May 13, 1930. J. N. CAYO 1,758,733

DRILL PRESS VISE

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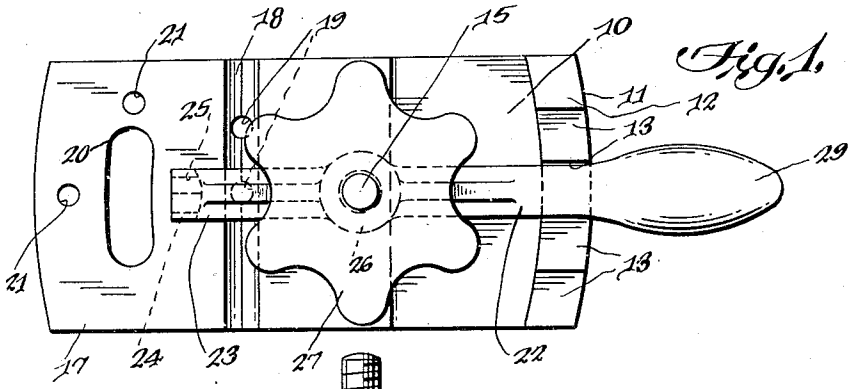


Fig. 1.

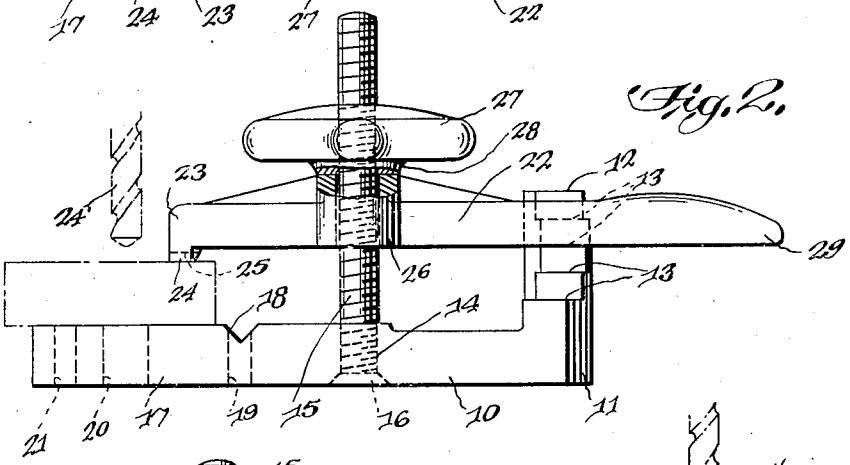


Fig. 2.

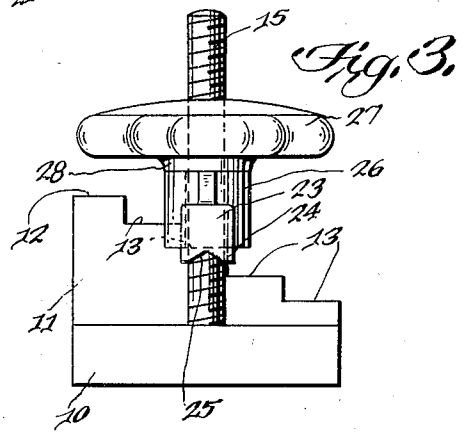


Fig. 3.

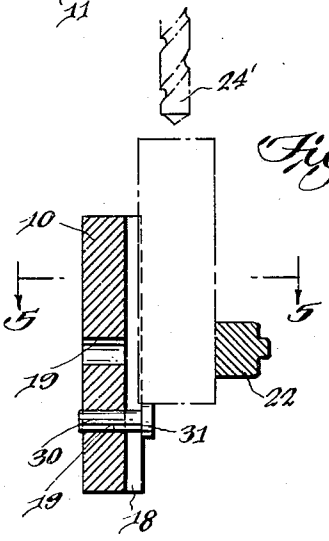


Fig. 4.

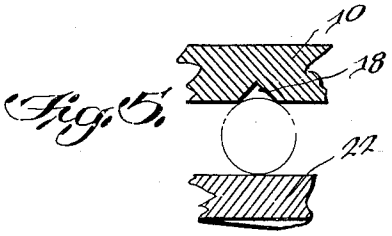


Fig. 5.

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Fig. 6.

