(No Model.) 3 Sheets—Sheet 1.

G. A. GRAY & E. RICHTER.

FEED FOR METAL PLANERS.

No. 597,356. Patented Jan. 11, 1898.

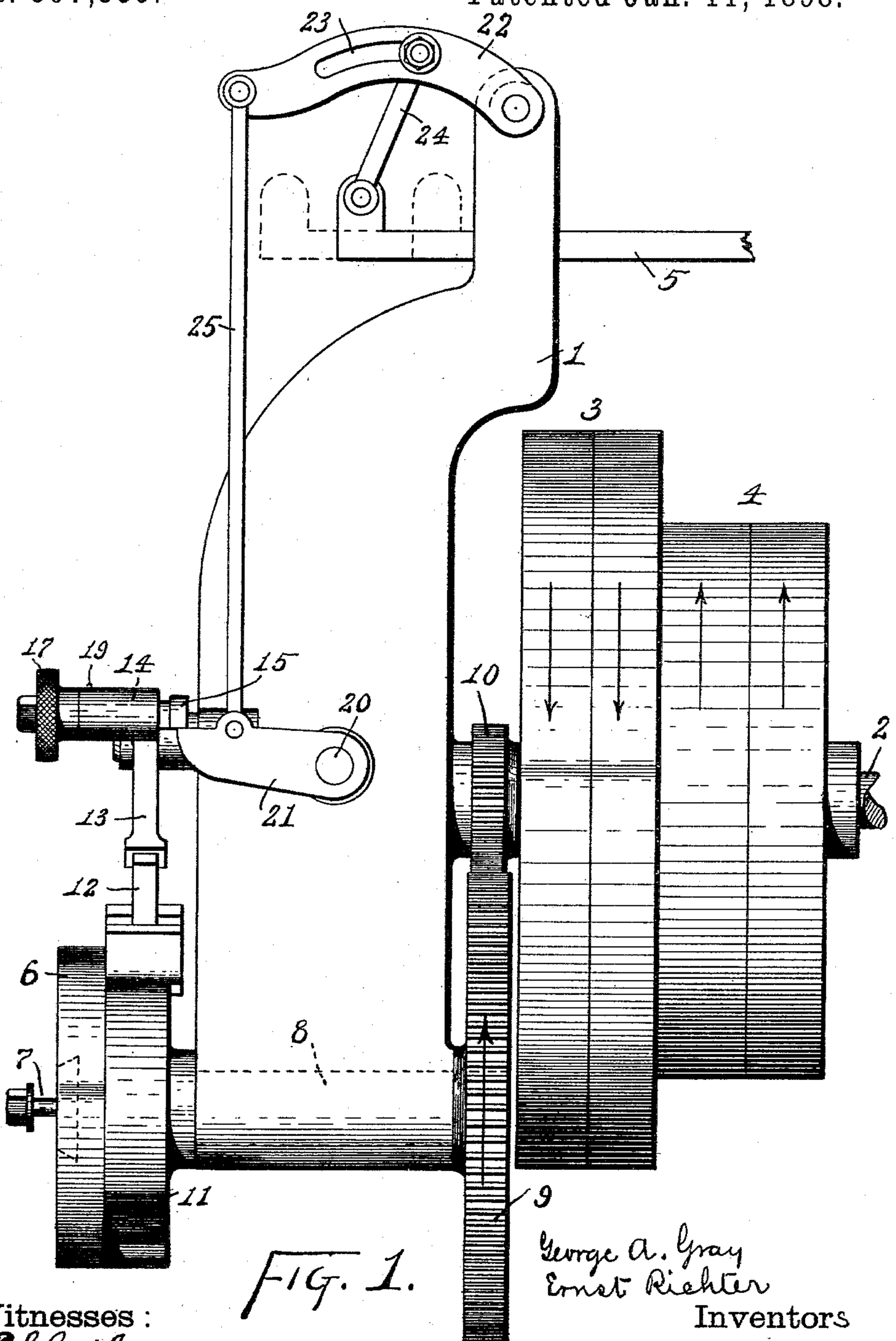

FIG. 1.

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K. M. Laurie

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Inventors
by James W. See
Attorney

(No Model.) 3 Sheets—Sheet 2.

