No. 771,817. PATENTED OCT. 11, 1904.

M. FLATHER.

PLANER.

APPLICATION FILED MAR. 18, 1903.

NO MODEL. 3 SHEETS—SHEET 1.

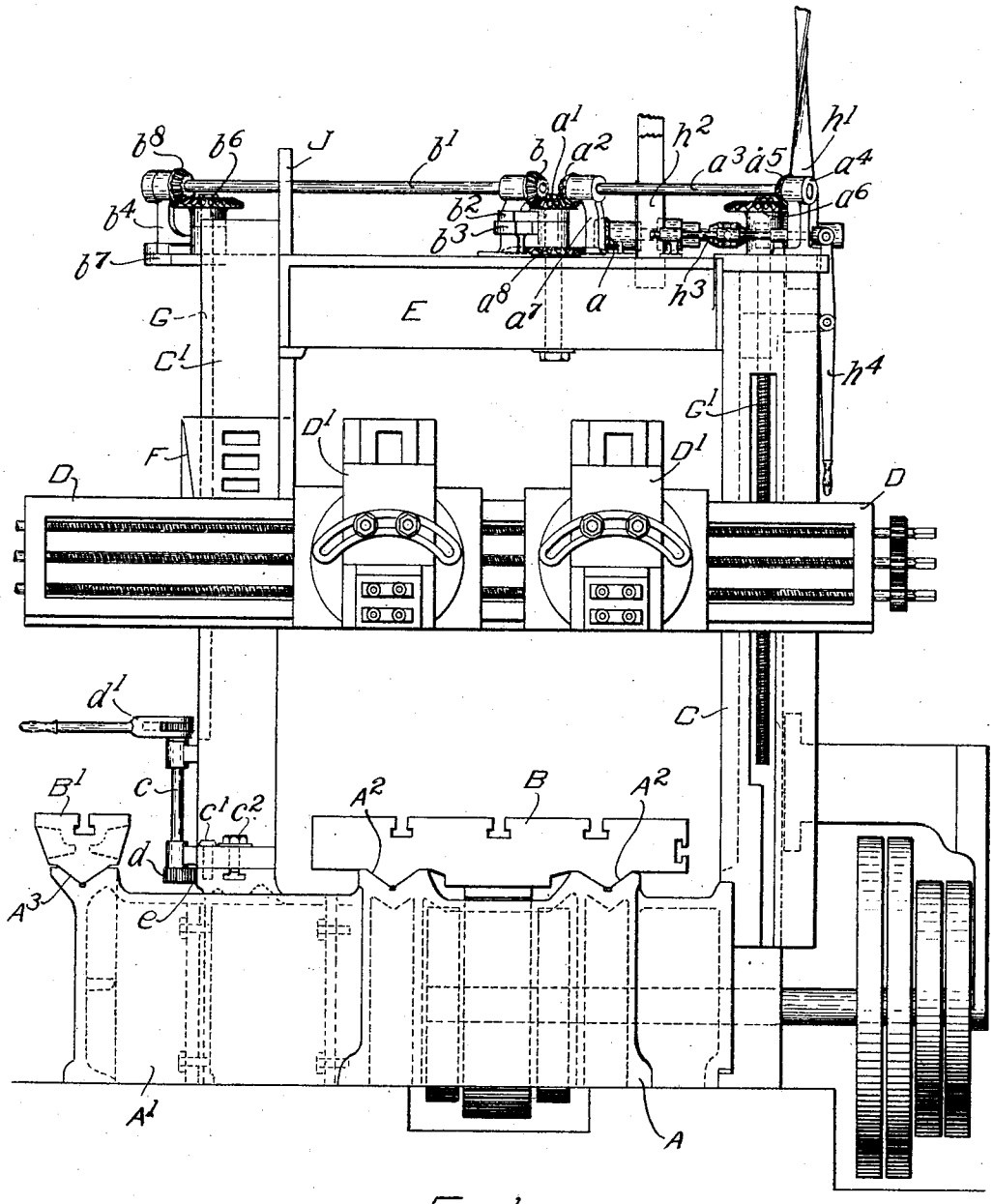


FIG. 1.

