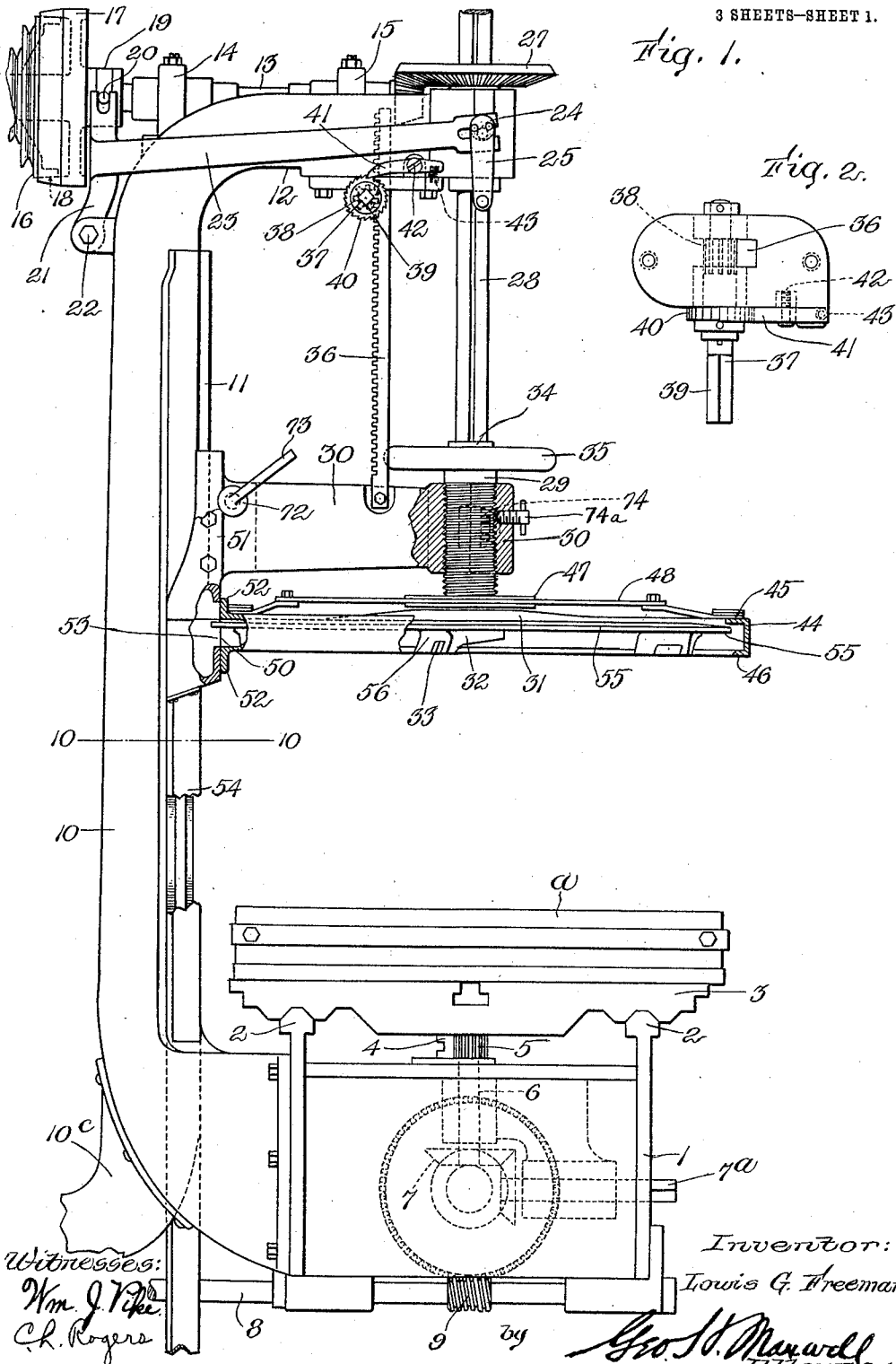


L. G. FREEMAN.
 BLOCK PLANER.
 APPLICATION FILED AUG. 30, 1910.

1,003,099.

Patented Sept. 12, 1911.

3 SHEETS-SHEET 1.



L. G. FREEMAN.
 BLOCK PLANER.
 APPLICATION FILED AUG. 30, 1910.

1,003,099.

