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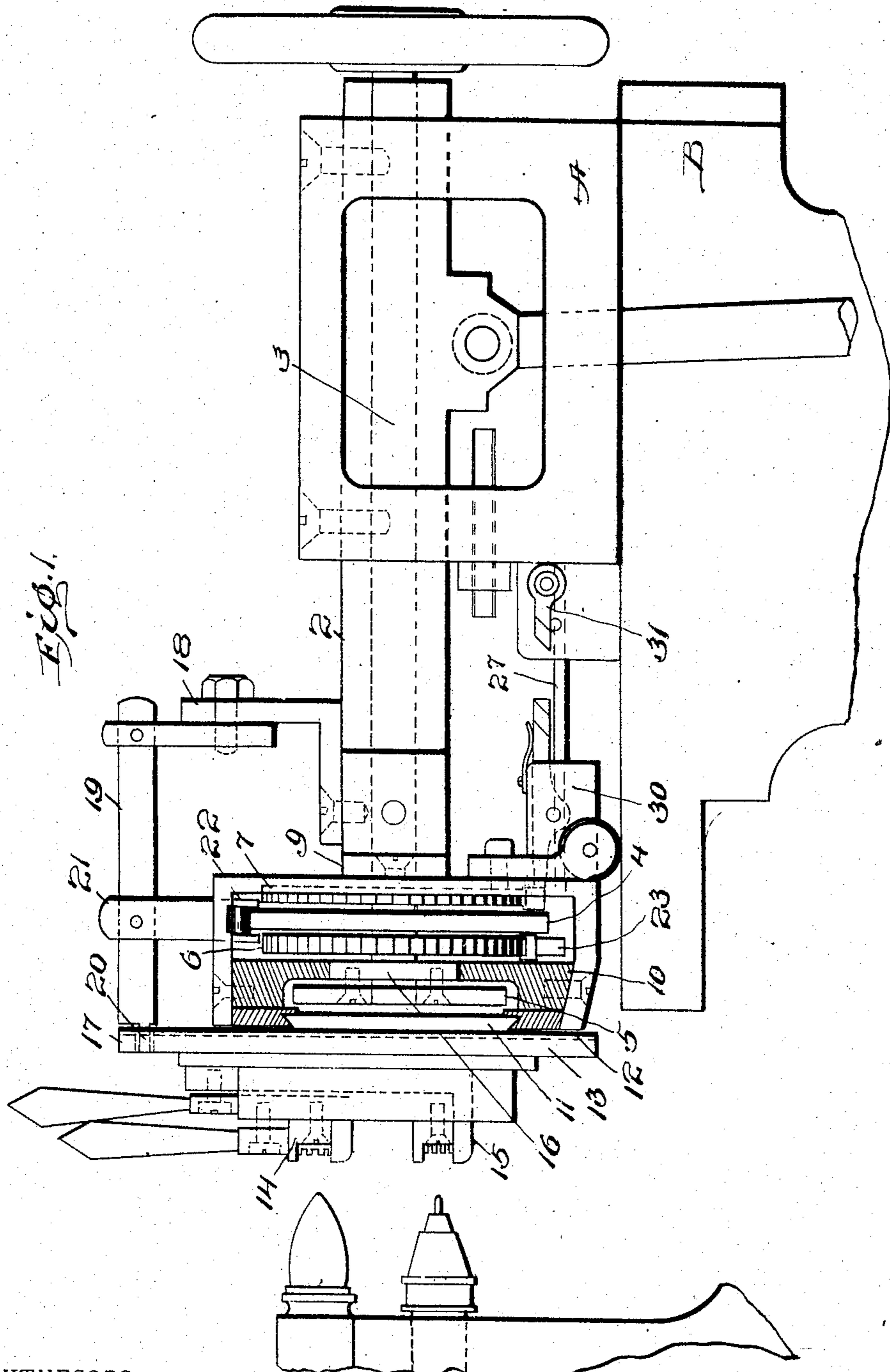
PATENTED DEC. 27, 1904.