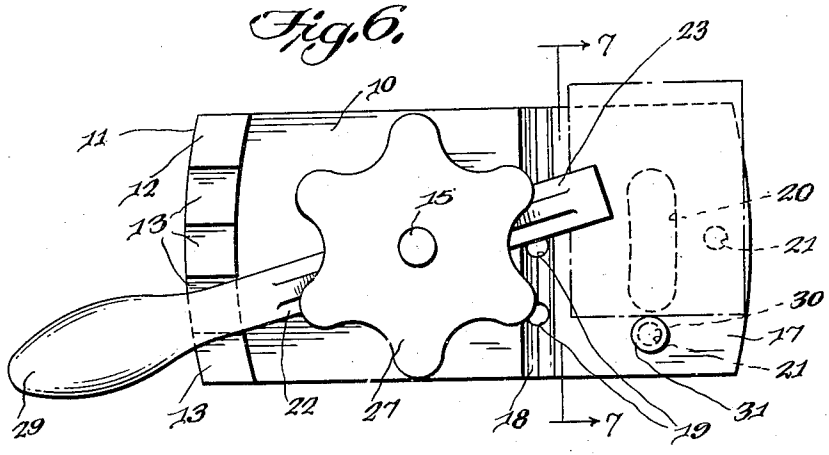


Fig. 7.

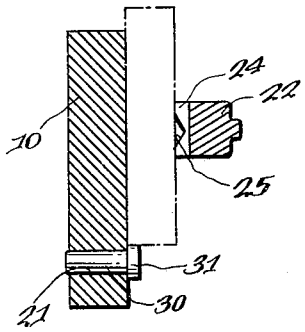
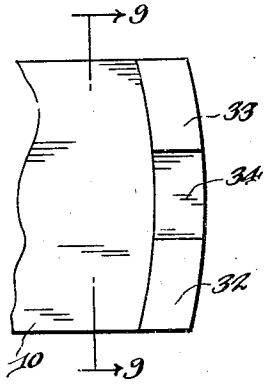


Fig. 8.



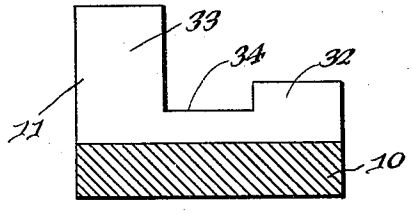


Fig. 9.

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UNITED STATES PATENT OFFICE

JULIUS N. CAYO, OF BUCHANAN, MICHIGAN

DRILL-PRESS VISE

Application filed February 25, 1927. Serial No. 170,958.

This invention relates to certain novel improvements in drill press vises and has for its principal object the provision of an improved construction of this character which will be highly efficient in use and economical in manufacture.

Among the salient objects of the invention is to provide a device of this character which is so constructed as to hold work to be drilled upon in various positions with respect to the drill bit.

Other objects will appear hereinafter.

The invention consists in the novel combination and arrangement of parts to be hereinafter described and claimed.

The invention will be best understood by reference to the accompanying drawing, showing the preferred form of construction, and in which:

Fig. 1 is a top plan view of the invention,

Fig. 2 is a side elevational view of the same,

Fig. 3 is an end elevational view of the same,

Fig. 4 is a longitudinal vertical sectional detail view of the invention showing the same in position to hold work for edge drilling,

Fig. 5 is a fragmentary sectional detail view of the invention taken through the base and jaw lever, showing these elements in position for holding round work,

Fig. 6 is a top plan view of the invention as illustrated in Fig. 1 showing the jaw lever in a different position for holding work to be edge drilled,

Fig. 7 is a sectional detail view taken substantially on line 7—7 of Fig. 6,

Fig. 8 is a fragmentary plan view of the invention showing a slightly modified form of construction, and

Fig. 9 is a sectional detail view taken substantially on line 9—9 of Fig. 8.

Referring to the drawings, Figs. 1 and 2, 10 indicates a base plate which functions as a cooperating jaw. This base plate at one end thereof, has formed as an integral part thereof, an upstanding flange 11. This flange has its top 12 shaped to provide a plurality of steps 13 which increase in height from one longitudinal edge of the base plate to the opposite longitudinal edge thereof. Inwardly of the flange 11 the base plate has formed therein a tapped hole 14 and threaded in this hole is a screw 15. The lower end portion of the screw 15 is swedged as at 16 to more securely fix the lower end portion of the screw in the hole 14. The opposite end portion 17 of the base plate has formed therein a transversely extending groove 18 substantially V-shaped in cross-section. Entering this groove 18 through the base plate 10 are spaced openings 19 for reasons hereinafter set forth. Outwardly of the groove 18 is an elongated opening 20 and two angularly disposed holes 20 for reasons hereinafter set forth.

A jaw lever is indicated at 22 and at one end portion 23 of this jaw lever there is formed a depending bearing portion 24 having formed therein a transverse groove 25. The intermediate portion of the lever 22 is enlarged as at 26 to provide an enlarged bearing sleeve which is adapted to slidably receive the screw 15.

Threaded upon the screw 15 for quick movement longitudinally thereof is a hand wheel 27 which may be of any approved configuration. This hand wheel has an enlarged boss 28 formed thereon which is adapted to bear against the top of the bearing sleeve of the jaw lever. The opposite end portion of the jaw lever is shaped to provide a suitable handle 29 and the handle portion is preferably hollow for lightness purpose. This handle at its inner end portion is adapted to rest upon any one of the steps 13 for reasons hereinafter set forth.