Patented Sept. 12, 1911.

3 SHEETS—SHEET 2.

Fig. 3.

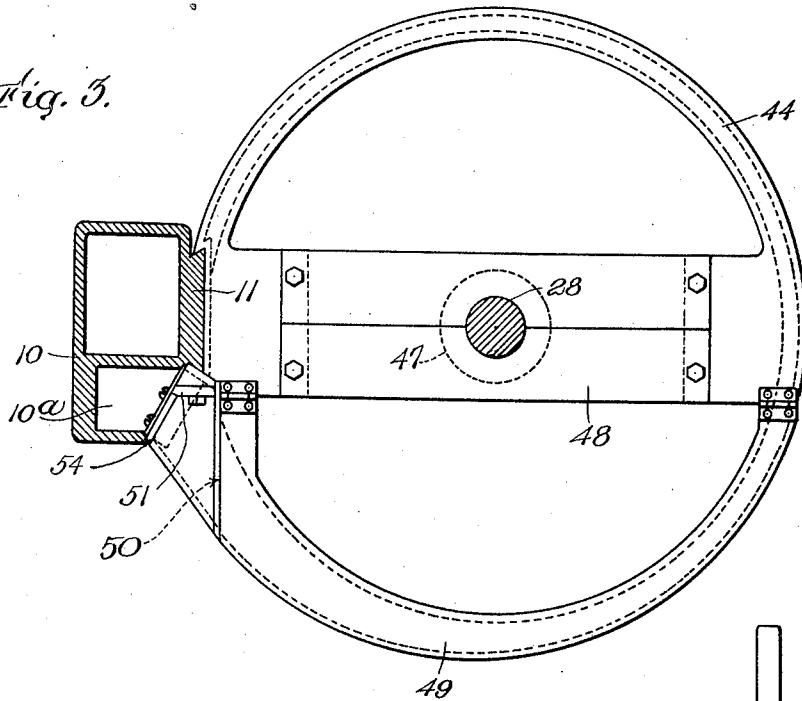


Fig. 4.

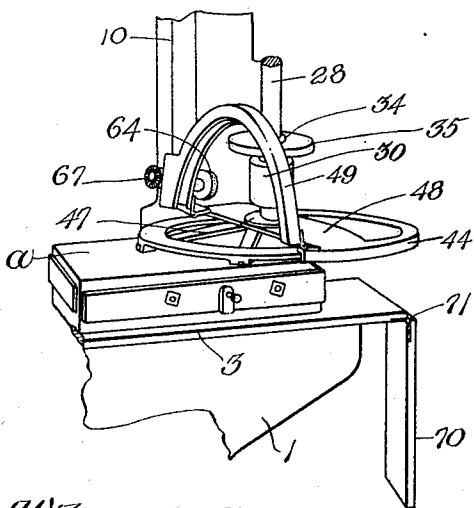
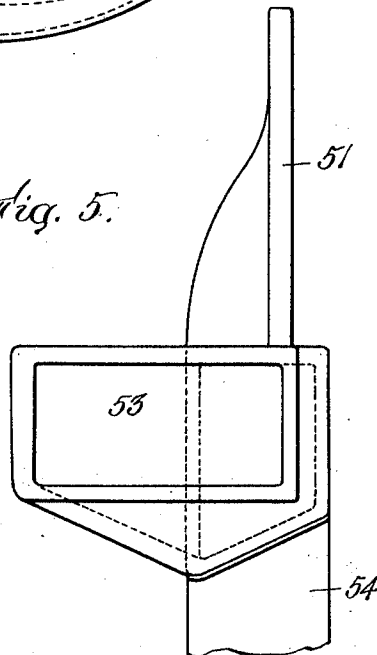


Fig. 5.



Witnesses:
Wm. J. Tike
Ch. Rogers

Inventor:
Louis G. Freeman,
 by *Geo. S. Maxwell,*
 Attorneys

L. G. FREEMAN.

BLOCK PLANER.

APPLICATION FILED AUG. 30, 1910.

1,003,099.

Patented Sept. 12, 1911.

3 SHEETS—SHEET 3.

Fig. 6.