C. GRÜNEBERG.

MACHINE FOR DRILLING AND PLUGGING BRUSH BACKS.

APPLICATION FILED OCT. 20, 1903.

3 SHEETS—SHEET 1.



WITNESSES

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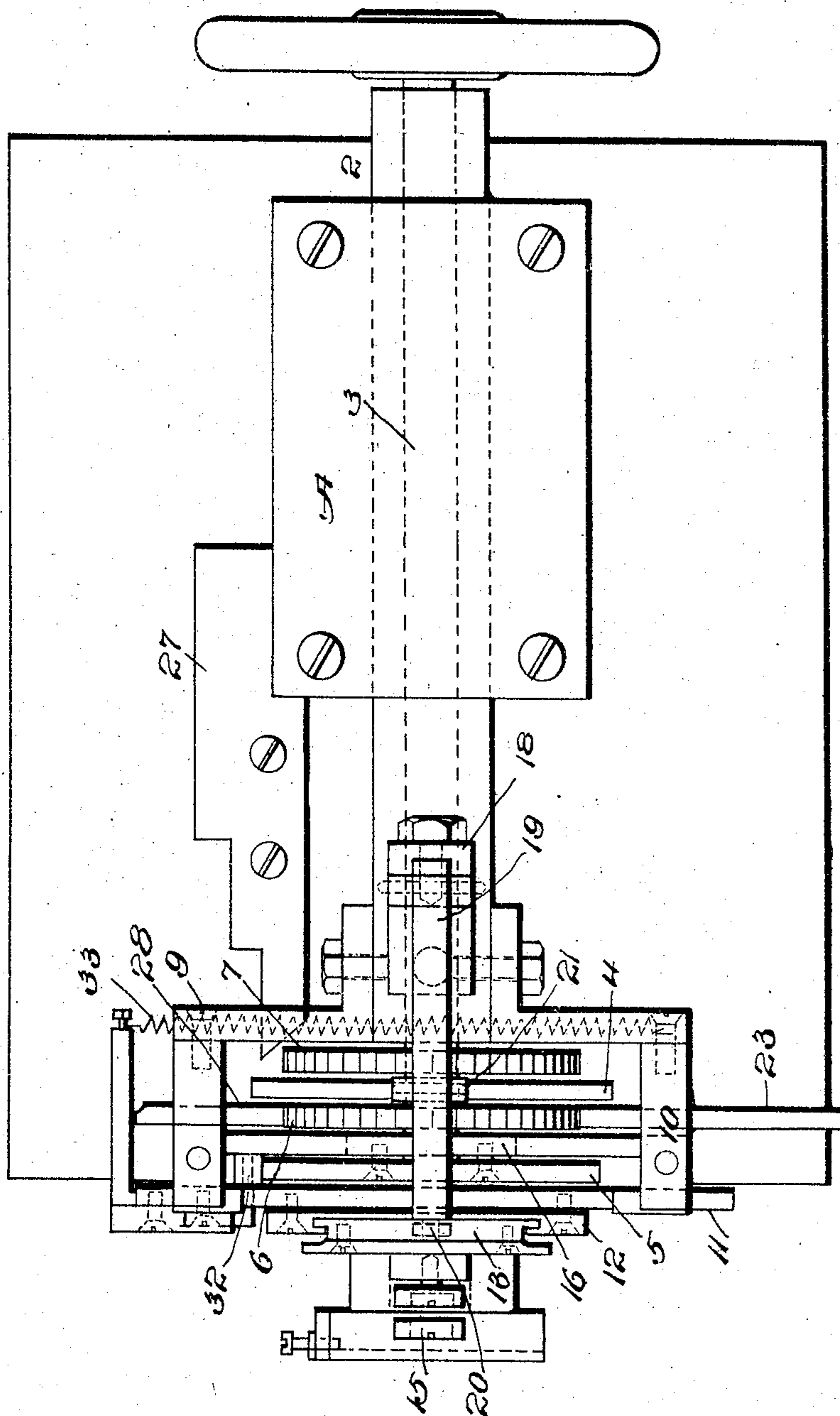
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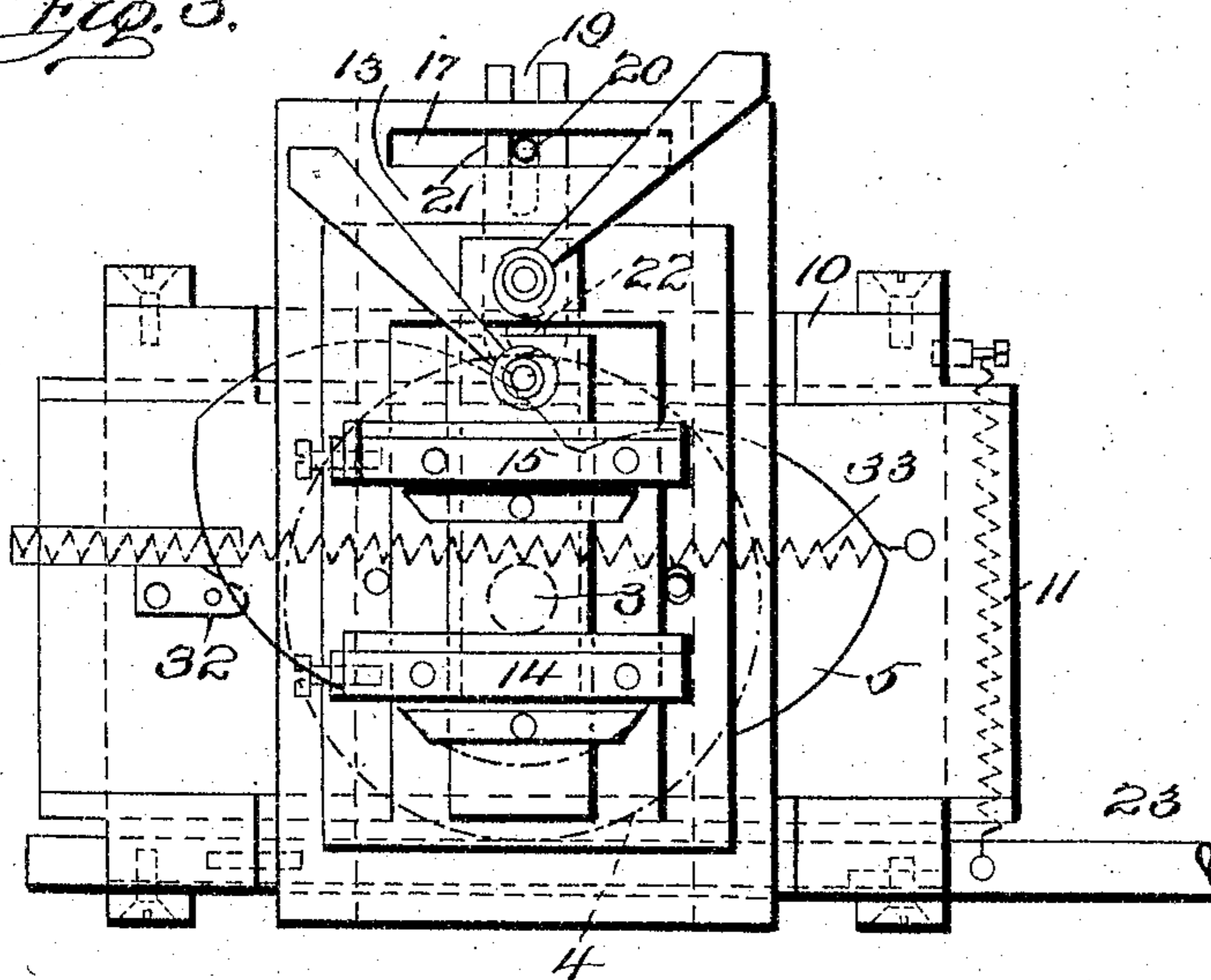
