PORTABLE POWER-DRIVEN PLANER

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Application March 24, 1949, Serial No. 83,162

1 Claim. (Cl. 145—5)

This invention relates to planers, is particularly concerned with portable planers, and is more particularly concerned with hand operated portable power driven planers, and is most particularly concerned with a depth regulating device for a hand operated portable power driven planer.

In the prior art there are hand planers of various designs, and of various types of construction, and these are adapted for either general planing, or for specific planing operations. Since these are manually operated they are not adapted for modern use inasmuch as present day methods of building construction call for speed and great efficiency.

There also are power operated planers but these are factory use and do not lend themselves to transporting to a location, for example, where a residential dwelling is being constructed. Portable power driven planers are had but these are of such cumbersome and unwieldy construction that they often require the services of two workers to perform an operation. Another serious objection found in such planers is the cumbersome depth regulating device whereby it is not only difficult to adjust the depth of the cut of the planer but close tolerance adjustments are substantially impossible. There are also other serious disadvantages of such portable power driven planers and their use is greatly limited for a number of reasons.

It is therefore an object of this invention to provide a portable planer. It is a further object to provide a portable, power driven planer. It is still a further object to provide a hand operated, portable, power driven planer. It is a further object to provide a depth regulating device for a hand operated, portable, power driven planer.

I have now discovered and invented a planer comprising a base, the said base having a longitudinal flat surface, an electric motor, the said motor being secured to the rear portion of the said base, a plurality of blades, the said blades being mounted about a rotatable shaft, the said blades and the said shaft being mounted forwardly in respect to the said motor, a planer head helical gear, the said gear being secured to the said motor shaft, a longitudinal shaft, the said shaft having secured thereto a helical gear at each end thereof, one of the said helical gears on the said longitudinal shaft meshing with the helical gear secured to the motor shaft and the other said helical gear on the said longitudinal shaft meshing with the helical gear secured to the planer blade shaft, and the said planer being adapted for manual movement during the operation of the motor and the blades thereof, and I am now able to avoid the disadvantages of the prior art and am able readily to accomplish the objects set forth.

Referring to the drawings:

Fig. 1 is a top view of the planer of my invention.

Fig. 2 is a front longitudinal view of the same.

Fig. 3 is a rear longitudinal view of the same.

Fig. 4 is a sectional view taken along the lines 4—4 of Fig. 1.

Fig. 5 is a sectional view taken along the lines 5—5 of Fig. 2.

Fig. 6 is a sectional view taken along the lines 6—6 of Fig. 4.

Fig. 7 is a longitudinal view of the members provided for planing a surface at an angle to another surface.

Fig. 8 is a side view side view of Fig. 7.

The flat surface 1 of the planer extends forwardly from the extreme rear portion of the said planer to an open space where the blades 44 protrude. There is a continuation of the flat surface along the adjusting mechanism 54. The side wall 2 of the planer rises irregularly along the right longitudinal edge of the flat surface 1 and is perpendicular to the said surface. The side wall 3 of the planer, likewise, rises irregularly along the left longitudinal edge of the flat surface 1 and is perpendicular to the said surface.

The said left wall 3 of the planer has an offset 44 as is shown in the Figs. 1, 2, and 5. The bottom surface of the said offset 4 is designated by the numeral 46. The purpose of the said offset is to allow the blades 44 to plane to a square shoulder on material in the process of manufacture.

The electric motor 5 is mounted on the frame of the planer and is secured to the said frame by means of a plurality of screws passing upwardly through a base secured to the frame of the planer and held thereto by means of the screws 17 and the slotted nuts 18, and through the cantilevered supports 16.

The electric cord 6 leading to a source of electricity passes therethrough the handle 9—10, passes through the switch housed in the said handle, and terminates at the motor. The trigger switch 12 can be operated by holding the said closed, or it may be locked in place by means of the push pin 13. The locking catch which is attached to the push pin 13 is designated by the numeral 14. One of the wires leading from the cord 6 passes through the handle, is attached to the binding post 7a, and the other wire is attached to the binding post 7b. The screws 71 hold the two parts of the handle 9—10 together. The holes 19 and 20 in the motor 5 are for ventilating purposes.
The cover plate and bearing support of the motor end is designated by the numeral 21. The cover plate and bearing support of the motor head end is designated by the numeral 22.

