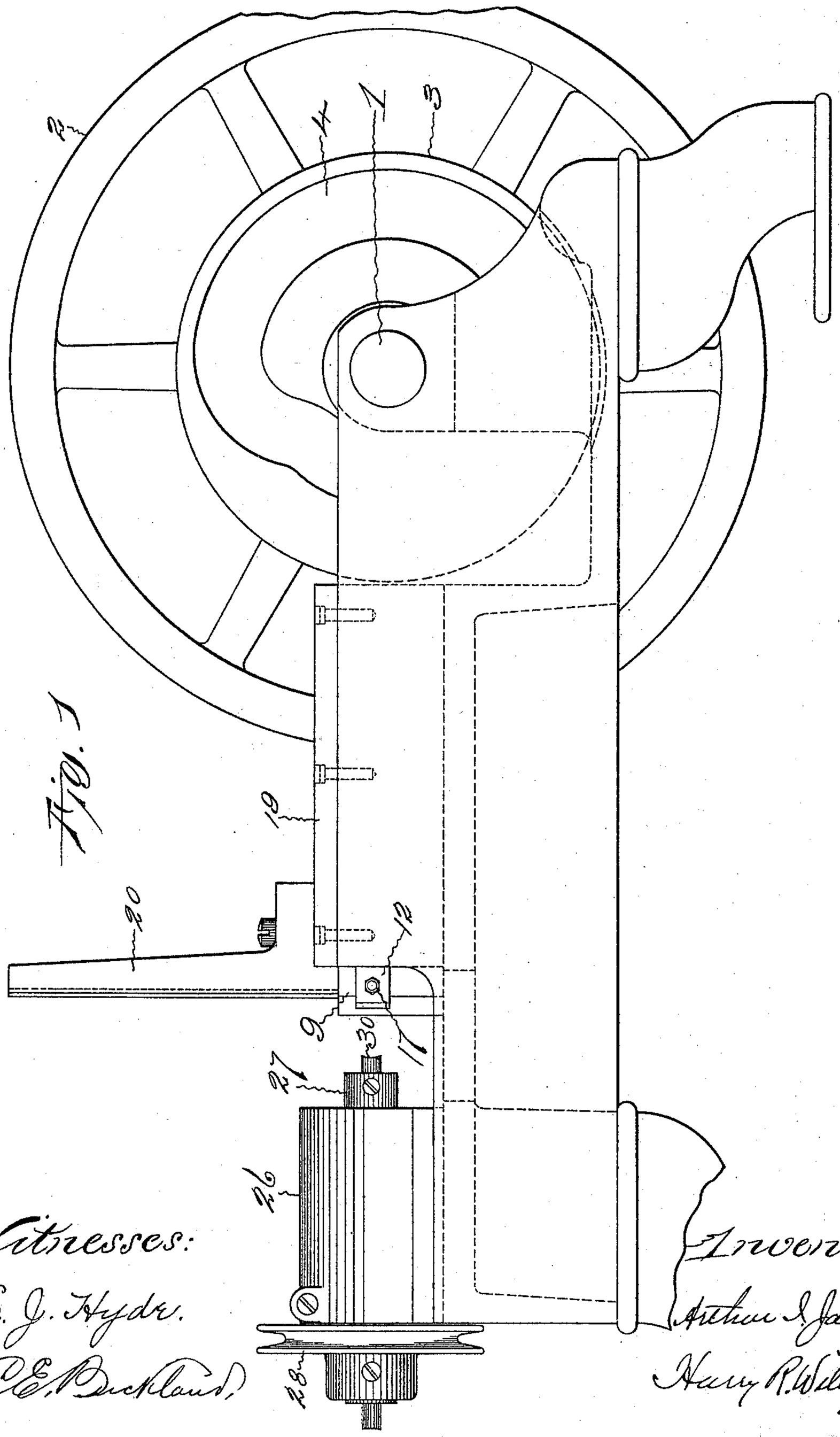
(No Model.) 4 Sheets—Sheet 1.

A. I. JACOBS.

STUD CUTTING MACHINE.

No. 585,762. Patented July 6, 1897.



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(No Model.) 4 Sheets—Sheet 2.

