July 21, 1931. J. M. LUERS 1,815,518

TOOL

Filed Jan. 9, 1930

Fig. 1.

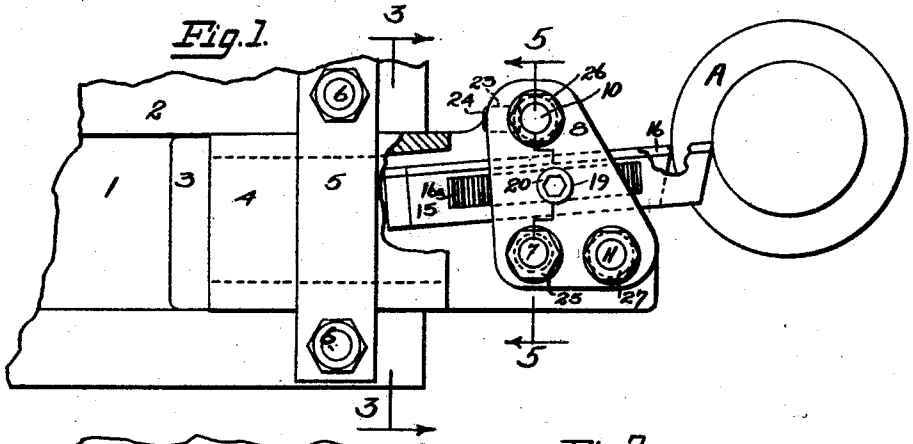


Fig. 2.

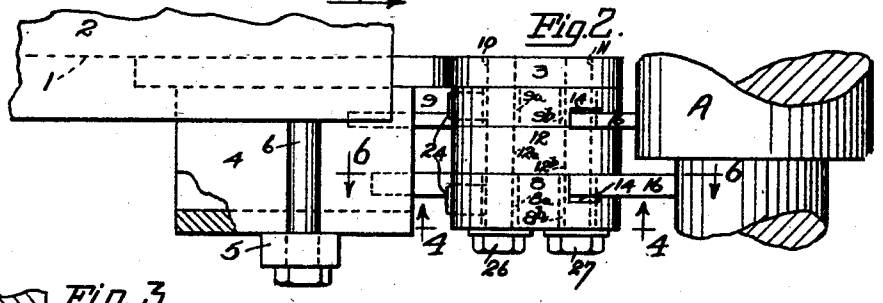


Fig. 3.

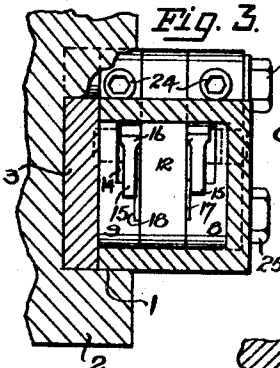


Fig. 4.

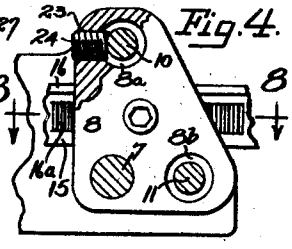


Fig. 5.

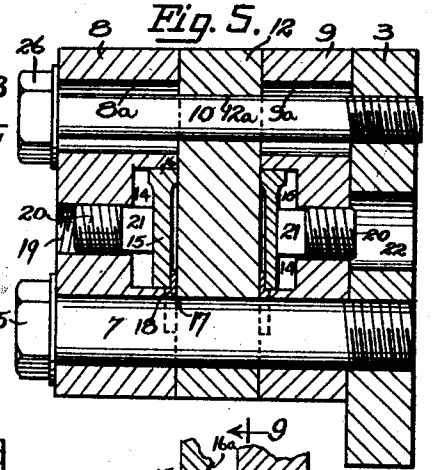


Fig. 9.

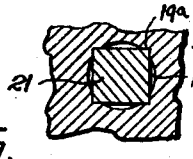


Fig. 6.

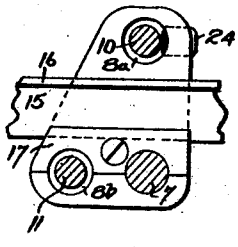


Fig. 7.