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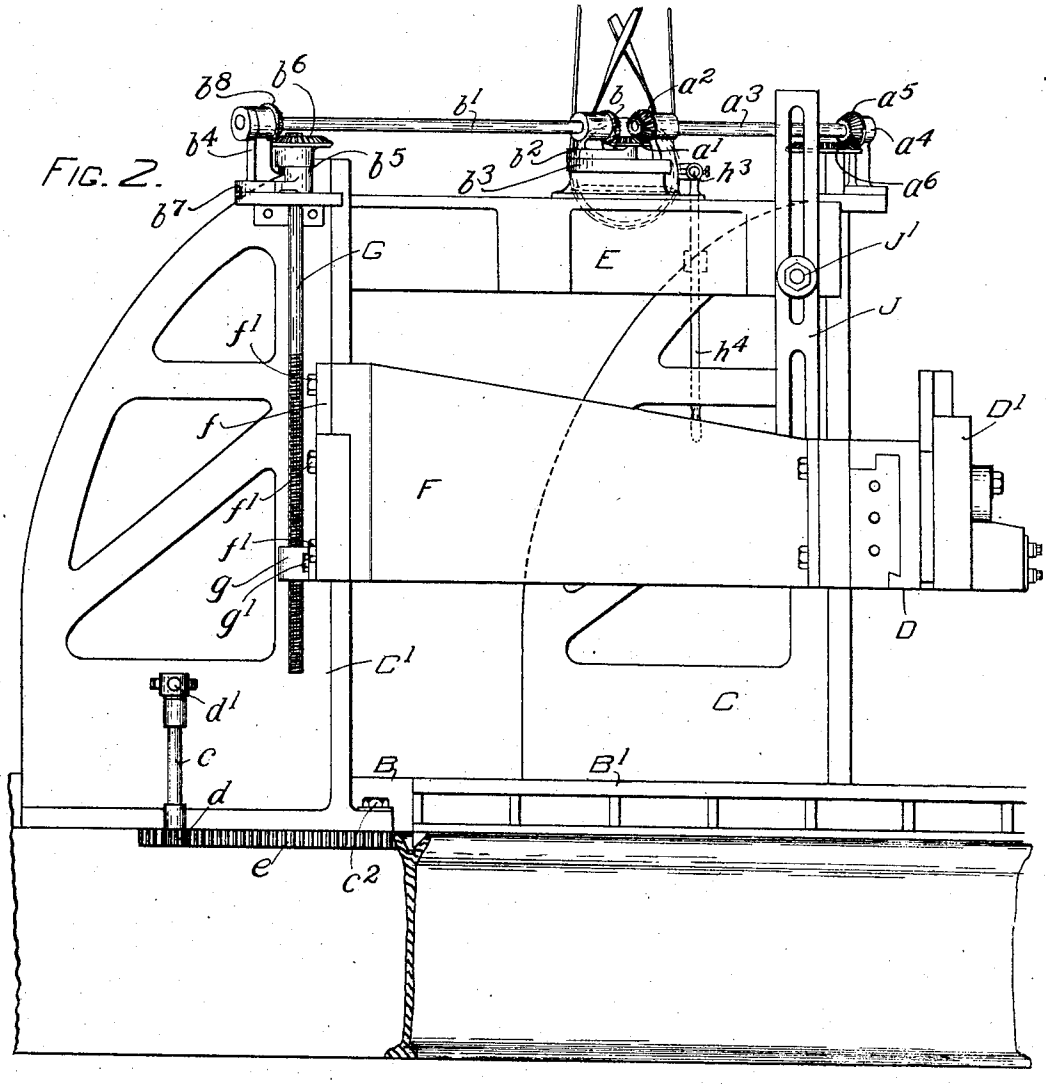
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NO MODEL. 3 SHEETS—SHEET 2

FIG. 2.



