Feb. 3, 1959 A. HESSE ET AL 2,871,897

POWER PLANE

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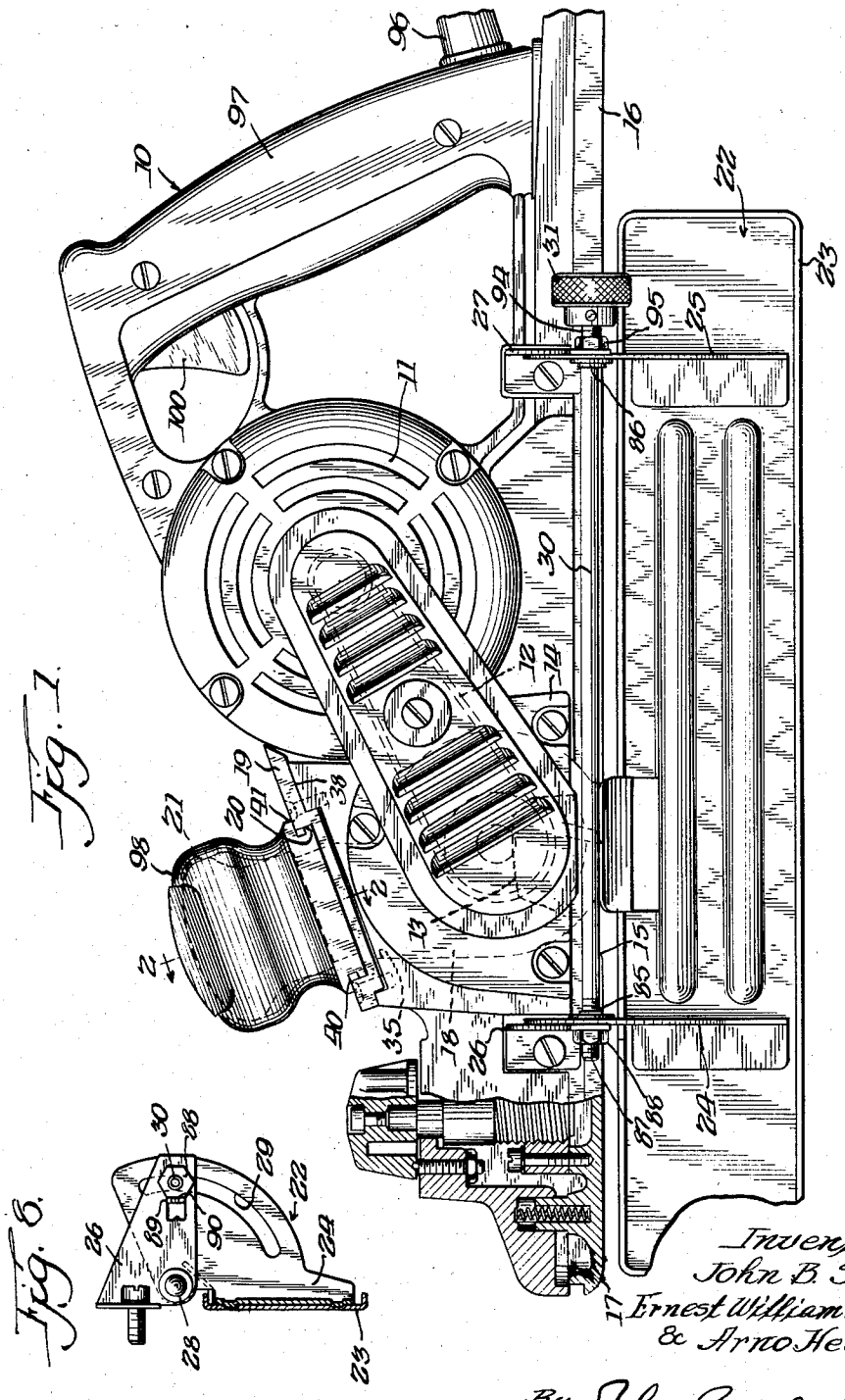


Fig. 1.

