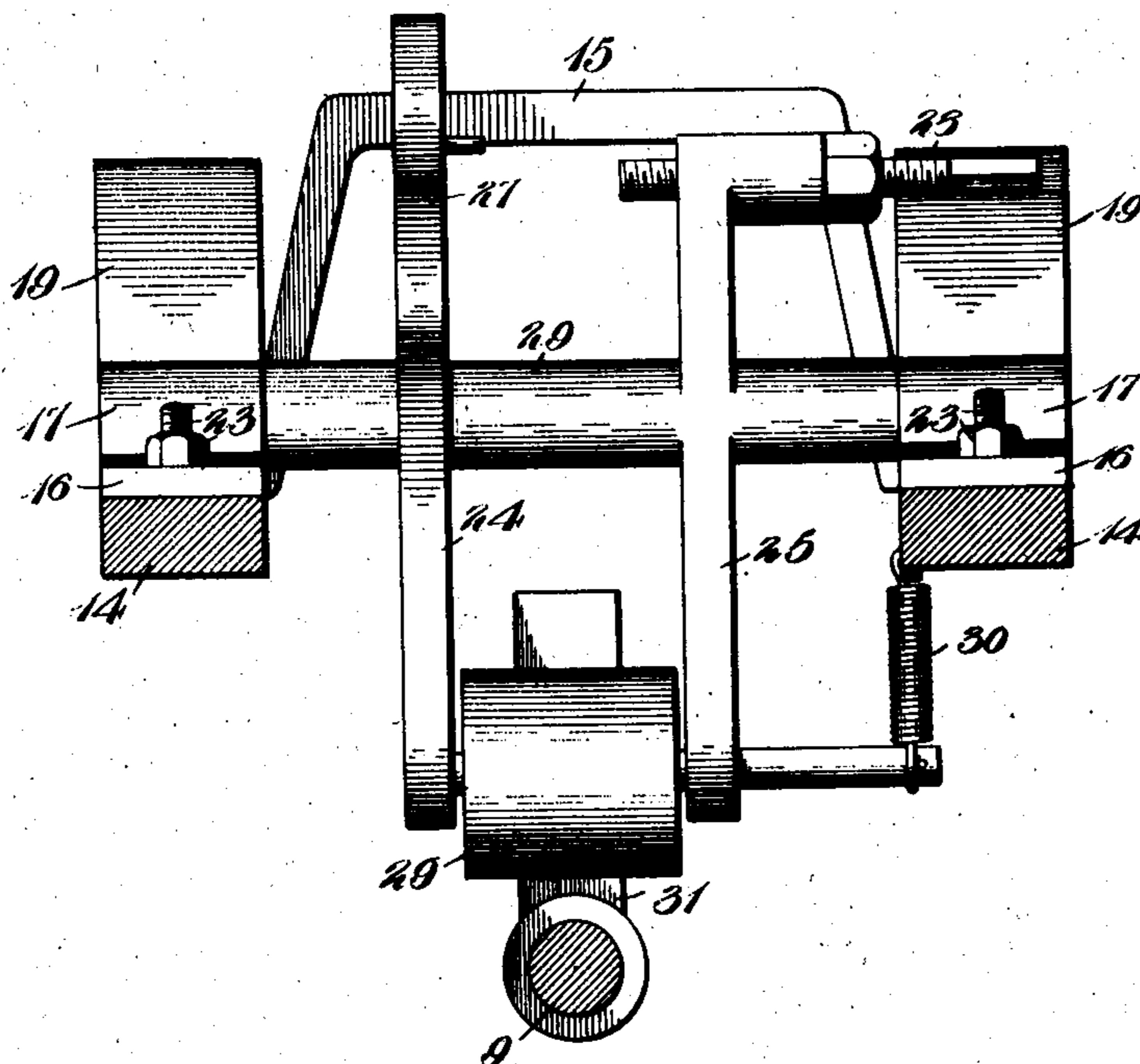
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6 SHEETS—SHEET 6.

Fig. 10.



