Aug. 7, 1923. 1,464,375

C. A. VIDINGHOFF

WORK HOLDER AND CLAMP

Filed Feb. 15, 1921

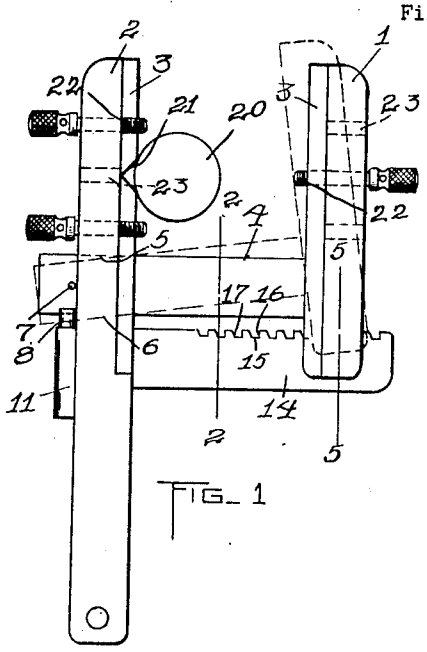

FIG. 1

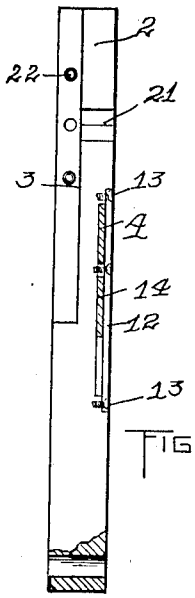

FIG. 2

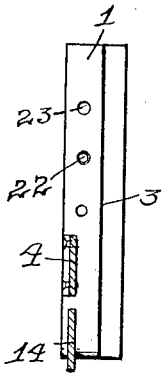

FIG. 3

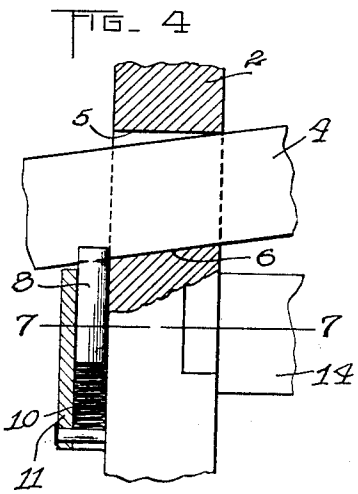

FIG. 4

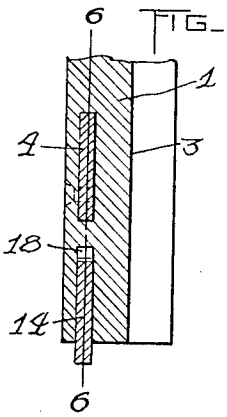

FIG. 5

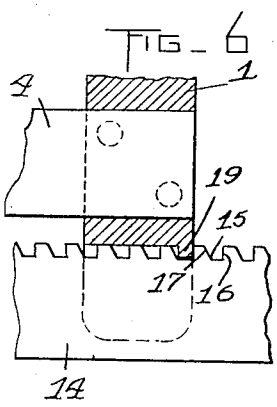

FIG. 6

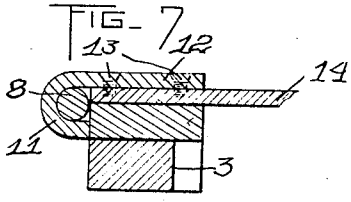

FIG. 7

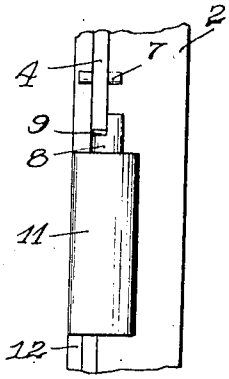

FIG. 8

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UNITED STATES PATENT OFFICE.

CHARLES A. VIDINGHOFF, OF ROCHESTER, NEW YORK.

WORK HOLDER AND CLAMP.

Application filed February 15, 1921. Serial No. 445,118.

To all whom it may concern:

Be it known that I, CHARLES A. VIDINGHOFF, a citizen of the United States, and resident of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Work Holders and Clamps, of which the following is a specification.

The present invention relates to a work holder and clamp, and an object thereof is to provide a tool which may be used in connection with the table of a drill press for holding the work piece against turning during the drilling operation or for clamping a work piece for operation upon by a drill press. A further object of the invention is to provide a work holder which will effectively hold a work piece in spaced relation to the work table of a drill press so that the drill may pass entirely through the work piece.

To these and other ends the invention consists of certain parts and combinations of parts, all of which will be hereinafter described, the novel features being pointed out in the appended claims.