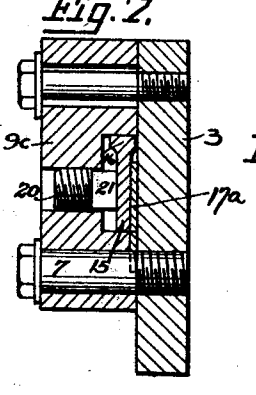
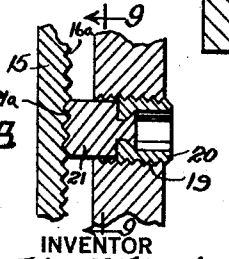


Fig. 8.



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UNITED STATES PATENT OFFICE

JOHN MILTON LUERS, OF DETROIT, MICHIGAN

TOOL

Application filed January 9, 1930. Serial No. 419,542.

This invention relates to improvements in tools consisting of toolholders and blades therefor, and is primarily intended for use in a well known type of automatic machine wherein a toolholder slot is provided in the slide having its upper margin in alignment with the centre of the work and wherein the slide has no vertical adjustment, though these tools may also be successfully employed on other types and makes of machines.

It is an object of the invention to provide a tool intended for such purposes as necking or parting, or both necking and parting simultaneously, wherein the blade or blades is/are so arranged in the toolholder that it/they may be readily removed and replaced in the same position in a short space of time by an unskilled operator without disturbing the setting of the toolholder, or having to index the spindle.

Another object of the invention is to provide a tool wherein the holder has one or more pivotal guides thereon with blade receiving grooves formed in one side so that when the angle of the guides is varied the inclination of the blades carried by them is changed.

A further object of the invention is to provide means in such a tool for positively holding the guides so that the inclination of the blades cannot be changed by pressure exerted against them by the work.

With these and other objects and advantages in view which will become apparent as the specification proceeds, the invention is hereinafter more fully described with the aid of the accompanying drawings, in which:

Figure 1 illustrates a side elevation of the tool mounted in the slide of a machine, and

Figure 2 is a plan view of Figure 1.

Figure 3 shows a section on the line 3—3 of Figure 1.

Figure 4 shows a section on the line 4—4 of Figure 2.

Figure 5 is a section on the line 5—5 of Figure 1.

Figure 6 is a detail showing the method of supporting the lower margin of the blade in its guide groove.

Figure 7 is a sectional view of a modified form of the tool arranged to hold a single blade.

Figure 8 is a section on the line 8—8 of Figure 4.

Figure 9 is a section on the line 9—9 of Figure 8.

Since the tool is primarily intended for use in one type of machine, it is shown in Figures 1 and 2 applied thereto and is mounted in a horizontal slot 1 formed in one side of a slide 2. The tool itself consists in part of a plate 3 which is adapted to rest against the base of the slot 1. This plate is usually held in position by a substantially U-shaped member 4 which is forced against its upper and lower margins by a strap 5 supported on studs 6 projecting from the side of the said slide.

I will now describe the embodiment of the tool shown in Figures 1 to 6 and 8 and 9. Extending laterally from the plate 3 is a hinge pin 7, and pivotally mounted on the latter are guides 8 and 9 between which a spacing block 12 is arranged through which the said pin also projects. Through the guides 8 and 9 apertures 8*a* and 8*b* and 9*a* and 9*b* are formed for the passage of studs 10 and 11 which also project laterally from the plate 3 in alignment with the hinge pin 7. The studs are smaller than the guide apertures through which they pass so that limited pivotal movement of the guides is permitted about the hinge pin. Through the spacing block 12 openings 12*a* and 12*b* are formed which fit snugly around the studs 10 and 11 which extend through them.

It will be noted that the guides 8 and 9 and the spacing block 12 all lie substantially parallel with the plate 3, and that in the sides of the guides adjacent the block 12 longitudinal grooves 14 are formed so that blades 15 may be inserted from the ends. To the sides of the guides 8 and 9 adjacent the block 12 retaining members 17 are secured longitudinally under the grooves 14 and extend upwardly beyond the undersides of the latter. These retaining members rest partly in recesses 18 formed in the sides of the guides so that their outer sides lie substantially flush with the guide sides. The blades 15 have

heads 16, across which cutting edges are formed, wider than their lower portions on one side of each of which serrations 16*a* are provided throughout their length. The thickness of the upstanding portions of the retaining members 17 against which the lower portions of the blades 15 rest should be less than the amount which the blade heads 16 project laterally beyond their lower portions.