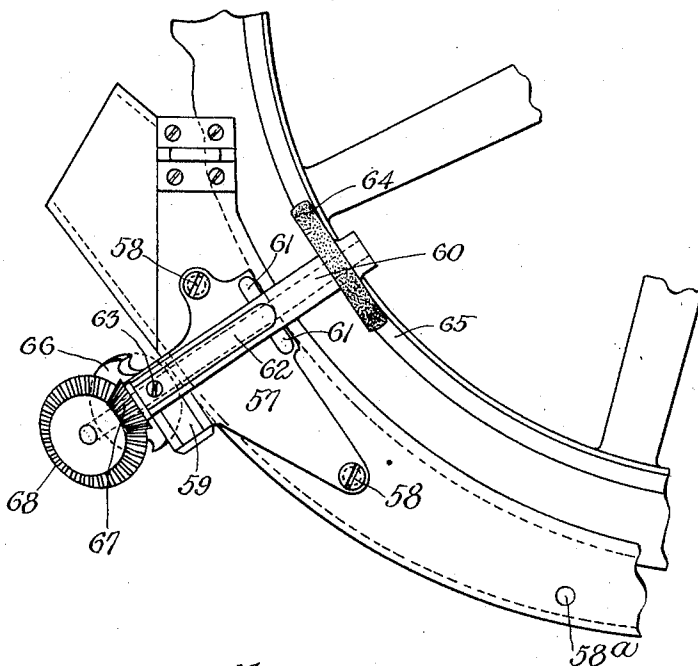


Fig. 7.

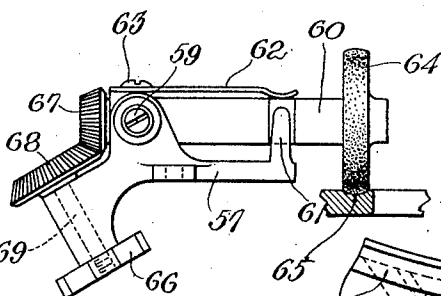


Fig. 9.

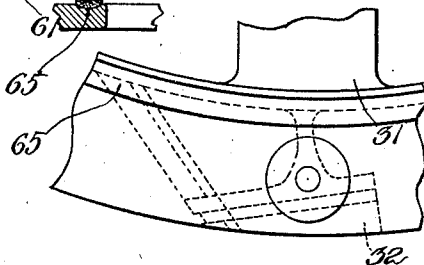


Fig. 8.

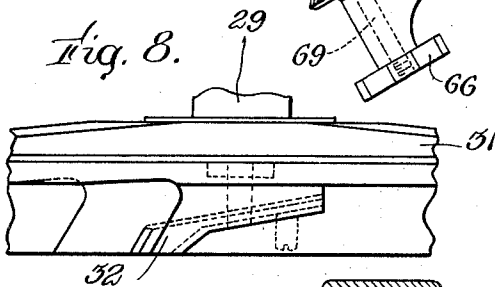
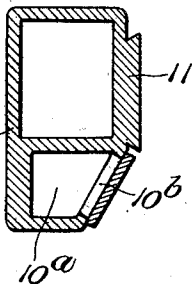


Fig. 10

Witnesses:

Wm. J. Pike
C. L. Rogers



Inventor:
Louis G. Freeman,

by Geo. S. Maxwell,
Attorney.

UNITED STATES PATENT OFFICE.

LOUIS G. FREEMAN, OF CINCINNATI, OHIO.

BLOCK-PLANER.

1,003,099.

Specification of Letters Patent. Patented Sept. 12, 1911.

Application filed August 30, 1910. Serial No. 579,708.

To all whom it may concern:

Be it known that I, LOUIS G. FREEMAN, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented an Improvement in Block-Planers, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to rotary planers, and more especially to a form of planer adapted to plane or face the surface of blocks or slabs of wood or the like. The particular embodiment to be described is designed especially for facing and smoothing blocks used in dying out leather for shoe parts, but this embodiment as well as the invention in its broader aspects, is susceptible of other and general uses.

The objects of the invention are to provide a planer with a rotary planer head capable of convenient and accurate adjustment; to provide an improved form of dust and safety hood for the planer head; to so construct the planer head that it will act as a blower in said hood; to provide convenient means for controlling the application of power; to provide an improved beveling attachment to be operated in connection with the machine; and other desirable features which will hereinafter appear.

