

(No Model.)

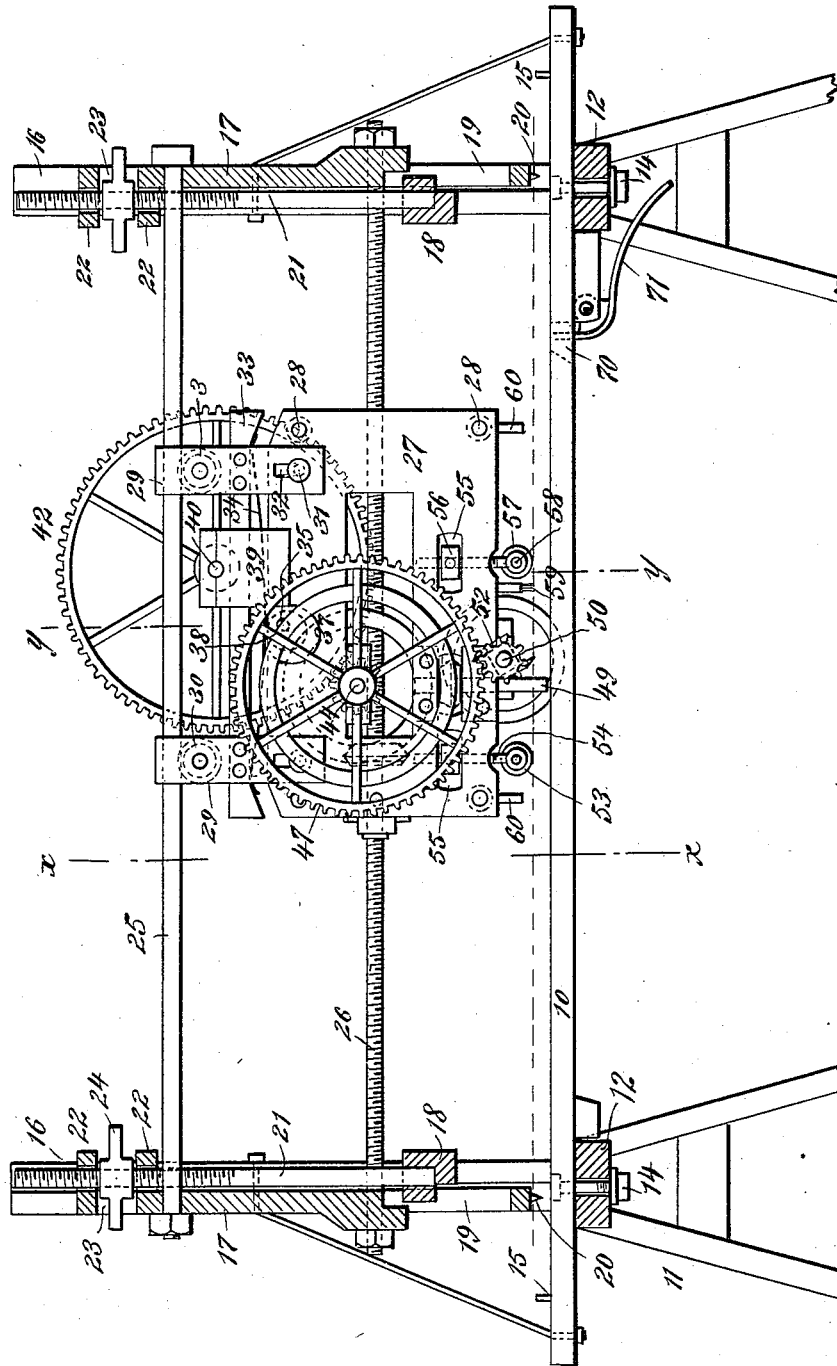
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S. M. NEELY.
HAND PLANER.

No. 426,735.

Patented Apr. 29, 1890.

Fig. 1.



