Sept. 9, 1924. **1,507,815**

M. S. CUMNER

MOUNTING FOR CLAMPS OR VISES

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Fig. 1,

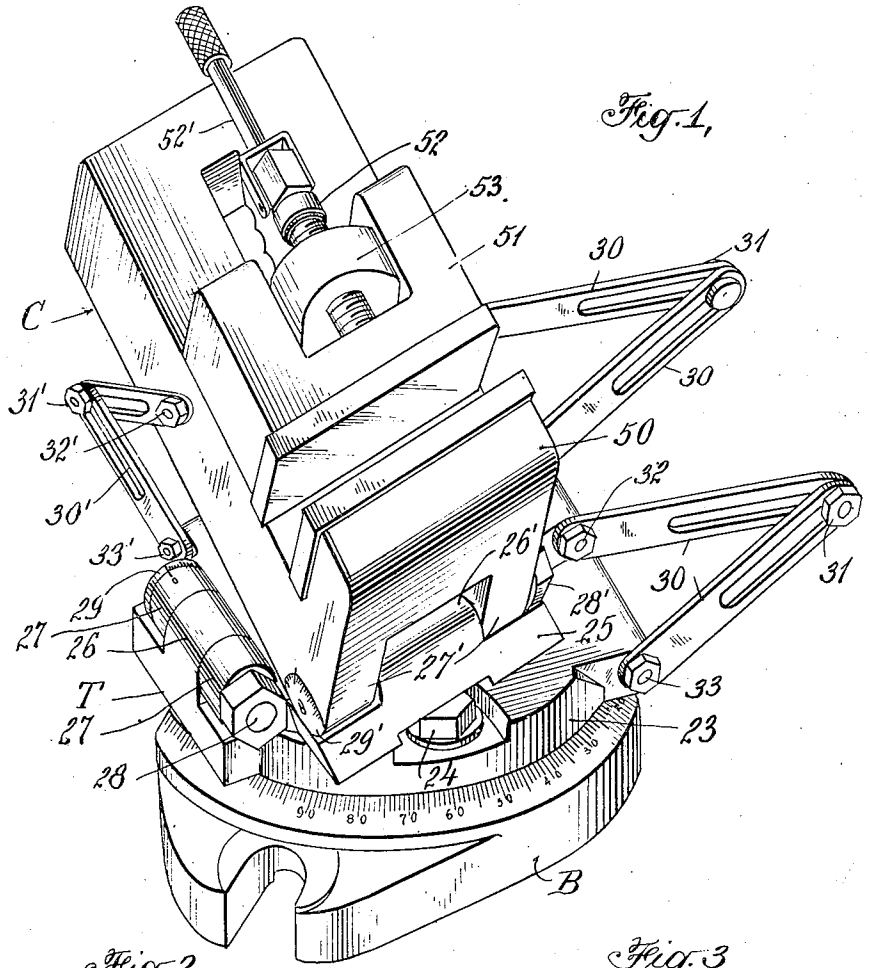


Fig. 2,

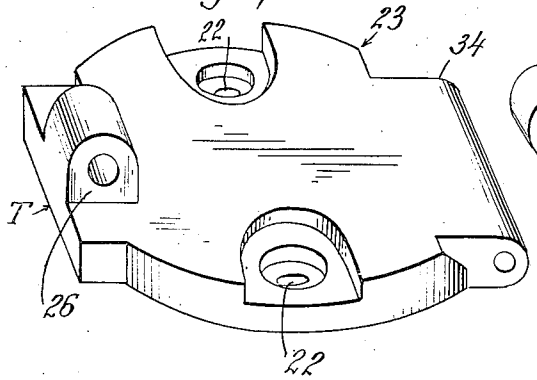
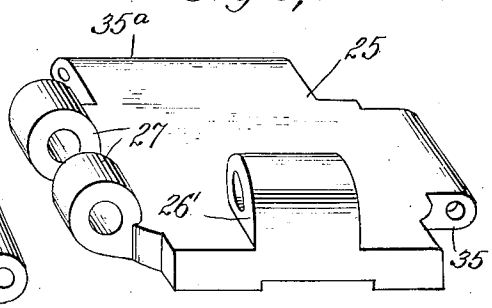


