

Jan. 25, 1944.

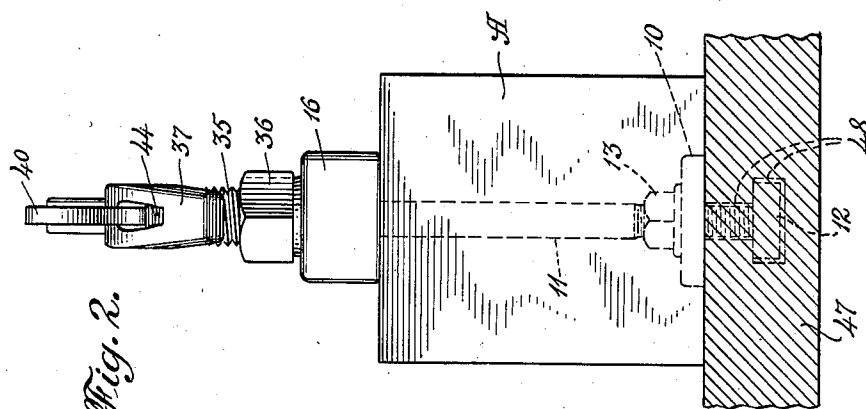
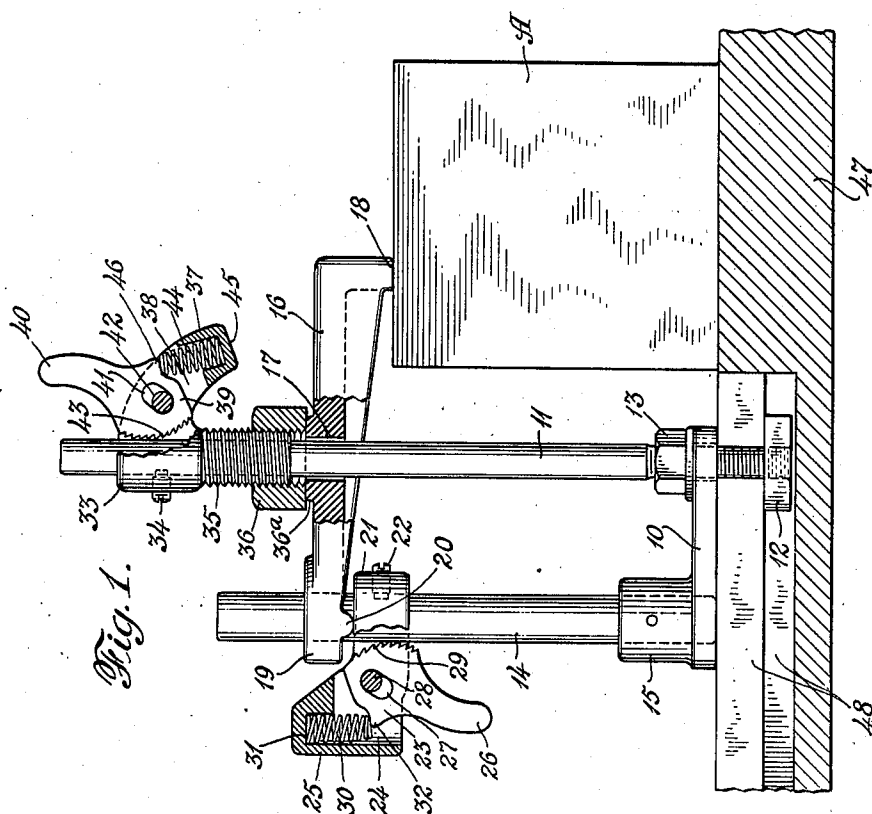
M. E. WETZLER

2,339,897

CLAMP

Filed May 26, 1943

2 Sheets-Sheet 1



INVENTOR
MAX E. WETZLER.
BY
John A. Tehlantsek
ATTORNEY

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2 Sheets-Sheet 2

Fig. 3.