WITNESSES:

Donn Fritchell
Co. Sedgwick

INVENTOR:

S. M. Neely

BY

Munn & Co.
ATTORNEYS.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

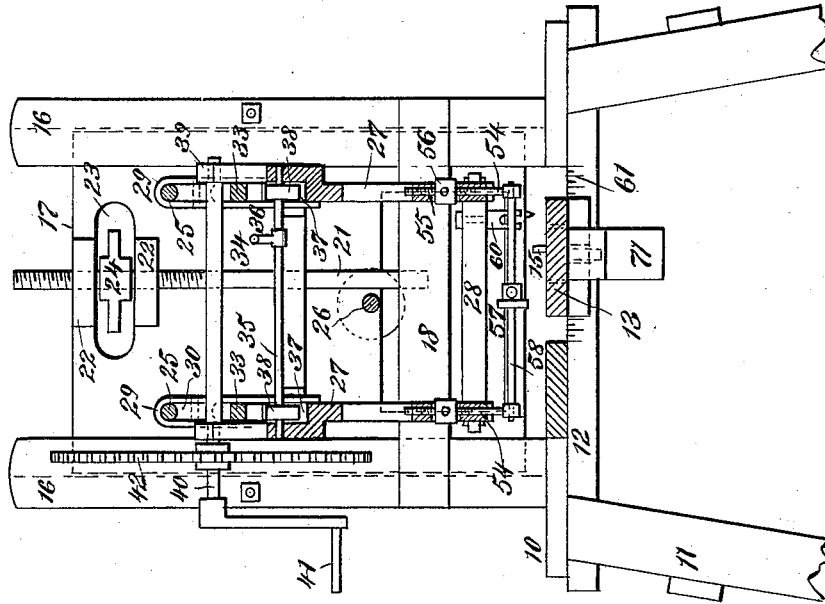


Fig. 2.

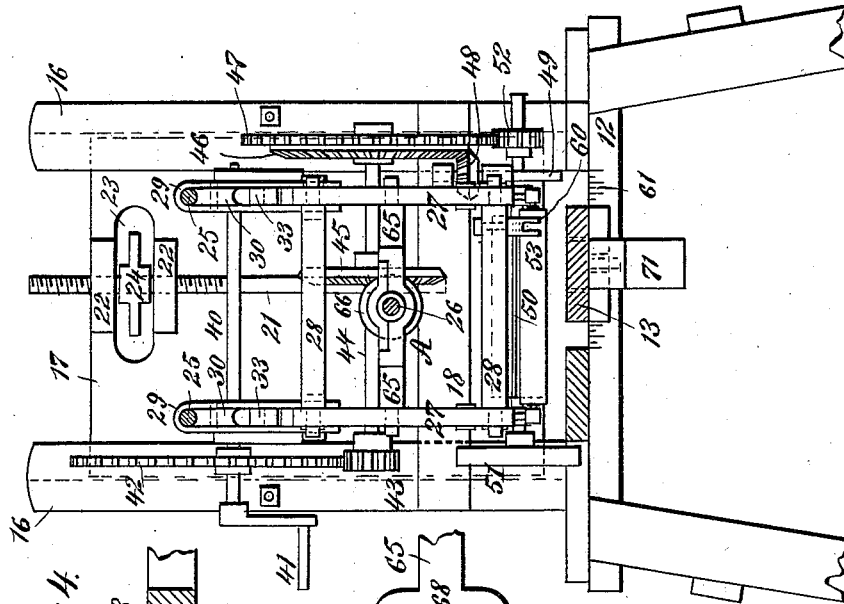


Fig. 4.

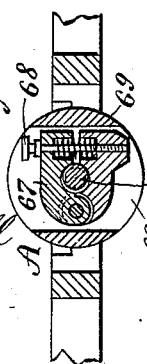
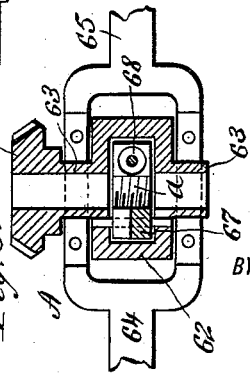


Fig. 5.



WITNESSES:

Norm Twitchell
Co. Sedgwick

INVENTOR:

S. M. Neely

Munn & Co.
ATTORNEYS.

UNITED STATES PATENT OFFICE.

SAMUEL M. NEELY, OF SMITH'S TURN-OUT, ASSIGNOR OF ONE-HALF TO
WILLIAM L. RODDEY, OF ROCK HILL, SOUTH CAROLINA.