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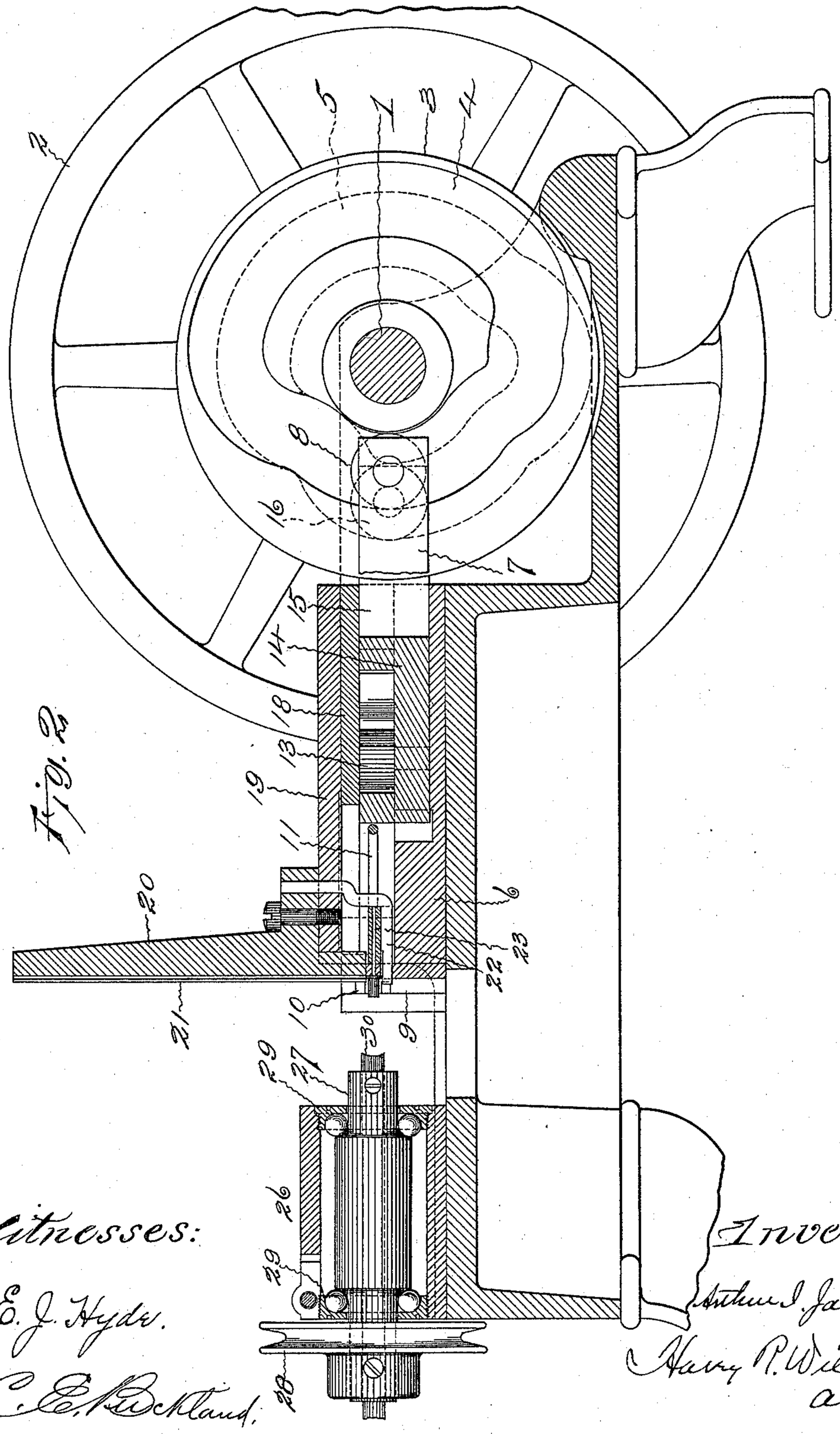

Fig. 2.