Fig. 3,



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Fig. 4,

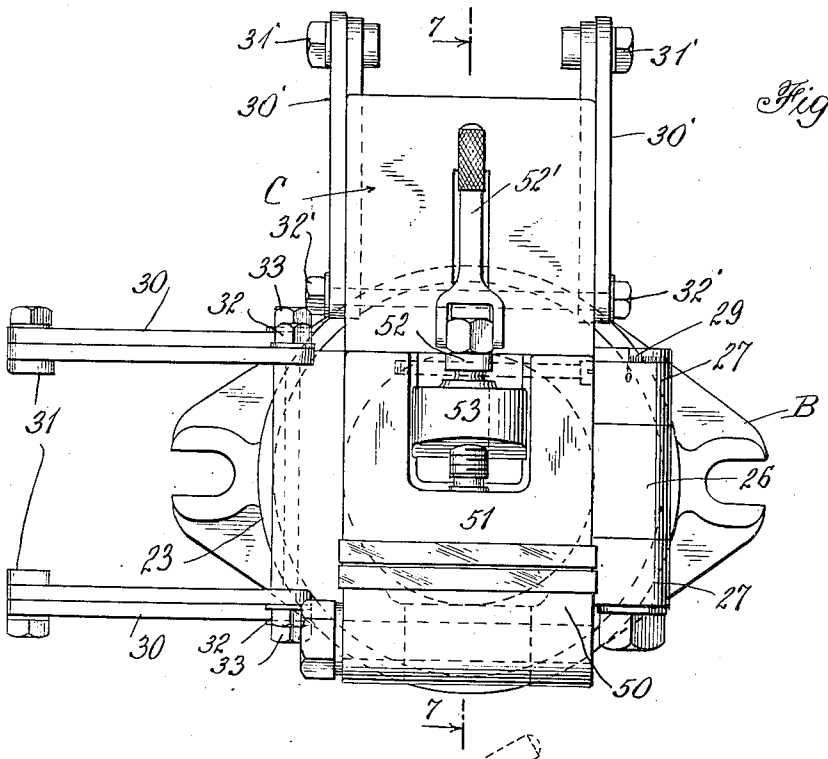
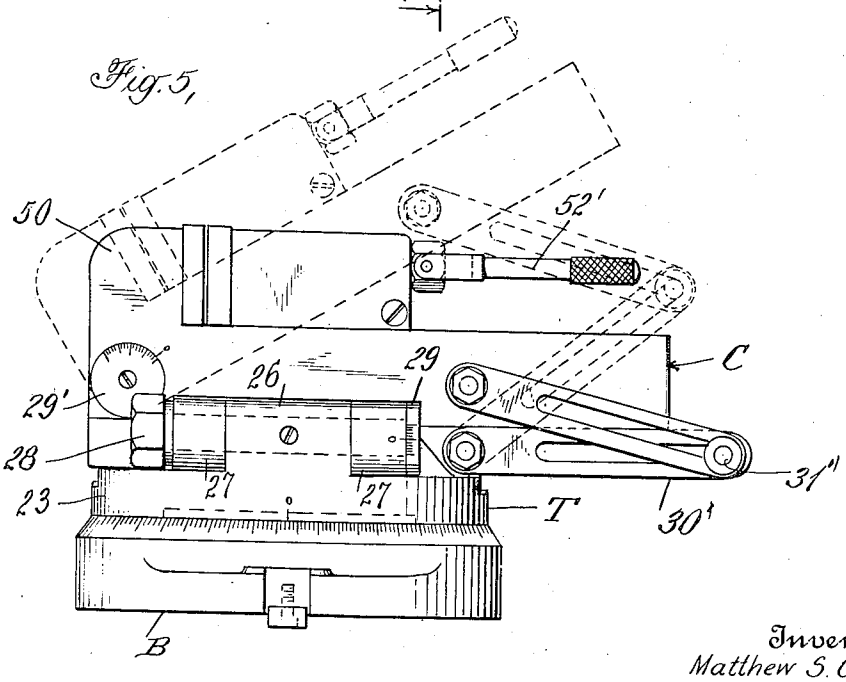


Fig. 5,



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Fig. 6.