HAND-PLANER.

SPECIFICATION forming part of Letters Patent No. 426,735, dated April 29, 1890.

Application filed May 23, 1889. Serial No. 311,837. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL M. NEELY, of Smith's Turn-Out, in the county of York and State of South Carolina, have invented a new and useful Improvement in Hand-Planers, of which the following is a full, clear, and exact description.

My invention relates to an improvement in hand-planers, and has for its object to provide a frame and a carriage adapted to travel in said frame, having attached thereto saw or planer bits, and to so construct the carriage and frame that the former may be conveniently and expeditiously manipulated, and wherein the latter will be adjustable to operate upon boards of varied thickness.

A further object of the invention is to simplify the construction of machines of the above type and to provide a durable and economic machine.

The invention consists of the novel construction and combination of the several parts, as will be hereinafter fully described, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a central vertical section through the frame and a side elevation of the carriage, illustrating the latter in position to travel in the frame. Fig. 2 is a section on line *xx* of Fig. 1. Fig. 3 is a section on line *yy* of the same figure, and Figs. 4 and 5 are detail sectional views of the carriage-clutch adapted to grasp the feed-rod of the frame.

In carrying out the invention the body 10 may be constructed of wood or of metal, and is supported upon suitable trestles or legs 11. The body 10 is preferably made up of a series of strips united to cross-bars 12, one of which strips 13 is laterally adjustable upon the said cross-bars, the adjustment being effected by passing a set-screw 14 upward through an elongated slot in the cross-bars to an engagement with the said adjustable strip of the bed, as illustrated in Fig. 1. This adjustable strip 13 of the bed is provided at or near each outer end with a pin 15 to be used when sawing or ripping a board. The edge of the board rests against the said pins and

is prevented thereby from slipping back and forth across the bed, whereby strips of uniform width are obtained.

If in practice it is found desirable, a series of apertures may be made in each end of the adjustable bed-strip to permit the position of the pins to be changed to suit the requirements of different boards.

Near each end of the body 10 spaced perpendicular standards 16 are secured, which standards are grooved upon their outer faces to receive a vertically-adjustable end frame 17. The standards are connected a slight distance above their lower ends by a cross-bar 18. The adjustable end frame is preferably provided with a recess 19 near the lower end, and teeth or spikes 20 inserted in the under edge, which teeth or spikes are adapted to contact with the board to be planed or sawed and retain the same in a rigid position.

The vertical adjustment of the end frame is effected by means of a threaded rod 21, held at the lower end in the cross-bar 18 of the standards 16. The threaded rod is located near to the inner face of the adjustable end frame, and is passed vertically upward through spaced ribs 22, secured to the inner face of the adjustable frame at or near the top, as is illustrated in Figs. 2 and 3.

A recess or slot 23 is formed in the adjustable end frame near the top between the ribs 22, and a wheel or a thumb-nut 24, provided with a threaded bore, is held to turn within the said recess 23 upon the threaded rod 21. Thus by the manipulation of the hand nut or wheel, whichever may be employed, the end frame may be elevated or depressed at pleasure.

It will be understood that an adjustable frame is provided at each end of the bed-plate, and that each of the adjustable end frames are adjusted in similar manner.

The two end frames are connected at or near the top, preferably by two rods 25, held in place by having a nut screwed upon each extremity, or the respective rods may be provided at one end only with a nut, the other end having integral therewith a suitable head. These rods 25 are adapted to guide the carriage to be hereinafter described, and if in

practice it is deemed desirable three rods or more may be employed instead of two, as illustrated.

In vertical alignment with the center of the space intervening the two carriage-rods 25 a feed-rod 26 is secured at its ends in the opposed adjustable end frames 17, which rod extends longitudinally above the bed 10 and is threaded throughout its length.

The carriage comprises two side frames 27, united by suitable cross bars or braces 28, each of the said sides 27 having attached thereto near each end an essentially U-shaped hanger 29, which hangers pass over the several carriage-rods 25 in contact therewith, and are each provided with a friction-pulley 30, journaled therein to contact with the under surface of the carriage-rods. These hangers 29 are adjustably secured to the side pieces 20 of the carriage-frame by a set-screw 31, which passes through an elongated slot 32 in the lower ends of the hangers, as illustrated in Fig. 1.