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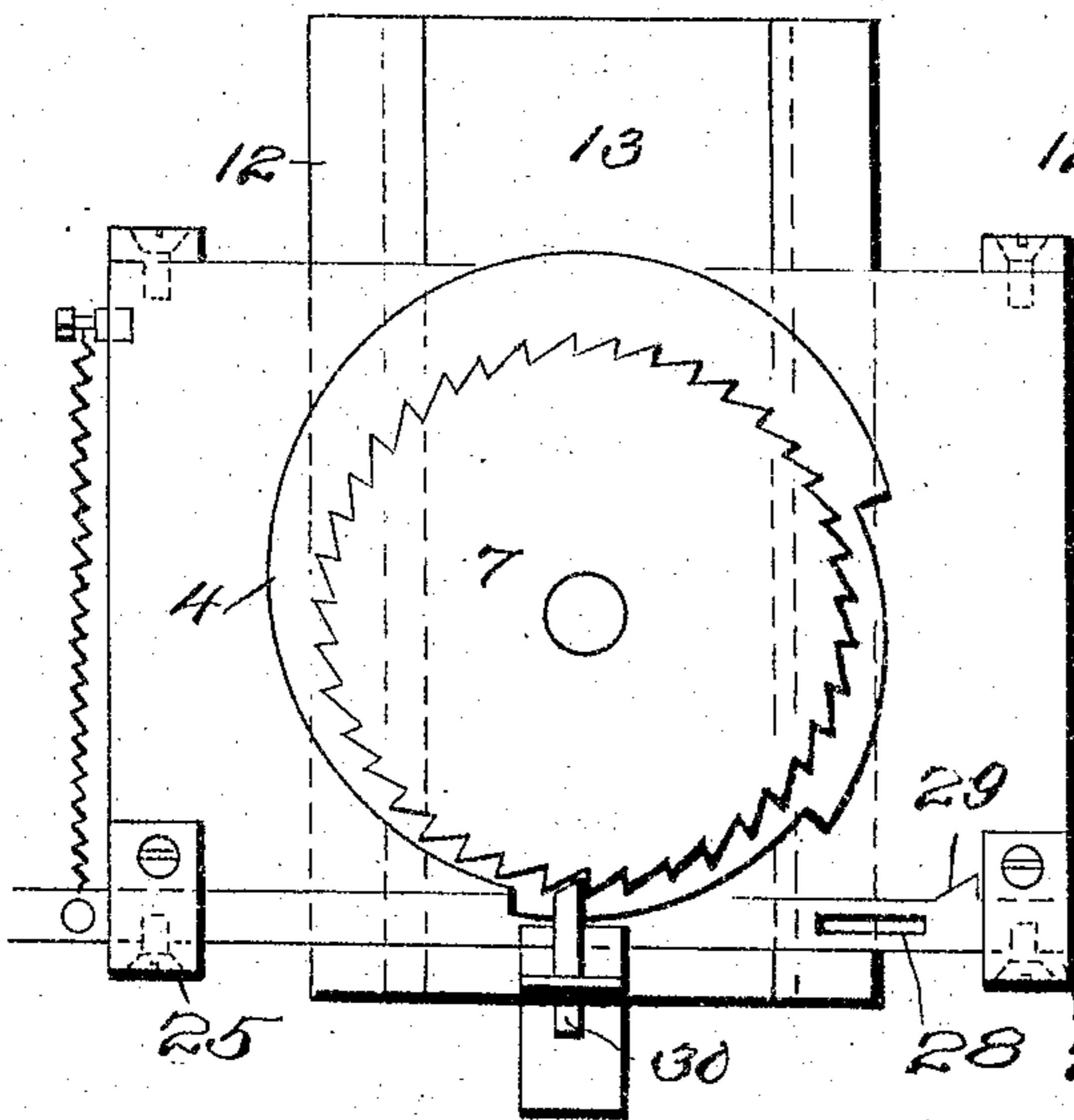
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3 SHEETS—SHEET 3.