Fig. 6.

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Fig. 2.

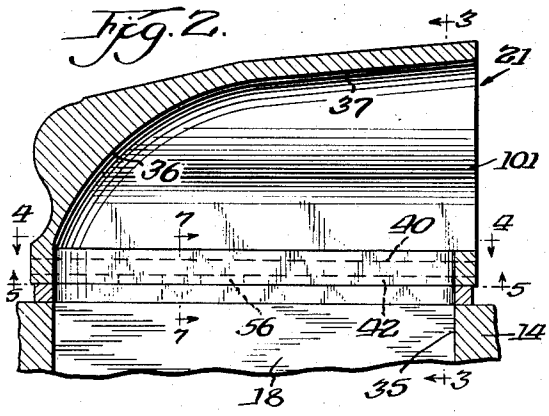


Fig. 3.

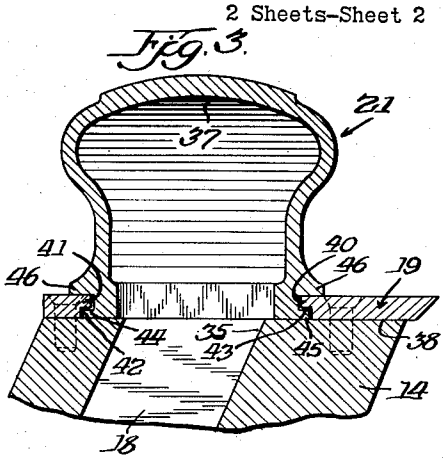


Fig. 4.

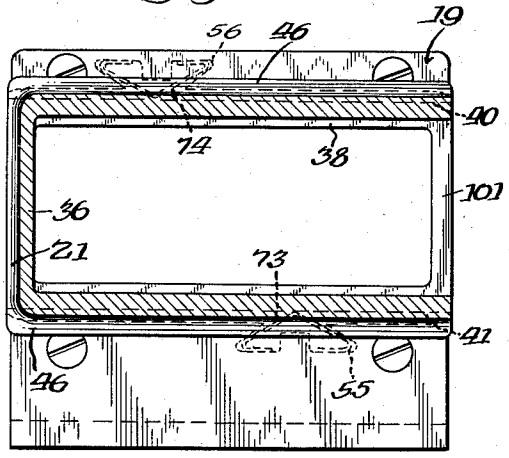


Fig. 5.

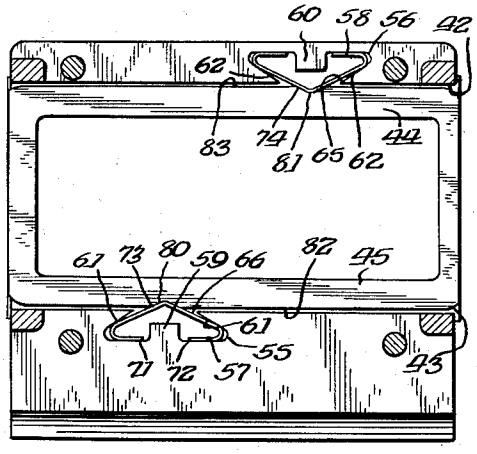


Fig. 6.

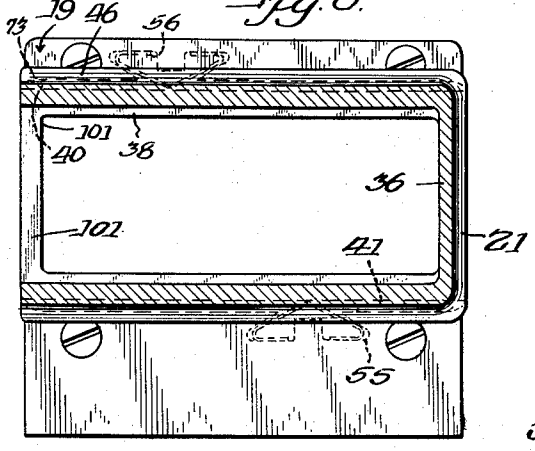
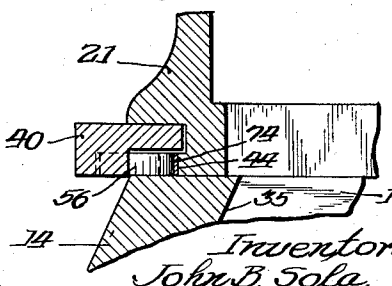


Fig. 7.