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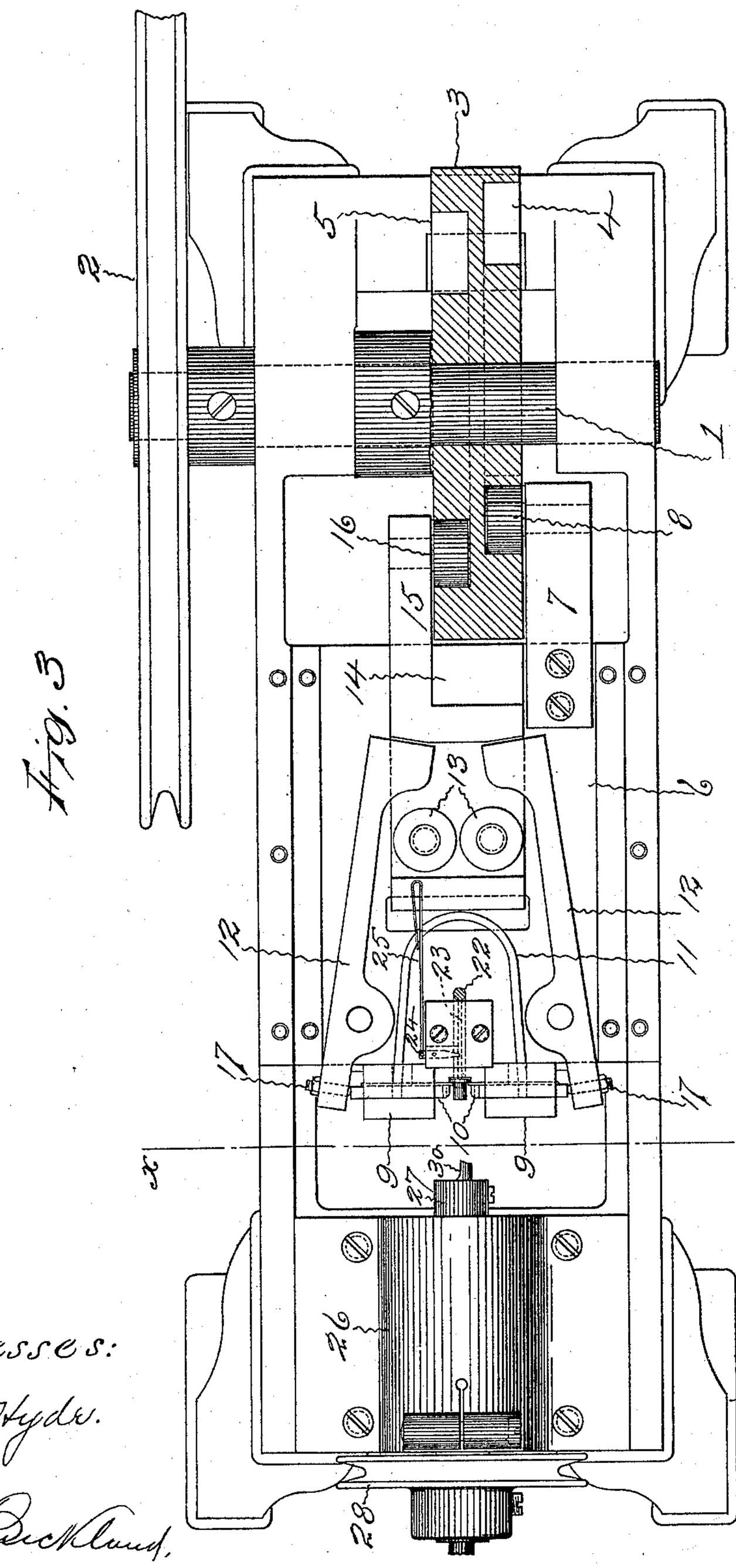

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(No Model.) 4 Sheets—Sheet 4.

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STUD CUTTING MACHINE.

No. 585,762. Patented July 6, 1897.

