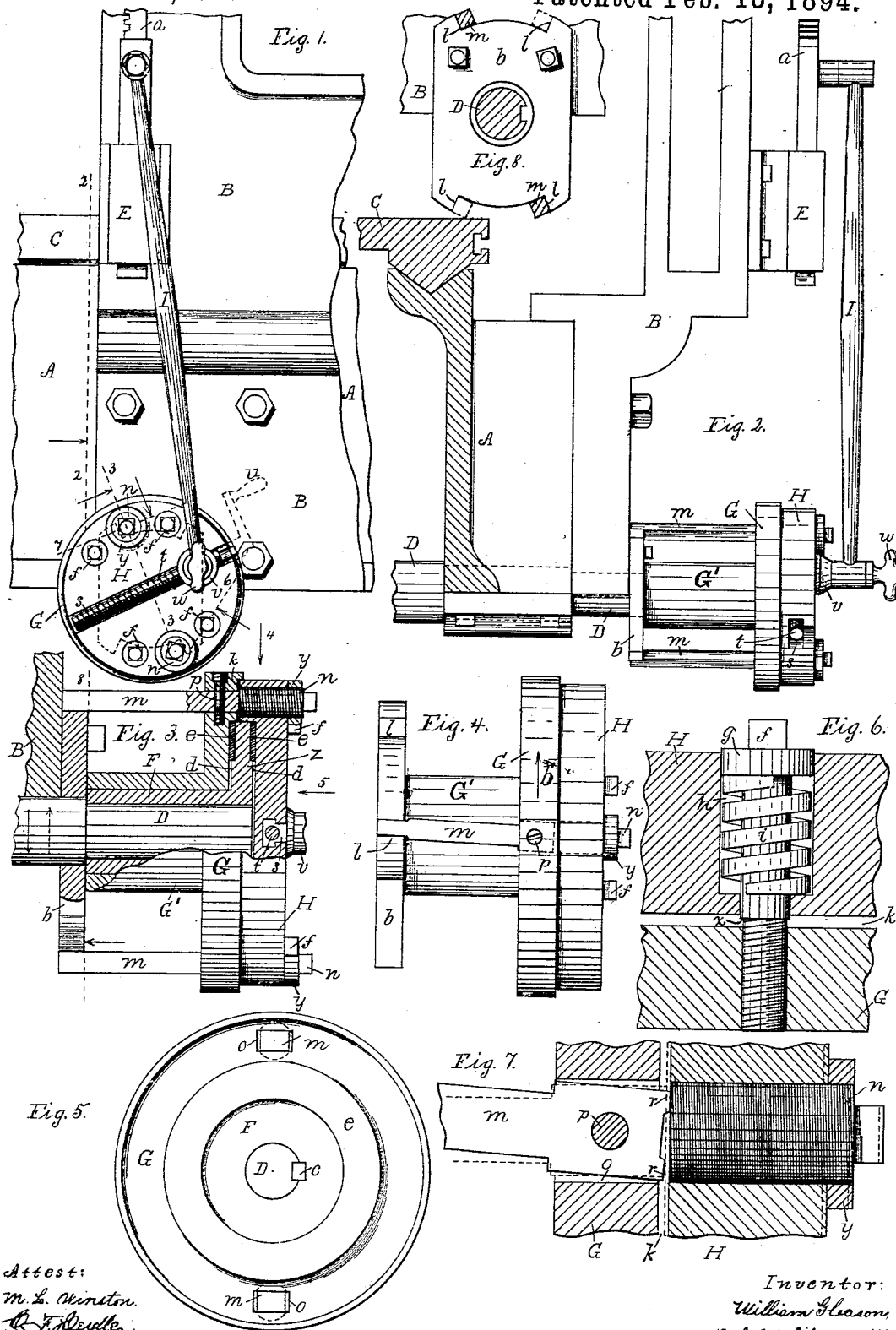


(No Model.)

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FEED MECHANISM FOR METAL PLANERS.

No. 514,594.

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FEED MECHANISM FOR METAL-PLANERS.

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To all whom it may concern:

Be it known that I, WILLIAM GLEASON, of Rochester, in the county of Monroe and State of New York, have invented a new and useful Improvement in Feed Mechanism for Metal-Planers, which improvement is fully set forth in the following specification and shown in the accompanying drawings.