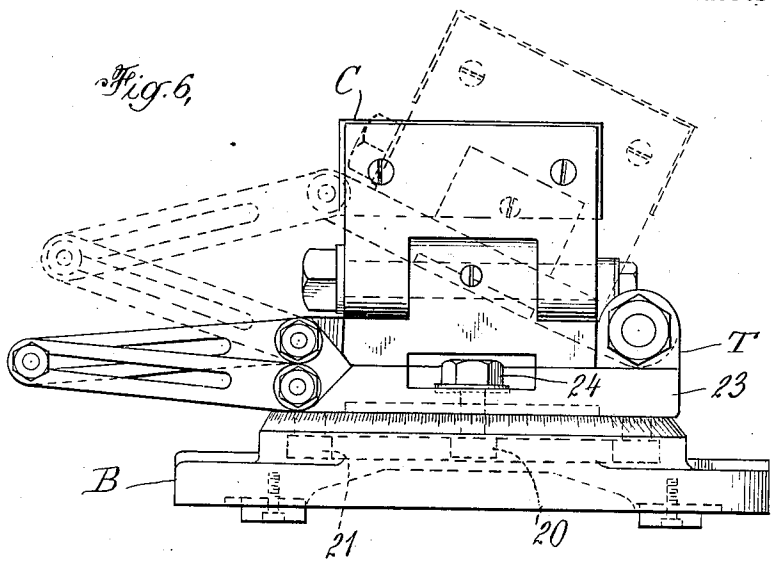
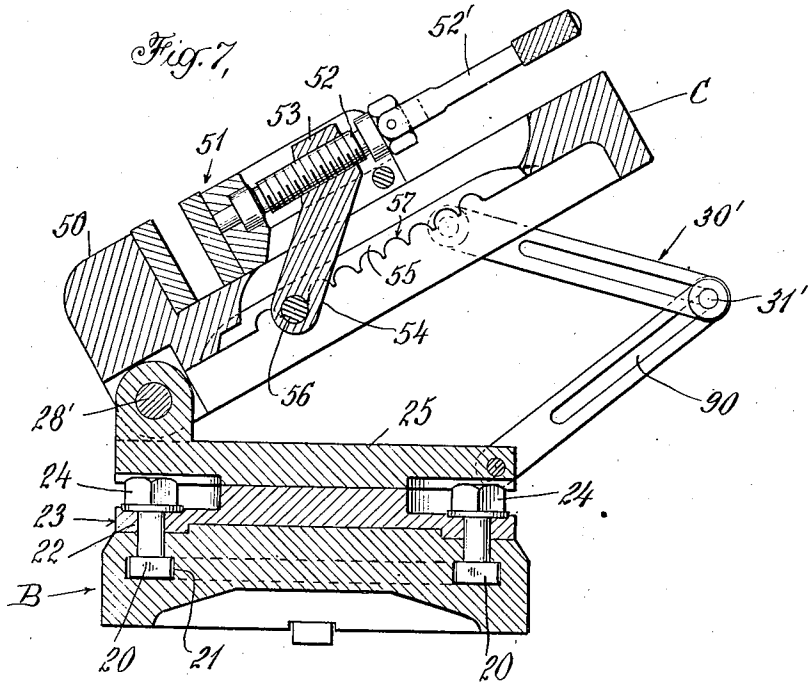


Fig. 7.



