This invention relates in general to power driven hand tools and, more particularly, to a planer and jointer attachment for so-called "electric hand-saws."

The primary object of the present invention is to provide a planer and jointer attachment which can be coupled or mounted upon a power hand-saw to provide a power driven plane capable of performing all the wood-working functions of a conventional hand plane and also adapted for attachment to a work-bench or similar stationary support, in which position it will be capable of performing the functions of a planer or a jointer.

It is also an object of the present invention to provide a planer and jointer attachment of the type stated which can be quickly and accurately attached to the power hand-saw with which it is to be associated.

It is a further object of the present invention to provide a planer and jointer attachment which is provided with a unique type of chip disposal arrangement and will not clog up readily.

It is an additional object of the present invention to provide a planer and jointer attachment which incorporates a novel, convenient, and highly precise depth-of-cut controlling mechanism.

With the above and other objects in view, my invention resides in the novel features of form, construction, arrangement and combination of parts presently described and pointed out in the claims.

In the accompanying drawings:

Figure 1 is a perspective view of a planer and jointer attachment constructed in accordance with and embodying the present invention, and showing such attachment in operative association with a power hand-saw from which the blade and guard have been removed;

Figures 2, 3, and 4 are side elevational, top plan, and end elevational views, respectively, of the planer and jointer attachment;

Figures 5 and 6 are sectional views taken along lines 5—5 and 6—6, respectively, of Figure 3;

Figures 7 and 8 are sectional views taken along lines 7—7 and 8—8, respectively of Figure 2;

Figure 9 is a sectional view taken along line 9—9 of Figure 7;

Figure 10 is a sectional view taken along line 10—10 of Figure 2;

Figure 11 is a fragmentary exploded-perspective view of the depth-of-cut mechanism forming a part of the present invention; and

Figure 12 is a side elevational view of the planer and jointer attachment in association with a bench-mounting fixture by which the device can be used as a jointer.

Referring now in more detail and by reference characters to the drawings, which illustrate a preferred embodiment of the present invention, A designates a power hand-saw, of more or less conventional design, including a housing generally designated b enclosing an electric motor 1 which is provided with a shaft 2, a removable handle 3, and a sole-plate 4. The usual circular saw blade and blade guard have been removed and hence are not shown.

Provided for use with the hand-saw A is a planer and jointer attachment B, which comprises a body-casting 5 having a flat top face 6, side faces 7, 8, an inclined rear face 9, and an arcuate front face 10, the latter being beveled across its top margin, as at 11, and provided with a centrally located flat-faced boss 12 for alternatively receiving the handle 13 or the stand-attachment bolt 14. The body-casting 5 is provided in its rear half with a flat under face 15 upon which the entire device sits when it is being used for planing purposes. In its forward end, the body-casting 5 is cored out to provide an open-bottomed box-like recess 16 having a forward face 17, rear face 18, side faces 19, 20, and a flat top wall 21 which is integrally provided with a dowastically opening tubular post 22. The front face 10 of the body-casting 5 and the forward face 17 of the recess 16 define a front wall 23 which is indented along its bottom margin to provide a guide slot 24 having end-stops 25, 25'. Rearwardly of the recess 16, the body-casting 5 is also cored out to provide a somewhat cylindrical transverse cutter chamber 26, which is separated from the recess by a partition wall 27 and is closed at one lateral end by a bearing plate 28 which is secured to the body casting 5 by screws 29 and is provided with a bearing 30 in coaxial alignment with a bearing 31 mounted in the body-casting 5 at the opposite end of the cutter chamber 26 for supporting a cutter shaft 32 having a cutter body 33 and removable cutter blades 34, 34'. The shaft 32 furthermore extends outwardly through the bearing 30 and is provided with a pulley 35, all as best seen in Figure 2 and for purposes presently more fully appearing.

The substantially solid rear half of the body-casting 5 is also cored out to provide an arcuate chip-discharge throat 36 which opens at its forward end and upon the rear face 37 of the cutter chamber 26 and opens at its rear end upon the side face 7 of the body-casting 5. It should be noted that the chip-discharge throat 36 curves smoothly and becomes progressively wider from front to rear in a rather unique manner, with the result that chips and shavings coming away from the cutter-blades 34, 34', are efficiently blown out to one side, thereby avoiding clogging or interference with the effective operation of the tool.