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UNITED STATES PATENT OFFICE.

OLE TVERDAHL, OF COSHOCTON, OHIO, ASSIGNOR OF ONE-HALF TO
THOMAS J. RITTENHOUSE AND ONE-FOURTH TO P. J. HAIDET, OF
COSHOCTON, OHIO.

POLISHING-MACHINE.

No. 834,421.

Specification of Letters Patent.

Patented Oct. 30, 1906.

Application filed October 4, 1905. Serial No. 281,298.

To all whom it may concern:

Be it known that I, OLE TVERDAHL, a citizen of the United States, residing at Coshocton, in the county of Coshocton and State of Ohio, have invented new and useful Improvements in Polishing-Machines, of which the following is a specification.

This invention is a machine for polishing metal articles, particularly constructed and adapted for polishing the edges of sad-irons, although capable of adaptation for polishing stove-trimmings, castings of various kinds, and metal articles generally. It is illustrated as embodying appliances for polishing sad-irons.

The object of the invention is to produce an improved device of the kind embodying particularly a line of polishing-wheels under which the articles are moved, said articles being held upon carriers which travel along a track under the wheels. Means are provided for oscillating or turning the articles, so as to present various parts of the surfaces thereof to the wheels.

In the accompanying drawings, Figure 1 is a front elevation of the machine. Fig. 2 is a rear elevation thereof. Fig. 3 is an end elevation. Figs. 4 and 5 are details of the trip mechanism for advancing the carriages. Figs. 6 and 7 are details in side elevation and top plan view of one of the carriages with oscillating holders. Figs. 8 and 9 are partial front and rear elevations showing revolving holders mounted in the carriages. Fig. 10 is a central vertical cross-section of the carriage and holder shown in Figs. 6 and 7.

The frame of the machine consists of a long narrow bed 6, mounted upon legs 7. Mounted upon this bed are tracks 8, which are spaced apart, and extending lengthwise of the machine, under the tracks, is a rod 9, which, by means to be hereinafter described, is reciprocated in the bearings or guides on the frame by which it is supported. Located above the track and overhanging the same is a row of polishing-wheels 10. Each of these wheels is mounted upon a post 11, which fits in a socket 12, mounted upon the frame 6. The socket is split, so that the post may be turned and raised or lowered therein and clamped at adjustment by bolts 13. The wheels are advantageously disposed at an

angle to the track, so as not to interfere with each other. It will be seen in Fig. 1 that the row of wheels is divided into two sections, six in each, with a break therebetween. This is for the purpose of allowing the sad-irons to be reversed or put in the other edge up between the sections, one edge of the irons being polished by one section and the other edge by the next section.

The carriages which carry the sad-irons slide one behind the other on the tracks 8. A carriage is illustrated in detail in Figs. 6 and 7 and consists of a frame having side bars 14, which rest and travel upon the respective tracks, and these bars are connected at the ends by arched pieces 15. The pieces are arched so that the sad-iron holders may swing thereunder. Mounted upon each side bar 14 is a pair of bearing-plates 16, each of which has a bearing 17 for the rock-shaft 18 of the sad-iron holder. Each bearing-plate 16 has a raised portion 19 at the outer end, under which is a coiled spring 20, which lifts said bearing-plate to the extent permitted by the stop-nut 21 on the bolt 22, which projects upwardly from the bar 14 through a hole in the bearing-plate. The plate is loosely fastened at the other end by a bolt and nut 23.

Each carriage contains a pair of holders. Oscillating holders are shown in Figs. 6 and 7. Each of these consists of a pair of bars 24 and 25, connected by a sleeve 26, which is sleeved over the shaft 18, above referred to. One of these bars terminates at the upper end in a plate 27, which is of substantially the same shape as the back of a sad-iron. The other arm projects upwardly opposite said plate and is provided with a screw 28, which may be clamped against the sad-iron. Between the lower ends of the bars 24 and 25 is journaled a roller 29, and the holder is normally held in vertical position by a spring 30, connected between the shaft of the roller 29 and a lug on the under side of the frame 14. When so constructed and mounted, each holder is at liberty to oscillate on its shaft, and its supporting-bearings are also cushioned by the springs 20, so that a limited yielding up-and-down motion is permitted. This causes the sad-irons to be pressed against the polishing-wheels with a yielding

pressure and also accommodates the irons to small differences in the diameter of the wheels.

