No. 720,647. PATENTED FEB. 17, 1903.

A. W. WHITCOMB.

METAL PLANING MACHINE.

APPLICATION FILED JULY 19, 1901.

NO MODEL. 3 SHEETS—SHEET 1.

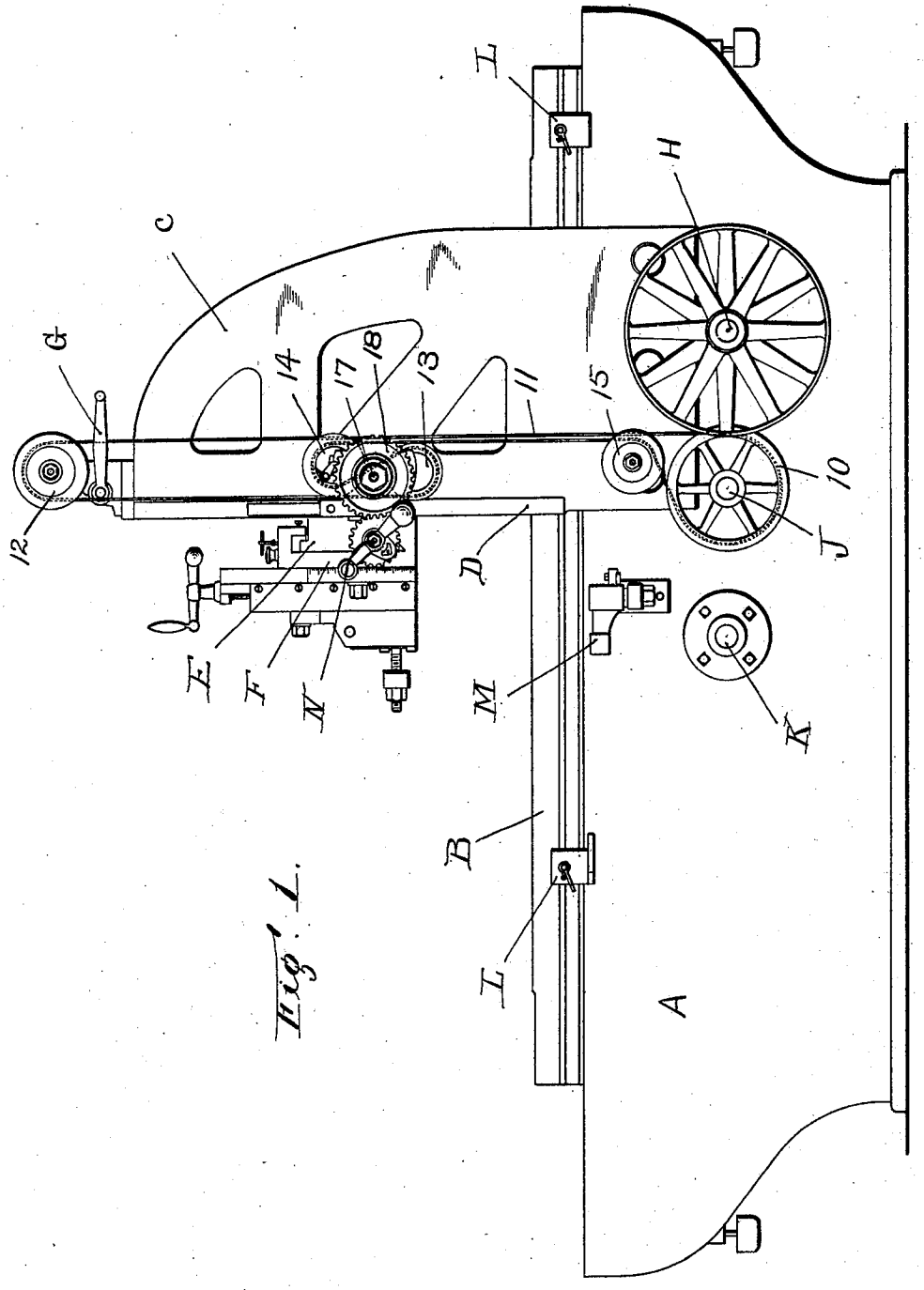

Fig. 1.

Witnesses
C. F. Wesson.
M. E. Regan.

Inventor
A. W. Whitcomb
By
Smithgate & Smithgate
Attorneys.

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NO MODEL. 3 SHEETS—SHEET 2.