Referring to the accompanying drawings, wherein a preferred embodiment of the invention is illustrated, Figure 1 is a side elevation of the apparatus, partly sectioned; Fig. 2 is a detail bottom plan view of the planer head adjusting mechanism; Fig. 3 is a horizontal section showing the dust hood in plan view; Fig. 4 is a perspective showing the cutterhead, the dust hood open, and adjacent parts; Fig. 5 is a detail view of the dust chute; Fig. 6 is a detail plan view showing the beveling attachment in place; Fig. 7 is a side elevation of the beveling attachment; Figs. 8 and 9 are details in side and plan view respectively of a cutter-carrying wing and cutter therein; and Fig. 10 is a cross-sectional detail on the line 10-10 Fig. 1.

A suitable base 1 has parallel ways 2 formed thereon to receive a table 3 which is

adapted to be reciprocated by a rack 4 engaged by a pinion 5 on a vertical shaft 6. The shaft 6 may be operated by suitable gearing 7 driven from a cross shaft 8 through a worm 9, and such gearing may be controlled to give reciprocating movement to the table in any desired or known manner not illustrated herein. A hand operable shaft 7^a may have geared connection with the table drive. The cross shaft 8 is preferably driven by belt or other geared connection from the driving shaft 13, hereinafter referred to. A column 10 rises from the base 1 and has vertical dove tail ways 11 and a horizontal overhanging portion 12. A chuteway 10^a is also formed therein with an extended slot 10^b down its front side. A shaft 13 has bearings 14, 15 in said horizontal portion and has fixed to the outer extremity thereof a member 16 formed as one element of a cone friction clutch. A driving pulley 17 is loosely fitted on the shaft 13 for limited longitudinal movement thereon, and has at one side thereof a coned out portion 18 adapted to cooperate with and drive the member 16. At the other side of the pulley 17 is journaled an operating collar 19 having a pin 20 adapted to be engaged by the forked extremity of a lever arm 21 fulcrumed at 22 on the upright 10. Fixed to and extending horizontally from the arm 21 is a second arm 23 extending to the front of the horizontal portion 12 of the column and there engaged by an eccentric 24 suitably journaled in the column and having an operating handle 25. Referring to Fig. 1, it is to be noted that the eccentric 24 is so connected with the handle 25 in relation to the arm 23 that as the handle 25 drops to its lowered position by gravity as shown, the eccentric 24 extends transversely of arm 23 in its line of movement so that there will be no tendency for accidental displacement of the parts when in this position.

The shaft 13 carries a beveled pinion 26 engaging with a beveled gear 27 which has splined driving engagement with the vertical shaft 28. The shaft 28 has a bearing for rotation at its lower portion in a sleeve 29 which is threaded in an arm 30. The shaft 28 has fixed thereto at its lower end a rotary

planer head 31 carrying a series of cutter holding lugs or wings 32, cutters socketed therein being designated at 33 and held therein by engaging screws or other suitable devices. The sleeve 29 is held against endwise movement relative to the shaft 28 and hence is adapted to control the vertical position of the cutterhead, by bearing on the same at its lower extremity and by engagement with a collar 34 fixed to the shaft 28, and an accurate adjustment of the cutterhead within small limits may be effected by turning the hand wheel 35 rigid with said sleeve, by reason of the screw-threaded engagement of the sleeve with the arm 30. When so desired, the sleeve 29 may be clamped against displacement in any desired manner, the means shown being a split construction of the embracing portion of the arm 30 adapted to be drawn up against the sleeve 29 by suitable bolts as at 74; a clamp screw 74^a may also be used for this purpose. The longer rough adjustment of the cutterhead is provided by arranging the arm 30 to engage and slide on the dove tail ways 11, and a rack bar 36 extends upward from said arm to be engaged and actuated by a suitable operator. Such an operator is shown as a stub shaft 37 carrying a small pinion 38 to engage the rack 36 and having a squared end 39 for engagement by a wrench. As a means for holding the rack bar 36, and therefore the cutterhead, in the position of any desired elevation, there is provided a ratchet wheel 40 fixed to the shaft 37 and adapted to be engaged by a pawl 41 pivoted at 42 to the frame work and normally pressed into engagement with said ratchet by a spring 43. After said adjustment of the arm 30, it may be clamped to the ways 11, and as a suitable provision for such clamping the engaging portion of the arm 30 is shown as split back for a proper distance and the sides thereof may be clamped against the ways as by a screw bolt 72 and operating handle 73 thereon.