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MOUNTING FOR CLAMPS OR VISES

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Fig. 8,

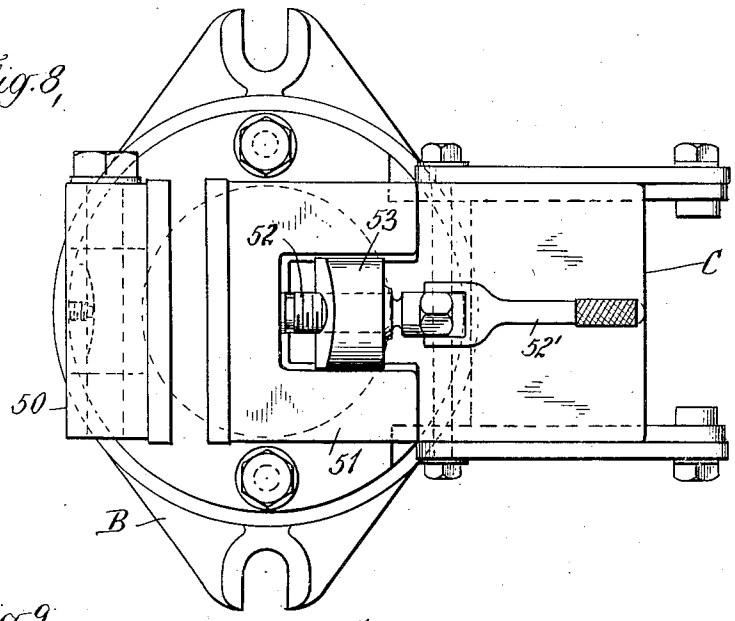


Fig. 9,

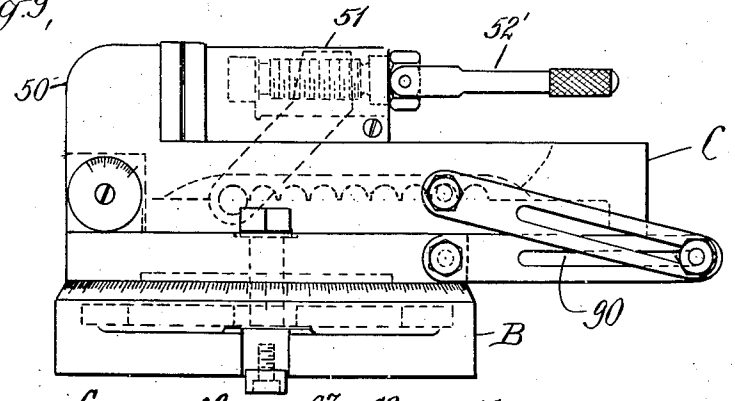
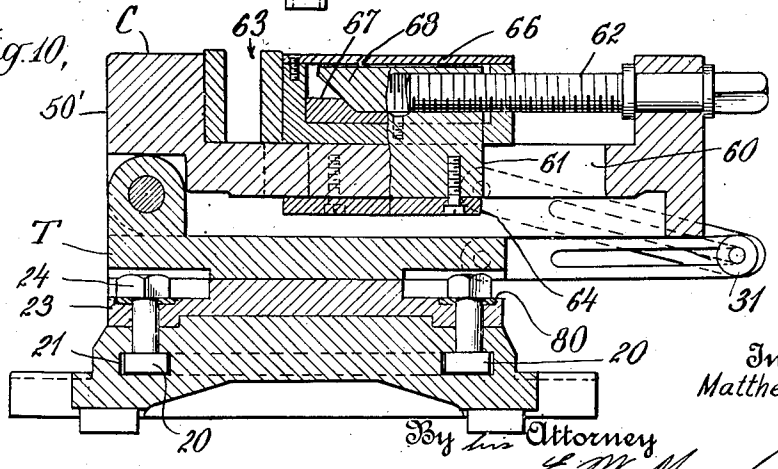


Fig. 10,



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Fig. 11.