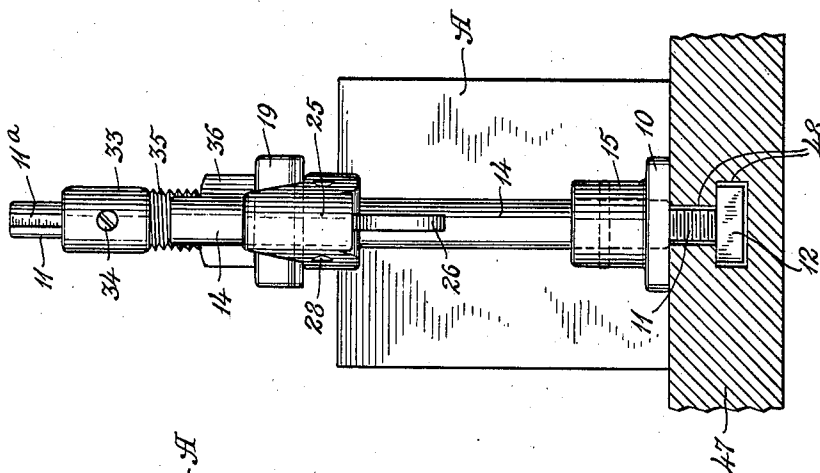


Fig. 4.

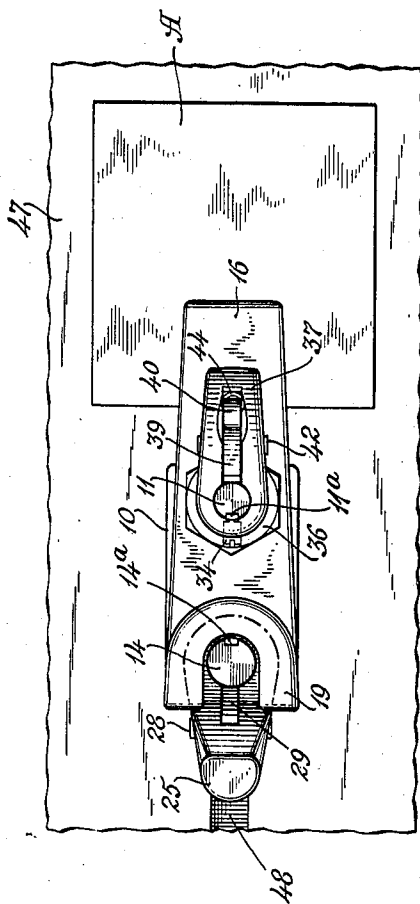
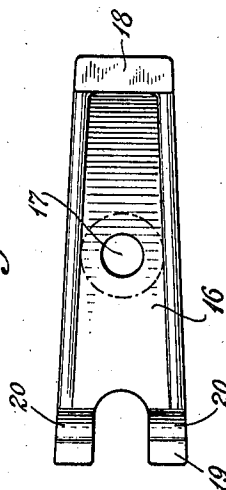


Fig. 5.



INVENTOR
MAX E. WETZLER
BY
John A. Hehlentz
ATTORNEY

UNITED STATES PATENT OFFICE

2,339,897

CLAMP

Max E. Wetzler, Long Island City, N. Y.

Application May 26, 1943, Serial No. 488,596

2 Claims. (Cl. 90—59)

My invention relates to clamps and more particularly to that type of clamps which constitute attachments for drill presses, milling machines and other apparatus.

The invention has for its object to provide a novel clamp of the indicated type which may be readily and efficiently combined with the machines for which it is intended, and which is capable of being adjusted with a minimum of effort to effect its operative functions, and is especially designed for combination with conventional milling machines.

The invention contemplates further the provision of a novel clamp in which the clamping instrumentalities are highly efficient and arranged to be adjusted to operative positions at high speed and in a minimum of time.

Other objects will appear from the description hereinafter and the features of novelty will be pointed out in the claims.

In the accompanying drawings, which illustrate examples of the invention without defining its limits,

Fig. 1 is a side elevation, partly in section, of the novel clamp embodied in a conventional milling machine;

Fig. 2 is a front elevation thereof partly in section;

Fig. 3 is a rear elevation of the novel clamp;

Fig. 4 is a plan view thereof, and

Fig. 5 is an inverted plan view of a clamping member joining part of the novel clamp.

As illustrated in the drawings, the novel clamp comprises a base 10 of suitable dimensions and preferably constructed of metal or other suitable material. The base 10 carries an upright member or main rod 11 which in the form under discussion preferably is of circular cross-section and projects upwardly from said base 10 as shown in Figs. 1 and 2. The upright member 11 is provided with a groove 11a extending lengthwise thereof and may be combined with the base 10 in any convenient manner. For instance, as shown in the drawings, the lower end of the rod 11 is screw-threaded and passes loosely through an opening in the base 10 for the accommodation of a head 12 which is fixed upon said rod 11 and co-operates with a nut 13 for securing the device in place in the machine and at the same time fixes the rod 11 in position on the base 10 as will appear more fully hereinafter.