In the drawings:

Fig. 1 is a plan view of a work holder and clamp constructed in accordance with this invention;

Fig. 2 is a section on the line 2—2, Fig. 1 looking toward the inner face of the longer jaw;

Fig. 3 is a section on the same line looking toward the same face of the shorter jaw;

Fig. 4 is a section showing the manner in which the guide bar is mounted to rock and to slide upon one of the jaws;

Fig. 5 is a detail sectional view on the line 5—5, Fig. 1;

Fig. 6 is a sectional view on the line 6—6, Fig. 5;

Fig. 7 is a sectional view on the line 7—7, Fig. 4; and

Fig. 8 is a fragmentary view showing the manner in which the rocking and sliding jaw cooperates with the spring pressed plunger.

Referring more particularly to the drawings, 1 and 2 indicate the two jaws of the instrument, the jaw 1 being, in this instance, shorter than the jaw 2. These jaws are of uniform thickness and are provided with ledges 3 on their opposed faces. The top and bottom faces of the jaws are plane surfaces.

The connection between the jaws embodies, in this instance, a guide bar 4 which is preferably rigid with the jaw 1 and extends substantially at a right angle to the jaw 1 and has a rocking and sliding connection with the jaw 2. In this instance, the jaw 2 is provided with an opening which has a wall 5 substantially at right angles to the engaging face of the clamp, and a wall 6 at a slight angle to the wall 5, the shortest distance between the walls being substantially equal to the width of the guide bar 4, so that the guide bar will be confined against lateral play at the inner face of the jaw 1, while it may swing or rock as shown in Fig. 4 for the purpose of effecting the relative adjustment of the jaws. A limiting stop 7 may be provided on the guide bar 4 to limit the movement of the jaws away from each other.

With the end in view of maintaining the jaws 1 and 2 in substantially parallel relation, but at the same time permitting them to swing out of such parallel relation for adjustment, a yielding device 8 is provided which cooperates with the locking bar 4 on the outer face of the jaw 2 and holds the bar against the wall 5. This yielding device, in this instance, is in the form of a plunger which is cut away or notched at 9 to receive a side edge of the locking bar in order to prevent the turning of the plunger in its support. A spring 10 bears against the plunger 8 and holds the latter normally in a raised position. In this instance, the spring 10 and the plunger 8 are mounted in an open ended sleeve 11 formed by curling one end of a plate 12 in the manner shown in Fig. 7, this plate 12 being counter-sunk in the rear face of the jaw 2 and secured by screws 13 which, when removed will permit the plate 12 to be removed and the jaws 1 and 2 to be separated.

For the purpose of securing the jaws in different adjusted positions relatively to each other there may be provided a locking bar 14 which, in this instance, is rigidly secured to the jaw 2 and extends at right angles to the length of the latter from a point substantially midway between the ends of said jaw 2 so as to provide on one side of the locking bar, a clamping face and, on the opposite side of said locking bar, a handle through which the clamp may be held or controlled. The locking bar 14 lies parallel with the guide bar 4 when the jaws 1 and 2

are parallel and the edge of the locking bar 14 nearest the guide bar 4 may be provided with a number of locking notches or recesses 15, one wall 16 of each notch being at right angles to the length of the bar, while the other wall 17 is at a slight angle to said wall 16. The jaw 1 may be extended beyond the guide bar 4 and slotted or recessed at 18 to receive the locking bar 14, the bottom wall of the slot being provided with a tooth or projection 19 which, in this instance, has both of its side faces parallel and extending in the direction of the length of the jaw 1.

For the purpose of clamping round stock such as indicated in Fig. 1 at 20, one of the jaws may be provided with a V notch 21 while the other jaw may have a screw 22 adjustable in an opening opposite such V notch. Any number of these screws 22 may be provided, operable in any one of the openings 23 so that work of different shapes may be held between the jaws.

The main function of the instrument is to hold work upon the table of a drill press. The flat opposite faces of the tool permit either of such faces to rest upon the drill press table, any suitable means being employed for holding the tool against movement on the table. In fact, the tool may be held by hand through the handle extension of the jaw 2. To hold the work piece, the jaw 1 is swung with the guide 4 so as to free the tooth 19 from the teeth on the locking bar 14 and thereafter the jaw 1 is moved with reference to the jaw 2 so as to fit about the work piece in a manner to prevent the latter turning between the jaws. After this position is reached, the jaw 1 and the guide bar 4 are freed and return under the action of the spring to cause the tooth or projection 19 to engage in that one of the notches 15 most suitable for holding the work being operated on against turning. The locking bar also serves to take up some of the strains which would otherwise be imposed solely on the guide bar. Should it be desired to clamp a work piece, then the screws 22 of which there may be any desired number, are brought into operation to engage opposite sides of such work piece after the rough adjustment between the jaws 1 and 2. Should it be desired to employ the tool for clamping round stock, then such stock is placed opposite the notch 21, the jaw 1 is given a preliminary adjustment to bring the jaw 1 as close as possible to the stock or work piece and thereafter the screw 22 is adjusted to effect the clamping of the work piece. The work piece may either rest upon the drill press table in which instance the nearest faces of the opposed jaws will cooperate with the work piece, or the work piece may rest upon the ledges 3 and when resting on the latter, the vertical faces at the outer sides of said ledges will engage the work piece. The ledges are used when it is desired that the drill will pass completely through the work piece without engagement with the work table of the drill press. As the two jaws are of uniform thickness and have flat faces on opposite sides, they will also serve as parallels for properly supporting work in parallel relation to the table of the drill press.