As shown in the Fig. 3, the helical gear 23 is secured to the motor shaft 23c and rotates at 17,000 R. P. M. The helical gear 23 meshes with the helical gear 24. Both the helical gear 23 and the gear 24 have the same pitch and consequently both have the same R. P. M. The gear 24 is secured to the driving shaft 34 by means of the set screw 25. The helical gear 29 is secured to the driving shaft 34 by means of the set screw 32. The helical gear 29 meshes with the planer head helical gear 38 and the pitch diameter of the gear 38 is twice the pitch diameter of the helical gear 29. Therefore the gear 38 revolves one-half the R. P. M. of the gear 29. The R. P. M. of the gear 29 is 17,000, and of the gear 38 is 8,500 R. P. M. The gear 38 is secured to the planer head shaft 35, turning the planer head 22 at 8,500 R. P. M. The planer head 42 is secured to the planer head shaft 35 by the set screws 43. The planer head shaft 35 revolves in ball bearings enclosed in the bearing case 39. The helical gears 23 and 24 are housed in the cover plate and bearing support 21. The gear 25 and the gear 38 are housed in the cover plate and bearing support 22.

The planer head shaft 35 is supported by the ball bearing cases 39 and the planer head 42 is secured thereto by the set screws 43. The blades 44 are secured to the planer head 42 by means of the screws and nuts 45. Each of the said blades has a slot 45 and a locking pin 46 which is riveted in the screws 47, passes through the slot 45 and is inserted in the planer head 42. The vertical sheet metal covering 45 and 49 forms the planer head member. The angle bracket 50 is welded to the covering 49. The screw 51 secures the angle bracket 50 to the offset 4 on the side wall 3 of the planer. The shaving discharge throat 52 is composed of the hood 53 which is secured to both covering 48 and the covering 49. The member 54 is movably secured to the planer and is the depth adjusting mechanism of the planer. The adjusting lever 60 is movably secured to the boss 56 by means of a fulcrum pin 62. The said pin 62 is riveted in the lever 60 and secures the said lever 60 to the boss 56. The said lever 60 has a pin 64 riveted therein and extending substantially upwardly and moves in the slot 63 of the bracket 63. The rotating movement of the said lever 60 allows the movement of the adjusting member 54 along the inclined plane of the slider 57 and the boss 56. The hand knob 71 is secured to the member 54 and is used for manually holding the planer with one hand during the operation.

In the Figs. 7 and 8, are shown the members provided for planing a surface at an angle to another surface. The facing plate 65 is secured to the levers 66. The levers 66 are hingely secured to the attaching plates 67 by means of the fulcrum bolts and nuts 68. The bolts 68 secure the said attaching plates 67 to the said wall 2 of the planer. The holes 70 which are shown in the Figs. 1, 2, and 3, are used for the attachment of the said members hereinbefore described.

In the operation of the planer of my invention the electric cord 6 is connected to a convenient electrical outlet and the right hand of the operator grasps the handle 9—10. The second finger of the operator's hand extends forward and beneath the handle 9—10 to press against the trigger switch 12 to complete the circuit. The index finger of the operator pushes down the push pin to lock the locking catch into locking position. The left hand grasps the handle 71 to guide and steady the planer. When the motor 5 is running the planer head is made to rotate by means of the helical gears and shaft hereinbefore described. The planing blades therefore plane the surface of the desired wood material.

To adjust for the depth of the cut in the wood, the adjusting mechanism 54 of the planer may slantingly be moved forwards, backwards, or sideways, which moves the said mechanism downwardly, and upwardly, respectively.

I wish particularly to point out that the depth regulating device of my invention used in combination with the planer, can be readily adjusted to cut at substantially any desired depth and the said adjustment can be of extremely close tolerance. The adjustment furthermore can be made rapidly which adds greatly to the economy of the operation of the planer.

I claim:

A depth adjusting device, in combination with a planer, comprising a flat base, the said base being forwardly disposed in respect to the said planer, an inclined foundation, the said foundation being integral with and disposed thereover the said base, a pair of inclined planes, the said planes being integral with the said base and being transversely opposed to each other, a lever, a boss, the said boss being integral with the said flat base, a fulcrum pin, the said pin being secured to the said boss, the lever being rotatably secured to the said boss by the said fulcrum pin, a bracket, the said bracket having a pair of arms, the said bracket being secured by one of its arms to the stationary portion of the said planer, and the other said arm being disposed adjacent to the upper surface of the said boss, a bracket pin, the said bracket pin being secured to the said bracket, the said lever having a slot, the said slot being opposed in respect to the fulcrum of the said lever, the said lever pin engaging the slot of the said lever, the said lever being axially disposed in respect to the said planer, the transverse movement of the said lever adapted for upward and downward movement of the said base, increasing and decreasing, respectively, the depth of the cut of the said planer.

HENRY A. SPITZLEY.

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