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POWER PLANE

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Application October 28, 1955, Serial No. 543,414

1 Claim. (Cl. 145—4)

This invention relates to a portable power plane and more particularly means for fastening in place on a power plane a deflector for shavings removed by the rotary blade of the machine.

Shavings removed by the rotary blade of a power plane are normally forced through a passage in the housing of the plane and ejected from the machine in a direction away from the operator.

It is a principal object of this invention to provide a removable deflector through which shavings removed by the blade are ejected to one side of the machine, and which may be reversed in order to eject shavings to the opposite side of the machine.

It is another object of this invention to provide means for fastening the removable deflector in place on the machine in both its first and reversed positions. It is a further object to provide a deflector which slides into place on the machine in ways provided with a latch and anti-rattle structure, preventing the deflector from being loosened by vibration accompanying operation of the plane and securely fastening the deflector in its positions.

It is a further object to provide the power plane with a bevelling guide so that the unit may be used as an edge planer or a door plane, the bevelling guide incorporating an angularly adjustable fence and means allowing the fence to be shifted easily from one angle to another and located in place.

Further objects will appear from the following description read in connection with the accompanying drawings, wherein:

Fig. 1 is a view in side elevation of the power plane of this invention;

Fig. 2 is a view in section taken along lines 2—2 of Fig. 1 showing the deflector with which the power plane is equipped;

Fig. 3 is a section taken along lines 3—3 of Fig. 2;

Fig. 4 is a section taken along lines 4—4 of Fig. 2;

Fig. 5 is a section taken along lines 5—5 of Fig. 2;

Fig. 6 is a section similar to Fig. 4 but with the deflector reversed;

Fig. 7 is a detail sectional view taken along lines 7—7 of Fig. 2; and

Fig. 8 is a detail view showing the angularly adjustable pivotal support for the bevelling guide.

A power plane 10 of a conventional type is shown in Fig. 1 powered by a motor hidden behind the fan shroud 11 through a belt drive 12 turning a rotary blade 13 rotatably supported in the housing 14 of the unit. The rotary blade 13 extends through an opening 15 in the shoe 16 which is flat and rests directly against the work when the machine is operated. Projecting below the shoe the blade 13 removes shavings the thickness of which is determined by adjusting a shoe 17 supported on the forward part of the machine.

Shavings removed by the blade 13 are forced upwardly through a passage 18 extending above the blade to an opening in the top of the housing. On the top of the housing 14 there is mounted plate 19 provided with a

slide way 20 for receiving a deflector 21 slidable in the way. The deflector 21 serves to deflect shavings received from the blade and ejects the shavings to one side of the machine. The plane 10 as shown in Fig. 1 has a deflector 21 which ejects shavings in a direction away from a right handed operator, to the right hand side of the plane.

The plane 10 may be used as a surface planer or, when provided with the bevelling guide 22 it may be used as an edge planer or door plane. The bevelling guide 22 comprises a fence 23 angularly adjustable with respect to the bottom surface of the plane. Brackets 24, 25 are pivotally supported on arms 26, 27 fastened on the plane 10. The pivotal support is provided by means of rivets 28 (Fig. 8) passing through companion pairs of arms 26, 27 and brackets 24, 25. The brackets 24, 25 are punched with aligned curved slots 29, and a shaft 30 passing through the slots 29 may be turned by a small thumb wheel 31 to tighten the assembly and securely lock the fence 23 in position.

Deflector 21 mounted on top of the power plane 10 over an opening 35 at the end of the passage 18 leading to the rotary blade 13, shown in Fig. 2 to consist of a casting or stamped part, is formed with a curved inner end wall 36 and an inclined back wall 37 which combine to deflect shavings forced through passage 18 and the opening 35, to one side of the machine.

