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G. H. AMIDON.
PLANING MACHINE.

APPLICATION FILED JUNE 26, 1902.

2 SHEETS—SHEET 1.

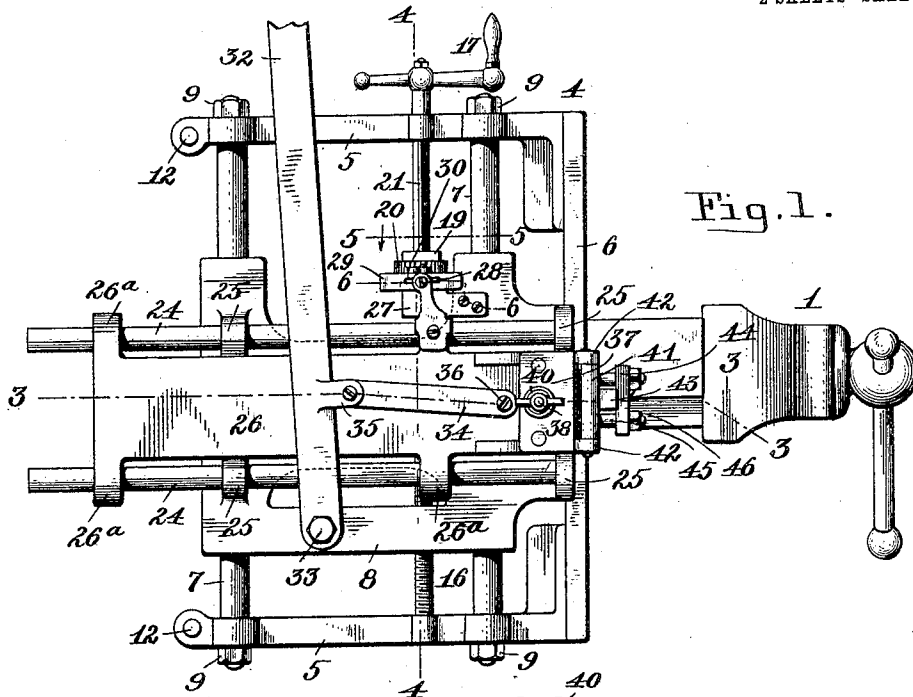


Fig. 1.