Above the upper edge of each of the side pieces 27 of the carriage-frame a bar or beam 33, of equal length with the said side pieces, is supported by being rigidly attached to the hangers 29, and between the contiguous faces of the bars or beams 33 and the sides of the carriage-frame a spring 34 is intervened, having a bearing upon both surfaces, as illustrated in Fig. 1. It will be observed that by reason of this construction, when the carriage-frame is forced downward so that the saw or planer carried thereby contacts with a board, and the planers or the guide-rollers, hereinafter described, connected with the carriage, pass over uneven surfaces of a board, all strain is removed from the set-screw 31 and sustained by the carriage-rods 25, since the carriage proper is enabled to slide upward by reason of its adjustable connection with the hangers, and the strain is communicated through the spring 34 to the beams 33, and from thence to the friction-rollers, which bear against the carriage-rods 25. When the carriage has been adjusted downward by manipulating the thumb nuts or wheels 24, and it is desired to cause the planer, if one is carried, to contact yet more closely with the board to be planed, this may be effected by rocking a shaft 35, journaled transversely in the side pieces of the carriage-frame at or near the top, which shaft to that end is provided with an attached lever 36.

Beneath the bearings of the shaft 35 a recess 37 is produced in the side pieces of the carriage-frame, the walls of which are circular, and a cam 38 is secured at or near each end of the shaft to contact with the walls of said recess. When the cams are thrown out of contact with the said recessed walls, the adjustment of the carriage is accomplished through the end frames only; but when the cams are brought to a contact with the recessed walls they force the carriage-frames apart.

In suitable bearings 39, attached to the side

pieces of the carriage-frame, the drive-shaft 40 is journaled, provided at one or both ends with a crank-arm 41 and at one end outside of the carriage-frame with a large spur-wheel 42. This spur-wheel meshes with a pinion 43 upon a feed-shaft 44, journaled transversely in the carriage-frame, which shaft is provided at or near its center with a bevel-gear 45, secured thereto, and at the end opposite to that carrying the pinion 43 with a larger bevel-gear 46 and a spur-wheel 47, both of said wheels being rigidly secured to the said shaft, as illustrated in Fig. 2. The bevel-gear 46 meshes with a bevel-pinion 48, secured to a vertical saw-shaft 49, and communicates motion to the said shaft, the shaft being preferably journaled at one side of the carriage-frame, as is also illustrated in Fig. 2.

Near the lower end of the carriage-frame a planer-shaft 50 is transversely journaled, carrying at one outer end a balance-wheel 51 and at the opposite end a pinion 52, adapted for contact with the spur-wheel 47 of the feed-shaft.

Near the front of the carriage and beneath the same a roller 53 is journaled in adjustable bearings, the said roller being preferably of a width essentially equal to the width of the carriage. The adjustment consists of hangers 54, having a threaded upper end, which threaded end is projected upward through the side pieces of the carriage-frame, and in said side pieces a recess 55 is formed, exposing a portion of the threaded hanger. Within the recess a nut 56 is held to turn upon the threaded section of the hanger, as illustrated in Figs. 1 and 3, Fig. 3 illustrating more properly the journaling of the smaller roller 57, which is located at or near the rear. This roller is adjustable in similar manner to the forward roller. The roller 57 is a small roller, as shown in said Fig. 3, and is adjustably secured upon a shaft 58, which shaft is journaled in hangers, and in front of this smaller roller 57 a scraper or brush 59 is located, as shown in Fig. 1, adapted to remove any matter that may be in the path of the said roller.

To facilitate the guidance of the carriage over a plank when turned edgewise, or a molding, for instance, a bifurcated guide-block 60 is adjustably secured to one of the connecting-rods 28 of the carriage-frame, as illustrated in Figs. 1 and 2.

In order to facilitate the movement of the adjustable bed-strip 13, a scale may be produced upon the under face thereof, or upon the cross-bar 12, as shown at 61 in Figs 2 and 3.