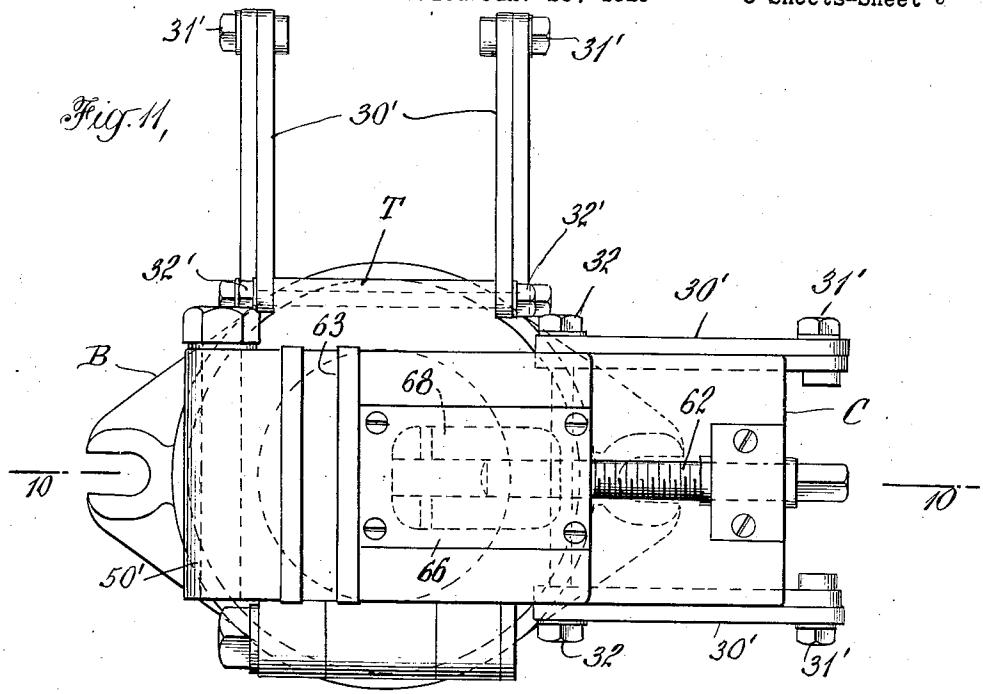


Fig. 12.

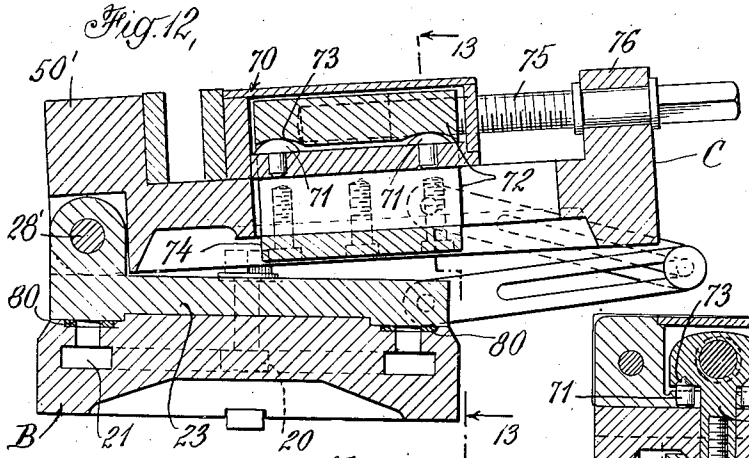


Fig. 14.

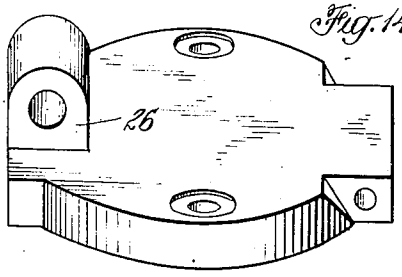
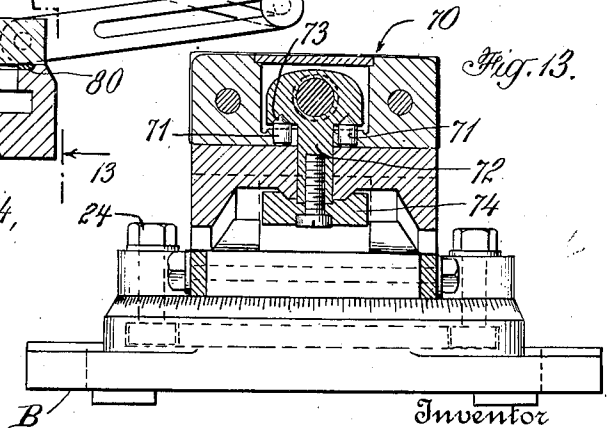


Fig. 13.