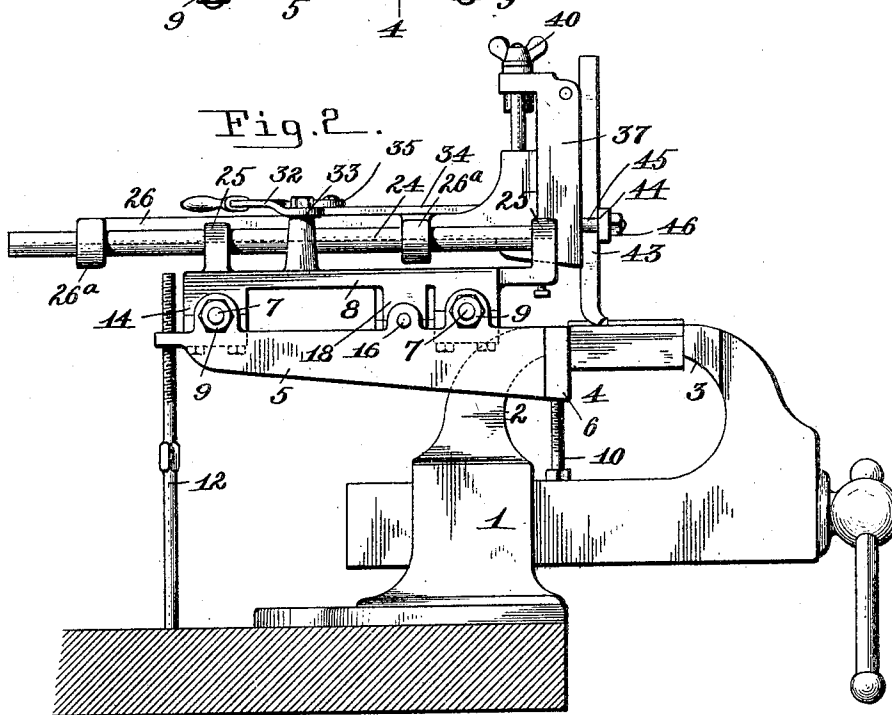
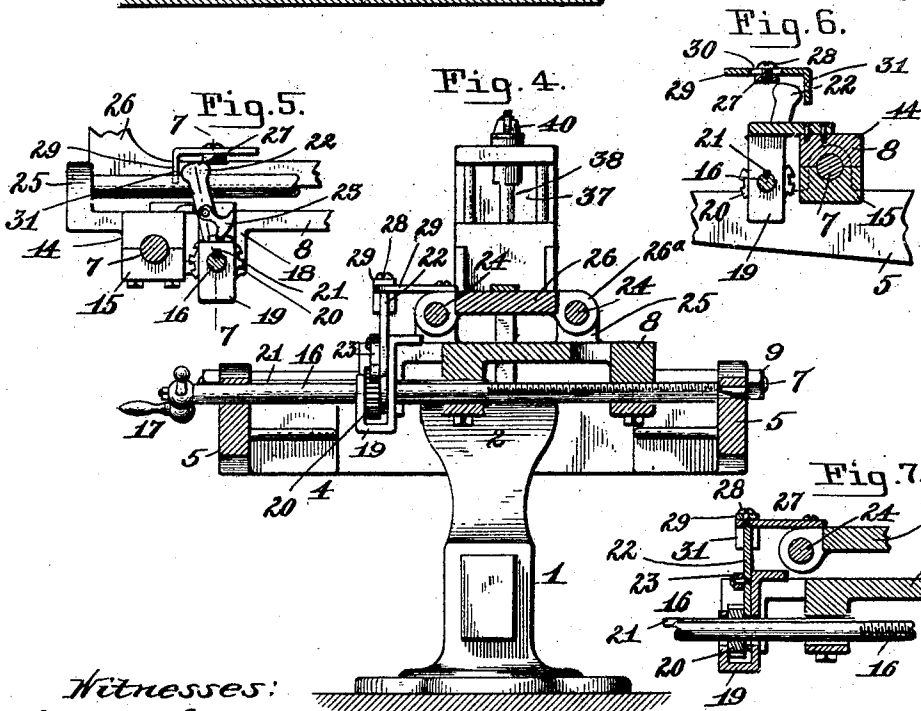
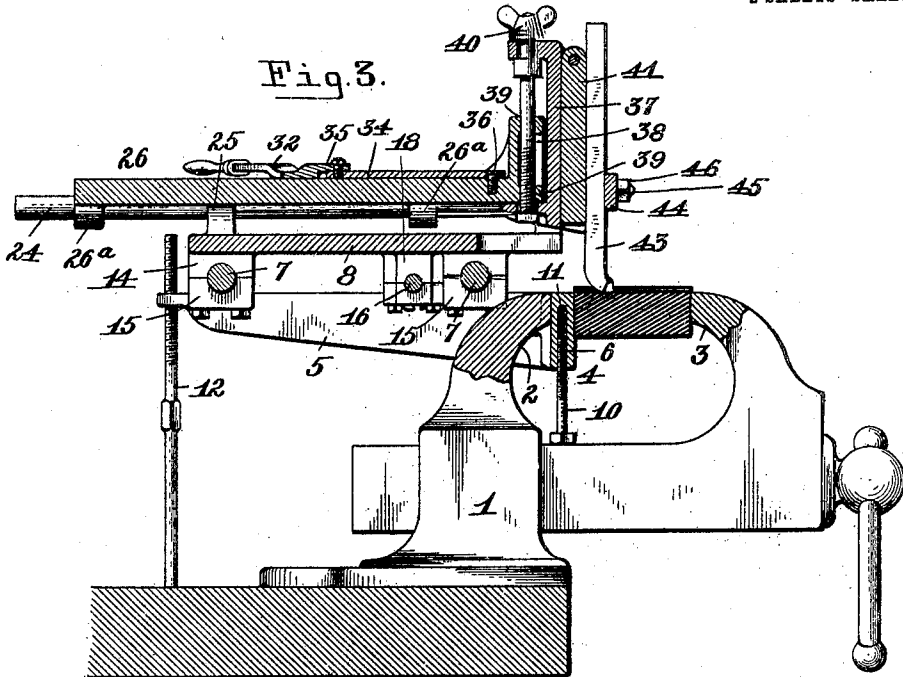


Fig. 2.