This invention has for its object the producing of a better and more reliable means for operating the feed of metal planers and similar machines than has heretofore been employed, the same being hereinafter fully described and more particularly pointed out in the claims.

Referring to the drawings Figure 1 is a side elevation of portions of a metal planer with my improved feed operating mechanism attached in place. Fig. 2 is a transverse section on the dotted line 2 2 in Fig. 1 and viewed as indicated by the arrow pointed thereon. Fig. 3 is in part, a diametrical section on the dotted line 3 3 in Fig. 1 and viewed as indicated by the arrow pointed on the line. Fig. 4 is a view seen as indicated by arrow 4 in Fig. 3. Fig. 5 is a front view seen as indicated by arrow 5 in Fig. 3, the outer plate being omitted. Fig. 6 is a section on the dotted line 6 in Fig. 1 and viewed as indicated by arrow pointed on said line. Fig. 7 is a section on the dotted line 7 7 in Fig. 1 and viewed as indicated by the arrow pointed thereon. Fig. 8 is a front elevation of the trip plate or trip, parts being transversely sectioned as on the dotted line 8 8 in Fig. 3, viewed as indicated by the arrow pointed on said line. The detail figures 3 to 8 inclusive are drawn to scales larger than that of the general figures 1 and 2.

Referring to the parts shown A, Figs. 1 and 2, is a part of the frame of a planer, B a part of a post and C the bed, all being substantially of common construction. D, Figs. 2 and 3, is the ordinary heavy cross shaft resting in bearings in the frame for driving the bed, commonly carrying a stout pinion connected by intermediate gearing with the rack on the under side of the bed. A vertical box E, Figs. 1 and 2, is secured to a post B, within which the ordinary feed rack, *a*, is adapted to slide vertically. The parts of the feed mechanism above the box E and operated by the feed rack are such as are commonly used with

machines of this class and are not shown or here claimed to be new.

A trip, *b*, Fig. 8, is secured rigidly to the base of the post in a vertical position and is pierced centrally by the shaft D which projects some distance beyond the plate. To this overhanging end of the shaft a part F, Fig. 3, is rigidly secured by means of an ordinary key *c*, Fig. 5, said part being formed with a flange *z*, having its plane at right angles to the axis of the shaft. The flange *z* is formed with opposing circular recesses in its sides and extending inward from its circumference, and friction rings or bodies *e e*, Figs. 3 and 5, preferably of leather or similar yielding substance, are placed in said recesses, which friction bodies project laterally beyond or overhang the faces of the flange, as shown. The sole function of the part F with its flange *z* is to carry these friction bodies; and said flange might be, save as to a matter of convenience in construction, made in one piece with the shaft itself. The flange, being permanently and rigidly secured to the shaft is, for all practical purposes, a part thereof.

A circular plate G, is provided, formed with a hub G', having a journal bearing upon the part F, or (in case the flange *z* be a part of the shaft) upon the shaft itself. This plate is formed with a circular recess in its face adjacent to the flange *z* in which to receive the latter. A circular face plate or outer plate H, is held parallel with the inner plate G and concentrically therewith, it being slightly less in diameter than said inner plate, the latter being slightly chambered to receive said outer plate, as shown in Fig. 3. The inner face of the plate H is formed with a circular chamber or recess opposite to, and corresponding in diameter with, the recess in the inner plate which the flange occupies, which two recesses together form a circular chamber inclosing the flange *z* with the friction bodies *e e*. The flange *z* is less in thickness than the corresponding width of the chamber containing it so that thin circular cavities *d d*, are formed on either side of said flange next the respective plates G and H.

The outer plate H is secured to the inner plate G by means of bolts *f*, Figs. 1, 2, 3 and 4, more fully shown, however, in Fig. 6. These

bolts have thin circular heads or flanges *g*, fitted within cylindrical longitudinal cavities *h*, formed in the face plate. The bolts pass through the face plate and are threaded in the plate *G*; and under the head of each and within the cavity *h*, is placed a stout spiral spring *i*.