Transversely through the guides 8 and 9 threaded holes 19 are provided for locking screws 20 on the inner ends of which locking members 21 are so secured that the screws may rotate independently of the said members. On the ends of the said locking members serrations 21*a* are formed to coact with the blade serrations 16*a*. In order to hold the said locking members 21 against rotation with the screws 20, so that the serrations 21*a* will always remain in alignment with the blade serrations 16*a*, angular slots 19*a* are formed axially in the sides of the threaded holes 19 to engage the corners of the locking members 21. Through the plate 3 an aperture 22 is provided to afford access to the locking screw 20 in the guide 9.

By turning either guide 8 or 9 about the hinge pin 7 the inclination of that guide and its blade 15 may be adjusted. Nuts 25, 26 and 27 on the outer extremities of the hinge pin 7 and studs 10 and 11 exert pressure transversely against the guide 8 and hold it and the guide 9 against movement about the said hinge pin. To reinforce this hold and positively prevent rotation of the guides 8 and 9 and their blades 15 when pressure is exerted against the latter by the work, indicated at A; tapped holes 23 are provided through the said guides at right angles to the axes of their apertures 8*a* and 9*a* and extend into the latter. In threaded engagement with the tapped holes 23 are screws 24 the inner ends of which are adjusted to contact the stud 10 after the guides have been set at their desired angles.

The purpose of making the spacing block 12 non-pivotal about the hinge pin 7 is to facilitate separate angular adjustment of the guides 8 and 9. The adjacent sides of the blade heads 16, when secured in position by the locking members 21, are forced into intimate contact with the sides of the spacing block 12, so that the thickness of the latter determines the spacing between the blades 15 which must be exact when two cuts are to be taken simultaneously. It is for this reason, and to insure the use of the spacing block as the determining factor in spacing the blades, that the width of those positions of the retaining members 17 against which the lower portions of the blades 15 rest is made less than the overhang of the blade heads 16 beyond the sides of their lower portions.

The plate 3 may be held in position in its slot 1 by a U-shaped member 4 and strap 5, or in any other preferred means, and the height of the member 4 is such that both the blades 15 may pass under it when being either inserted or removed. Thus it will be seen that the blades are readily accessible and may be removed by loosening the locking screws 20 and without disturbing the setting of the guides 8 and 9.

It is believed that the construction and operation of the tool will be readily understood from the foregoing description wherein the method of securing the guides 8 and 9 in position by tightening the nuts 25, 26 and 27 and the screws 24, and of tightening or loosening the blades 15 by turning the locking screws 20 is fully described. The smooth parallel sides of the spacing block 12 which is non-pivotal on the hinge pin 7 permit the adjacent sides of the blades 15 to be easily moved over them as the latter and their guides are being angularly adjusted; and the non-pivotal arrangement of the block facilities separate setting of the two guides 8 and 9 which are sometimes employed at an angle to one another.

Referring to the modified construction shown in Figure 7, it may be remarked that a cross sectional view only is shown since Figures 1, 4 and 8 would apply equally to the changed structure wherein the spacing block and second guide are eliminated. The one and only guide 9*c* rests against the plate 3 and is similarly pivotal about a hinge pin 7. A similar locking screw 20 and locking member 21 are provided to exert pressure transversely of the blade 15, and, since only one blade is employed in this construction and therefore the distance between blades which is considered in the two blade arrangement is no longer a factor, the retaining member 17*a* is not only made higher but wider. In this case the width of the said member 17*a* is greater than the overhang of the blade head 16 beyond its adjacent side, so that when the locking screw 20 is tightened the lower portion of the blade 15 is forced into intimate contact with the member 17*a*, while the latter in turn rests against the adjacent side of the plate 3. This greater bearing surface is provided for the blade and this bearing surface is located immediately behind the locking member 21 by which transverse pressure is exerted against it.

While in the foregoing the preferred embodiments of the invention have been described and shown, it is understood that these constructions are susceptible to such further alterations and modifications as fall within the scope of the appended claims.

What I claim is:

1. In a tool of the character described, the combination of a guide having a longitudinally grooved side, a blade movable longitudinally in said groove having a serrated side,

a member adjacent the grooved side of the guide against which the side of the blade remote from the guide is adapted to be held, said guide having a tapped hole provided transversely therein, a locking screw in threaded engagement with said tapped hole, a multi-sided locking member so mounted on said screw that the latter is independently rotatable, the end of the locking member remote from the screw having serrations thereon to coact with the blade serrations, and said tapped hole having angular slots formed in its wall extending axially therethrough to engage the corners of the multi-sided locking member.