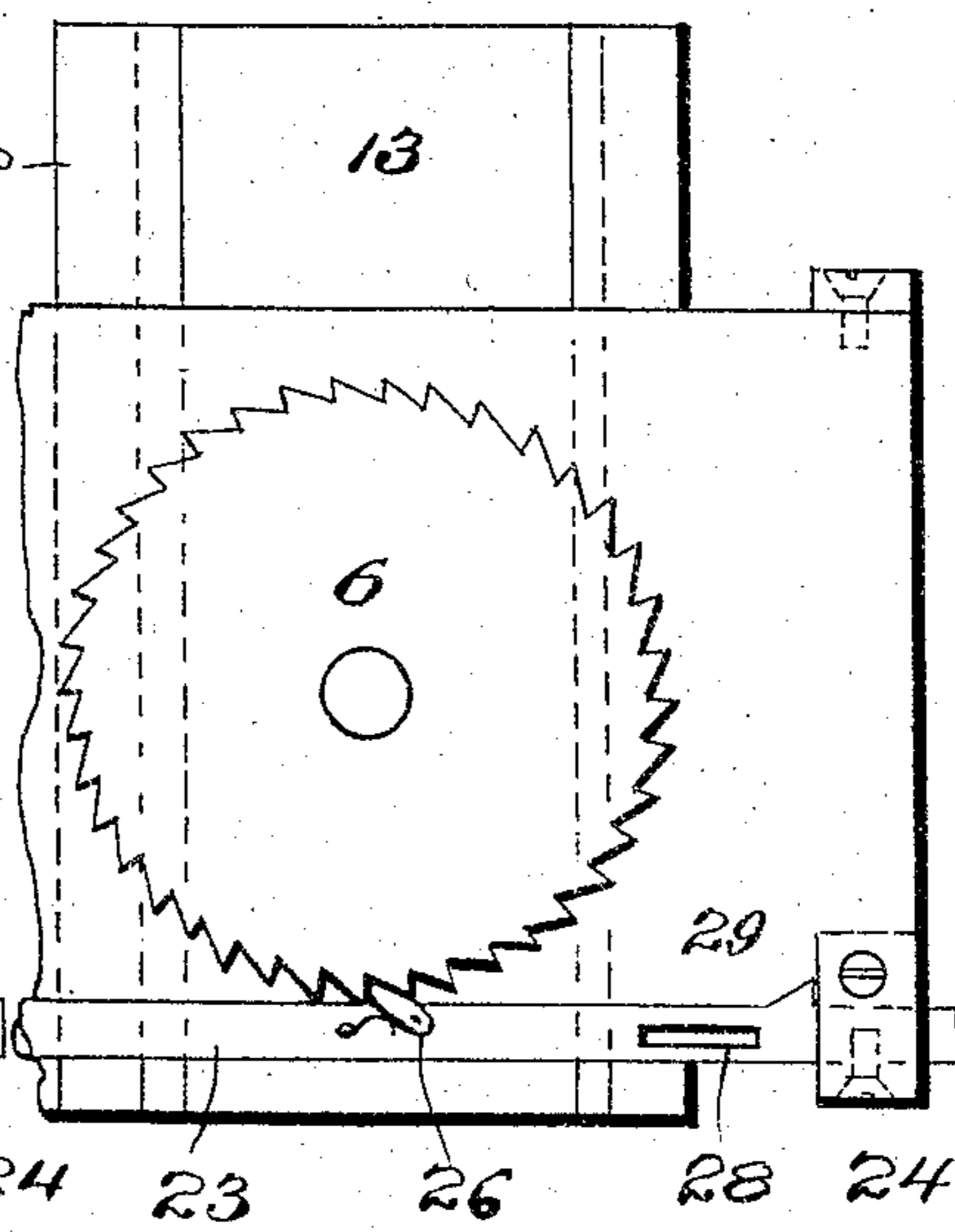
*Fig. 3.*



*Fig. 5.*



*Fig. 4.*



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# UNITED STATES PATENT OFFICE.

