

(No Model.)

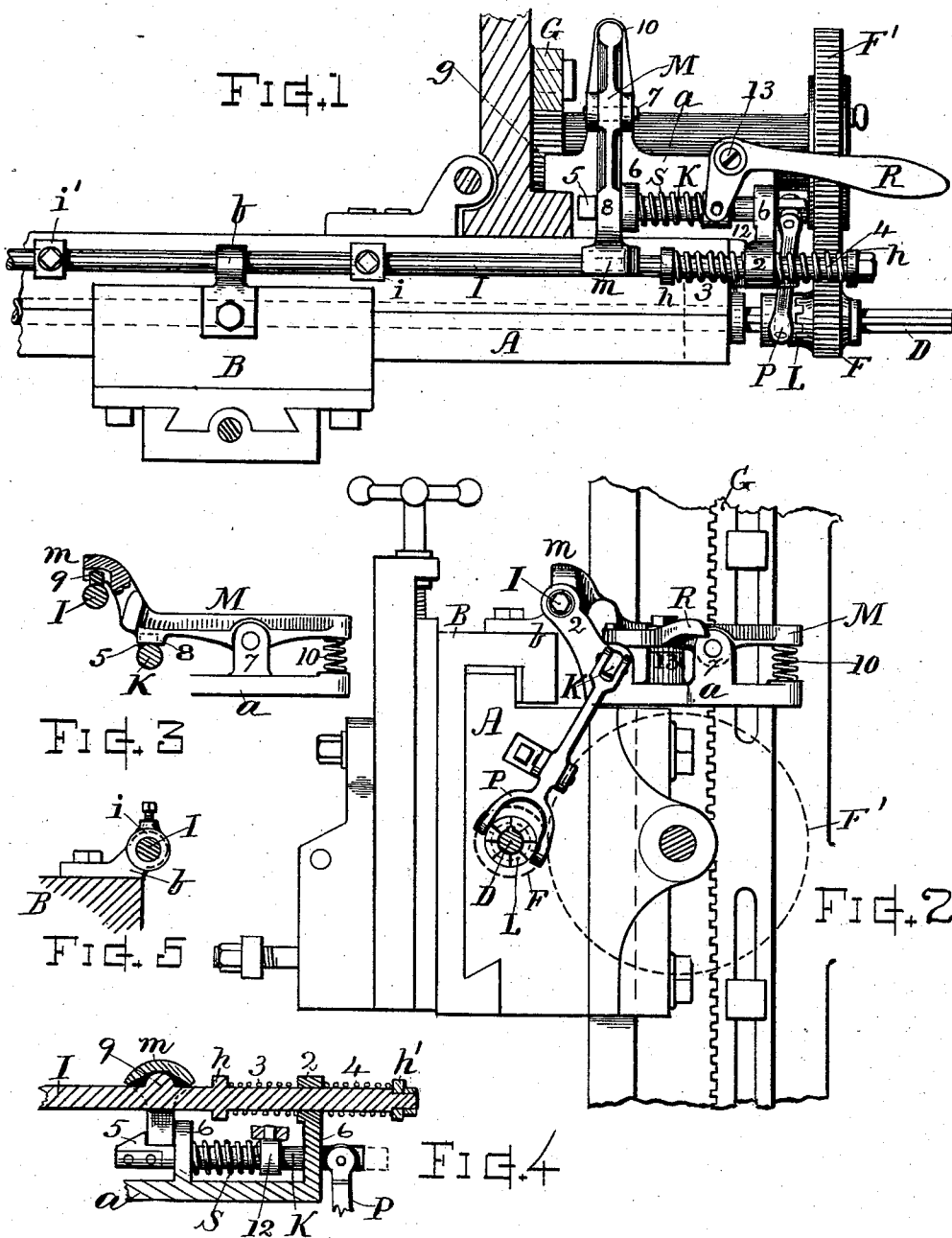
2 Sheets—Sheet 1.

A. M. POWELL.

AUTOMATIC FEED STOP FOR METAL PLANING MACHINES.

No. 570,954.

Patented Nov. 10, 1896.



Witnesses.

W. H. Burton
Simon E. King

Inventor.