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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

CHARLES H. AMIDON, OF BUFFALO, NEW YORK.

PLANING-MACHINE.

No. 820,330.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CHARLES H. AMIDON, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Planing-Machines, of which the following is a specification.

My invention relates to manually-operated planing-machines of that type which can be conveniently carried from place to place and be applied to a vise for holding the same in an operative position.

The primary objects of this invention are to provide a planing-machine of this character which is simple, positive, inexpensive, and durable, and in which a uniform and smooth forward or cutting stroke can be maintained at all times, and to provide a machine in which the sliding tool-holding carriage is moved back and forth independent of the feed-carriage.

Further objects are to provide mechanism whereby the amount of feed may be varied at will and to improve and simplify planing-machines of this type in general.

With these objects in view the invention consists of a frame which with the work to be planed is held rigidly in a vise, a feed-carriage movable laterally on the frame, and a sliding tool-holding carriage movable on the feed-carriage at right angles to the movement thereof, and a variable-feed mechanism movable partly with the feed-carriage and partly with the tool-carriage, the two parts coacting when the tool-carriage is operated.

It further consists in the new and novel arrangement and combination of parts, as will be hereinafter more fully described, and particularly pointed out in the subjoined claims.

Referring to the drawings, Figure 1 is a top plan view of my improved planing-machine, showing the same applied to a vise. Fig. 2 is a side elevation of the same. Fig. 3 is a longitudinal section taken on line 3 3, Fig. 1. Fig. 4 is a transverse section taken on line 4 4, Fig. 1. Fig. 5 is a longitudinal section taken on line 5 5, Fig. 1, looking in the direction of the arrow. Fig. 6 is a longitudinal section taken on line 6 6, Fig. 1. Fig. 7 is a vertical transverse section taken on line 7 7, Fig. 5.

Referring to the drawings in detail, like numerals of reference refer to like parts in the several figures.

To show the application of or the manner of supporting the machine, I have illustrated

a vise which I will designate by the numeral 1 and which consists of two cooperating parts having, respectively, a fixed jaw 2 and a slidable jaw 3, said vise being secured to a work-bench, as is common.

The frame of the machine is designated by the numeral 4 and comprises side bars 5, connected at their forward ends in any approved manner to a front connecting bar or plate 6. Transverse guide-rods 7 are provided on which the laterally-movable feed-carriage 8 is guided. The said guide-rods serve also to tie the side bars 5 of the frame rigidly together and have their reduced ends passing through said bars and securing-nuts 9 screwed onto their projecting ends.

An adjusting-screw 10 enters a threaded bore 11, formed in the front bar 6, and has suitable means to permit of turning the same in its socket for adjusting the front end of the frame to bring the same in proper relation to the fixed jaw of the vise and hold the same in such relation. The lower end of this screw bears upon the movable member of the vise; but in addition to this support the front bar or plate with the work to be planed is locked between the two jaws of the vise, thereby supporting the forward end of the frame in a rigid and positive manner. The rear end of the frame is supported by two adjusting-screws 12, which rest on the work-bench and have their threaded upper ends engaging similarly-threaded apertures formed in the rear end of the side bars 5 of the frame. It is therefore apparent that the rear end of the frame can be adjusted to any desired position within certain limits to cause the cutting-tool of the machine to travel on a perfect horizontal plane or at an angle thereto, as may be desired.