Fig. 4

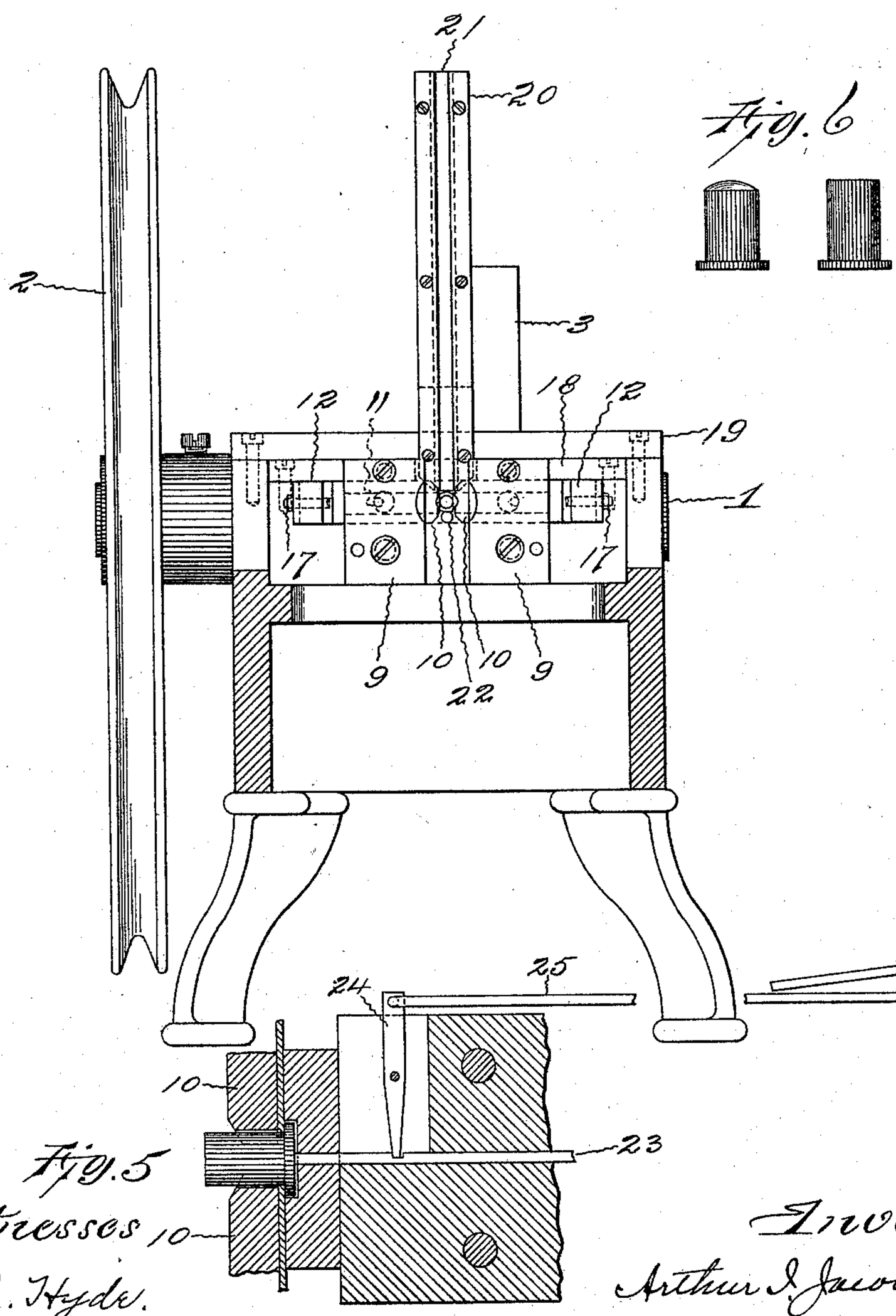

Fig. 6

Fig. 5

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UNITED STATES PATENT OFFICE.

ARTHUR I. JACOBS, OF HARTFORD, CONNECTICUT, ASSIGNOR TO THE POPE MANUFACTURING COMPANY, OF SAME PLACE AND PORTLAND, MAINE.

STUD-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 585,762, dated July 6, 1897.

Application filed November 18, 1896. Serial No. 612,622. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR I. JACOBS, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Stud-Cutting Machines, of which the following is a specification.

The invention relates to those machines in which small studs are automatically fed to a revolving cutter and after being subjected to the action of the cutter are withdrawn and discharged from the machine.

The object of the invention is to provide a simple, durable, and adjustable machine of this class in which the studs will be quickly and correctly presented to the action of a rapidly-operating cutter and then discharged with the desired cut accurately made.

In the machine shown as embodying the invention the studs are placed in a receiving-trough and allowed to feed by gravity. The lower stud is grasped by a pair of jaws that are borne by a cam-reciprocated slide and closed by cam-oscillated levers. The forward movement of the slide presents the studs in the grasp of the jaws to the action of the rotating cutter, and during the backward movement of the slide, which withdraws the stud from the cutter, the jaws are allowed to open and the cut stud to be dropped into a receiving-tray.