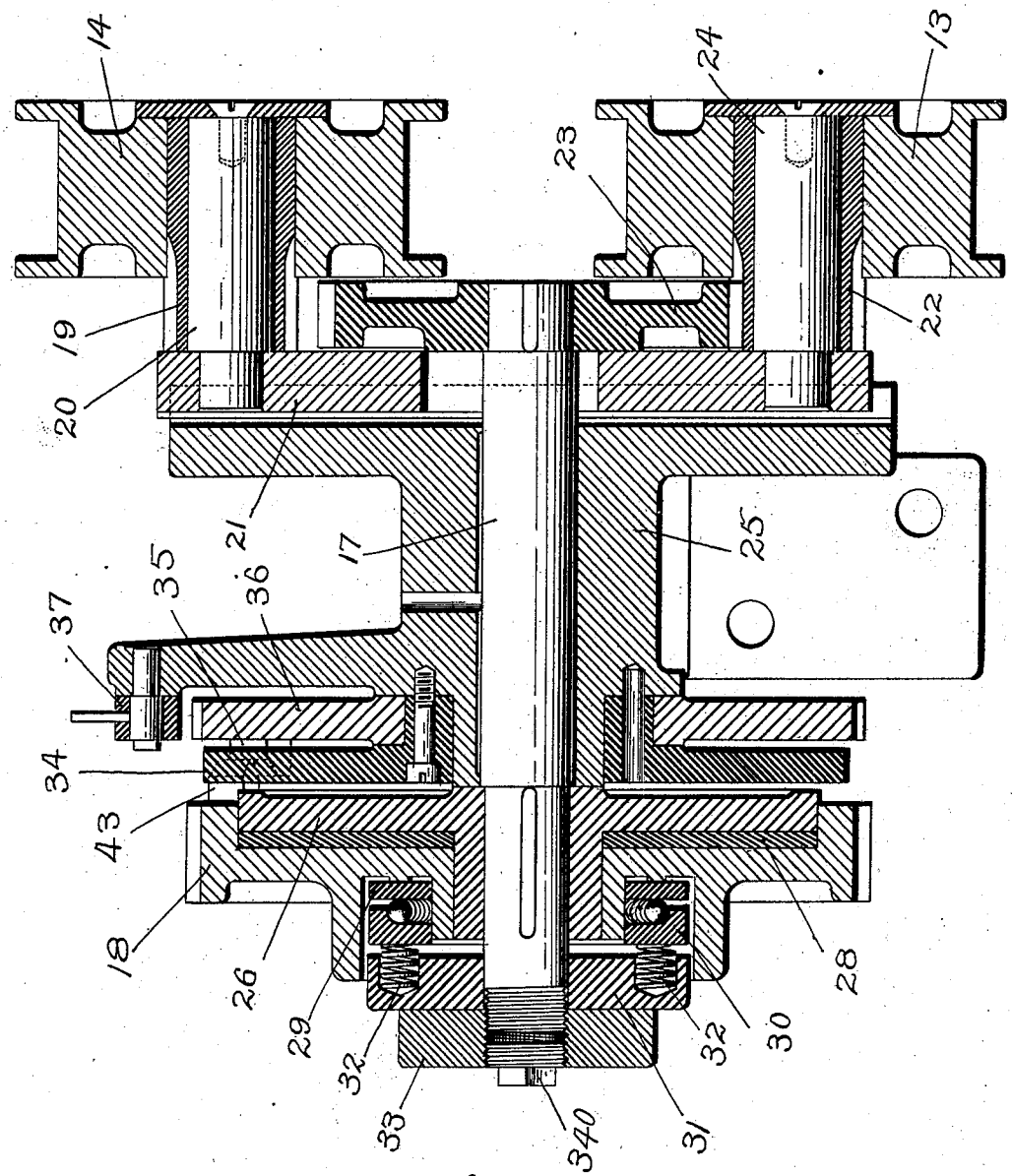

Fig. 2.

Witnesses.
C. A. Wesson.
M. E. Regan.

Inventor
A. W. Whitcomb
By
Smithgall & Smithgall
Attorneys.

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NO MODEL. 3 SHEETS—SHEET 3.

Fig. 5.

