

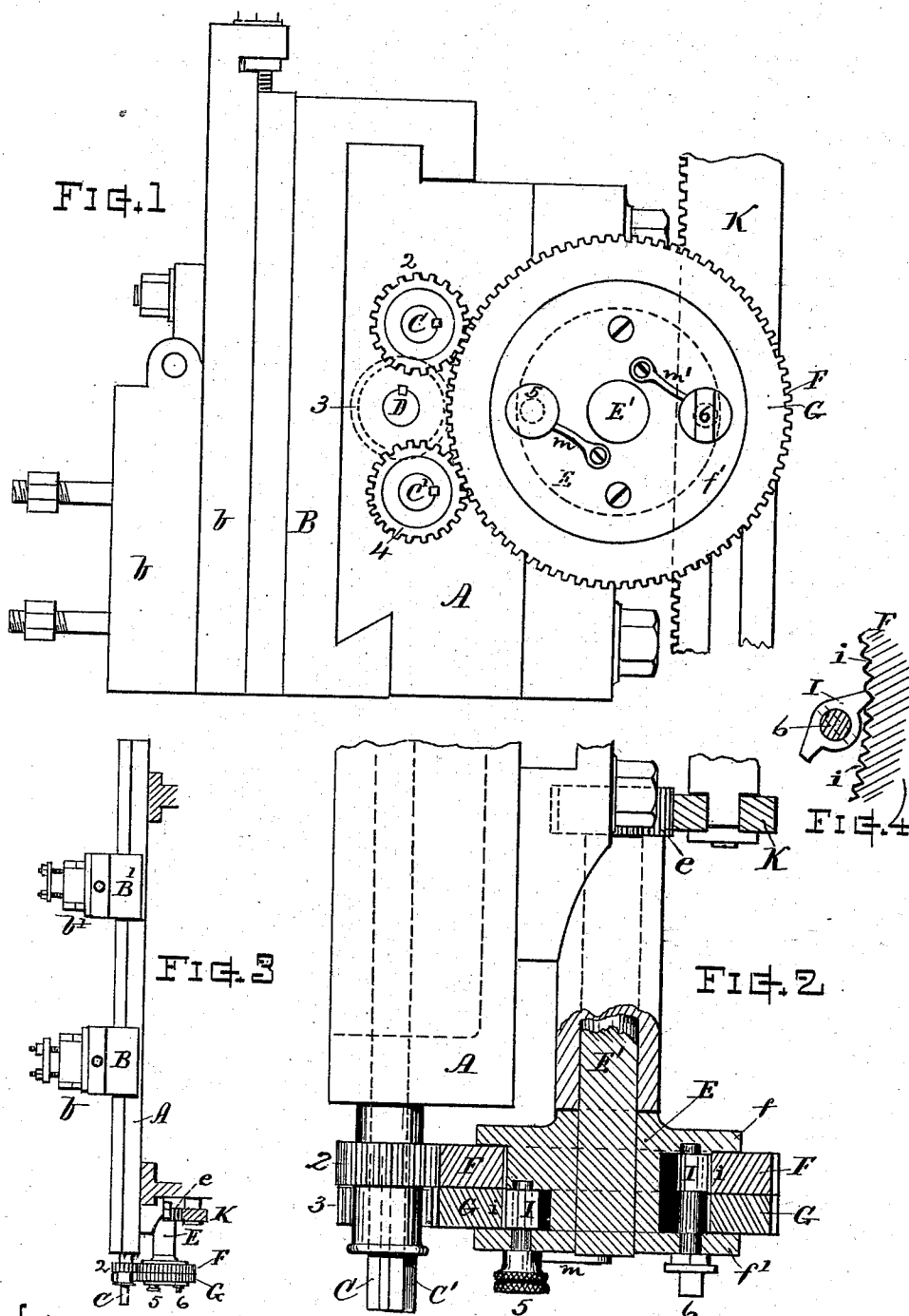
(No Model.)

A. M. POWELL.

COMPOUND RATCHET FEED GEARING FOR METAL PLANERS.

No. 562,482.

Patented June 23, 1896.



Witnesses.

Geo. W. Rice &
Simon & King

Inventor.

Albert M. Powell
By Charles S. Burdough
Attorney

UNITED STATES PATENT OFFICE.

ALBERT M. POWELL, OF WORCESTER, MASSACHUSETTS.

COMPOUND RATCHET FEED-GEARING FOR METAL-PLANERS.

SPECIFICATION forming part of Letters Patent No. 562,482, dated June 23, 1896.

Application filed April 25, 1896. Serial No. 589,015. (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 Compound Ratchet Feed-Gearing for Metal-Planers, 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.

This invention relates to the construction and arrangement of the feed-gearing and ratchet mechanism employed in metal-planers, in combination with the screws, shafts, or rods whereby the feed movements are imparted to the tool-carrying heads.

The objects of my present invention are to provide a feed-gear for double-head metal-planers adapted for effecting independent feed of the respective heads; also, to provide a simple and efficient feed-gear mechanism which can be manipulated with ease for the various changes desired, and which is applicable for use upon small planers, where the amount of room for the gearing is limited, as well as upon planers of larger dimension. These objects I attain by the mechanism illustrated in the drawings, which embrace such parts of a metal-planer as will show the nature of my invention.