An annular dust hood 44 is formed to encircle the cutterhead, with upper and lower flanges 45, 46, the flange 46 being somewhat shorter than the flange 45 so as not to interfere with the movement of the cutters. Engagement between the dust hood 44 and the adjusting sleeve 29 is effected by means of a peripheral groove in the disk 47 at the bottom of the sleeve 29, engaging a strap 48 bolted or otherwise fixed to the dust hood, this arrangement causing the dust hood to partake of the vertical adjustments effected by said sleeve. The hood 44 has its front portion 49 hinged to the other part, so that it can be raised to expose the cutterhead when desired and also so as to render it self-adjusting to different depth cuts. This hinged portion 49 has at its side adjacent the upright 10 an open-

ing 50 adapted to communicate with the dust chute 51, which may be bolted or otherwise secured to the arm 30. The outlet side of the hinged portion 49 about the opening 50 is flanged as at 52 to form a vertical plane face at right angles to the line of the hinges of the portion 49 and such face has a sliding fit with a cooperating face on the dust chute 51, which has an opening 53 somewhat wider than the opening 50 so as to register therewith in the different adjustments of the hood 44 as effected by the sleeve 29. The flanges 52 serve to cover the portions of the enlarged opening 53 which are not in register with the opening 50, thus preserving in all positions a tight joint at this place, which prevents any escape of dust and chips and insures the delivery thereof into the chute. The dust chute 51 opens into the chuteway 10^a and may have a chuteway shutter 54 of stiff plate material or the like, bolted or otherwise secured thereto to slide over and cover the chuteway slot 10^b thus forming a closed passage to convey away the dust and chips. An elbow 10^c may be attached to upright 10 in communication with chuteway 10^a to connect with an exhaust system.

The upper part of the cutterhead 31 is formed with a peripheral flange 55 which rotates in close proximity to the flange 45, thus closing the top of the hood, the bottom being open for receiving chips, said bottom, in operation, being substantially closed by the block of work over which it operates and from which it carries away the dust and chips. Thus the cutterhead with its series of cutter-carrying wings 32 is adapted to act in cooperation with the hood 44 as a blower and in its rapid rotation it will create a substantial current of air to blow dust, chips and the like through the opening 50 and into the chute 51. This constitutes, as shown and described, the most important feature of my invention. Also the particular form of the wings or chip-deflecting vanes 32, as shown, with their curved inclined front faces 56, constitutes a further feature of decided advantage, the inclined and curved, or scoop-like shape and angle of said wings tending to throw the chips up and forward, and therefore to insure their delivery into the hood annulus to be blown out as described (see Fig. 8).

In connection with the dust hood, and preferably carried by its hinged side or portion, is a plate or support 57 adjustably secured by screws as at 58, on which is mounted a pivoted bearing 59 for a shaft 60 having slight swinging movement in upstanding guide ears 61. The purpose of this construction is to insure the proper automatic positioning and operation of the edge cutter (which is commonly employed for beveling the blocks) by the same mecha-