In order to secure the deflector 21 in place a plate 19 is fashioned to rest on a base provided by the flat top 38 of the housing 14. The plate 19 has an opening with substantially parallel edges or rails 40, 41 (Fig. 3) on which the deflector 21 slides, and in order to lock the deflector in place on the plate, undercut grooves 42, 43 providing a slide way for the deflector 21.

Extending into the grooves 42, 43 are narrow flanges 44, 45 on the lower rim of deflector 21. Vertically spaced above the narrow flanges 42, 43 is a narrow projecting wall 46 which extends along both sides of the lower outside portion of deflector 21 and provides a flat lip resting on the rails 40, 41 of the plate 19. The narrow flanges 44, 45 and the lips formed by the protruding wall 46 embrace the rails 40, 41 in the plate with considerable play being allowed between the flanges and the walls of the grooves.

In order to hold the deflector in position and prevent it from rattling due to vibration set up by rotating parts of the machine, cavities 55, 56 in the plate 19 are provided registering with grooves 42, 43. As shown in Fig. 5 which is a view looking upwardly toward the underside of the plate 19, there are two cavities 55, 56 in the plate, each of which has a flat end wall 57, 58 substantially parallel with the rails 41, 42 and lugs 59, 60 extending into the cavities. The side walls 61, 62 of the cavities taper toward an opening 65, 66 communicating with the adjacent groove under the rail 40, 41.

The lugs 59, 60 extending into the cavities are positioned between the end portions of flat springs 73, 74 bent into a triangular or inverted V shape and contained within the cavities. The springs 73, 74 project into the adjacent grooves 42, 43 of the plate 19. In order to latch the deflector 21 in position in the slide way, notches 80, 81 are fashioned in the flanges 44, 45 into which the springs 73, 74 extend. The side walls of the notches 80, 81 are slanted so that the deflector may be removed from the slide way by the application of pressure deforming the springs and causing them to slip out of the notches to bear against the outer edges 82, 83 of the flanges 44, 45.

Due to the play between the deflector 21 and the plate 19 the deflector slides easily in the slide way formed in the plate 19, the springs bearing against the edges of the flanges provided on the lower rim of the deflector. When the deflector 21 is slid into position and the notches 80, 81 are brought opposite the springs 73, 74, the apexes of

the springs lock into position in the notches and latch the deflector in place.

Thus in addition to locking the deflector in place, preventing endwise movement and removal of the deflector until the application of sufficient pressure to deform the springs so that they allow deflector to be withdrawn from the ways, these springs also serve to prevent the deflector from vibrating due to the vibration set up by the rotating parts of the unit, the motor and rotary blade.

The power plane **10** is equipped with a bevelling guide **22** for the making of bevel cuts with the plane. By adjusting fence **23** at 90° to the bottom surface of the plane square cuts may be made such as are required in finishing the edges of doors and windows. In this application the power plane is termed a door plane.

In order to allow the fence **23** to be angularly adjusted, brackets **24**, **25** welded on the fence are pivotally supported on rivets **28** fastened to arms **26**, **27** carried on the housing of the plane **10**. In order to lock the fence **23** in the different angular positions, curved slots **29** are provided for receiving shaft **30**. Intermediately of shaft **30** inside brackets **24** and **25**, there are fastened washers **85**, **86** which abut against the inside of the brackets **24**, **25**. The free end **87** of the shaft **30** is screw threaded to receive a nut **88** which bears against arm **26**. To prevent the nut **88** from rotating a lug **89** (Fig. 8) struck out from the arm **26** is used, presenting a flat surface to one side **90** of the hexagonal nut **88**.

The screw threads provided on the free end **87** of shaft **30** are of right hand, so that by rotating shaft **30** clockwise the nut **88** is drawn up toward washer **85** squeezing arm **26** and bracket **24** together, and the bracket **24** is securely held against the arm **26** by the nut **88**.