Figure 1 represents an end view of the cross-rail and feed-gear mechanism. Fig. 2 is a horizontal sectional view of the same. Fig. 3 is a plan view of the cross-rail, tool-carrying heads, and feed-gear; and Fig. 4 shows a section of the gear, ratchet, and pawl.

My invention consists in a plurality of feed-gears and ratchet mechanism, employed with the feed-gear shaft, and interchangeable slip-gears for operating the feed-screws and rods that move the tool-carrying heads and tool-holders, the same combined and arranged as more fully hereinafter set forth, whereby a system of gearing is provided which facilitates ready adjustment for feeding or moving the tool carried by the respective heads individually in any desired direction.

Referring to parts, A denotes the cross-rail, B and B' the planer-heads that slide on said rail, and *b b'* the tool-holders that are mov-

able up and down on the heads in well-known manner.

C and C' indicate the cross-feed screws for the respective heads, and D the rod or feed-shaft that operates the vertical feed of the tool-holders *b* and *b'*. Two rods, one for each head, may in some instances be used, if desired. The ends of the screws and rod project in usual manner, forming arbors for receiving slip-gears, as at 2, 3, and 4, that can be removed, shifted, or interchanged on the several ends, which are fitted with a feather or otherwise formed so as to be rotated by rotation of the slip-gears.

E' indicates the usual feed power-shaft, upon the end of which there is fixed the hub E, having a back flange *f* and corresponding front plate *f'*, secured to the outer end of the hub.

F and G indicate two ring-gears arranged adjacent to each other and to turn loose upon the hub E. Said ring-gears are externally toothed to match the slip-gears 2, 3, and 4, and internally ratcheted or notched, as at *i*, Fig. 4.

Reversible engaging pawls or clutch devices I, disposed in recesses formed in the hub E, are provided for connecting the respective ring-gears with the hub for either right or left rotation. Said pawls are operated into or out of engagement by the two knobs or thumb-heads 5 and 6 on the ends of the pawl-spindles that extend through the front plate, as indicated.

m m' indicate the springs for retaining the pawls at position of adjustment. The shaft E' has alternate right and left rotation imparted thereto in well-known manner by the reciprocating rack K and pinion *e*.

The pawls I can be independently adjusted for giving right or left rotation to each, either one or both of the ring-gears as desired, by simply turning the knobs 5 and 6, as required.

In the instance shown in the drawings the axes of the screws and rod are so near together that three slip-gears, if arranged one on each screw and rod, and in the same plane, would interfere; not so, however, if the slip-gear on the screws and the rod are in separate planes. These axes may, however, if desired, be placed farther apart, or the slip-gears proportioned so that all three could

run in the same plane without contact with each other.

With the ordinary single-gear feed two heads can only be fed across the machine together right or left, or one head up or down, and the other head across; but with my arrangement of plural or dual gears I am enabled to feed the planer-heads B and B' both in the same direction or toward or from each other in opposite directions, or one head in either direction and the other head up or down at the same time. Thus when slip-gears 2 and 4 are both meshed with feed-gear F, both heads B and B' are moved together in the same direction. When meshed one with feed-gear F and the other with feed-gear G, the heads are moved independent in either direction; that is, in opposite direction or the same direction, accordingly as the two pawls may be adjusted to take into the ring-gear ratchets. When the slip-gear 3 is in mesh with F and the gear 4 in mesh with G, the tool-holder on one head moves up or down and the other moves crosswise in either direction, accordingly as the rotation of ring-gears F and G is set by their pawls. With gear 2 in F and 3 in G the operation is similar but with the other planer-head.

What I claim as of my invention, and desire to secure by Letters Patent, is—

1. In a metal-planer the combination with the tool-carrying heads mounted on the cross-rail, the feed-screws and rod for operating the tool-carrying heads and the feed power-shaft, of two feed-gears on said shaft, independent pawls and ratchets for the feed-gears, and the

adjustable slip-gears upon the rods and screws, substantially as set forth; whereby various changes in the operation of the screws and rod are effected, as and for the purposes set forth.

2. The combination of the feed-shaft carrying a hub having the recesses therein, a plurality of ring-gears supported on said hub, and having ratchet-notches in their inner faces, the oppositely-adjustable pawls arranged within said hub, and respectively engaging said ring-gears, and exterior knobs for independently adjusting said pawls for effecting right or left movement of the respective feed-gears, as and for the purpose set forth.

3. The combination of the feed-shaft carrying a hub having the recesses therein, a plurality of ring-gears supported on said hub, and having ratchet-notches in their inner faces, the oppositely-adjustable pawls arranged within said hub, and respectively engaging said ring-gears, and exterior knobs for independently adjusting said pawls for effecting right or left movement of the respective feed-gears, and the screws and rod for moving the tool-carrying heads, and interchangeable slip-gears for said screws and rod, as and for the purpose set forth.

Witness my hand this 21st day of April, A. D. 1896.

ALBERT M. POWELL.

Witnesses:

CHAS. H. BURLEIGH,
CHARLES S. BACON.