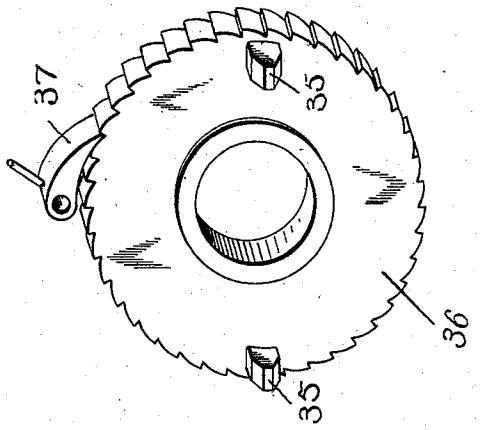


Fig. 4.

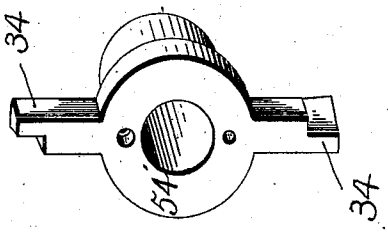
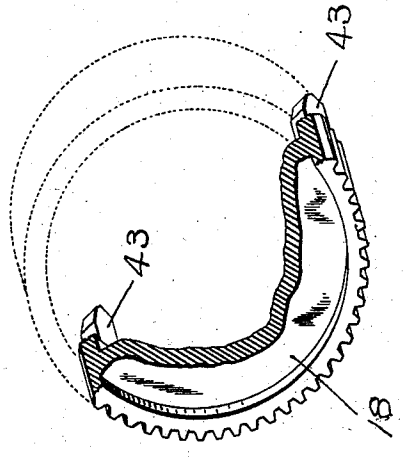


Fig. 3.



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M. E. Regan.

Inventor
A. W. Whitcomb
By
Smithgall & Smithgall
Attorneys.

UNITED STATES PATENT OFFICE.

ALONZO W. WHITCOMB, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO WHITCOMB MANUFACTURING COMPANY, OF WORCESTER, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

METAL-PLANING MACHINE.

SPECIFICATION forming part of Letters Patent No. 720,647, dated February 17, 1903.

Application filed July 19, 1901. Serial No. 68,934. (No model.)

To all whom it may concern:

Be it known that I, ALONZO W. WHITCOMB, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Metal-Planing Machine, of which the following is a specification.

This invention relates to an improved set of connections or train of devices for feeding the tools of metal-planing machines; and the especial objects of this invention are to provide a frictionally-driven feed-train for metal-planing machines in which the friction-box is located in a more convenient and accessible position than in ordinary planer constructions and to provide an improved construction for relieving the pressure on the friction-faces of the friction-box at the opposite ends of its throw.

To these ends this invention consists of the improved feed-train for metal-planing machines, of the improved friction-box, and of the combinations of parts, as hereinafter described, and more particularly pointed out in the claims at the end of this specification.

In the accompanying three sheets of drawings, Figure 1 is a side view of a metal-planing machine provided with an improved feed-train constructed according to my invention. Fig. 2 is an enlarged sectional view of the friction-box and connections for operating the same; and Figs. 3, 4, and 5 are detail perspective views illustrating the parts which coöperate to relieve the pressure on the friction-surfaces at the ends of the throw of the friction-box, Fig. 3 being a partial perspective view of the oscillating gear, showing the position of the bevel-sided stops extending therefrom, Fig. 4 being a perspective view of the hub with bevel-sided arms forming the fixed stops, and Fig. 5 being a perspective view of the adjustable ratchet-wheel carrying bevel-sided stops which may be adjusted to different positions.

In nearly all classes of machine-tools it is desirable to provide constructions in which the connections controlling different adjustments and regulations are located close enough together to be controlled from one position of the operator. In metal-planing machines, however, this has not ordinarily been accomplished, because while most of the adjustments of the machine are controlled from the planer-heads the power feed-train could ordinarily heretofore only be adjusted and regulated from a friction-box located on one of the intermediate shafts of the planer-bed, where access to the same is necessarily comparatively inconvenient.

The especial object of my present invention is to improve the construction of metal-planing machines by providing a construction in which not only the ordinary adjustment and hand-feeds of the tools can be controlled from the planer-heads, but in which the control and regulation of the power feed-train can also be controlled by connections likewise located near the planer-head.

Referring to the accompanying drawings and in detail, as shown in Fig. 1, A designates a planer bed or casting, mounted on the ways of which is a reciprocating planer-table B.