From this description it will be understood that the bolts do not hold the outer plate rigidly to the inner plate *G*, but that the former is urged toward the latter by the action of the compressed springs *i*. The parts are constructed so that the plates are not brought in actual contact by the yielding connections involving the springs, but are, rather, forced by said connections against the friction bodies *e e*. When the plates are pressing the friction bodies for instance, there is still left between the plates a free space *k*, Figs. 3 and 6. By this means the friction bodies, when the parts are in their normal positions, receive the whole force of the combined action of the springs; this being for the purpose of creating friction between the friction bodies and the contiguous plates when the parts move upon each other. The intensity of the pressure brought to bear upon the friction bodies, and the amount of friction created between them and the contiguous metal surfaces, may be regulated by turning the bolts *f* farther down against the springs or back to in part relieve the latter.

The trip *b*, which is a single metal plate, is formed with circular recessed ends, as shown in Fig. 8, there being two opposing shoulders or stops *l l*, at either end. The inner plate *G* is provided with two longitudinal trip levers *m m*, Figs. 2, 3, 4 and 5, the outer or free ends of which being in position to encounter said shoulders when the plate is turned upon its axis. These trip levers rest in rectangular cavities *o*, Figs. 5 and 7, formed in the inner plate and are held to place by radial pins *p p*, rigid in said plate. These cavities are made slightly wider—measured circumferentially—than the heads of the levers so as to allow the latter to swing to a limited extent upon the pins *p p* in planes parallel with each other and with the axis of the driving shaft *D*. The heads of these levers project across the space *k* between the plates, as shown in Fig. 7, to encounter the face plate *H*, the levers constituting actuators for said plates. When in their normal positions these levers are parallel with the axis of the shaft *D*.

For the purpose of adjustments and to guard against wear, the face plate is provided with two finely threaded longitudinal barrels *n n*, Figs. 1, 3 and 4, more fully shown in Fig. 7, one barrel being opposite the head of each lever. The barrels are in position to be encountered by the projecting corners *r r* of the heads of the levers when the latter are turned out of line or into oblique positions, as shown in Figs. 4 and 7, by encountering the stops *l l* of the trip *b*. On account of this action of the levers the plates *G* and *H* are pushed

temporarily farther apart, as indicated by dotted lines in Fig. 7, each time the levers are swung out of line by the action of the trip. This pushing apart of the plates is done against the combined action of the springs *i* and it relieves the friction between the bodies *e e* and the plates. To relieve this friction the plates need to be moved apart but a small fraction of an inch—as one-sixty-fourth, for instance—this being easily effected by the actuating levers in the manner above described.

It is understood that the axial motions of the shaft *D* are reciprocal; that is to say, when the planer is running this shaft is turned, by the ordinary means, first in one direction and then in the other to reciprocate the bed *C*.

Now, the operation of the feed mechanism is as follows: When the plates *G H* press the friction bodies the former are caused to turn with the shaft on account of the friction between said plates and the friction bodies. But when the plates, turning in either direction, cause the levers to encounter the stops of the trip, the plates are forced apart, which relieves the friction, and they at once stop turning, while the shaft continues its motion without them until its rotation in that direction ceases. And, again, when the shaft begins to rotate in the opposite direction the levers are carried away from the contiguous stops, which again permits the plates to press the friction bodies and turn with the shaft until the levers encounter the opposite stops of the trip. This occurring the friction is again relieved, as before, which allows the plates to stop until the shaft once more reverses its direction of motion. These operations give an intermittent reciprocal motion to the face plate *H* from which, by means of a connecting rod *I* and associated parts common to this class of machines, the feed rack or rod *a* is intermittently vertically reciprocated for the purpose of feeding the tool. The face plate is formed with the ordinary diametrical T-shaped slot *s*, Figs. 1 and 3, in its exposed face, in which is held an ordinary traverse screw *t*, which may be operated by a crank *u*. A clamp *v*, and a nut for the screw, both of common construction, are provided, the clamp being operated by a handle *w*. By loosening the clamp the adjacent end of the rod *I* may be moved along the slot to regulate its distance from the center of axial motion of the face plate for the purpose of determining the extent of motions of the feed rack *a*. The clamp holds the parts rigid with the face plate. The bolts *f* are each formed with a shoulder *x*, Fig. 6, which prevents it being turned so far into the plate *G* as to set the spring. If the springs become set at any time the trip levers could not press the plates apart and serious breakage would be liable to result from starting up the planer. The operating corners *r* of the trip levers and the opposing ends of the barrels are preferably hardened to prevent wear

at these points. The barrels are formed with squared heads upon which to use a wrench for turning them for the purpose of adjusting them longitudinally; and set nuts *y*, are provided for the barrels to hold them in place.