For surface drilling, such as drilling through or into the sides of work when placed flat, the work is placed upon the forward end portion of the base plate 10. The jaw lever is adjusted about the screw 15 to dispose its bearing portion 24 upon the work and its handle portion upon the step in substantial alignment with the top surface of the work. The handle wheel 27 is now threaded down the enlarged portion 26 to clamp the work between the bearing 24 and base 10. The vise with the work held therein is now placed upon the drill press table to place the work in position to be drilled upon by the bit 24′ as best

shown in Fig. 2. Should the work have a tendency to revolve by working action of the bit therein a small head bearing pin 30 is arranged with its shank inserted in one of the openings 21 nearest the work with the head of the pin 31 abutting the edge of the work in the direction of the tendency to rotate.

After the work has been drilled the handle wheel is revolved to permit disengagement of the jaw lever from abutment with the work at which time the work can be expeditiously removed.

For drilling in or through the cylindrical surface of a cylindrical bar or tubular member the work is placed with its cylindrical surface engaging in the groove 18 after which the jaw lever is tightly clamped against the work by means of the hand wheel 27. For edge drilling the work is arranged between the base and the jaw lever and the pin is inserted in any of the openings 21 to provide an abutment for the work, as best illustrated in Fig. 4.

In drilling in the ends of round rods or the like the rod is placed in the groove 18 with the jaw lever clamped against the work. To prevent slippage of the rod during drilling the pin 30 is inserted in any of the openings 19 thereby to provide an abutment for the end of the rod opposite the end being drilled.

The steps permit the jaw lever to be adjusted vertically with respect to the screw 15 and at angular positions with respect to the base plate 10 whereby to accommodate different sizes and configurations, as best shown in Fig. 6.

In Figs. 8 and 9 the base plate is slightly modified in that the upstanding flange 16 instead of being provided with the graduating steps is formed substantially V-shaped with one limb 32 thereof of a lesser height than the other limb 11, said limbs providing seats frictionally similar to the steps 12. The groove between the two limbs provide an indented seat 34 for the handle 29 whereby to prevent lateral movement of the handle relative to the screw 15 when the vise is subjected to heavy duty.

The opening 20 provides an outlet for the shavings which accumulate during drilling and also to permit projection of the drill when the drill has passed through the work thereby protecting the base plate from damage by the drill.

From the above description taken in connection with the accompanying drawings, it will be manifest that I provide a portable vise which will efficiently hold work in various positions to be operated upon by a drill press and while I have illustrated several methods of holding the work it is apparent that many other methods will flow from the invention and, therefore, I do not want to be limited to the precise methods herein described and shown in the accompanying drawings.

While I have illustrated and described the preferred form of construction for carrying my invention into effect, this is capable of variation and modification without departing from the spirit of the invention. I, therefore, do not wish to be limited to the precise details set forth, but desire to avail myself of such variations and modifications as come within the scope of the appended claims.

My invention having been set forth, what I claim as new and desire to secure by Letters Patent is:

1. In a vise, a substantially flat body portion having an upwardly projecting flange arranged at one end thereof, said flange having a plurality of transversely ascending graduated steps formed on the upper edge thereof, a lever, a threaded post extending upwardly from said main body portion in spaced relation with said upwardly extending flange, said lever having an opening therein intermediate the ends thereof through which said post may be extended, said lever having a gripping jaw portion formed on one end thereof and having a rounded portion on the other end thereof adapted to be extended beyond said upwardly projecting flange, a hand wheel adapted to be fitted on said threaded post above said lever whereby when the jaw portion of said lever is engaged with an article resting on the main body portion and when the opposite end of said lever is resting on one of said transversely ascending steps said hand wheel may be tightened to force said jaw portion into clamping engagement with the article.

2. In a vise, a substantially flat main body portion having an upwardly protruding flange formed at one end thereof, said flange having a plurality of transversely ascending graduated steps formed on the upper edge thereof, a threaded post extending upwardly from said flat body portion adjacent said upwardly extending flange, a lever having an opening therein through which said threaded post may be extended to permit adjustment of said lever with respect to said post, said lever having a depending gripping jaw portion formed on one end thereof and having the opposite end extending beyond said upwardly extending flange to provide a handle portion, a hand wheel adapted to be arranged on said threaded post above said lever whereby said hand wheel may be moved downwardly to secure said lever with the jaw portion in clamping engagement with an article disposed on said flat body portion and with the opposite end thereof disposed on one of said graduating steps corresponding to the thickness of said article.

In testimony whereof I affix my signature.

JULIUS N. CAYO.