CARL GRÜNEBERG, OF PRESSBURG, AUSTRIA-HUNGARY.

## MACHINE FOR DRILLING AND PLUGGING BRUSH-BACKS.

SPECIFICATION forming part of Letters Patent No. 778,361, dated December 27, 1904.

Application filed October 20, 1903. Serial No. 177,811.

*To all whom it may concern:*

Be it known that I, CARL GRÜNEBERG, a subject of the Emperor of Austria-Hungary, residing at Pozsony, Pressburg, Empire of Austria-Hungary, have invented certain new and useful Improvements in Machines for Drilling and Plugging Brush-Backs; and I do hereby 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.

My invention relates to a machine for drilling and plugging the stocks or backs of brushes, and the construction is such that the brush-back is automatically fed to the tool.

The entire mechanism by means of which the intermittent motion is imparted to the brush-back to bring it into the desired position and the devices for stopping such movement during the boring and plugging operations is mounted upon and shares the motion of the frame which carries the brush-back chucks or holders and is reciprocated to and from the drill or plugger by the main shaft. This arrangement is adapted for the purpose of enabling simplification of the mechanism for imparting positive motion. It is obvious that such an arrangement involves less wear and tear and is less liable to irregularity in the adjustment than constructions in which the brush-back holder works in concert with the feed device by means of complicated lever, rack, and pinion or like gear.

The feed and stop devices according to this invention are arranged independently of each other, and the stop-wheel has teeth cut in an opposite direction to those of the feed-wheel, so that it serves to check the motion of the latter.

The feeding and stopping motion is extremely exact and certain, as the feed and stop pawls are not actuated by any complicated parts, but by stationary butting-pieces against which the pawls, together with the entire device, are advanced.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation, partly in section, of the entire apparatus. Fig. 2 is a plan of Fig. 1. Fig. 3 is a front elevation of Fig.

1; and Figs. 4 and 5 are detail views, drawn to a larger scale, of parts to be hereinafter referred to.

The device may be driven by a cam-disk (not shown in the drawings) on the main shaft of the drilling and plugging machine reciprocating a slide 2 in the guide A at certain intervals. In the slide 2 is mounted a shaft 3, carrying the cam or pattern disks 4, Figs. 1, 2, and 5, and 5, Figs. 1, 2, and 3, together with the ratchet feed-wheel 6 and the ratchet stop-wheel 7, Figs. 1, 2, 4, and 5. The slide 2 is connected to the frame 10 by means of the angle-brackets 8 and 9.

11 is a slide working horizontally in the frame 10. In front of this slide 11 is a slide 13, working up and down in the frame 12, and to this slide 13 the brush-back holders 14 and 15, of well-known construction, are secured.

The feed-wheel 6 is set in motion at certain definite intervals and advances the cams 4 and 5 through a certain distance, the extent of which, and the form of the cams, determines the distance between the holes being drilled in the brush-back. The stop-wheel 7, on the other hand, serves to stop the cams at the precise moment required during the actual drilling or plugging operation. The cam 5 is located in the recess in the frame 10 and, together with the cam 4 and the wheels 6 and 7, is mounted on the common shaft 3.

The cam 5 effects the feed corresponding to the distances between the drill-holes in the longitudinal rows and actuates the slide 11, with the brush-backs held by 14 and 15, in the longitudinal direction by means of the roller 32, secured to the said slide 11, which roller being pressed against the cam 5 by means of the spiral spring 33 follows the motion of the said cam 5.

The slide 13 serves to move the brush-back in the vertical direction—that is to say, determines the vertical distance between the separate rows of holes. On the slide 2 is an adjustable angle-bracket 18, to which one end of the lever 19 is jointed. The other end of the lever carries the slide 13 by means of a roller 20, the latter engaging in a slot 17, Fig. 3, of the slide 13.

A pendant 21 from the lever 19 rests with its roller 22 on the cam 4. By the form and motion of the latter the uniform disposal of the rows of holes vertically is determined in well-known manner.