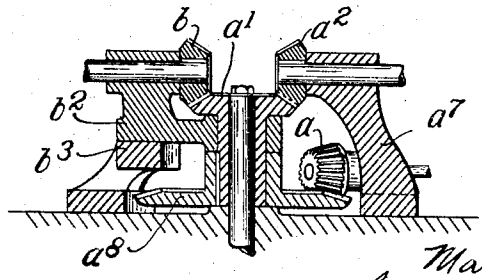


FIG. 4.

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NO MODEL. 3 SHEETS—SHEET 3.

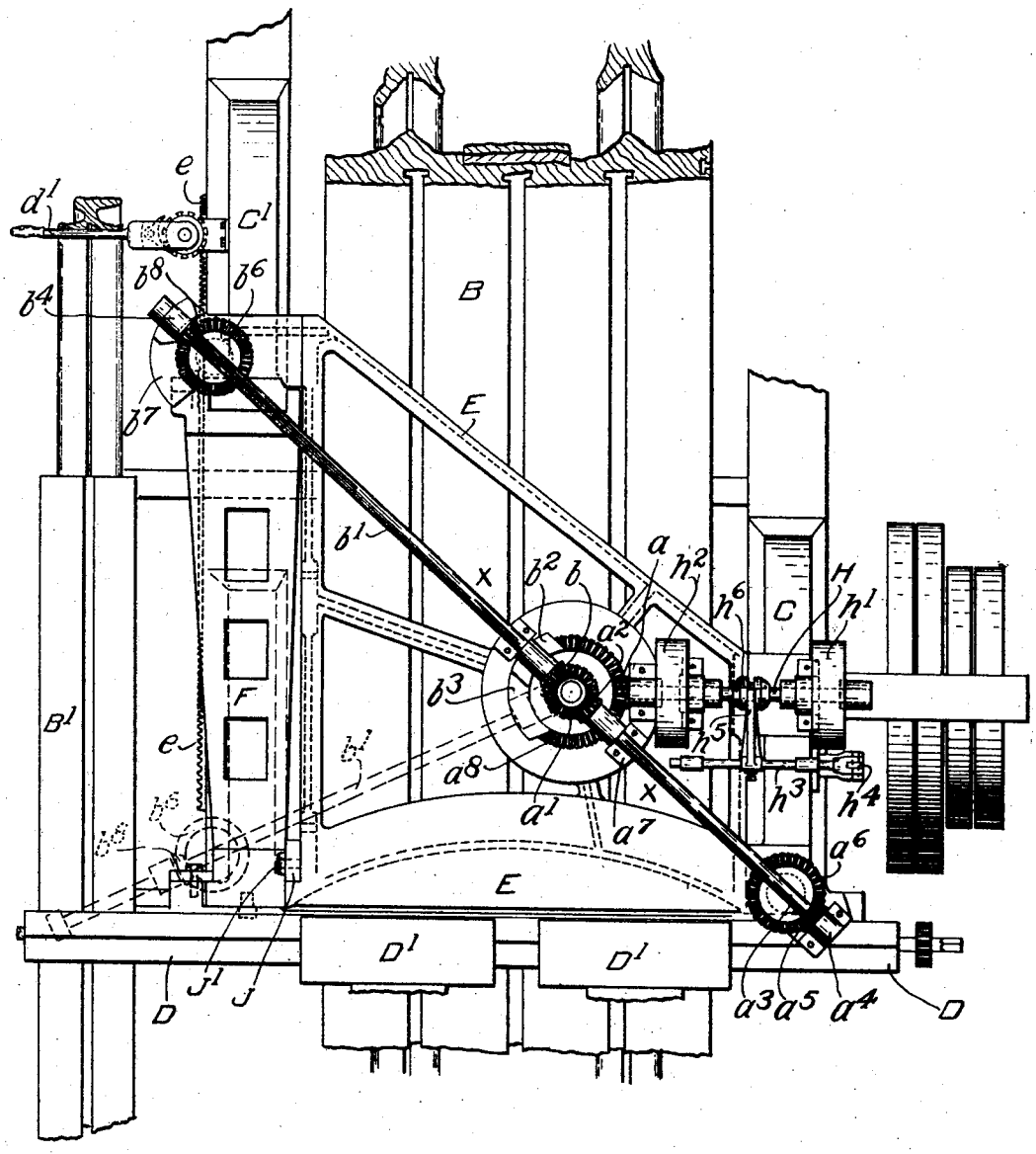


FIG. 3.