It will be observed that the action of the springs *i* serves to start the plates at each time the shaft *D* changes its direction of motion. That is to say, when the shaft starts to turn in either direction the springs coact for a moment with the shaft to rotate the plates. This matter is essential, and the said action of the springs aids in the successful operation of the feed mechanism. By observing Fig. 7 it will be seen that the inclined position of the trip lever is a strained or abnormal position from the fact that the lever is pressing the face plate back against the action of the springs; and the tendency of the latter is to return the lever to its normal or truly longitudinal position, in which both corners *r r* bear fairly against the end of the barrel. This action of the springs causes the free end of the lever to bear hard against the contiguous shoulder of the trip plate, (see Fig. 4,) and the reaction serves to turn the plates in the direction indicated by the arrow *b'*, and this action will take place instantly upon the shaft ceasing to act to hold the levers against the stops, that is to say, the instant the shaft begins to turn in the opposite direction. By this means the springs turn the plates each time until the levers assume their normal positions and again permit the plates to press the friction bodies, when the motion of the plates is assumed by the shaft and they are carried forward temporarily as before.

The longitudinal adjustments of the barrels *n n*, above mentioned, determine the distance the plates are moved apart by the action of the levers.

What I claim as my invention is—

1. In a feed mechanism for metal planers a rotatory reciprocating shaft carrying friction bodies, in combination with plates one on either side of said friction bodies adapted to press the latter between them, the plates being urged toward each other and against the friction bodies by a yielding pressure, and actuators held in one plate in position to press the other plate, substantially as shown and described.

2. In a feed mechanism for metal planers a rotatory reciprocating shaft carrying friction bodies, in combination with plates adapted to press the friction bodies between them said plates being pressed against the friction bodies by a yielding pressure as that of springs, and actuators serving to release the plates from the friction bodies, and means to regulate the tensity of the action of the springs, substantially as shown and described.

3. In a feed mechanism for metal planers a rotatory reciprocating shaft carrying friction bodies, in combination with plates one on either side of said friction bodies pressed

against the latter by a yielding pressure, and levers having bearings in one plate and adapted to press against the other, and stops to control the levers, substantially as and for the purpose specified.

4. A feed mechanism for metal planers, consisting of a rotatory reciprocating shaft carrying friction bodies, in combination with plates adapted to press the friction bodies between them, and actuators in one plate and adapted to press the other plate, the surfaces or parts of the latter plate against which the actuators press being made adjustable, as and for the purpose specified.

5. A feed mechanism for metal planers, consisting of a rotatory reciprocating shaft carrying friction bodies, in combination with plates adapted to press the friction bodies and turn with the shaft, and actuators for said plates serving to release them from the action of the shaft while the latter is turning, substantially as described.

6. A feed mechanism for metal planers, consisting of a rotatory reciprocating shaft carrying friction bodies, in combination with plates adapted to press the friction bodies between them, and actuators serving to release the plates from the action of the shaft, and a feed rack connected with said plates, substantially as shown and described.

7. In a feed mechanism for metal planers a rotatory reciprocating shaft carrying friction bodies, in combination with an outer and an inner plate adapted to press the friction bodies between them, and actuators for said plates serving to release them from the action of the shaft, a feed rack, and a connecting rod for the feed rack and the outer plate, and means to regulate or shift the hold of the connecting rod upon the plate, substantially as shown and described.

8. A feed mechanism for metal planers, consisting of a rotatory reciprocating shaft carrying friction bodies, in combination with plates adapted to press the friction bodies, and levers having bearings in one plate and adapted to press the other plate, and stops to control said levers, substantially as shown and described.

9. In a feed mechanism for metal planers two rotatory plates joined by yielding connections involving springs, and actuating levers for the plates, in combination with trips or stops to turn the levers out of line against the action of the springs while the plates are turning, whereby the springs tend to reverse the direction of motion of the plates by restoring the levers to their normal position, substantially as shown and described.

In witness whereof I have hereunto set my hand, this 24th day of April, 1893, in the presence of two subscribing witnesses.

WILLIAM GLEASON.

Witnesses:

ENOS B. WHITMORE,
M. L. WINSTON.