Disposed across the open bottom of the recess 16, and, in effect, forming a closure therefor, is a shoe 38 having a flat under face 39 integrally provided with an upwardly extending guide-sleeve 40 shaped for snug-fitting slideable disposition upon the tubular post 22. Milled axially into the shoe 38 are two diametrically opposite holes 41, 41', for engagement with endwise aligned guide-pins 42, 42' mounted in the body-casting 5 and projecting into the recess 16. Disposed flushwise upon the upwardly presented face of the shoe 38 is a somewhat diamond-shaped adjustment lever 43 which is centrally provided with a centrally located circular aperture 44 sized for snug-fitting rotatable disposition upon the guide-sleeve 40. The diamond-shaped adjustment lever 43 is also provided with two diametrically opposite, curved ears 45 having camming slots 45' adapted for operative engagement with the guide-pins 42, 42'. The adjustment lever 43 is also provided with arcuate slots 46, 46', concentric with the aperture 44 and extending snugly, but slidably, therethrough are studs 47, 47', respectively, by which the adjustment lever 43 is operatively secured to the shoe 38. Interposed between the shoe 38 and adjustment lever 43 is an indexing plate 48 which is rigidly fastened to the shoe 38 and has an arcuate segment of radial corrugations or teeth 49 for engagement with a single matching corrugation or tooth 50 formed on the under side of the adjustment lever 43 whereby to hold the latter in any one of a plurality of positions between the limits of its movement. The adjustment lever 43 furthermore projects forwardly through the guide slot 24 and is provided with an upstanding tongue 51 having forwardly...
extending ears 52, 52', which may be manually gripped, whereby to swing the adjustment lever 43 from side to side. Preferably, the tongue 51 is provided with a V-shaped notch which is aligned with a scale engraved, embossed, or otherwise imprinted upon the front face 10 of the body-casting 5. As will be evident from the drawings and the foregoing description, the adjustment lever may be manually swung from side to side and the camming slots 45, 45', will cause the shoe 38 to shift up and down with respect to the recess 16, thereby varying the relative perpendicular distance between the planes of the under face 39 and the under face 15 so as to effect satisfactory adjustment in the depth-of-cut of the tool. It will also be noted by reference to Figure 11 that the shoe 38 is provided along its rear transverse margin with an upwardly projecting seal-forming flap 53 which may be made of any suitable resilient material, such as spring steel, rubber, or the like, and serves to keep chips or sawdust from blowing into the recess 16 to any appreciable extent. Furthermore, the forward margin of the shoe 38 is preferably curved slightly upwardly, as at 54, to facilitate feeding the tool into the work.

Rigidly mounted in the body-casting 5 toward the forward end thereof is an upstanding threaded stud 55 which is fitted with a wing-nut 56 and washer 57. Provided for co-operation with the stud 55 is a U-shaped fastening clip 58 having a forward leg 59 and a rear leg 60 connected by a flat bight 61 which is slotted for loose-fitting disposition upon the stud 55 beneath the washer 57 and wing-nut 56. The rear leg 60 is slightly shorter than the forward leg 59 so as to bear down in tightly clamped engagement with the forward portion of the sole-plate 4 which forms a conventional part of the usual housing of the power-hand-saw A. Also rigidly mounted in the body-casting 5 toward the rear end thereof is a second upstanding threaded stud 62 which is fitted with a wing-nut 63 and washer 64 for tightening down a somewhat wedge-shaped clamping block 65 having forwardly extending arms 66, 66', project laterally beyond the side faces 7, 8, of the body-casting 5 to straddle the sole-plate 4 and bear thereagainst at widely spaced areas, forming a somewhat triangular relationship with the center area under the forward fastening clip 58, thereby producing an unusually secure and stable juncture between the power-hand-saw A and the attachment B.

The shaft 2 of the power-hand-saw A is provided with a conventional drive pulley 67 which is operatively connected to the pulley 35 by a V-belt 68 whereby the shaft 32 and the motor drive may be rotated when the motor of the hand-saw A is energized.