nism and movements which regulate the po-
 sitioning and operation of the facing cut-
 ters. One of my objects is to insure that
 whatever adjustments, with reference to the
 5 work, are given to the facing cutterhead,
 will be thereby automatically given to the
 edge cutter, and whenever the hinged por-
 tion of the dust hood is raised for conven-
 10 sient inspection of the facing cutters, the
 same movement and mechanism turns up the
 edge cutters for inspection, and preferably
 also the latter are dependent for their op-
 eration and speed of operation directly upon
 the facing cutterhead. A further feature of
 15 importance resides in the provision for au-
 tomatically maintaining the last mentioned
 mutual driving engagement of the two cut-
 ter members irrespective of slight variations
 in position of the dust hood under the in-
 20 fluence of a more or less irregular block
 surface. For conveniently carrying out this
 last mentioned feature I provide a leaf
 spring 62 fixed at 63 to the support 57 to en-
 25 gage the free end of the shaft 60 and there-
 by hold downward a driving gear, prefer-
 ably in the form of a friction disk 64 fixed
 to the shaft 60 to engage a track 65, prefer-
 30 ably concave in cross section, formed there-
 for in the top surface of the cutterhead 31.
 The friction disk 64 may be faced with
 leather or other friction material, and the
 engagement so formed between said disk
 and the cutterhead furnishes not only power
 to drive the beveling cutter 66 but consti-
 35 tutes one convenient means of attaining the
 above explained objects had in view as im-
 portant features of my invention. The re-
 quired angular connection is made by any
 convenient means, as by the bevel gears 67
 40 and 68. The shaft 69 may be mounted in
 bearings in the support 57 at such an angle
 that the cutters 66 thereon in operation will
 produce the desired bevel. A further im-
 45 portant advantage of the combination of
 parts thus far explained as carried by the
 facing cutterhead is that the edge cutter is
 thereby caused to operate on the edge just
 ahead of the facing cutters, thereby serving
 50 to prevent the chipping or breaking of the
 block at its edge where the facing cutters
 leave the block. Such chipping or breaking
 is liable to take place when the facing cut-
 ters are dull or the wood brittle, and by hav-
 55 ing the edge cutter operate to bevel the
 edge, it will be apparent that when the sur-
 face cutters reach the edge they find the
 same already cut off on a bevel and hence
 there is no liability to be any chipping or
 60 breaking of the edge. To accomplish the
 automatic beveling of narrow blocks being
 dressed by the surface cutters I provide one
 or more additional holes as at 58^a, properly
 spaced in the hinged portion 49 so that the
 support 57 carrying the beveling cutter may

be secured farther in from the edge of the 65
 table to operate upon such narrow blocks.

Referring to Fig. 4, I prefer to provide
 aprons 70 hinged as at 71 to the ends of the
 reciprocating table, these aprons being 70
 adapted to receive the dust and cuttings and
 carry the same over the extremity of the
 base with the driving gear therein, and as
 the hinge line passes over the end of the
 bed the apron will drop down, discharging
 such cuttings and dust beyond the end of 75
 the bed, and therefore prevent the same from
 getting into and interfering with the opera-
 tion of the driving mechanism.

In use, a block or other piece of work *a*
 whose top surface is to be planed or 80
 smoothed, is secured to the work table 3 by
 usual T bolts or other securing means, and
 the ratchet 41 being released, the arm 30
 carrying the cutterhead is lowered to en-
 gage the top surface of the work. The arm 85
 30 may then be locked in place and the de-
 sired fine adjustment to determine the exact
 depth of cut may be effected by manipulat-
 ing the hand wheel 35, it being possible to
 effect this latter operation, if desired, and to 90
 vary the cut with extreme nicety while the
 cutterhead is in operation. The work table
 being given a to-and-fro motion by any suit-
 able reversing gearing controlled by dogs at
 95 the side of the table, the desired removal of
 material may be effected by one or more
 cuts, and by adjustment of the hand wheel,
 35 a fine finishing or smoothing cut may be
 effected. The handle 25 is turned to throw
 the clutch faces 16 and 18 into engagement, 100
 thus communicating power from the driver
 pulley 17 to the cutterhead through the de-
 scribed connections, the spline engagement
 of the shaft 28 with the bevel gear 27 pre- 105
 serving the driving engagement in any ver-
 tical adjustment of the cutterhead, as above
 explained.

Since, as above explained, the hinged con-
 struction of the front portion 49 of the hood
 enables it to rise and fall to accommodate 110
 itself to different thicknesses of the work to
 be planed, and since the beveling cutter just
 described is mounted on such hinged por-
 tion, it is evident that said beveling cutter
 will partake of the rising and falling ad- 115
 justing movements of the portion 49 in ac-
 commodating itself to variations in the work,
 and that hence the beveling cutter will be
 likewise adjusted correspondingly and prop- 120
 erly in accordance with such variations, thus
 rendering this portion of the device auto-
 matic in its adjustments.

By virtue of the construction whereby the
 planer head and all its operating and ad-
 justing devices are carried by the upright 125
 at one side of the work table, thus leaving
 unobstructed access to the other side of the
 work table, it is possible to plane wider

blocks with the same size cutterhead and the putting on or taking off of blocks or boards is also facilitated.