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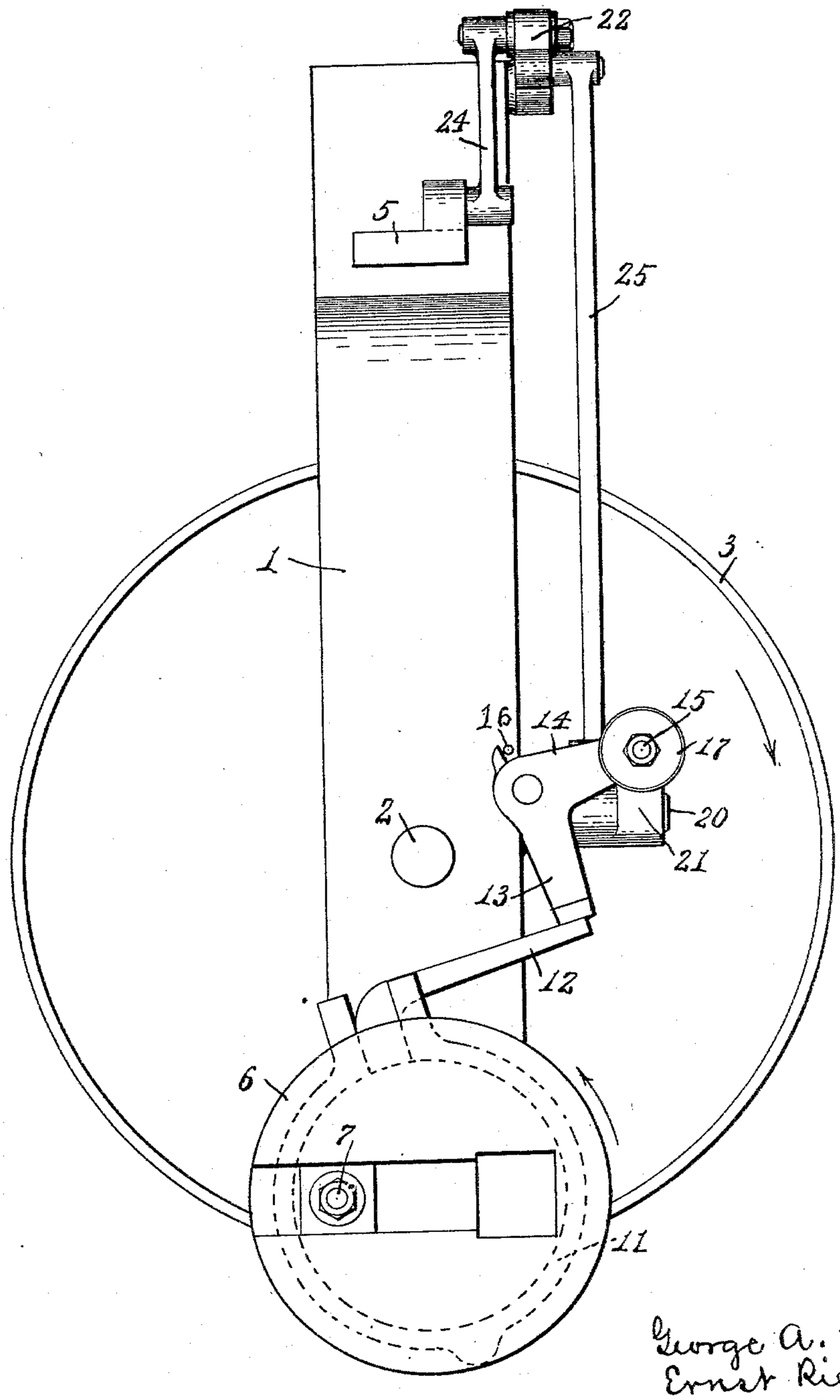

FIG. 2.

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(No Model.) 3 Sheets—Sheet 3.