When the carriages are mounted on the 5 tracks, the lower ends of the holders hang down with the rollers 29 just above the rod 9. Said rod is provided with pairs of upwardly-projecting lugs 31, which are located the same distance apart as the polishing- 10 wheels and directly under the axes thereof. Each pair of lugs is adapted to receive therebetween a roller 29 at the lower end of a holder. The lugs are beveled on one side, as at 32, so that the rollers may ride up the 15 same, as the carriages are intermittently moved along and drop into the space between the lugs, when the reciprocation of the rod 9 causes the holders to swing back and forth with the sad-irons in contact with the 20 polishing-wheels until the next movement of the carriages.

To produce the reciprocation of the rod 9, a shaft 33 is driven by belt and pulley from any suitable source and has at the front of 25 the machine crank-disk 34, connected by a rod 35 to an arm 36 on a rock-shaft 37, which has an arm 38 connected by a head 39 to the rod 9. Rotation of the shaft 33 rocks the shaft 37, and the arm 38 carries the rod 9 30 back and forth and swings the holders by the means above described.

To produce an intermittent advance of the carriages, a rod 40 is connected at one end to and swings with the arm 36, and at the other 35 end to a pawl 41, arranged to engage a ratchet-wheel 42. This ratchet-wheel has on its inner side a cam 43 with a notch 44.

45 indicates a lever which is pivoted at 46 to one of the tracks 8 and extends along beside said track and beside the ratchet 42. It has a pin 47, which is normally pressed up by the cam 43, but which will drop in the notch 44 when the wheel turns to proper position. The free end of the lever 45 is bent rear- 45 wardly around the end of the front track 8 and terminates between two lugs 48 and 49 on a trip 50, which is pivoted to the side of a block 51, mounted upon the end of the rod 9. The head of this trip is arranged to engage a 50 pin 52, projecting from a pivot-plate 53, which is hinged at 54 to the top of the block 51 and at its front end is arranged to hit or miss a pusher-frame 55. Under the plate 53 is a spring 56, tending to lift the same. The 55 pusher-frame 55 rests upon the tracks 8 and has a handle 57, whereby it may be retracted.

Normally the cam 43 lifts the lever 45, which by its contact against the lug 48 swings the trip 50 forwardly, so that its curved head 60 engages over the pin 52 and bears down thereon, confining the plate 53 against the top of the block 51, so that when the rod 9 advances the plate 53 misses and slides under the frame 55, and consequently does not 65 move said frame; but when the notch 44

reaches the pin 47 said pin drops into the notch, allowing the lever 45 to drop, and it hits the lug 49 and lifts the head of the trip 50, releasing same from the pin 52. This al- 70 lows the plate 53 to lift in consequence of the spring thereunder, and when the rod 9 then advances, the plate 53 strikes the pusher-frame, and said frame, being at its front end against the last carriage, is advanced and 75 pushes the carriages along one step, or from one wheel to the next. When the rod 9 slides back, the pin 47 rides up on the cam 43 and again engages the trip and presses down the plate 53. The pusher-frame 55 is re- 80 tracted by hand and another carriage is put in place. Necessarily the track must be kept full of carriages in order to operate it. As fast as one carriage is pushed off the rear end of the machine it is brought around to the 85 head thereof and put in place in front of the pusher-frame.

In operation the sad-irons are put in place against the plates 27 and clamped by the screws 28. The carriages are then placed 90 on the tracks and are advanced by the means above described. They stop with one of the holders under each wheel, and the irons held by these holders are in contact with the wheels and are polished thereby, and by 95 means of the oscillation of the holders, produced by the reciprocation of the rod 9, all parts of the edge on one side are presented to the wheels. When the carriages reach the break between the first and second sections 100 of the row of polishing-wheels, the sad-irons are unclamped and turned over, so that the other edge will be polished by the next section. Obviously by varying the shape of the holders articles of other kinds may be 105 worked on.