A laterally-movable feed-carriage is guided in its movement on the guide-rods 7 and is provided with depending lugs 14, serving, with caps 15, bolted thereto, to act as guides to permit of movement of the carriage on said rods. A feed-screw 16, arranged parallel to the line of movement of the feed-carriage, is secured with its ends in the side bars 5 of the frame and at one end thereof has a hand-bar 17 to turn the same. This feed-screw is by preference threaded at one end only and engages a threaded depending lug 18, formed on the feed-carriage, which latter is moved laterally in either direction on turning the feed-screw, depending on the direc

tion in which the latter is turned. In order to move the feed-carriage intermittently, a feeding device is provided, which is actuated only on the return movement of the tool-
 5 holding carriage. This device consists of a bracket 19, secured to the feed-carriage and of necessity movable therewith, and in this bracket is a ratchet-wheel 20, which is secured to the feed-screw by means of a spline
 10 21, which causes the said ratchet-wheel to turn with the feed-screw, but permits it to move lengthwise thereon. Located between the ratchet-wheel and the side bar of the
 15 bracket and mounted to turn loosely on the feed-screw is a ratchet-arm 22, having a ratchet dog or pawl 23 pivoted thereon. As shown in Fig. 5, the ratchet-pawl is double-acting and can be swung on its pivot to revolve the ratchet-wheel during the forward
 20 or rearward movement of the ratchet-arm, as may be desired. By preference, however, the ratchet-wheel is revolved during the rearward movement of the ratchet-arm, which takes place simultaneously with the return
 25 or inoperative movement of the cutting-tool, as will be disclosed hereinafter.

Longitudinal guide-bars 24 are secured in upwardly-projecting lugs 25, formed on the upper face of the feed-carriage, and movable
 30 on these guide-bars is the tool-holding carriage 26, which has laterally-projecting apertured guide-lugs 26^a, which encircle the said guide-rods and guide the carriage in its movement. To the said tool-holding carriage I secure an
 35 arm 27, on which is supported, by means of a screw 28, an adjustable trip-bar 29, having a longitudinal slot 30, through which said screw passes. By loosening the screw the
 40 trip-bar 29 may be moved on the arm 27, which causes the trip tooth or projection 31, formed on said trip-bar, to engage the ratchet-arm 22 sooner or later on the movement of the tool-holding carriage, depending on the
 45 adjustment of the bar.

The tool-holding carriage is reciprocated by an operating-lever 32, which may be of any suitable length to give the desired leverage. The said lever lies transversely of the machine and is pivotally secured with one end to
 50 the feed-carriage, as at 33. It is also connected to the tool-holding carriage by means of a link 34, pivotally connected with one end to a lateral extension 35 on said operating-lever and to the forward end of the tool-holding
 55 carriage, as at 36. This connection prevents binding of the carriage on the guide-bars on moving the operating-lever, which permits of a free and easy movement. If desired, the guides on the reciprocating tool-
 60 carriage may be constructed in like manner to the guides on the feed-carriage to permit of taking up the wear which may be brought on by the constant use of the parts.

On reciprocating the tool-holding carriage
 65 the trip-tooth of the trip-bar 29 engages the

ratchet-arm 22 on the rearward movement of the carriage and through the agency of the pawl 23 causes the ratchet-wheel and the feed-screw to turn. This movement of the
 70 feed-screw, owing to the threaded connection thereof with the feed-carriage, moves the latter laterally sufficient to present the cutting-tool to a new or uncut portion of the work. On the forward or working stroke the ratchet-
 75 arm 22 is engaged by the arm 27 and moved forward. This movement, however, does not revolve the ratchet-wheel, but simply causes the pawl 23 to ride idly over the ratchet-wheel to a point where it may again
 80 engage and revolve the same on the rearward movement of the carriage. It is thus apparent that the feed-carriage is moved laterally intermittently and only during the inoperative stroke of the cutting-tool.

When the entire face of the work is planed
 85 and new work is clamped in the vise, it may be necessary to start the planing of the same at a certain point or at least at a point different from that over which the cutting-tool
 90 is located, and in order to move the tool to any point desired the feed-screw is turned by means of the hand-bar 17, and thus the feed-carriage is moved and with it the tool-holding carriage, on a part of which the cutting-
 95 tool is held.