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No. 771,817. Patented October 11, 1904.

UNITED STATES PATENT OFFICE.

MARK FLATHER, OF NASHUA, NEW HAMPSHIRE.

PLANER.

SPECIFICATION forming part of Letters Patent No. 771,817, dated October 11, 1904.

Application filed March 18, 1903. Serial No. 148,339. (No model.)

To all whom it may concern:

Be it known that I, MARK FLATHER, of Nashua, county of Hillsboro, and State of New Hampshire, have invented certain new and useful Improvements in Planers, of which the following is a specification.

My invention relates more particularly to metal-planers, and has for one of its objects so to arrange the housings of the planer that one of them may be moved backward, so as to leave one side of the planer open for the purpose of planing crosswise of long sections of material.

Another object of my invention is to arrange the housings in such manner as to properly support the cross-rail by an extension between same and the housing, which is arranged to be moved backward.

Still another object is to so construct and arrange the vertical feed mechanism as to make it automatically adjustable to the different positions of the housings.

A further object of my invention is to provide for raising and lowering the cross-rail by means of a counter-shaft capable of being driven in opposite directions by belts secured to the cross-tie of the housings.

Other objects of my invention will more clearly appear from the description and the drawings accompanying this specification.

In the drawings, Figure 1 is a front elevation of a metal-planer embodying my invention. Fig. 2 represents a side elevation of same with the parts arranged as an open side planer. Fig. 3 is a plan view of same and arranged as an open-side planer. Fig. 4 is a sectional view through line X X, Fig. 3, of a portion of the vertical feed mechanism for moving the cross-rail up and down.

In the drawings, A represents the bed of the planer, and A′ an extension of the bed adapted to support the adjustable housing and the supplemental work-table.

B is the platen or work-table and is longitudinally movable in ways A^2 A^2 in the upper face of the bed A.

B′ is a supplemental table movable in the same direction as the main work-table B and is used to support long pieces of material being operated upon when the planer is used as an open-side planer.

C is one of the housings of the planer and is permanently attached to the bed A.

C′ is the adjustable or movable housing and is attached to the extension A′ in such manner as to be longitudinally adjustable thereon and is provided with the adjusting mechanism, which consists of the pinion *d*, attached to the shaft *c*, and a ratchet-handle *d′*, attached to the upper portion of said shaft, the shaft *c* being mounted in bearings attached to the housing C′.

A rack *e* is attached to the extension A′ and is adapted to enmesh with the gear *d*.

c′ is a pin which is inserted in holes in the extension A′ and the foot of the housing C′. Said holes are arranged to register when the said housing C′ is in proper position to be used either as a standard planer or an open-side planer.

The bolts c^2 are used to clamp the housing C′ in its adjusted position.

D is a cross-rail of the usual construction adapted to support the tool-carrying heads D′ D′.

E is the cross-tie adapted and arranged to securely fasten the tops of the housings C and C′ and is permanently attached to the housing C and adjustably secured to the housing C′.

When the planer is used as an open-side planer, there is inserted between the cross-rail D and the housing C′ the extension-piece F. This extension-piece F is so formed at its outer end as to be readily secured to the cross-rail D and at its inner end to be adjustably secured to the housing C′ in such manner as to be raised and lowered thereon by the adjusting-screw G, which is threaded throughout its length and is adapted to revolve in the threaded bearing *g*, attached to the extension-piece F by the bolt *g′*. The extension-piece F is adjustably held to the housing C′ by the gib *f*, attached thereto by the gib-screws *f′ f′ f′*.

G′ is a vertical adjusting-screw for vertically adjusting the end of the cross-rail D opposite to that attached to the extension-piece F.