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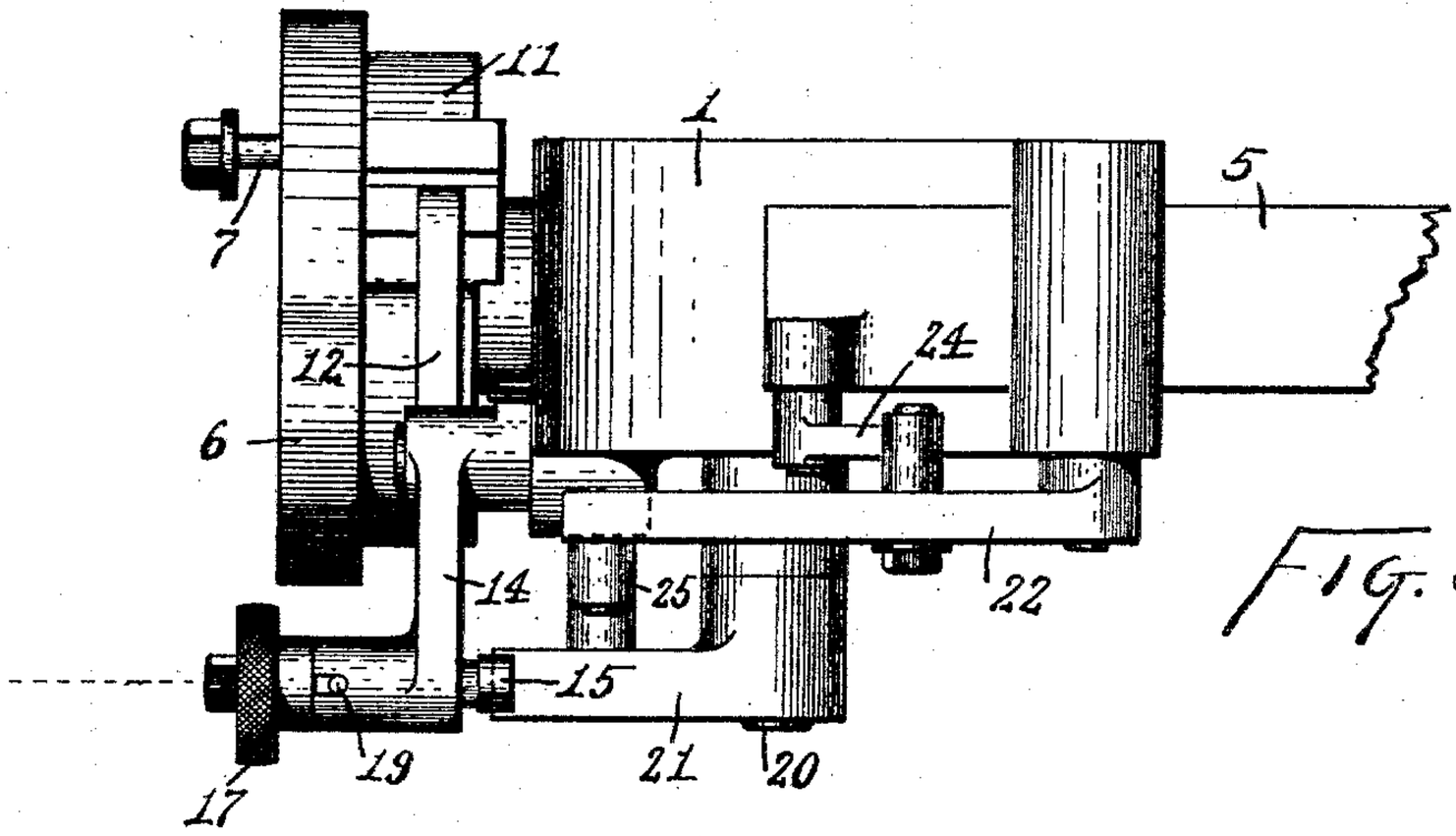

FIG. 3.