To the front end of the tool-holding carriage a vertically-adjustable tool-holder 37 is secured. An adjusting-screw 38 passes through apertures 39 in the said carriage, the
 100 lower one of which is threaded for engagement with the screw, and the head formed on the lower end of the latter bears against the under side of the tool-holder, serving to elevate the same when the adjusting-screw is
 105 turned in one direction. A thumb-nut 40 is pinned or otherwise secured to the upper end of the said adjusting-screw and bears against the upper face of the tool-holder, serving to lower the same when the adjusting-screw is
 110 turned in the opposite direction. The said thumb-nut serves as a convenient device for turning the adjusting-screw, which threads itself upward or downward in the tool-holding carriage and necessarily moves the tool-
 115 holder in a like direction.

Pivotally secured to the vertically-adjustable tool-holder and forming part thereof is an apron 41, which is held between two jaws
 120 42 to prevent lateral movement thereof. A cutting-tool 43 is clamped between the said apron and a transverse bar 44, having apertures through which stud-bolts 45 pass, which are secured to the said apron. Nuts 46 are provided to securely clamp the tool between
 125 the apron and the said bar. By loosening the nuts 46 the tool may be set to approximately cut the desired thickness from the work; but when a fine and absolute adjustment is required the tool-holder must be ad-
 130 justed by turning the adjusting-screw 38.

The apron 41, owing to its pivotal connection to the tool-holder, may swing forward to enable the tool to be lifted on the rearward stroke of the tool-carriage to clear the cut. If desired, the frame may be rigidly secured to the fixed jaw of the vise or it may be formed therewith; but in practice I have found the arrangement shown in the drawings to form a very convenient device.

Having thus described my invention, what I claim is—

1. In a hand planing-machine, the combination with the frame having a revoluble screw arranged therein, of a transversely-movable feed-carriage having threaded connection with said feed-screw, feeding mechanism carried by said feed-carriage and adapted for engagement with said feed-screw, a tool-holding carriage located on the feed-carriage and being longitudinally movable thereon, a trip-bar adjustably secured to said tool-holding carriage and adapted to actuate the feed mechanism on operating the said tool-holding carriage to cause the feeding mechanism to move lengthwise on the feed-screw and move the feed-carriage in one direction, and means for revolving said feed-screw to cause the feed-carriage to move in the opposite direction, substantially as set forth.

2. In a hand planing-machine, the combination with an open frame having its front end adapted to be held in a vise, means for supporting the rear end of the frame and adjusting the same vertically, a feed-carriage movable transversely on the frame, and a tool-holding carriage movable longitudinally on the feed-carriage, substantially as set forth.

3. In a hand planing-machine, the combination with the frame having its front end adapted to be held in a vise, means for adjusting the front end of the frame, means for supporting the rear end of the frame and adjusting the same vertically, a feed-carriage laterally movable on said frame, and a tool-

holding carriage longitudinally movable on the feed-carriage, substantially as set forth.

4. In a hand planing-machine, the combination with the frame having its front end adapted to be held between the jaws of a vise, an adjusting-screw operatively connected to the front end of the frame to adjust the same vertically, adjusting and supporting screws operatively connected to the rear end of the frame, a feed-carriage movable in one direction, and a tool-holding carriage movable in another direction, substantially as set forth.

5. In a hand planing-machine, the combination with an open frame having its front end adapted to be held in a vise, vertical adjusting and supporting screws having threaded connection with the rear end of the frame, a feed-carriage movable transversely on the frame, and a tool-holding carriage movable lengthwise on the feed-carriage, substantially as set forth.

6. In a hand planing-machine, the combination with the frame, of a transverse feed-screw revolubly secured in said frame, a feed-carriage having a threaded transverse opening with which said feed-screw engages, a ratchet-wheel splined to said feed-screw so as to move lengthwise thereon but turn with the same, a ratchet-arm held loosely on said screw, said ratchet-wheel and ratchet-arm being connected to the feed-carriage so as to move with the same, a pawl pivotally held on said ratchet-arm, a reciprocating tool-holding carriage located on the feed-carriage and being movable at an angle to the movement of the latter, and an adjustable trip secured to said tool-holding carriage to actuate the ratchet-arm, substantially as set forth.

In testimony whereof I have hereunto affixed my signature in the presence of two subscribing witnesses.

CHARLES H. AMIDON.

Witnesses:

CHAS. F. BURKHART,
JULIUS LANKES.