Referring to Fig. 3, we find the vertical adjusting-screws G G′ are operated by means of a counter-shaft H, mounted on the upper face

of the cross-tie E by suitable bearings. This counter-shaft H has mounted upon it pulleys h' and h^2, driven in opposite directions by means of a straight and a cross belt, as illustrated in Figs. 1 and 2. The pulleys h' and h^2 are normally loose upon the shaft H and are secured thereto when it is desired to turn said shaft H by friction-clutches operated by the shipper-rod h^3 through the medium of the lever h^4 and clutch-operating parts h^5 and h^6.

The vertical adjusting-screws G G′ are revolved by the counter-shaft H in either direction, according as it is desired to raise or lower the cross-rail D, this through the medium of the bevel-gear a, which enmeshes with the gear a^8. Said gear a^8 is secured to the hub of the gear a' and revolves same. The gear a' enmeshes with the gears a^2 and b, mounted upon the shafts a^3 and b', respectively. At the outer end of the shaft a^3 is a bearing a^4, which supports it. There is also mounted thereon the gear a^5, which enmeshes with the bevel-gear a^6, attached to the vertical adjusting-screw G′. This shaft a^3 has a fixed bearing a^7 at its inboard end, in which said shaft revolves. The shaft b' is supported at its inner end by an adjustable bearing b^2, having an inward extension provided with a bearing which surrounds the hub of the bevel-gear a'. The bearing is also supported by the turn-table b^3. The outer end of said shaft b' is supported by the bearing b^4, which has an inwardly-extending lug b^5, surrounding the hub of the bevel-gear b^6, that is attached to the upper end of the vertical adjusting-screw G. The bearing b^4 is also supported upon the turn-table b^7. The horizontal shaft b' is secured in the bevel-gear b^8 by a key in said shaft b' in such manner that said shaft b' will freely slide through the gear b^8 longitudinally, but is rotatively immovable thereon.

The object of the arrangement of the shaft b' and its bearings b^2 and b^4 is that they will turn upon the hubs of the gears a' and b^6 and automatically adjust themselves to the different positions of the housing C′ when it is adjusted to the position it will occupy either as a standard planer or an open-side planer. Furthermore, the arrangement of the friction-driven counter-shaft H is such that by manipulating the lever h^4 the cross-rail may be moved up or down, as the case may be, by means of belts driven from any convenient power-driven shafting.

J is a supporting device which is adjustably attached to the cross-tie E by means of the bolt J′, its lower end being attached to the extension-piece F. The object of this supporting device is to firmly tie said extension-piece F and the cross-tie E together in such manner as to more firmly support the cross-rail D when the tools mounted on the tool-blocks thereon are performing the operation of planing.

The operation of my improved planing-machine is as follows: Assuming the planer to be adjusted to be used as a standard planer, in such case the movable housing C′ will be moved forward to the position represented in dotted lines in Fig. 3, the vertical adjusting-shaft b' will assume the position shown in dotted lines in said Fig. 3, the bearings b^2 and b^4 will revolve on the hubs of the gears a' and b^6, respectively, upon the turn-tables b^3 and b^7 and assume their proper position. The planer as constructed when the adjusting-block F is removed and the housing C′ moved forward and the cross-rail secured to it is operatively and in appearance a standard planer. When it is desired to plane a long piece of material crosswise of its greatest length, the housing C′ is moved backward to the position shown in Figs. 2 and 3. The extension-piece is then inserted and firmly secured to the cross-rail D at its outer end, and its inboard end is adjustably attached to the housing C′ by means of the gib f and the gib-screws f'. Then said extension-piece F may be adjusted vertically on the housing C′ by the described vertical adjusting mechanism. To move the housing C′ backward in the open-side position, the pin c' is removed, the clamping-bolts c^2 loosened, and the housing moved backward by means of the adjusting-shaft c, its ratchet-handle d', the gear d, and the rack e, with which said gear enmeshes. When the housing C′ is moved back to its rearward position, long work may then be clamped to the platen B and the supplemental supporting-table B′, so that it will freely pass under the extension-piece F of the cross-rail D, as will be readily seen.