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Patented Sept. 9, 1924. 1,507,815

UNITED STATES PATENT OFFICE.

MATTHEW S. CUMNER, OF NEW YORK, N. Y.

MOUNTING FOR CLAMPS OR VISES.

Application filed January 26, 1921. Serial No. 440,243.

To all whom it may concern:

Be it known that I, MATTHEW S. CUMNER, a citizen of the United States, and a resident of New York city, county and State of New York, have invented certain new and useful improvements in Mountings for Clamps or Vises, of which the following is a specification.

This invention relates to mountings for clamps or vises and it is an object of the invention to provide a mounting that will not only enable the clamp to be rotated about a vertical axis but will also enable it to be tilted to various degrees of angularity in vertical planes.

Briefly stated the invention embodies a suitably supported turntable which includes a pair of hinge leaves to one of which the clamp is hinged. The hinge between the clamp and upper leaf provides for tilting the clamp in one plane while the other hinge provides for tilting the same in a plane at right angles to that plane. Suitable means are provided for holding the clamp in any given degree of angularity or tilt to the vertical.

Other objects and features of novelty of the invention will appear from the detailed description thereof taken in connection with the accompanying drawings forming part of this specification.

In the drawings, Fig. 1 is a perspective view of one embodiment of my invention, the clamp being shown as tilted about one of its supporting hinges.

Fig. 2 is a perspective view of the turntable with the upper leaf removed.

Fig. 3 is a perspective view of the upper leaf to which the clamp is hingedly attached.

Fig. 4 is a plan view of the structure shown in Fig. 1.

Fig. 5 is a side elevation of the structure shown in Fig. 4, the dotted lines showing the clamp as tilted on end.

Fig. 6 is a rear end elevation of the structure shown in Fig. 1, the dotted lines showing the clamp as tilted on its side.

Fig. 7 is a section taken on the plane of line 7—7 of Fig. 4, the clamp being shown as tilted on end.

Fig. 8 is a plan view of a slightly modified form of my invention, the clamp being adjustable in one vertical plane only.

Fig. 9 is a side elevation of the structure shown in Fig. 8.

Fig. 10 is a vertical section of a different form of clamp that may be embodied with the novel form of mounting, the view being taken on the plane of line 10—10 of Fig. 11.

Fig. 11 is a plan view of the structure shown in Fig. 10.

Fig. 12 is a view similar to Fig. 7 but showing the mounting as combined with a still different form of clamp.

Fig. 13 is a vertical transverse section taken on the plane of line 13—13 of Fig. 12.

Fig. 14 is a perspective view of the turn table forming part of the mounting shown in Figs. 12 and 13.

Like characters of reference designate like parts throughout the several views of the drawings.

The base B of the mounting may be of any suitable or preferred form to enable the securement thereof to the platen or other part of a machine tool. The clamp designated generally by C is mounted for horizontal rotation on this base by means of the turntable designated generally T. This table T is rotatably mounted on the base in any suitable or preferred manner. The means for locking the turntable to the base preferably comprise T-head bolts 20 having their heads seated in an under-cut groove 21 in the base B, the stem of the bolts passing upwardly through openings 22 in the turntable plate 23, the upper terminals of the bolts being threaded to receive a locking nut 24.

Hingedly connected to the plate 23 is a leaf or plate 25. The hinge therefor preferably comprises a perforated lug 26 which rises vertically from the rim of the plate and a pair of lugs or perforated ears 27 projecting from the plate 25, a pintle 28 being passed through the lugs and secured in fixed engagement with the lug 26. To one end of the pintle is secured a graduated circular scale member 29 (Fig. 5) whereby the degree of angularity between the two plates 23 and 25 may be readily determined.