The carriage is fed forward by means of a clutch A, illustrated in detail in Figs. 4 and 5. This clutch consists of a casing 62, having reduced outer tubular ends 63, which are journaled in a link, section 64 of a tie or brace rod 65, secured at its ends in the sides of the carriage-frame, as illustrated in Fig. 2. Upon one tubular end of the casing 62 a bevel-gear 66 is formed, having a bore align-

ing the end bore in the casing, as illustrated in Fig. 5. When the clutch is upon the feed-rod, this bevel-gear 66 is adapted to mesh with the bevel-gear 45 upon the feed-shaft of the carriage.

The clutch consists of two hinged jaws 67, held within the body of the casing, having aligning concave recesses in their opposed faces, interiorly threaded, as illustrated at *a* in Fig. 5, whereby when the jaws are brought together the threaded walls of the recesses will mesh with the thread of the feed-rod 26, as shown in Fig. 4. These jaws are held in firm contact with the feed-rod 26, when the carriage is to be fed forward, by means of a set-screw 68, passing through the free ends of said jaws, as shown in Fig. 4, and through recesses in the said jaws, in which recesses a coil-spring 69 is located, surrounding the set-screw. Thus when the clutch is to be released from the feed-rod, by loosening the set-screw the spring acts and forces the jaws apart. This operation takes place when it is desired to carry the carriage backward to be again fed forward.

In the adjustable base-strip 13 a recess or opening 70 is formed, (shown in dotted lines in Fig. 1,) and near said recess, upon the under face of the adjustable strip, an angled dog 71 is pivoted, the upper end of which dog is adapted to pass upward through the recess 70, when occasion may demand, to a contact with the under surface of the board, and thereby hold the same while being sawed or planed.

I desire it to be understood that any well-known form of saw or planer bits may be used in connection with the carriage and frame above described, and as such saw or planer bits do not constitute any portion of the invention I have not illustrated them in the drawings.

In operation the board is placed in position upon the adjustable strip of the bed, and the carriage is fed downward, so that the saw or planer will contact with the board by manipulating the thumb nuts or wheels 24, which force the end pieces 17 downward, so that the teeth 20, carried thereby, will contact with the board, and as the carriage-rods and feed-rod are secured in said adjustable ends the carriage is carried downward likewise. The depth of cut of the planer-bit is regulated by the adjustment of the rollers 53 and 57. The clutch is made to contact with the feed-rod and the crank-arm 41 is turned, whereupon, the several gears acting, the carriage is fed forward. When the carriage has traveled as far as it possibly can forward, to return the carriage to its initial-point the set-screw 68 is screwed upward, whereupon the clutch-jaws separate and release their hold upon the feed-rod, permitting the carriage to be readily carried backward.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a hand-planer, the combination, with a base, vertically-grooved standards projected from the base, and end plates vertically adjustable in said standards, of carrier-rods, and a feed-rod connecting the said end plates, and a carriage held to travel upon the carrier-rods and connected with the feed-rod, substantially as shown and described.

2. In a hand-planer, the combination, with a base having a laterally-adjustable section, grooved standards projected upward from the base, and end plates vertically adjustable in said standards, of carrier-rods and a feed-rod connecting the said end plates, a carriage held to travel upon the carrier-rods, and a clutch connecting the feed-rod and carriage, substantially as shown and described.

3. In a hand-planer, the combination, with a base, grooved standards projected upward from said base, end plates held to slide in the said standards, a cross-bar connecting the standards at each end of the base-frame, a rod attached to said cross-bars and extending vertically upward, having a threaded upper end contacting with the end plates, and a nut or wheel held to travel upon the rod in contact with the end plates, of carrier-rods and a feed-rod connecting the adjustable end plates, a carriage held to travel upon the carrier-rods, and a clutch connecting the feed-rod and the carriage, substantially as shown and described.

4. In a hand-planer, the combination, with a base provided with a laterally-adjustable section, grooved standards projected upward from each end of the base and connected by a cross-beam near the bottom, end plates held to slide in the said standards provided with teeth at the lower edge, spaced offsets upon the inner face, and a slot between the offsets, of a perpendicular rod having an upper threaded end secured in the cross-bar of the standards extending upward through the offsets of the end plates, a nut or wheel held to travel upon the threaded portion of the rod between the offsets of the end plates, carrier-rods and a feed-rod connecting the end plates, a carriage held to travel upon the carrier-rods, and a clutch-connection between the said feed-rod and carriage, all combined for operation substantially as shown and described.