The periodical motion of the feed-wheel 6 is imparted by a pawl-bar 23, Figs. 4 and 5, located below the same. This pawl-bar rests on either side in guides 24 and 25 and has one tooth 26, which fits between two teeth of the feed-wheel 6.

On the table B is a butting device 27, which on the slide 2 retreating enters the slot 28 in the pawl-bar 23 horizontally, whereby the feed-wheel 6 is turned through the distance between two teeth. Hereupon the member 27 is brought out of action owing to the advance of the slide 2. The pawl-bar 23 is then forced back by a spring 34 as far as the stop 29 allows. On the slide 2 now retreating again the member 27 once more enters the slot 28, so that the feed-wheel is once more turned in the manner described, and so on.

The stop-wheel 7 has ratchet-teeth cut in the opposite direction to those of the wheel 6 and serves, as already mentioned, to insure stopping of the brush-back at the precise moment required for drilling or plugging. The stopping action is effected by the pawl 30, the front tooth of which engages between the teeth of the wheel 7 and is provided rearwardly with a projecting portion having an incline which on the slide 2 retreating strikes the spring-stop 31, jointed to the stationary work-table 13, whereby the pawl 30 is disengaged from the teeth of the ratchet-wheel 7, while on advance it is again brought into engagement by a spring. This arrangement of the stop device has the advantage that no wear and tear and consequent inexactness in the operation of the feed-wheel can interfere with the correct adjustments of the brush-back during drilling and plugging, as the said stop-wheel is wholly independent of the feed-wheel.

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

1. In a brush-back drilling and plugging machine, a device for automatically feeding the backs to the tool, comprising a slide 2 traveling in the machine-frame, a shaft 3 mounted in the slide, a frame 10 carried by the slide, a horizontal slide 11 in said frame, a vertical slide 13 supporting the brush-backs, carried by the said slide 11, a cam 5 mounted

on the shaft 3 and actuating the slide 11, a cam 4 mounted on the shaft 3 and actuating the slide 13, ratchet feed and stop wheels 6, 7 mounted on said shaft and pawl mechanism cooperating with the same, all substantially as described.

2. In a brush-back drilling and plugging machine, a device for automatically feeding the backs to the tool, comprising a slide 2 traveling in the machine-frame, a shaft 3 mounted in the slide, a frame 10 carried by the slide, a spring-actuated horizontal slide 4 in said frame, a cam 5 mounted on the shaft 3 against which the slide presses, a vertical, slotted slide 13 carried by the slide 11, an arm 19 jointed to the slide 2 and having one end located in the slot of the slide 13, a cam 4 mounted on the shaft 3, a pendant pivoted to the arm 19 raised and lowered by the cam 4, ratchet feed and stop wheels 6, 7 mounted on said shaft and pawl mechanism cooperating with the same, all substantially as described.

3. In a brush-back drilling and plugging machine, a device for automatically feeding the backs to the tool, comprising a slide 2 traveling in the machine-frame, a shaft 3 mounted in the slide, a frame 10 carried by the slide, a spring-actuated horizontal slide 11 in said frame, a cam 5 mounted on the shaft 3 against which the slide presses, a vertical, slotted slide 13 carried by the slide 11, an arm 19 jointed to the slide 2 and having one end located in the slot of the slide 13, a cam 4 mounted on the shaft 3, a pendant pivoted to the arm 19 raised and lowered by the cam 4, a ratchet feed-wheel 6 mounted on the shaft 3, a spring-pressed, slotted pawl-bar 23 carried by the frame 10 engaging the said ratchet-wheel 6, a stationary arm 27 having an inclined nose secured to the machine-table and entering the said slot on retreat of the slide 2, a stop-wheel 7 having ratchet-teeth cut in the opposite direction to those of the feed-wheel, a pawl pivoted to the frame 10 and engaging the ratchet-wheel, a stationary spring-actuated member 31 jointed to the machine-table disengaging said pawl on retreat of the slide 2, all substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

CARL GRÜNEBERG.

Witnesses:

NEUFET ARIUM,  
LOUIS NANDORY.