An auxiliary rod or member 14, preferably also of circular cross-section, projects upwardly from the base 10 in spaced parallel relation to the rod 11, and has its lower end fixed in a socket 15 com-

prising an integral part of the base 10. The rod 14 is also provided with a groove 14a extending lengthwise thereof.

The clamp further includes a clamping member or bracket 16 provided at an intermediate point with opening 17 whereby said clamping member 16 is slidably mounted on the upright member 11 in transverse relation thereto. The clamping member 16 at its one end terminates in a clamping flange 18 and at its other end terminates in a fork 19 which straddles the second rod 14 as illustrated in Fig. 4.

At its forked end the clamping member 16 is provided with depending bearing lugs 20 preferably curved and arranged to rest upon and engage a bearing member 21 slidably mounted on the auxiliary rod 14 and maintains against rotation thereon by means of a set screw 22 projecting into the groove 14a. With this arrangement, the bearing member 21 constitutes a fulcrum support for the one end of the clamping member 16 as will appear more fully hereinafter.

Any suitable easily releasable locking means may be provided for locking the bearing member 21 in an adjusted position against movement lengthwise of the rod 14. For instance, as shown in Fig. 1, this locking means may comprise a locking lever 23 located in a slot 24 of a head 25 forming part of the bearing member 21, said lever 23 projecting below the head 25 in the form of a readily accessible handle 26. The locking lever 23 is formed with a slot 27 for the accommodation of a pivot pin 28 whereby said lever 23 is pivotally mounted in the slot 24, and includes a preferably curved gripping edge 29 provided with teeth or otherwise roughened to develop a holding grip on the rod 24. The locking lever 23 is yieldingly maintained in and automatically returned to its operative locking position by means of a coil spring 30 seated in a recess 31 of the head 25 and bearing against a projection 32 with which the locking lever 23 is provided.

In addition to the parts so far described, the novel clamp includes pressure-developing means whereby the clamping member 16 is caused to clamp the work in place in the machine.

As shown in Fig. 1, this pressure-developing means comprises a carrier 33 slidably mounted on the main rod 11 and maintained against rotation thereon, for instance, by means of a set screw 34 projecting into the groove 11a of the rod 11. The carrier 33 includes a preferably integral depending sleeve 35 through which the rod 11 extends, and which is externally screw-threaded for the reception of a pressure member

or nut 36 arranged to bear against a bearing surface 36a of the clamping member 16. In addition, the carrier 33 is provided with an outwardly and downwardly-projecting extension 37, preferably of curved form and including a slot 38 as shown in Fig. 1. Releasable locking means is carried by the extension 37 and comprises a locking lever 39 located in the slot 38 and projecting above the same in the form of a readily accessible handle 40, as illustrated in Fig. 1. The locking lever 39 is formed with a slot 41 for the accommodation of a pivot pin 42 whereby said lever 39 is pivotally mounted in the slot 38, and includes a preferably curved gripping edge 43 having teeth or otherwise roughened to develop a holding grip on the rod 11. The locking lever 39 is yieldingly maintained in and automatically restored to its operative locking position by means of a coil spring 44 seated in a recess 45 of the extension 37 and bearing against a projection 46 with which the locking lever 39 is provided.

In the arrangement illustrated in the drawings, the novel clamp is mounted upon the bed plate or table 47 of a conventional milling machine which, as usual, includes the customary undercut slot 48.

In practice the base 10 rests upon the upper surface of the bed plate 47 in registry with the slot 48 and with the head 12 located in the undercut portion thereof and the nut 13 in engagement with the base 10. Obviously, as the nut 13 is screwed down upon the screwthreaded end of the rod 11, said nut 13 in co-operation with the head 12 will develop a clamping force whereby the novel clamp will be securely fixed in place on the bed plate 47 of the milling machine or other machine. It will be understood that the novel clamp is set in a position to bring the clamping member 16 into operative relation with the work A which is located on the bed plate 47 as illustrated in the drawings.