Bolted or otherwise removably fastened to the side face 8 of the body-casting 5 are laterally projecting hinge-brackets 69, 69', having hinge-pins 70, 70', respectively, which support hinge-plates 71, 71'. Welded or otherwise rigidly secured to the hinge-plates 71, 71', and extending lengthwise therebetween is a fence 72 which projects below, and to one side of, the under faces 15, 39, whereby to guide the tool by bearing slidably against a lateral face of the work. In order to permit the cutting of bevels, the hinge-plates 71, 71', are provided with arcuate slots 73, 73', respectively, and the hinge-plates are correspondingly provided with threaded studs 74, 74', projecting loosely therethrough and being fitted with wing-nuts 75, 75', and washers 76, 76', so that the angular-planar relationship between the fence 72 and the under faces 15, 39, may be suitably adjusted.

Provided for optical use with the planer and jointer attachment B is a bench stand C formed preferably from heavy-gauge sheet metal and integrally including upstanding legs 77, 77, connected by a flat base-plate 79. At their upper ends, the legs 77, 77, are suitably bent over and formed to fit retentively against the front face 10 and rear face 9 of the body-casting 5. The planer and jointer attachment B is mounted on the bench stand by removing the handle 13 and inserting the bolt 14 through an aperture X provided in the leg 77. The rear face 9 is provided with a removable bolt 80 and washer 81 which can similarly be removed and reinserted through an aperture Y provided in the leg 78. At best it should be noted that, for this purpose, the handle 3 of the power hand-saw is removed and the base-plate 79 clamped or fastened by any other conventional means to a work-bench, table, or other similar support. In such position, the tool may be used as a jointer.

It should be understood that changes and modifications in the form of the invention, and combination of the several parts of the power driven hand tool may be made and substituted for those herein shown and described without departing from the nature and principle of my invention.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. For use with a power driven hand tool having a housing, an electric motor and a shaft; a jointer and planer attachment comprising a body-member having a downwardly opening transverse chamber, a cutter operatively mounted in the chamber, means for operatively connecting the cutter to the shaft, a work-contacting shoe operatively mounted in the chamber, and means for detachably securing the body-member to the housing.

2. For use with a power driven hand tool having a housing, an electric motor and a shaft; a jointer and planer attachment comprising a body-member having a downwardly opening transverse chamber, a cutter operatively mounted in the chamber, means for operatively connecting the cutter to the shaft, a work-contacting shoe adjustably mounted on the body-member, and clamping means for detachably securing the body-member to the housing.

3. For use with a power driven hand tool having a housing, an electric motor and a shaft; a jointer and planer attachment comprising a body-member having a downwardly opening transverse chamber, a fluted cutter operatively mounted in the chamber, means for operatively connecting the cutter to the shaft, a work-contacting shoe adjustably mounted on the body-member, and clamping means for detachably securing the body-member to the housing.

4. For use with a power driven hand tool having a housing, an electric motor and a shaft; a jointer and planer attachment comprising a body-member having a downwardly opening transverse chamber, a cutter operatively mounted in the chamber, means for operatively connecting the cutter to the shaft, a work-contacting shoe adjustably mounted on the body-member, and clamping means for detachably securing the body-member to the housing.

5. For use with a power driven hand tool having a housing, an electric motor and a shaft; a jointer and planer attachment comprising a body-member having a downwardly opening transverse chamber, a cutter operatively mounted in the chamber, means for operatively connecting the cutter to the shaft, a work-contacting shoe adjustably mounted on the body-member, and clamping means for detachably securing the body-member to the housing.

6. For use with a power driven hand tool having a housing, an electric motor and a shaft; a jointer and planer attachment comprising a body-member having a downwardly opening transverse chamber, a cutter operatively mounted in the chamber, means for operatively connecting the cutter to the shaft, a work-contacting shoe adjustably mounted on the body-member, and clamping means for detachably securing the body-member to the housing.
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5 tachably securing the body-member to the housing, and
means for optional engagement with the body-member
whereby the body-member and housing can be invorted
when in assembled relation so that the cutter and work-
contacting shoe will be presented upwardly as in a
joiner.