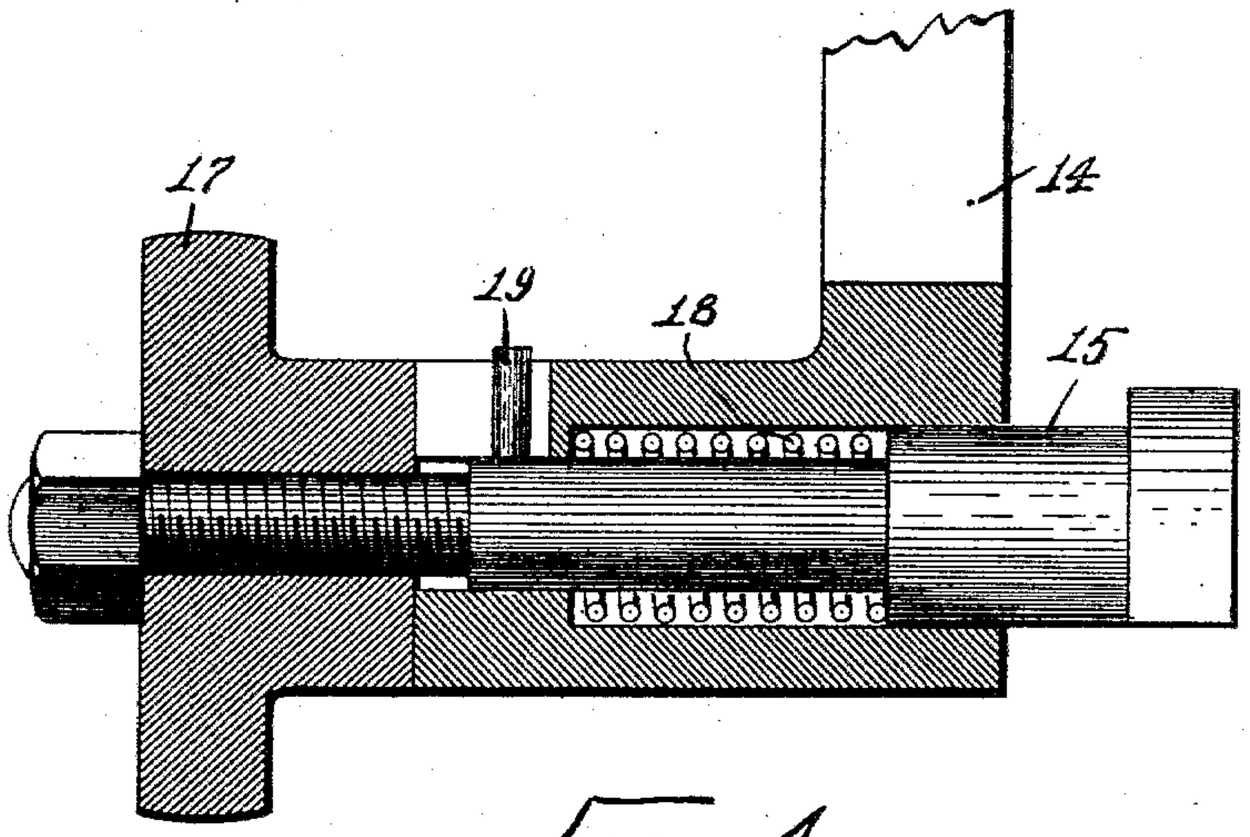

FIG. 4.

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UNITED STATES PATENT OFFICE.

GEORGE A. GRAY AND ERNST RICHTER, OF CINCINNATI, OHIO, ASSIGNORS TO THE G. A. GRAY COMPANY, OF SAME PLACE.

FEED FOR METAL-PLANERS.

SPECIFICATION forming part of Letters Patent No. 597,356, dated January 11, 1898.

Application filed September 10, 1897. Serial No. 651,173. (No model.)

To all whom it may concern:

Be it known that we, GEORGE A. GRAY and ERNST RICHTER, of Cincinnati, Hamilton county, Ohio, have invented certain new and useful Improvements in Feeds for Metal-Planers, (Case B,) of which the following is a specification.

Reference is hereby made to application, Serial No. 651,172, filed by us September 10, 1897, for feeds for metal-planers, (Case A,) claiming certain matter not herein claimed.

This invention pertains to feeding devices of metal-planing machines and relates to improvements whereby the feed of the cutting-tool may take place at the beginning or at the end of the cutting stroke, alternatively.

Our improvements will be readily understood from the following description, taken in connection with the accompanying drawings, in which—

Figure 1 is a side elevation of a feed mechanism exemplyfying our invention; Fig. 2, a front elevation of the same, the front being assumed as at the left in Fig. 1; Fig. 3, a plan, and Fig. 4 a vertical section through the bearing of the trip-pin.