To clamp the work A against movement, the clamping member 16 is slidably shifted lengthwise of the rods 11 and 14 until the clamping flange 18 rests in engagement with the work A, as shown in Fig. 1. Either previously or at this stage the bearing member 21 with its associated elements is slidably shifted upwardly on the auxiliary rod 14 into engagement with the bearing lugs 20 of the clamping member 16. This is accomplished by exerting a pressure on the handle 26 to pivotally operate the lever 23 against the tension of the spring 30 and to thereby relieve the gripping engagement of the gripping edge 29 with the rod 14. When the bearing member 21 is in contact with the lugs 20 the handle 26 is released whereupon the spring 30 automatically will pivotally actuate the lever 23 in the reverse direction and thereby restore the gripping edge 29 into gripping engagement with said rod 14 to fix the bearing member 21 against movement thereon.

When this has been done manual pressure is exerted on the handle 40 to pivotally swing the locking lever 39 against the tension of the spring 44 and thereby relieve the gripping engagement of the gripping edge 43 on the main rod 11. With the lever 39 held in this inoperative position the carrier 33 with its associated elements is then moved downwardly on the main rod 11 until the pressure member or nut 36 engages the bearing surface 36a of the clamping member 16. The handle 40 is then released to permit the spring 44 automatically to swing the lever 39 in the reverse direction and return the gripping edge 43

into gripping engagement with the main rod 11. The carrier 33 and its associated parts will thereby be securely fixed against movement on said main rod 11. By means of a wrench or other suitable implement, the pressure member or nut 36 is then screwed down on the sleeve 35 against the bearing surface 36a of the clamping member 16. The latter is thereby rocked on the lugs 20 which rest on the bearing member 21, and accordingly forces the clamping flange 18 against the work A to develop an efficient and firm clamping force thereon. The work A is thereby securely fixed in place on the bed plate 47 of the milling machine or its equivalent and may be operated on thereby in an efficient and satisfactory manner.

The novel clamp is so constructed and arranged that all of its parts are firmly fixed in their operative positions against unintentional dislocation by vibration or other disturbing forces incidental to the milling machine or its equivalent during an operative period.

At the same time, the parts may be easily and quickly adjusted to their inoperative positions and back to operative positions with maximum speed and minimum effort and without requiring any particular skill on the part of the machinist or other operator.

The novel clamp may be readily combined with the milling or other machine without requiring any changes in the conventional construction thereof.

Although the present invention has been described in conjunction with a preferred embodiment, it is to be understood that modifications and variations may be resorted to without departing from the spirit and scope of the invention, as those skilled in the art will readily understand. Such variations and modifications are considered to be within the purview and scope of the claims.

I claim:

1. A clamp of the kind described comprising a base, a main rod projecting upwardly from said base, means on said main rod for removably fixing the clamp in a machine, an auxiliary rod projecting upwardly from said base in spaced parallel relation to said main rod, a bearing member slidably mounted on said auxiliary rod, releasable gripping means associated with said bearing member for gripping engagement with said auxiliary rod to fix said bearing member against movement thereon, a clamping member slidably mounted on said main rod and extending transversely thereto, said clamping member having a forked end slidably straddling said auxiliary rod, a clamping flange at the other end of said clamping member arranged to engage the work to be clamped, bearing lugs depending from said clamping member at its forked end for engagement with said bearing member, a carrier slidably mounted on said main rod above said clamping member, an externally screwthreaded sleeve depending from said carrier and slidable therewith on said main rod, releasable gripping means associated with said carrier for gripping engagement with said main rod to fix said carrier and sleeve against movement thereon, and a pressure member threaded on said sleeve for engagement with said clamping member to rock the latter on said bearing lugs and force the clamping flange of said clamping member against the work to develop a clamping force thereon.

2. A clamp of the kind described comprising a base, a main rod projecting upwardly from said

base, means on said main rod for removably fixing the clamp in a machine, an auxiliary rod projecting upwardly from said base in spaced parallel relation to said main rod, a bearing member slidably mounted on said auxiliary rod, releasable gripping means associated with said bearing member for gripping engagement with said auxiliary rod to fix said bearing member against movement thereon, a clamping member slidably mounted on said main rod in transverse relation thereto and in slidable engagement with said auxiliary rod above and in resting engagement with said bearing member, a carrier slid-

ably mounted on said main rod above said clamping member, releasable gripping means associated with said carrier for fixing the latter against movement on said main rod, and means including a movable pressure member movable with said carrier on said main rod and arranged to develop a pressure on said clamping member which is resisted by said bearing member whereby the free end of said clamping member is forced against the work to clamp the same against movement.

MAX E. WETZLER.