2. A tool of the character described comprising a plate, a hinge pin extending laterally therefrom, another member extending from said plate in alignment with said pin, a guide pivotal on said pin having an aperture therethrough larger than said member through which the latter projects so that limited pivotal movement is permitted the guide, the latter also having a slot formed longitudinally in one of its sides, a blade movable longitudinally through said slot, a member adjacent the slotted side of the guide, means for exerting transverse pressure against said blade and holding it against said member, and means for holding said guide against accidental pivotal movement about said hinge pin.

3. A tool of the character described comprising a plate, a guide pivotally mounted on one side of said plate, a blade, means for supporting said blade on said guide so that they move pivotally together on said plate, a member extending from said plate, said guide having an aperture therethrough larger than said member through which the latter extends so that the guide is permitted limited pivotal movement, said guide having an opening therein extending into said aperture, the axis of the opening being in the same plane as that in which said guide is pivotally movable, and an adjustable stop in said opening adapted to be brought into contact with said member when the angular setting of the guide has been accomplished to hold the latter against pivotal movement.

4. A tool of the character described comprising a plate, a U-shaped member resting against the upper and lower margin of the plate to be engaged by the strap of a toolpost to hold the plate against a fixed surface, a guide lying parallel with said plate and pivotally mounted with respect thereto, said guide having a longitudinal groove formed on one side, a blade slidable longitudinally in said groove and under said U-shaped member, another member adjacent the grooved side of said guide, and means extending through the latter for exerting pressure transversely against said blade and holding it against said other member.

5. A tool of the character described comprising a plate, a hinge pin extending laterally therefrom, guides pivotal on said hinge pin, a spacing block between said guides, the latter having longitudinal grooves therein on their sides adjacent said block, blades slidable longitudinally in said grooves, a locking means extending transversely through each guide to hold the blade adjacent thereto against the adjacent side of said block, a member extending from said plate in alignment with said hinge pin, said guides having apertures therethrough larger than said member through which the latter extends, and means for holding the guides against accidental pivotal movement.

6. A tool of the character described comprising a plate, a hinge pin extending laterally therefrom, guides pivotal on said hinge pin, a spacing block between the guides, the latter having longitudinal grooves therein on their sides adjacent said block, blades slidable longitudinally in said grooves, a locking means extending transversely through each guide to hold the blade adjacent thereto against the adjacent side of said block, said plate having an opening therethrough through which access is obtained to the locking means in the guide adjacent to it, a member extending from said plate parallel with said hinge pin, said guides having apertures therethrough larger than said member through which the latter extends, and separate means for holding the guides against accidental pivotal movement in one direction when pressure is exerted against the blades by the work.

7. In a tool, the combination as described in claim 5 wherein the hinge pin and member also extend through the spacing block.

8. In a tool, the combination as described in claim 5 wherein the member and hinge pin extend through the spacing block and the former holds said block against pivotal movement about the latter.

9. In a tool, the combination as described in claim 5 wherein each guide has an opening therein parallel with the direction of its pivotal movement which extends into its aperture, and an adjustable stop in each opening is adapted to be brought into contact with the member to hold its guide against accidental pivotal movement in one direction when pressure is exerted against its blade.

10. In a tool, the combination as described in claim 5 wherein another member projects from the plate parallel with the aforesaid member, and both guides having other apertures therethrough larger than said other member through which the latter extends, and means are provided on the extremity of said other member for exerting pressure against the guides towards the plate.

11. A tool of the character described comprising a plate, a U-shaped member resting against the upper and lower margins of the plate to be engaged by the strap of a toolpost

to hold the plate against a fixed surface, a hinge pin extending laterally from said plate, guides pivotal on said hinge pin, a spacing block between said guides, the latter having longitudinal grooves formed therein on their sides adjacent said block, blades slidable longitudinally in said grooves and under said U-shaped member, a locking means extending transversely through each guide to hold the blade adjacent thereto against the adjacent side of said block, said plate having an opening therethrough through which access is obtained to the locking means in the guide adjacent to it, a member extending from said plate parallel with said hinge pin, said guides having apertures therethrough larger than said member through which the latter extends, and means on the other extremity of said member for exerting pressure against said guides towards said plate.

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