In the drawings, 1 indicates fixed frame parts for the support of the moving mechanism; 2, the driving-shaft of the planer; 3, the tight and loose pulley for the belt producing the cutting motion of the planer, the left-hand one of these pulleys being assumed as the loose pulley; 4, the tight and loose pulleys for the belt producing the backing motion of the planer; 5, the belt-shifter or some part having an equivalent motion in one direction or the other as the reversals of the planer motion take place; 6, the usual feed-crank, which by making a single rotation causes the proper feeding motion to be imparted to the cutting tool or tools; 7, the usual crank-pin adjustable in the crank to determine the degree of feed, this crank-pin receiving the usual connections; 8, the shaft of crank 6, the crank being, however, loose with reference to this shaft, as in our Patent No. 447,820, hereinafter referred to as "our former patent;" 9, gear fast on shaft 8; 10, pinion engaging gear 9 and turning with the loose pulley of the pair of pulleys 3; 11, friction-strap carried by crank 6 and serving when gripping to lock crank 6 to its shaft, as in our former patent; 12, cam-lever carried by crank 6 and adapted when the lever is pressed inwardly to force the friction-strap open and allow shaft 8 to revolve while crank 6 remains stationary, as in our former patent; 13, an arm hung on a pivot and standing normally in the path of and engaging the end of cam-lever 12, as seen in Fig. 2, and adapted to swing to the right, so as to release the cam-lever; 14, an arm projecting from arm 13 and carrying on its end a bearing-boss, as in Fig. 4; 15, a trip-pin sliding in this bearing-boss and projecting its end to the rear of the boss; 16, a stop-pin to limit the inward rocking of arm 13; 17, a handle on the outer end of the trip-pin, by means of which the trip-pin may be drawn inwardly and turned; 18, a spring in the bearing-boss urging the trip-pin rearwardly; 19, a pin projecting from the trip-pin and engaging an open slot in the front end of the bearing-boss and while so engaging preventing the turning of the pin, the construction being obviously such that by means of its handle the trip-pin may be drawn forwardly and so turned that pin 19 engages the outer face of the bearing-boss, thus retaining the trip-pin in retracted position; 20, a pivot; 21, an arm rocking on this pivot, the extremity of this arm forming a toe engaging under the rear end of trip-pin 15 when that trip-pin is in rearward projected position; 22, an arm rocking on a fixed pivot and lying substantially parallel with the path of reciprocating movement of belt-shifter 5; 23, a segmental slot in arm 22; 24, a link having its lower end pivoted to belt-shifter 5 and having its upper end connected with arm 22 at the slot therein, the upper pivot of the link being capable of being made fast to arm 22 at either end of the slot, the slot permitting the adjustment of the pivot-point to be conveniently made, and 25 a link connecting arm 22 with arm 21.

Shaft 8 turns in the direction indicated by the arrow on gear 9. This shaft is to turn continuously or at such times as feeding motion is wanted—that is to say, at the beginning and at the end of the cutting stroke of the planer. In the example this shaft derives its motion from the loose pulley of the pair of

pulleys 3, which will be found quite satisfactory in practice; but any other source of motion for shaft 8 will be the equivalent of the transmitting system shown. Friction-strap 11 is normally open and held so by the action of arm 13 on cam-lever 12, as in our former patent, so that feed-crank 6 remains stationary while shaft 8 turns.