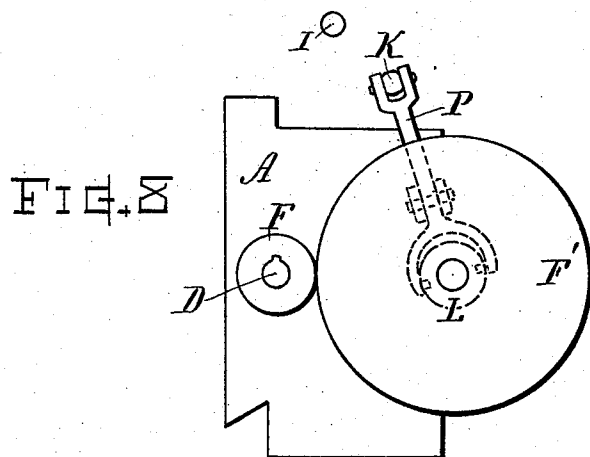
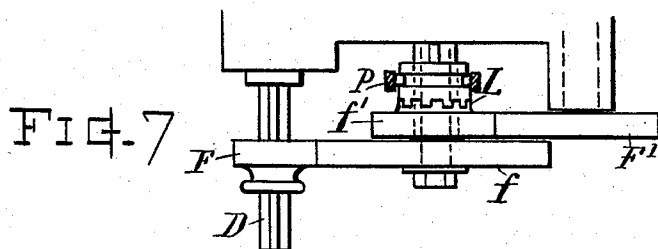
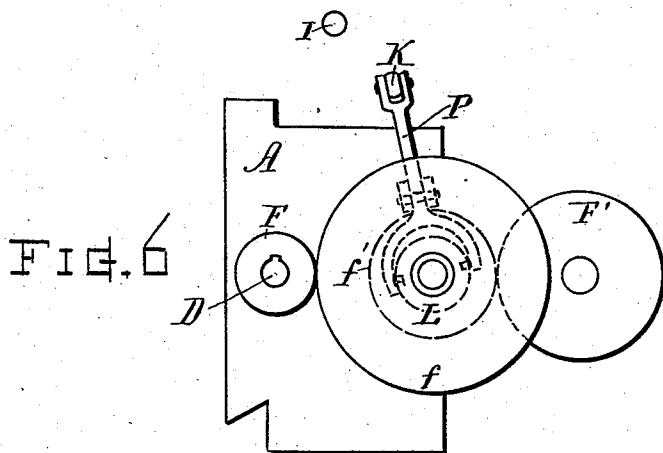
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UNITED STATES PATENT OFFICE.

ALBERT M. POWELL, OF WORCESTER, MASSACHUSETTS.

AUTOMATIC FEED-STOP FOR METAL-PLANING MACHINES.

SPECIFICATION forming part of Letters Patent No. 570,954, dated November 10, 1896.

Application filed April 25, 1896. Serial No. 589,013. (No model.)

To all whom it may concern:

Be it known that I, ALBERT M. POWELL, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Automatic Feed-Stop for Metal-Planing Machines, of which the following, together with the accompanying drawings, is a specification sufficiently full, clear, and exact to enable persons skilled in the art to which this invention appertains to make and use the same.

The objects of my present invention are to provide in metal-machines means whereby the feed movement of the tool-carrier or head can be automatically stopped when the planing-tool has reached any given place on the work; to render the metal-planer an automatic machine, thus enabling the operator to set the stop devices, start the machine, and leave it to run alone or with but casual attention until the given surface is planed. These objects I attain by mechanism the nature and organization of which are illustrated in the drawings, wherein—

Figure 1 is a plan view of my stop mechanism and such parts of a metal-planer as will show the connection and operation of the invention. Fig. 2 is an end view of the same. Fig. 3 is a separate view of the latch-lever and section of the slide-bar and trip-rod. Fig. 4 is a longitudinal section at the end of the trip-rod and a front view of the latch-lever. Fig. 5 is a section of the trip-rod, showing the adjusting-collar and tappet. Figs. 6 and 7 are outline plan and end views illustrating a modification in the location of the clutch such as may be used on planers where intermediate gears are employed, and Fig. 8 shows another modification in the location of the clutch.

The general construction of metal-planing machines being well known, only such parts thereof are herein shown as are necessary to indicate the manner of combining the stop mechanism therewith; but it will be understood that my stop mechanism is applicable to any of the various styles of metal-planing machines in which a cross-rail A, having a laterally-moving tool-carrying head B mounted thereon, is employed, the saddle of said head sliding on said cross-rail and moved right

or left along said rail by the feed-screw D, mounted in the rail and operated by feed-gears F F' and rack G in well-known manner. 55

In my stop mechanism I indicates a trip-rod arranged across the machine parallel with the cross-rail A and supported in suitable bearings 2 to have endwise motion imparted thereto, said rod having thereon adjustable collars *i* and *i'*, held by screws and adapted to receive contact from a slide or tappet *b*, connected with the saddle or tool-carrier head B, one of said collars being at the right and the other at the left of said tappet, so that the trip-rod can be actuated when the tool-carrier reaches a given position in its movement either to the right or left. At its end the rod I is furnished with two springs 3 and 4, respectively, confined between the opposite sides of the stationary bearing 2 and collars *h* and *h'*, fixed on the rod, which springs serve to maintain the rod at a normal position, but permit yielding movement in either direction. 75