In the modification shown in Figs. 8 and 9 rotary holders are disclosed instead of oscillating holders. The carriages are substantially the same, except that the plates 16 instead of having closed bearings 17 have open 110 bearings 17^a, which receive a shaft 18^a. Mounted on this shaft is a disk 27^a, against which the sad-irons are clamped by a spider 28^a, sleeved on the shaft. The disk 27^a will hold three irons. The shaft 18^a has on its 115 rear end a pinion 60, which hangs out beyond the track in position to mesh with pinions 61, driven by intermediate gearing from a long shaft 62, which extends along the rear edge of the track, so as to drive all the holders. 120

It will be noticed that with the modified form of holder, as with the original, the parts are spring-supported, so that a yielding pressure is effected against the polishing-wheels. The disks 27^a, carrying the irons, are caused 125 to rotate under each wheel by the means described, and the edges of the irons carried thereby are polished.

The scope of the invention is not limited to the exact construction shown, since it is ob- 130

vious that changes may be made within the spirit of the invention and within the scope of the following claims.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a polishing-machine, the combination with a wheel, and means to vary the angle and elevation thereof, of a holder supported thereunder and arranged to hold an article against the wheel, and means to turn the holder, to present different parts of the surface of the article to the wheel.

2. In a polishing-machine, the combination with a series of wheels, of a series of holders movable thereunder and arranged to hold an article against the wheel, and means to rock the holder, to present different parts of the surface of the article to the wheel.

3. In a polishing-machine, the combination with a polishing-wheel, of a carriage slidable thereunder, an article-holder spring-supported on the carriage, and means to turn the holder to present different parts of the article to the wheel.

4. In a polishing-machine, the combination with a track and a row of polishing-wheels over the same, of a plurality of carriages having article-holders, movable on the track from one wheel to the next, and means to turn the holders when they are under the wheels to present different parts of the surface of the articles to the wheels.

5. In a polishing-machine, the combination with a track and a row of polishing-wheels over the same, of a plurality of carriages movable on the track, swinging holders carried by the carriages, and a reciprocating rod having projections engageable with the holders, to swing the same.

6. In a polishing-machine, the combination with a track and a row of polishing-wheels over the same, of a plurality of carriages movable on the track, swinging holders carried by the carriages, a reciprocating rod having projections engageable with the holders, to swing the same, and having means to intermittently advance the carriages.

7. In a polishing-machine, a work-carriage comprising a frame, bearing-plates spring-supported thereon, and article-holders mounted in bearings on said plates and arranged to turn therein.

8. In a polishing-machine, a work-carriage comprising a frame, bearing-plates spring-supported thereon, and a swinging holder which hangs through the frame on a rock-shaft mounted in the bearings and has a clamp at the top for attaching the article to be polished.

9. In a polishing-machine, the combination with a track and a row of polishing-wheels over the same, of a plurality of carriages movable along the track, swinging holders hanging in the carriages and having clamps at the upper end for the articles, and depending at the lower ends below the carriages, and a reciprocating rod below the track having means to engage the lower ends of the holders and swing the same.

10. In a polishing-machine, the combination with a track and a row of polishing-wheels over the same, of carriages movable along the track and carrying article-holders, a sliding pusher at the head of the track, behind the carriages, and means to intermittently advance the pusher.

11. In a polishing-machine, the combination with a track and a row of polishing-wheels thereover, of carriages movable along the track and carrying swinging article-holders, a sliding pusher at the head of the track behind the carriages, a reciprocating rod along the track, having means to engage the holders, to swing the same, and a trip-plate carried by said rod and engageable with the pusher to advance the same, and means to intermittently engage the trip-plate with the pusher.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

OLE TVERDAHL.

Witnesses:

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MARY M. HUNT.