Referring to the accompanying drawings, which illustrate a machine embodying the invention, Figure 1 is a front elevation. Fig. 2 is an elevation with part cut in longitudinal section to show the construction and arrangement of the mechanisms. Fig. 3 is a plan with parts removed. Fig. 4 is a vertical section taken on plane denoted by the broken line X X of Fig. 3. Fig. 5 is an enlarged detail view of one of the studs in the grasp of the holding-jaws, and Fig. 6 shows views of the stud before and after being subjected to the action of the cutter shown in the drawings.

The bed of this machine may be of any common form and construction and may be mounted upon any suitable legs. Extending transversely near one end of the bed in suitable bearings is a shaft 1, mounted upon which is a driving-pulley 2 and a cam-disk 3. In the faces of this disk are cam-grooves 4 and 5. Between properly-formed ways on the upper face of the bed is located a slide 6, and attached to this slide is a bar 7, bearing a roll 8, that is adapted to run in the cam-groove 4, so the slide will be reciprocated by the rotation of the cam-disk. Attached to the front end of the slide are blocks 9, and in openings in these are loosely held the jaws 10, which are shaped to grasp and hold the studs. These jaws are normally thrust apart by a spring 11 and are adapted to be forced toward each other for grasping the studs by the movement of levers 12, that are pivoted upon and move with the slide 6. These levers are oscillated by the engagement with their ends of rolls 13, mounted upon a supplemental slide 14, that is movably held in a recess in the main slide 6 and that is connected by an arm 15 with a roll 16 in the cam-groove 5. This supplemental slide 14 is thus reciprocated independently of the main slide 6 at the proper time by the rotation of the cam-disk, so that the engagement of the rolls with the ends of the levers will close the jaws and the disengagement of the rolls from the ends of the levers will allow the spring to open the jaws without interfering with the reciprocation of the main slide that bears these parts. The ends of the levers adjacent to the jaws are preferably provided with bolts 17, that can be adjusted to insure the correct engagement of these ends of the levers with the jaws, so that the studs will be properly grasped and held with the necessary grip. A plate 18 is secured to the top of the main slide to retain the parts in place, and a plate 19 is secured to the bed to close in the slide.

Supported by the stationary plate 19 is the feed-trough 20, which has a groove 21 for receiving the heads of the studs and guiding them in their movement to the jaws.

Connected with a stationary part, as the plate 19 or the trough 20, is a finger 22. This finger projects forward, so that its end is just below the bottom end of the groove of the trough and offers a rest for supporting the lowest stud in position to be grasped by the jaws. It is not neeessary to support the stud after it has been grasped by the jaws, so the

finger is connected with a stationary part and only supports the lowest stud when the slide is back and the jaws are open. The finger not moving is not in position to offer any obstruction to the dropping of the stud after having been cut and the jaws are opened to release it.

Loosely held in a perforation in the parts back of the groove for the head of the stud is a pin 23, and engaging with this is a lever 24, to which is connected a rod 25. This rod is fitted into a groove in the under side of the plate 19 in such manner that the frictional contact of the bent end of the rod against the walls of the groove when the slide is moved tends to retard the rod, which action, when the slide moves forward, oscillates the lever and causes it to thrust the pin against the back of the head of the stud and force it forward to the front edge of the groove, as shown in Fig. 5. This insures that all of the studs shall be grasped and held by the jaws in exactly the same position so all the studs will be presented the same to the cutting-tool and operated upon accurately.

Supported by bearings in a box 26, attached to the top of the bed near one end, is a spindle 27, that bears a driving-pulley 28. This spindle is preferably supported upon antifriction-balls held in place by collars 29, screwed into the ends of the box, as shown in Fig. 2, and it is made hollow for the reception of the shank of the operating-tool 30, which, according to the nature of the work to be performed, may be either a cutting, boring, abrading, or similar tool. The tool shown in the drawings is a cutting-tool which rounds off the end of the stud, as illustrated in Fig. 6.