Likewise, when the shaft **30** is turned counterclockwise the nut is moved away from washer **85** relaxing the pressure forcing the bracket **24** and the arm **26** together, so that these parts may be moved relative to each other.

The end of shaft **30** adjacent the wheel **31** is also screw threaded to receive a nut **95** and a lug is struck out of arm **27** fitting against one side of the hexagonal nut **95** to prevent its rotation, as has been described in connection with the nut at the other end of the shaft **30**. The screw threads provided at the end **94** of the shaft **30** adjacent the wheel **31** are left hand as contrasted to the right hand threads at the free end of the shaft. This is in order that the nuts **88**, **95** at both ends of the shaft **30** may be drawn up toward their respective washers **85**, **86** to lock the brackets at both ends of the fence against the companion arms by rotating shaft **30**. For example, by turning the shaft **30** clockwise the nut **88** at the free end of shaft **30** is drawn up to tighten the bracket **24** against arm **26** and the nut **95** at the other end of the shaft is drawn up to tighten the bracket **25** against the arm **27**. By turning the wheel **31** counterclockwise, and consequently rotating the shaft **30** counterclockwise, both nuts **88**, **95** are loosened and the fence **23** unlocked so it may be angularly adjusted from one position to another.

In using the power plane **10** as a surface plane, an electric cord **96** is plugged into a convenient electric outlet, and the unit grasped by means of handle **97** and handle **98**, provided by deflector **21**. As has been described hereinbefore, if the power plane **10** is to be used as a surface plane, the fence **23** must first be removed. This is done by loosening bolts **99** and removing the entire guide assembly.

The handle **97** is a pistol grip type with an on-off switch **100** for the motor driving the rotary blade **13** of the plane. Deflector **21** is formed exteriorly to provide a handle on the forward part of the plane **10** and may be gripped in either the left or right hand depending upon the nature of the work and the inclination of the operator. It is normally desirable to eject shavings from the machine to the side away from the operator, so that the plane arranged with the deflector **21** to eject chips to the right hand side of the plane would be used by a right hand operator handling the plane at his side in the usual fashion. The deflector **21** may be removed and reinserted so that the opening **101** in the end of the deflector is directed to the left hand side of plane **10**, the arrangement most convenient for a left hand operator handling the plane as he is accustomed.

Removing the deflector **21** requires only that sufficient pressure be applied endwise to the deflector to slip the springs out of the notches in the flanges on the deflector, and it then may be reinserted just as easily in place. It will be observed that the cavities containing the springs are on opposite sides of the opening in the plate and are staggered with respect to each other, as shown in Fig. 4, so that the deflector will be properly located over the opening whether arranged to eject chips to the right or to the left side of the machine.

Although the fit between the deflector member **21** and the slide way is loose, the deflector member is prevented from rattling due to vibration set up by the rotating parts of the machine, by the springs seated in the cavities provided adjacent to the slide way and bearing against the flanges on the lower rim of the deflector member. Thus the springs serve not only to lock the deflector against endwise movement and consequently enable its use as a handle on the forward part of the machine as well as locating it properly in place over the opening to the passage in the housing, but also serve to prevent the deflector member from rattling and constitute in the arrangement disclosed an antirattle structure.

The invention has been described with reference to particular preferred embodiments and it is understood the details are merely illustrative and that the invention may be carried out in other ways without departing from the true spirit and scope of the appended claim.

We claim:

A latch and antirattle structure for securing a chip deflector to a power plane comprising a housing member provided with parallel rails, grooves undercut below said parallel rails forming a slideway, said member having cavities in registration with the grooves, said cavities having one end wall extending parallel with the grooves and side walls tapering to a narrow opening communicating with the grooves, said deflector slidable in said slideway and having narrow flanges extending into said grooves, said flanges having notches therein, springs bent into a V shape seated in said cavities against said end wall with an apex portion extending through the openings into the grooves and bearing against the deflector, for engagement in the notches provided in the flanges of said deflector to resiliently secure and locate said member and said deflector with respect to each other.

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