The clamp C is hingedly secured to the upper leaf 25 by a similar hinge of which 26′ designates the lug rising from the plate 25; 27′ designates the ears or lugs depending from the body of the clamp C at the rear end thereof, and 28′ designates the pintle which is passed through the said lugs and secured in fixed relation to the lug 26′; a scale plate 29′ being likewise secured to the pintle 28′ in order to permit a ready ascertainment of the degree of angularity between the plate 25 and the clamp C.

In order to lock the plates 23 and 25 in any given angular position, I have provided means of such character that the said plates may normally lie in contiguous relation. These means preferably comprise a pair of links 30 connected at one of their ends by a pintle 31 and at their free ends to the plates 23 and 25 by pintles 32 and 33, respectively. The pintle 32 passes through a lug 34 projecting from the plate 25. These pintles are headed at one end and threaded at the other to receive a nut whereby the joints can be frictionally or otherwise locked against movement.

In order to lock the clamp C in fixed angular position with respect to the plate 25 means similar to those employed for securing an angular relation between the plates 23 and 25 are employed, namely means consisting of a pair of pivoted links 30′ having their joints so constructed that they may be locked in non-movable relation. The pintle 33′ corresponding to the pintle 33 passes through the lug 35ª projecting from the plate 25 at right angles to the lug 35. The upper link 30′ is secured to the base of the clamp C by means of a stud 32′ having a nut thereon for frictionally securing the link to the base. The pintle 31′ which passes through the over-lapping ends of the links has a nut thereon to enable the links to be secured in non-movable frictional engagement. Preferably two sets of the aforesaid links are combined with each pair of relatively movable members to more effectively secure them in angular position.

The form of clamp shown in Figs. 1 to 9 is substantially similar to that disclosed in Figs. 4 to 6 of my Patent No. 1,379,747 granted May 31, 1921. The base of the clamp has a fixed jaw 50 at one end and has another jaw 51 slidably mounted thereon. The means for moving the jaw 51 from or toward the fixed jaw comprises a screw 52 which has threaded engagement with a head 53 of an anchor link 54 which extends through a slot 55 in the base and terminates below the bottom thereof. Through the lower end of this link is passed a transversely extending pin 56 which engages in recesses or stops 57 at each side of the slot at the bottom or under side of the base. This arrangement permits the jaw 51 to be quickly moved toward and away from the fixed jaw by simply removing the pin 56 during the major adjusting operation after which the jaw 51 may be screwed home against the work between the jaws by rotating the screw 52 in any suitable manner as by means of a pivoted crank or handle 52′.

The form of clamp shown in Figs. 10 and 11 is also disclosed in the above mentioned application but is specifically claimed in my Patent No. 1,406,981, February 21, 1922. Briefly stated this clamp comprises a base having a fixed jaw 50′ at one of its ends, the base being longitudinally slotted at 60 to form a guide for the nut 61 which coacts with the screw 62 for moving the slidable jaw designated generally by 63, toward or from the fixed jaw. The nut 61 is substantially of T form, the leg thereof passing through the slot 60 in the base and is prevented from withdrawal therefrom by means of a plate 64 extending across the slot and secured to the lower end of the leg.

The head of the nut 61 is housed within a box-like member 66 which is slidably mounted on the base of the clamp, this member constituting primarily the movable jaw. Arranged within the bottom of this box is a wedge member 67 adapted to cooperate with the inclined end 68 of the head of the nut 61. The angles of these wedges are not complementary. The construction is such that the heel or bottom edge of the head of the nut 61 will tend to slide upwardly on the wedge 67 as resistance is offered to movement of the box 63 toward the fixed jaw. But inasmuch as the nut 61 is prevented from vertical displacement with respect to the base of the clamp by means of the plate 64, the result of this tendency of the heel to climb up on the wedge 67 is to take up any lost motion between the parts thus forcing the box 63 down against the base of the clamp as the jaw is forced home against the the work between the jaws. The effect of the arrangement is therefore to prevent vertical displacement of the movable jaw 63 when and as the same is forced against the work.