The front portion 49 of the dust and safety hood may be thrown up to the position shown in Fig. 4, thus allowing free and quick access to the cutting knives, and when the beveling attachment is utilized it may be temporarily thrown out of operative position by the same elevation of the portion 49. The controlling handle 25 for the driving clutch, being disposed in a position within handy reach of the operator from the front of the machine, it is evident that convenient manipulation is thereby effected.

The hood 44 with its flanges 45 and 46, when the parts are lowered so that the cutterhead engages the work, in connection with the top flange 55 of the cutterhead, will form a substantially closed blower chamber having the outlet 50 into the dust chute, whereby any considerable escape of dust or cuttings is avoided.

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

1. A planer, comprising a base, a table mounted for reciprocation thereon, a rotary cutterhead mounted to rotate about a vertical axis, and having driving means, on said base, and a flanged hood for receiving debris and with connections to deliver the same encircling said cutterhead having the forward portion arranged for vertical movement transversely of the line of table reciprocation to rest upon the work by gravity and follow irregularities therein.

2. A planer comprising a base, a work support movable thereon, a rotary facing cutterhead mounted opposite the face of said work support and a rotary beveling cutter arranged to operate in conjunction with said cutterhead to trim the edge of the work, said beveling cutter having a driving element engageable with said cutterhead to be driven thereby.

3. A planer, comprising a base, a work table mounted for reciprocation thereon, a main facing cutterhead mounted opposite said work table, a cutterhead protecting member mounted for vertical movement transversely of the line of table movement and adapted to rest upon and be controlled by the work thereon, and a secondary edge cutter arranged to be controlled by said member.

4. A planer, comprising a base, a work table mounted for reciprocation thereon, a main facing cutter mounted opposite said work table, a cutter protecting member hinged transversely of the line of table reciprocation to rest upon and be controlled by the work, and a secondary cutter carried by said member in position to trim the edge of the work.

5. A planer, comprising a base, a work table mounted for reciprocation thereon, a rotary cutterhead mounted, and having driving means, on said base, a hood portion hinged transversely of the line of table reciprocation and adapted to extend about said cutterhead, and a secondary cutter mounted on said hood portion.

6. A planer, comprising a base, a table mounted thereon for reciprocation, a rotary cutterhead mounted on said base and having driving means, a hood encircling said cutterhead and having a hinged portion, and a beveling cutter attached to said hinged portion.

7. A planer, comprising a base, a work support, a rotary cutterhead having driving means and arranged to face work on said support, and a rotary beveling cutter having a driving disk arranged to engage and receive driving impulse from said cutterhead and mounted to trim the edges of the work.

8. A planer, comprising a base, a work table mounted thereon, a rotary cutterhead having driving means and mounted to face work on said table, a rotary beveling cutter mounted to trim the edge of the work, and a disk connected with said beveling cutter and resting upon said cutterhead for driving said beveling cutter from said cutterhead by friction engagement.

9. A planer, comprising a base, a work table thereon, a rotary cutterhead mounted on said base, a hood for receiving debris and with connections for the delivery thereof, completely encircling said cutterhead and having a portion hinged to swing transversely of the line of table reciprocation, and a secondary cutter mounted on said hinged portion.

10. A planer, comprising a base, a work table mounted thereon, a rotary cutterhead mounted on said base, a hood encircling said cutterhead, a secondary cutter mounted on said hood, and means for simultaneously adjusting said cutterhead and said hood relative to the work.

11. In combination, a base, a work table mounted thereon for horizontal reciprocation, driving gearing for said table underneath the same, and an apron mounted for vertical movement on an end of said table and adapted to protect said driving gearing.

12. In combination, a base, a work table mounted to reciprocate thereon, driving gearing therefor, and an apron hinged to an end of said work table and adapted to carry debris past said driving gearing and then drop to deflect the same away from the sub-jacent gearing.

13. A planer, comprising a base, a work support thereon, a member carried by the base having ways, an arm slidable along said ways and having means whereby it may be clamped thereto, means for adjusting said

arm, a cutterhead carried by said arm, and
means for effecting separate adjustment of
the cutterhead relative thereto, said means
consisting of a sleeve threaded in said arm
5 and having engagement directly upon said
cutterhead to adjust the same.

In testimony whereof, I have signed my

name to this specification, in the presence of
two subscribing witnesses.

LOUIS G. FREEMAN.

Witnesses:

M. J. SPALDING,
WM. J. PIKE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."