Assume now that at the beginning of the cutting stroke the belt-shifter 5 moves to the right. The result will be that link 24, in swinging, will push up on arm 22 and pull up on arm 21. As arm 21 rises its toe, engaging under trip-pin 15, raises arm 14 and causes arm 13 to move to the right clear of cam-lever 12. As soon as the toe of arm 21 shall have cleared the lower corner of the trip-pin arm 14 returns by gravity to its normal position. When arm 13 swung to the right and cleared cam-lever 12, the friction-strap was at liberty to grip the feed-crank to shaft 8, whereupon the feed-crank turned with the shaft and would continue to do so until the clutch formed by the friction-strap was released. Arm 13 cleared the cam-lever and allowed the friction-clutch to engage and the crank to start on its rotation; but arm 13 at once returns to its intercepting position, and when the feed-crank shall have completed its rotation the cam-lever will again engage arm 13, thus releasing the friction-strap and arresting the motion of the feed-crank. The feed-crank has thus made one turn and given the feeding impulse to the planer. This will happen each time belt-shifter 5 moves to the right, and it has been assumed that this rightward movement takes place at the beginning of the cutting stroke of the planer. Belt-shifter 5 moved to the right at the beginning of the cutting stroke of the planer, and at the end of the cutting stroke it will move back to the left, the dotted lines in Fig. 1 indicating the extreme positions of the lower pivot of link 24. When the belt-shifter moved to the right, it elevated arm 22 and produced the tripping effect before referred to. Arm 21 remains up so long as the belt-shifter occupies its rightward position. When the belt-shifter moves to the left, then arm 22 descends and so does arm 21, the toe of arm 21 in such case brushing down past the end of trip-pin 15, the trip-pin yielding endwise to permit the toe to pass below the trip-pin. In Fig. 1 the belt-shifter is shown in mid-position. As it moves from that position to the left it obviously draws arm 22 downwardly. This results in arm 21 moving farther down, which movement, however, is without effect on the tripping. It is thus seen that a feeding impulse of the planer will take place at the beginning of each cutting stroke. If, however, the trip-pin 15 be retracted and locked back by pin 19, arm 21 in rising will clear the trip-pin and no feeding will take place. The feed may thus be thrown out of and into action by locking trip-pin 15 in retracted position or by allowing it to go into projecting position. If now the upper pivot of link 24 be shifted to the left-hand end of slot 23, it will be obvious that when belt-shifter 5 moves to the right, as it is assumed as doing at the beginning of the cutting stroke of the planer, the effect will be to depress arm 21 instead of elevating it. The depression of arm 21 has no effect on tripping the feed, and consequently the feeding will no longer take place at the beginning of the cutting stroke; but, under the new conditions, when the belt-shifter moves to the left then arm 22 will be raised and the feed will be tripped, the action being precisely as before, except that the feeding takes place at the end of the cutting stroke instead of at the beginning. The feeding may thus be made effective at either the beginning or the end of the cutting stroke by adjusting the upper pivot of link 24 to one or the other end of the slot in arm 22. It is obvious that the ends of the slot constitute the two selective pivot-points and that the slot between these points is merely a convenience to permit of the shifting of the pivot.

Reciprocating part 5, which gives motion to link 24, has been assumed as the belt-shifter of the planer, as may well be the case in practice; but it is obvious that any other reciprocating part about the planer which makes a stroke at each reversal of the planer motion will be the equivalent of the belt-shifter in giving motion to link 24. It is to be observed that arms 22 and 21 move in common, being connected by link 25. The forming of arms 21 and 22 as separate pieces and the connecting of them for common motion by means of link 25 is a mere incident to the fact that the belt-shifter is disposed far above the parts which its motions are to produce a tripping effect upon.

We claim as our invention—

1. In feeds for metal-planers, the combination, substantially as set forth, of a reciprocating pivot making a stroke at each reversal of the planer motion, a pivoted arm lying substantially parallel with the path of reciprocation of said pivot and connected with the feed-tripping mechanism of the planer, a pivot carried by said arm to one side of vertical plane of said reciprocating pivot when the latter is at mid-stroke, and a link connecting said two pivots.

2. In feeds for metal-planers, the combination, substantially as set forth, of a reciprocating pivot making a stroke at each reversal of the planer motion, a pivoted arm lying substantially parallel with the path of reciprocation of said pivot and connected with the feed-tripping mechanism of the planer, a pivot carried by said arm to one side of vertical plane of said reciprocating pivot when the latter is at mid-stroke and adjustable to the opposite side of said plane, and a link connecting said two pivots.

3. In feeds for metal-planers, the combination, substantially as set forth, of a recipro-

cating pivot making a stroke at each reversal of the planer motion, a pivoted arm lying substantially parallel with the path of reciprocation of said pivot and connected with the feed-tripping mechanism of the planer, and having a slot whose ends are at opposite sides of the vertical plane of said pivot when the latter is at mid-stroke, a pivot adjustably mounted in said slot, and a link connecting said two pivots.

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Witnesses:
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