Extending up from the bed A are the uprights C, having guides or ways D, mounted on which is the cross-bar or support E, which cross-bar or support E can be adjusted vertically by connections controlled from the crank-handle G, and upon which cross-bar E are mounted one or more of the ordinary planer-heads F.

The main driving-shaft H of the machine is provided with tight and loose pulleys, and the main driving-shaft H is connected through an intermediate shaft J to turn the driving-shaft K, which is geared to reciprocate the planer-table B.

The planer-table B is provided with adjustable stops L, coöperating with an arm M to reverse the motion of the planer-table by shifting the driving-belts by means of connections which need not be herein shown or described.

The parts as thus far referred to may be of the ordinary constructions used in metal-planing machines, their connections and relative operation in such machines being well understood.

Heretofore in the construction of ordinary metal-planing machines the friction-box for

driving the power feed-train to feed the planer-heads transversely has usually been located on the end of the intermediate oscillating shaft J, and the coarseness of the feed has heretofore ordinarily been regulated by an adjustable crank-pin or pitman connection with the friction-box.

The location of the friction-box on the end of the intermediate shaft J is not only objectionable by reason of the fact that the parts as thus located are comparatively inaccessible, but is also objectionable by reason of the fact that the location of the friction-box at a point so far remote from the planer-heads themselves requires the use of a comparatively long set of intermediate connections, requiring comparatively heavy pressures, and hence undesirable wear in the friction-box.

In a planing-machine constructed according to my invention instead of locating the friction-box at the base of the machine on the end of the intermediate shaft J, I have provided a construction in which the friction-box is located upon and is vertically movable with the planer-head support, so that the same is readily accessible and acts more nearly directly to feed the planer-heads. To provide for driving the friction-box as thus located, I preferably employ a double-looped driving-belt, which will exert the same force to turn the friction-box independently of the position to which the friction-box may be raised or lowered.

As shown in Fig. 1, the intermediate shaft J in a metal-planing machine constructed according to my invention is provided at its end with a pulley 10. Extending around the pulley 10 is a belt 11, which passes up over a pulley 12, under and around a pulley 13, over and around a pulley 14, around a tightener or guide pulley 15, and thence back to its driving-pulley 10. By means of this construction the pulleys 13 and 14 will be turned in opposite directions and may be moved up and down without changing the tension of their driving-belt 11. Either one of the pulleys 13 or 14 may be connected to drive the shaft 17, which shaft 17 has a frictional connection with the oscillating gear 18, which meshes with and drives a gear having a pawl-and-ratchet connection with the feed-shaft N in the ordinary manner.

The construction for driving the shaft 17 from either one of the pulleys 13 or 14 and for securing a relieving frictional connection between the shaft 17 and the oscillating gear 18 is most clearly illustrated in the second sheet of drawings.

As shown in Fig. 2, the pulley 14 is provided with a rigid hub or sleeve 19, having gear-teeth cut therein, and is journaled upon a stud 20, secured in a vertically-movable slide 21. The lower pulley 13 is also provided with a rigid hub or sleeve 22, having gear-teeth cut therein, and is journaled on a stud 24, also secured in the vertically-movable slide 21. Secured on the end of the shaft 17 is a gear 23. By means of this construction by moving the slide 21 up or down by any suitable connections, which need not be herein shown or described, either of the pulleys 13 or 14, as desired, may be geared to turn the shaft 17, which shaft 17 is journaled in a bearing 25, carried by a bracket secured in the cross-bar or planer-head support E. Secured on the opposite end of the shaft 17 is a friction-disk 26, and journaled on the hub of the friction-disk 26 is the oscillating gear 18, before referred to. A thin disk of wood, leather, or similar suitable material 28 is interposed between the oscillating gear 18 and its friction-disk 26, and extending from the opposite face of the oscillating gear 18 is a cup or hollow hub, mounted in which are bearing-rings 29 and 30, interposed between which is a set of bearing-balls, said parts being held in place by springs 32, located in sockets in a piece 31, the tension of the springs 32, and hence the frictional pressure of the friction-box as thus constructed, being regulated by a nut 33, which can be held in its adjusted position by a tightening-screw 340, which is shown as slightly unscrewed or loosened from its tightened position.

To limit the throw of the oscillating gear 18 and to relieve the pressure in the friction-box at the ends of the throw, I have provided an arrangement of stops having cammed or beveled faces and one set of which is adjusted to vary the coarseness of the feed.