In Figs. 12 and 13 I have shown a slightly different arrangement for obtaining wedging action between the screw nut and the box-like jaw indicated generally by 70. This action is obtained by providing the bottom of the box jaw 70 with hump-like wedges 71 of rivet-like form and providing the head of the screw nut 72 with shallow pits 73 of wedge-like form, as clearly shown in Fig. 12. As the nut is moved toward the fixed jaw the box jaw 70 is carried along therewith without unduly binding on the ways of the base. When the jaw 70 is brought up against the work the nut 72 will tend to ride up on the hump-like wedges 71. But since vertical displace-

ment of the nut 72 relatively to the base is prevented by means of the plate 74 below the base, the box jaw is brought into intimate contact with the base and upward tilting effectually prevented as will now be readily understood. The screw 75 which cooperates with the nut 72 is held from axial movement by being mounted in a lug 76 rising from the base.

In Figs. 10 and 12 I have also shown the under-cut slot 21 in which the T head clamping bolts 20 are secured as countersunk to receive a cover plate 80 which is movable with the turntable. The bolts 20 pass through this plate and up through the turntable plate 23. This cover plate serves to prevent the entrance of chips and other foreign matter into the slot. For a fuller explanation of this feature reference may be had to my Patent No. 1,379,747 above mentioned wherein the same is claimed.

If found desirable the locking links 30 and 30′ may be slotted as shown at 90 to permit the links to be arranged at different degrees of angularity with respect to each other for any given position of angularity of the base to be adjusted.

The novel form of mounting which I have provided enables the work held by the clamp to be brought to any desired degree of angularity with respect to a fixed machine tool which is to be used for operating upon the work.

The mounting has the merit of being extremely simple and practical for the purposes intended. The clamp may be tilted in one vertical plane without necessitating its being tilted in a second vertical plane or it may be tilted in both of said planes at one and the same time, features which are particularly desirable in connection with clamps used by machinists. The mounting has an additional desirable feature, that it may be rotated about a vertical axis irrespective of the angularity or tilt of the vise with respect to the base.

The invention enables old vises of the swivel type to be converted into vises arranged for universal tilting movement and to make such conversion it is merely necessary to replace the old turntable by a turntable having a hinged leaf thereon to which the vise may be hinged, the axes of the respective hinges being at right angles to each other.

I have shown the mounting as combined with clamps of different design in order to make it perfectly clear that the application of the invention is not limited to any particular form of clamp. It will therefore be understood that I intend no limitations on the invention except as may be defined in the appended claims.

What I claim as new is:

1. The combination with a clamp and a support therefor, of a turntable mounted on the support, a pair of hinges arranged at angles to each other between the turntable and clamp in a fixed position with respect to the clamp, and means cooperating with the respective hinges for securing the clamp in any given tilted position.

2. The combination with a clamp and a support therefor, of a turntable mounted on the support, said turntable consisting of two hinged leaves; a hinge connecting the clamp to the upper leaf, means for maintaining the leaves in any given angular relation, and means for maintaining a given angularity between the clamp and upper leaf.

3. The combination with a clamp and a support therefor, of a turntable mounted on the support, a plate hinged to the turntable and normally in abutting relation therewith, means opposite the hinge for maintaining the plate in angular relation to the turntable, a hinge pivotally supporting the clamp on the said plate, and means between the plate and clamp for maintaining any given angularity between.

4. The combination with a clamp and a support therefor, of a turntable mounted on the support, said turntable consisting of two hinged leaves; a hinge connecting the clamp to the upper leaf, means for maintaining the leaves in any given angular relation, a graduated scale at the hinges for determining the degree of angularity of the movable members, and means for maintaining a given angularity between the clamp and upper leaf.

5. The combination with a clamp and support therefor, of an interposed plate, a leaf hinged to the clamp and plate, the axes of the hinges being at right angles to each other.

6. The combination with a clamp and a support therefor, of a turntable mounted on the support, a leaf between the turntable and clamp and pivotal connections between the leaf and turntable and leaf and clamp, the axes whereof are at right angles to each other.

MATTHEW S. CUMNER.