Supported in bearings 6 on a frame or bracket *a*, attached to the end of the cross-rail A, there is an endwise-movable spring-pressed slide-bar K, having at its inner end a beveled catch-lug 5, above which and transversely thereto is a latch-lever M, fulcrumed upon said frame, as at 7, said lever being furnished with a lug or angle at 8 for engaging with the lug 5 of the slide-bar and at its forward end provided with a head *m*, having right and left inclined surfaces that work in conjunction with a beveled or rounded lug 9, carried upon the rod I, the action of which against said beveled or inclined surfaces lifts the latch-lever whenever the rod I is moved right or left. A suitable spring 10 is arranged under the hub of the latch-lever to force its head down upon the lug 9, but to permit the yielding and elevation of the lever. 85

A clutch L is provided for connecting the feed-gear F and feed-screw D. Said clutch is arranged for operation in and out of engagement by a fork or lever P, fulcrumed on a suitable axle supported on the end of the cross-rail, the end of said lever being pivoted to or connected with the end of the slide-bar. The slide-bar is provided with a suitable spring S, strained between the bearing 6 and a collar 12, fixed on the bar, which spring is 100

of sufficient strength to throw the clutch L out of engagement.

A hand-lever R is provided for moving the slide-bar K in opposition to the spring S and throwing the clutch into engagement. Said hand-lever is best fulcrumed upon the frame α , as at 13, its shorter arm connected with the bar or its collar 12 and its longer arm projecting as a handle, as indicated.

The automatic stop mechanism and the trip-rod or devices for controlling the same in throwing the feed-gear clutch into and out for disconnecting the gearing and feed-screw are all supported and carried upon the cross-rail and move up and down therewith, so that their operation is the same at whatever position of adjustment the cross-rail may occupy relatively to the planer-bed.

The reciprocating rack G and pinion g , that work the feed-gear shaft, may be arranged to operate in the usual manner, the reciprocative movement of the rack and pinion shaft imparting rotary motion to the gear F' through an internal reversible ratchet mechanism of the usual or any suitable kind arranged within said gear.

In the operation the collars i i' on the trip-rod I are adjusted to the desired position for any given limit of work, and when the planer is started the attendant, by aid of the hand-lever R, slides inward the bar K, swinging the lever P to shift the clutch L into engagement for operatively connecting the feed-screw and gears and at the same time allowing the latch-lever M to fall behind the lug 5, thereby retaining said parts with the clutch L in engagement and with the spring S compressed. The machine can then be left unattended and running. As the work proceeds the saddle with the tool-carrying head moves along the rail A, bringing the tappet b into contact with the trip-rod collar i or i' , thereby imparting endwise movement to the rod I, so that its lug 9, acting in conjunction with the incline on the head m of the latch-lever, raises said lever from the lug 5. This releases the slide-bar, which is immediately shot forward by the force of the spring S swinging the clutch-lever P and retracting the clutch L, thereby disconnecting the feed-gearing and stopping the action of the feed-screw D, so that the tool can advance no farther over the work.

The clutch L in most instances is best arranged upon the feed-screw spindle D as an axis for connecting the loose running-gear F thereto; but if in any instance preferred the clutch can be disposed upon the axle of gear F', as indicated in Fig. 8, or in cases where intermediate gears f f' are employed the

clutch can be located in connection with the intermediate gears, one of which, f' , is loose to turn free on the axle of the other, except when in clutch, as indicated in Figs. 6 and 7. Each of these modifications is within the scope of my invention, the mechanism and result effected being substantially the same in either form.

I claim and desire to secure by Letters Patent—

1. In a metal-planing machine, the combination with the tool-carrying head, cross-rail, feed-screw, and feed-gearing; of the feed-gear clutch, the spring-pressed slide-bar carrying a catch-lug and connected for operating said clutch, the latch-lever, the trip-rod having a lug that operates said latch-lever, the adjustable collars on said trip-rod, and a tappet for striking said collars, connected with the saddle or tool-carrier, for the purposes set forth.

2. An automatic stop mechanism, comprising the endwise-movable trip-rod provided with an actuating-lug and adjustable collars thereon, the slide-bar having a catch-lug, a pressure-spring acting on said slide-bar, the clutch-lever and hand-lever connected with said slide, a latch-lever adapted for engaging the catch-lug of said slide-bar, and provided with inclined surfaces that work in conjunction with the actuating-lug on said trip-rod, the latch-lever spring and means for imparting motion to said trip-rod, for the purposes set forth.

3. In a feed-stop mechanism for metal-planing machines, the combination, with the trip-rod having the adjustable collars for right and left engagement by the tool-carrying mechanism; of the oppositely-acting springs arranged on said rod at the right and left of its guide-bearing, for normally maintaining said rod at central position and permitting movement in either direction, substantially as set forth.

4. In combination with the cross-rail, the tool-carrying head, its feed-screw, and the gearing by which said feed-screw is operated, in a metal-planing machine, a clutch for connecting and disconnecting said gears in their operation of the feed-screw, means for automatically releasing said clutch, and trip devices for controlling the same, said releasing and trip devices carried upon and movable up and down with said cross-rail.

Witness my hand this 11th day of February, 1896.

ALBERT M. POWELL.

Witnesses:

CHAS. H. BURLEIGH,
ELLA P. BLENUS.