As herein shown, the oscillating gear 18 is provided with two cammed or bevel-sided projecting stops 43, which oscillate between fixed arms or stops extending from a central hub 54 and adjustable lugs or stops 35, carried by a ratchet-wheel 36, which can be held in different adjusted positions by a pawl 37. The relation of these parts is most clearly illustrated in the third sheet of drawings.

As shown in Figs. 3, 4, and 5, when the oscillating gear 18 is turned in one direction its cammed or bevel-sided lugs 43 when brought into engagement with the stationary stops 34 will tend to open or spread apart the friction-box against the tension of its springs 32, and when the opposite side of the bevel-sided stops 43 engage with the lugs or projections 35, extending from the ratchet-wheel 36, they will also tend to open or diminish the pressure in the friction-box, thus relieving the pressures when the oscillating gear is at the end of its throw in either direction.

I am aware that changes may be made in the construction of metal-planing machines by those who are skilled in the art without departing from the scope of my invention as expressed in the claims. I do not wish, therefore, to be limited to the construction I have herein shown and described; but

What I claim, and desire to secure by Letters Patent of the United States, is—

1. In a metal-planing machine, the combination of a vertically-movable cross-bar or

support for planer-heads, a feed-train comprising a friction-box located at one end of the cross-bar or support, driving connections for turning the driven member of the friction-box alternately in opposite directions, said driving connections being arranged to leave the cross-bar or support free to be set to different elevations, and adjustable stops for the driven member of the friction-box for regulating the coarseness of the feed.

2. In a metal-planing machine, the combination of the vertically-movable cross-bar or support for planer-heads, a frictionally-driven feed-train comprising a friction-box carried by and vertically movable with said cross-bar or support, a looped belt for driving the friction-box from one of the oscillating shafts of the planer-bed, independently of the vertical position of the cross-bar or support, stops for limiting the throw of the friction-box, and means for adjusting said stops, whereby the coarseness of the friction-actuated feed may be controlled by connections on the vertically-movable cross-bar of the machine.

3. In a metal-planing machine, the combination of the vertically-movable cross-bar or support for the planer-head, and a power feed-train comprising a friction-box carried by and vertically movable with the cross-bar or support, two pulleys which may be thrown into and out of mesh to turn the driving member of the friction-box in relatively opposite directions, and a looped belt passing around said pulleys for turning the same in opposite directions independently of the vertical position of the cross-bar or support.

4. In a metal-planing machine, the combination of the vertically-movable cross-bar or support for the planer-head and a power feed-train comprising a friction-box carried by and vertically movable with said cross-bar or support, a vertically-movable slide having two pulleys journaled thereon, which may be thrown into and out of mesh to turn the driving member of the friction-box in relatively opposite directions, and a belt driven from one of the oscillating transverse shafts of the planer-head, which is looped around said pulleys in opposite directions, and extends up over an idler-pulley to drive the friction-box independently of its vertical position.

5. In a metal-planing machine, the combination of the vertically-movable cross-bar or support for planer-heads, a friction feed-train comprising a relieving friction-box mounted on and movable with the cross-bar or support, and having friction-disks held in engagement with each other by spring-pressure, stops limiting the throw of the driven friction-disk, which stops act as cams for relieving the pressure between the friction-disks, and means for adjusting said stops to regulate the coarseness of the feed.

6. In a friction-box, the combination of friction-disks held into engagement with each other by spring-pressure, stops extending from the face of the driven friction-disk, fixed stops limiting the throw of the driven friction-disk in one direction, a movable piece or ratchet-wheel having stops for limiting the throw of the friction-disk in the opposite direction, said stops being provided with inclined sides or faces to relieve the pressure between the friction-disks when the driven friction-disk reaches the end of its throw in either direction.

7. In a metal-planing machine, the combination of the vertically-movable cross-bar or support for the planer-head, a power-driven feed-train carried by and vertically movable with said cross-bar or support, comprising a relieving friction-box connected to oscillate a gear having a pawl-and-ratchet connection with the planer-head feed-shaft, adjustable stops for regulating the throw of the friction-box, a vertically-movable slide having pulleys which may be thrown into or out of mesh to turn the driving member of the friction-box in relatively opposite directions, and a belt driven from one of the oscillating shafts of the planer-head, and looped around said pulleys to drive the same independently of the vertical position of the cross-bar or support for the planer-head.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ALONZO W. WHITCOMB.

Witnesses:
PHILIP W. SOUTHGATE,
JOHN F. CROWELL.