From the foregoing it will be seen that there has been provided a tool which has a number of different functions. This tool is especially designed for work being operated upon by a drill press. It will effectively hold the work piece against turning upon the table of the press and may be quickly adjusted to engage or release the work. The extension on one of the jaws provides a handle through which the tool may be held or secured. The tool is not only simple in operation, but is inexpensive to manufacture and is not liable to get out of order.

What I claim as my invention and desire to secure by Letters Patent is:

1. A tool of the character described comprising two jaws, each provided with a bar extending laterally therefrom toward the other jaw, the bar on one of the jaws having a rocking and sliding movement on the other jaw beyond the inner end of the arm on such other jaw, and the other bar cooperating with the first mentioned jaw to support the latter independently of the rocking and sliding connection.

2. A tool of the character described comprising two jaws, each provided with a bar extending laterally therefrom toward the other jaw, the bar on one of the jaws having a rocking and sliding movement on the other jaw beyond the inner end of the arm on such other jaw, and the other bar interlocking with the first mentioned jaw to lock the two jaws against return movement in their adjusted positions.

3. A tool of the character described comprising two jaws, each provided with a bar extending laterally therefrom toward the other jaw, the bar on one of the jaws having a rocking and sliding movement on the other jaw beyond the inner end of the arm on such other jaw, and said jaw from which said rocking and sliding arm extends being formed with a recess in one end and a projection in said recess, the other bar operating in said recess and having notches in which said projection is adapted to be received to lock the jaws against relative movement.

4. A tool of the character described comprising two jaws, one of which is longer than the other, a guide bar rigid with the shorter jaw arranged at an angle to said jaw and having a rocking and sliding connection with the longer jaw, and a locking bar rigid with said longer jaw extending

laterally from the same between the ends thereof to provide a handle portion on one side and a gripping portion on the other side, said locking bar cooperating with the shorter jaw to hold it in a different position with reference to the longer jaw.

5. A tool of the character described comprising two jaws each provided with a bar extending laterally therefrom toward the other jaw, one of said jaws having, at a point to one side of the inner end of its arm, an opening having two opposite walls, one of which is flat and parallel with its arm and the other of which is at a slight angle to said arm, the arm of the other jaw being slidable and rockable in said opening and having a width equal substantially to the distance between the nearest portions of said opposite walls, there being provided between said other jaw and the arm on the first named jaw an interlocking connection broken when the arm of the second named jaw is rocked in one direction in said opening.

6. A tool of the character described comprising two jaws, one of which is provided with an opening having two walls, one of said walls being flat and substantially at right angles to the gripping face of the jaw, while the other of said walls is at a slight angle to the first mentioned wall, a guide bar rigid with and substantially at right angles to the other jaw extending through said opening and having a width substantially equal to the distance between the nearest portions of said walls of said opening, and means so connecting said jaws independently of said guide bar for securing the jaws in different positions with relation to each other.

7. A tool of the character described comprising two jaws, one of which is provided with an opening having two walls, one of said walls being flat and substantially at right angles to the gripping face of the jaw, while the other of said walls is at a slight angle to the first mentioned wall, a guide bar rigid with and substantially at right angles to the other jaw extending through said opening and having a width substantially equal to the distance between the nearest portions of said walls of said opening, and means for securing the jaws in different positions with relation to each other, said means comprising a locking bar extending from the jaw provided with the opening at one side of the opening and cooperating with the jaw from which the guide bar extends to one side of the point from which the guide bar extends.

8. A tool of the character described comprising two jaws of uniform thickness throughout, their upper faces lying in one plane and their lower faces lying in another plane parallel with the other plane of the upper faces and the opposed faces of the jaws being provided with ledges situated at an equal distance from the lower faces of the jaws, connecting means between the jaws lying entirely between the planes of the upper and lower faces, an adjusting screw arranged below the ledges on one of the jaws, and an adjusting screw arranged above the ledges on one of the jaws.

9. A tool of the character described comprising a pair of jaws, one of which is provided with an opening having a wall at right angles to the clamping face of the jaw and a wall at a slight angle to the first named wall, a guide bar extending laterally from the other jaw operating in the opening of the first mentioned jaw and having a width substantially equal to the shortest distance between said walls, and a spring device mounted on the first mentioned jaw and cooperating with the guide bar to hold the latter parallel with the wall of the opening which is at right angles to the first mentioned jaw, and means for locking the jaws in different positions with relation to each other.

10. A tool of the character described comprising two jaws, one of which is longer than the other, a locking bar projecting laterally from one of the jaws in spaced relation to both ends thereof to provide a clamping portion on one side, and a handle on the other side, and a guide bar projecting laterally from the other jaw and having a sliding and rocking movement on the first named jaw at a point beyond the inner end of said locking bar, said second named jaw cooperating with the locking bar to be held in different adjusted positions with reference to the first named jaw.

CHARLES A. VIDINGHOFF.