When the machine is in operation, one of the cams draws back the supplemental slide, and this causes the rolls which it bears to oscillate the levers in such manner that the jaws are made to loosely grasp the lowest stud that has dropped from the groove of the feed-trough and rests upon the stop-finger. The other cam then advances the main slide that bears the jaws, levers, and supplemental slide, and as the cams are timed the main slide is advanced faster than the supplemental slide, and this causes the rolls on the supplemental slide to be drawn backward relatively with the ends of the levers and oscillate them farther, which causes the jaws to firmly bite the stud that they hold. When the cam starts the main slide forward, the pin forces the stud forward before the jaws are finally tightened, so that the stud will be correctly held by the tightened jaws. The main slide moves forward with the stud held tightly in the grasp of the jaws until the end of the stud engages with and is operated upon by the cutting-tool. After the cutting operation is completed the cams move in such time that the jaws are opened to let the cut stud fall out and the main slide is drawn back for receiving the next stud.

With this machine the operations are automatically carried on with great rapidity, so that a large number of studs can be cut in a short period of time, and the parts are readily adjustable for accurate work, for the tool can be set in the desired position and the jaws made to grasp and hold the stud with the desired grip in the proper manner for accurate work.

I claim as my invention—

1. In a stud-cutting machine, in combination, a bed bearing a movable slide, mechanisms for reciprocating the slide, movable jaws mounted upon the slide, mechanisms for opening and closing the jaws, a feed-trough supported by the bed with its groove terminating adjacent to the jaws, a stop supported by the bed and projecting below the jaws and the lower end of the groove of the feed-trough, and a cutter adapted to be rotated in line with the jaws, substantially as specified.

2. In a stud-cutting machine, in combination, a bed bearing a movable slide, mechanisms for reciprocating the slide, movable jaws mounted upon the slide, mechanisms for opening and closing the jaws borne by the slide, a feed-trough supported by the bed with its groove terminating adjacent to the jaws, a stop supported by the bed and projecting below the jaws and the lower end of the groove of the feed-trough, and a cutter adapted to be rotated in line with the jaws, substantially as specified.

3. In a stud-cutting machine, in combination, a bed bearing a movable slide, movable jaws mounted upon the slide, levers for closing the jaws borne by the slide, a supplemental slide for oscillating the levers, cams for reciprocating the slides, and a cutter adapted to be rotated in line with the jaws, substantially as specified.

4. In a stud-cutting machine, in combination, a bed bearing a movable slide, movable jaws mounted upon the slide, levers for closing the jaws borne by the slide, a supplemental slide for oscillating the levers, a disk with cam-grooves in its opposite faces, connections between the opposite cam-grooves and the main and supplemental slides, and a cutter adapted to be rotated in line with the jaws, substantially as specified.

5. In a stud-cutting machine, in combination, a bed bearing a movable slide, movable jaws mounted upon the slide, levers for closing the jaws borne by the slide, a supplemental slide for oscillating the levers, cams for reciprocating the slides, a feed-trough supported by the bed with its groove terminating adjacent to the jaws, a stop-finger with its end projecting below the jaws and the lower end of the groove of the feed-trough, and a cutter adapted to rotate in line with the jaws, substantially as specified.

6. In a stud-cutting machine, in combination, a bed bearing a movable slide, movable jaws mounted upon the slide, levers for closing the jaws borne by the slide, a supplemental slide for oscillating the levers, cams for

reciprocating the slides, a feed-trough supported by the bed with its lower end terminating adjacent to the jaws, a stop-finger with its end projecting below the jaws and the lower end of the groove of the feed-trough, a pin borne by the slide and adapted to make contact with the end of the stud for locating it in position, and a cutter adapted to be rotated in line with the jaws, substantially as specified.

7. In a stud-cutting machine, in combination, a bed bearing a movable slide, movable jaws mounted upon the slide, levers mounted upon the slide and adapted to engage the jaws, a supplemental slide borne by the main slide and adapted to engage the levers, a cam-disk mounted upon a shaft supported by the bed, connections between the cam-grooves in opposite faces of the disk and the main and supplemental slides, a feed-trough supported by the bed with the lower end of its groove adjacent to the jaws, a stop-finger with its end projecting below the jaws and the lower end of the groove of the feed-trough, a pin borne by the bed and adapted to make contact with the head of the stud for locating it in position, a friction-rod connected by a lever with the pin and adapted to move in a groove in a fixed part of the bed, and a cutter adapted to be rapidly rotated in line with the jaws, substantially as specified.

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Witnesses:
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