5. In a hand-planer, the combination, with a base provided with standards at each end, adjustable end plates held to slide in said standards, and carrier-rods and a feed-rod connecting the said end plates, of a carriage held to travel upon the carrier-rods, a drive-shaft journaled in the said carriage, a feed-shaft driven from the drive-shaft provided with a bevel-gear, and a sectional clutch embracing the feed-rod and provided with a bevel-gear meshing with the bevel-gear of the feed-shaft, all combined for operation substantially as shown and described.

6. In a hand-planer, the combination, with a base, standards projected upward from the

end of the base, adjustable end plates held to slide in said standards, and carrier-rods and a feed-rod connecting the said end plates, of a carriage held to travel upon the carrier-rods, a drive-shaft journaled in said carriage, a feed-shaft driven from the drive-shaft provided with a bevel-gear, a casing supported between the sides of the carriage and provided with hinged clutch-sections contacting with the feed-shaft, a spring intervened between the free ends of the clutch-sections, a set-screw passed through said ends, and a bevel-gear integral with the clutch-casing and capable of contact with the bevel-gear of the feed-shaft substantially as shown and described.

7. In a hand-planer, the combination, with a base, standards projected upward from the base near each end, adjustable end plates held to slide in the said standards, and carrier-rods and a feed-rod connecting the said end plates, of a carriage provided with vertically-adjustable hangers contacting with the carrier-rods and provided with friction-rollers, a beam rigidly attached to the hangers above each side of the carriage, a spring intervening the contiguous surfaces of the carriage and said beams, a drive-shaft journaled in the carriage, a feed-shaft journaled below the drive-shaft carrying a bevel-gear, and a sectional clutch held to travel upon the feed-rod provided with a bevel-gear meshing with the gear of the feed-shaft, all combined for operation substantially as shown and described.

8. In a hand-planer, the combination, with a base, standards projected from said base, adjustable end plates carrying teeth at their lower ends held to slide in the standards, and carrier-rods and a feed-rod connecting the end plates, of a carriage, hangers contacting with the carrier-rod vertically adjustable upon the carriage and provided with a friction-roller, a beam rigidly secured to the hangers above each side of the carriage-frame, a spring intervening the said frame and each of the said beams, vertically-adjustable rollers journaled beneath the carriage, a feed-shaft provided with a bevel-gear, a casing held within the carriage-frame provided with a bevel-gear mesh-

ing with the gear upon the feed-shaft, a hinged clutch contacting with the feed-rod and controlled by a spring, a set-screw supported in said casing, a planer-shaft, a drive-shaft, and a gear-connection, substantially as shown and described, between the drive-shaft and feed-shaft and the drive-shaft and planer-shaft, as and for the purpose specified.

9. In a hand-planer, the combination, with a frame provided with a threaded feed-rod, and a carriage held to travel in said frame, of a clutch connecting the carriage to the feed-shaft, comprising a casing, hinged clutch-arms within the said casing provided with opposed semicircular recesses having threaded walls adapted to contact with the thread of the feed-rod, a spring intervening the opposed faces of the clutch-sections at their free ends, and a set-screw passing through the said free ends, substantially as shown and described.

10. In a hand-planer, the combination, with a bed and standards projected upward from the bed at each end, and cross-bars uniting each pair of standards near the bottom, of end plates held to slide in the standards, provided with teeth at the lower edge, a transverse recess near the upper end, and lugs upon the inner face, one at each side of said recess, of a rod provided with a threaded upper end secured in the cross-bar of the standards and extending upward through the lugs of the sliding plates, and a nut or wheel held within the recess of each end plate adapted to travel upon the threaded portion of the rod adjacent thereto, substantially as shown and described.

11. A base for hand-planers provided with a laterally-adjustable longitudinal section, detachable pins held in the upper face of the said section, and an angled dog pivoted to the under surface of the said section, the vertical member whereof is adapted to extend upward through a recess formed in the section, all combined for operation substantially as and for the purpose specified.

SAMUEL M. NEELY.

Witnesses:

JNO. O. GRAHAM,
J. C. McELROY.