7. For use with a power driven hand tool having a hous-
ing, an electric motor and a shaft; a joister and planer
attachment comprising a body-member having a down-
wardly opening transverse chamber, a cutter operatively
mounted in the chamber, means for operatively con-
necting the cutter to the shaft, said body-member also being
provided with a relatively large open-bottomed recess
located forwardly with respect to the chamber, a work-
contacting shoe shiftably mounted in the recess and ex-
tending closurewise across the open bottom thereof, and an
adjustment lever operatively mounted in the recess for
shifting the shoe to various adjusted positions between
the limits of its travel.

8. For use with a power driven hand tool having a hous-
ing, an electric motor and a shaft; a joister and planer
attachment comprising a body-member having a down-
wardly opening transverse chamber, a cutter operatively
mounted in the chamber, means for operatively con-
necting the cutter to the shaft, said body-member also being
provided with a relatively large open-bottom recess
located forwardly with respect to the chamber, a work-
contacting shoe shiftably mounted in the recess and ex-
tending closurewise across the open bottom thereof,
and an adjustment lever operatively mounted in the
recess and having a manipulating handle projecting for-
wardly from the forward end of the body-member be-
tween the shoe and the body-member, said lever being
adapted for shifting the shoe to various adjusted posi-
tions between the limits of its travel.

9. For use with a power driven hand tool having a hous-
ing, an electric motor and a shaft; a joister and planer
attachment comprising a body-member having a down-
wardly opening transverse chamber, a cutter operatively
mounted in the chamber, means for operatively con-
necting the cutter to the shaft, said body-member being pro-
vided with a rectilinear open-bottomed recess located
forwardly of the chamber, a slide-forming member dis-
posed centrally of the recess and projecting downwardly
therefrom, a flat-bottomed rectangular shoe disposed
closurewise across the open bottom of the recess and
having an inwardly extending element slidably engaged
with the slide-forming member, and a lever mounted
rockably upon the inner face of the shoe in substantially
parallel relation thereto and being pivoted around the
slide-forming member, and camming means operatively
associated with the lever for shifting the shoe toward
and away from the recess.

11. For use with a power driven hand tool having a hous-
ing, an electric motor and a shaft; a joister and planer
attachment comprising a body-member having a down-
wardly opening transverse chamber, a cutter operatively
mounted in the chamber, means for operatively con-
necting the cutter to the shaft, said body-member being
provided with a rectilinear open-bottomed recess
located forwardly of the chamber, a slide-forming mem-
ber disposed centrally of the recess and projecting down-
wardly therefrom, a flat-bottomed rectangular shoe
disposed closurewise across the open bottom of the recess
and having an inwardly extending element slidably
engaged with the slide-forming member, and a lever
mounted rockably upon the inner face of the shoe in
substantially parallel relation thereto and being pivoted
around the slide-forming member, upstanding ears formed
on the lever, said ears having angularly positioned
camming slots, and stationary pins fixed in and projecting
inwardly from the body-member into the recess, said pins
having end portions slidably engaged in said camming
slots so that as the lever is rocked to-and-fro the shoe
will be shifted toward and away from the recess.

12. For use with a power driven hand tool having a hous-
ing, an electric motor and a shaft; a joister and planer
attachment comprising a body-member having a down-
wardly opening transverse chamber, a cutter operatively
mounted in the chamber, means for operatively con-
necting the cutter to the shaft, said body-member being pro-
vided with a rectilinear open-bottomed recess located
forwardly of the chamber, a slide-forming member dis-
posed centrally of the recess and projecting downwardly
therefrom, a flat-bottomed rectangular shoe disposed
closurewise across the open bottom of the recess and
having an inwardly extending element slidably engaged
with the slide-forming member, and a lever mounted
rockably upon the inner face of the shoe in substantially
parallel relation thereto and being pivoted around the
slide-forming member, upstanding ears formed on the
lever, said ears having angularly positioned camming
slots, stationary pins fixed in and projecting inwardly
from the body-member into the recess, said pins having
end portions slidably engaged in said camming slots so
that as the lever is rocked to-and-fro the shoe will be
shifted toward and away from the recess, and means
disposed across the rear end of the shoe between the shoe
and the lower rear margin of the recess for barring the
direct entry of sawdust and shavings into the recess from
the chamber in which the cutter is located.

No references cited.