Having described my invention, what I claim is—

1. In a metal-planer, a movable table for supporting the work; a vertically-adjustable cross-rail; adjustable tool-holders mounted on said cross-rail; a fixed housing for supporting one end of the cross-rail; an adjustable housing for supporting the other end of said cross-rail and a filling-block adapted to be interposed between said adjustable housing and said cross-rail.

2. In a metal-planer, a work-supporting table, and a supplementary work-supporting table; a bed upon which said tables are movably mounted; a housing fixedly mounted on one side of said bed; and a housing adjustably mounted on the other side of said bed, said adjustable housing arranged to be moved longitudinally in the direction of the movement of the work-tables, and having means attached thereto for adjustably supporting one end of the cross-rail, the other end of said cross-rail being adjustably supported by the fixed housing.

3. A metal-planer having a bed, and a movable work-platen; a housing adjustably mounted on the bed at one side of said platen; and a housing fixedly mounted on the bed at the other side of said platen; means for moving

said adjustable housing longitudinally on said bed; a filling-block mounted on said adjustable housing and vertically movable thereon; a cross-rail, one end of which is secured to said filling-block, its other end being adjustably mounted on the fixed housing; and means mounted on said housings for moving said cross-rail to and from the work-platen.

4. A metal-planer, convertible to an open-side planer, provided with a movable work-platen, and a bed supporting same; housings mounted on said bed, one of which is movable thereon longitudinally; tool-supporting devices adjustably mounted on said housings; and means mounted in said housings for moving the tool-supporting devices up and down thereon; said feeding mechanism being arranged to automatically adjust itself to the different positions of the movable housing.

5. In a metal-planer having a bed and a movable work-supporting platen; tool-supporting devices attached to the bed of said planer, comprising a fixed housing and an adjustable housing; a cross-rail adjustably supported by said housings; feed mechanism for adjusting the cross-rail vertically, comprising vertical adjusting-screws driven through the medium of a driving mechanism, automatically adjustable to the different positions of the adjustable housing; and means for throwing said automatic feed mechanism in and out of operation.

6. In a planer having an adjustable housing, a vertical adjusting mechanism for the cross-rail, comprising vertical adjusting-screws, threaded bearings for same in said cross-rail; and means for revolving said adjusting-screws in either direction adjustable to the different positions of the adjustable housing.

7. In a planer having an adjustable housing, means for adjusting the tool-carrying cross-rail, comprising vertical adjusting-screws, threaded bearings in the cross-rail to receive said adjusting-screws; bearings in the housings in which said adjusting-screws revolve; means for revolving said adjusting-screws in either direction, comprising horizontal driving-shafts automatically adjustable to the different positions of the adjustable housing; and means for revolving said horizontal shafts in either direction.

8. In a planer having an adjustable housing, adjusting mechanism for adjusting the cross-rail vertically, comprising a counter-shaft, means for driving the counter-shaft in either direction, a gear on the end of said shaft; a central gear revolubly mounted in the cross-tie; horizontal shafts mounted in bearings which are arranged to revolve about the axis of said central gear; gears on said horizontal shafts enmeshing with said central gear; said bearings; gears on said horizontal shafts enmeshing with gears on the vertical adjusting-screws; and means whereby said horizontal shaft will automatically adjust itself to the different positions of the adjustable housing.

9. In a planer, having an adjustable housing; a vertical tool-adjusting mechanism, comprising a cross-rail; threaded bearings in said cross-rail; vertical screw-threaded adjusting-screws mounted in said bearings; bearings on the housing to receive said adjusting-screws; means for revolving said adjusting-screws in either direction; and means for automatically adjusting the intermediate driving mechanism of said vertical adjusting-screws to the different positions of the adjustable housing.

10. In a metal-planer, a movable table for supporting the work; a vertically-adjustable tool-supporting cross-rail; a housing for supporting one end of said cross-rail; a second housing for supporting the other end of said cross-rail located in a transverse plane back of the other housing, and a filling-block interposed between said second housing and said cross-rail.

In testimony whereof I have hereunto set my hand, in the presence of two subscribing witnesses, this the 6th day of March, A. D. 1903.

MARK FLATHER.

Witnesses:
G. T. FLATHER,
RICHARD P. ELLIOTT.