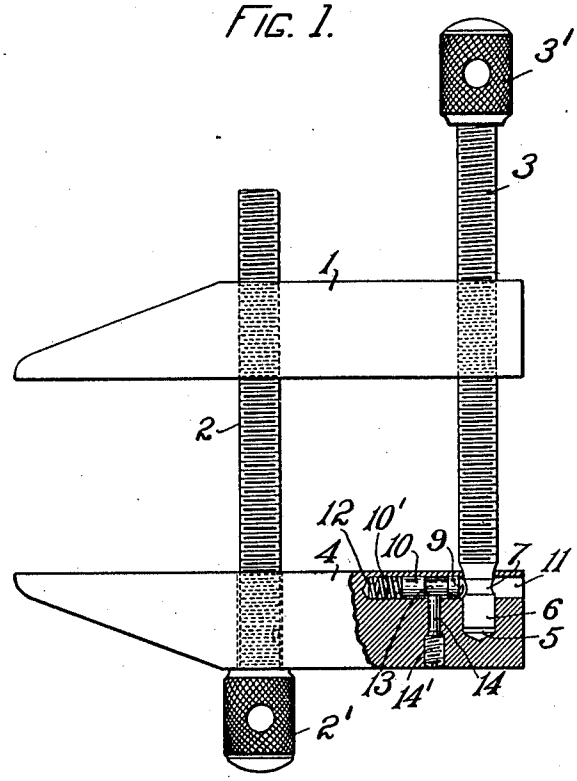
L. S. STARRETT.

SCREW CLAMP.

APPLICATION FILED SEPT. 30, 1909.

970,568. **Patented Sept. 20, 1910.**

FIG. 1.



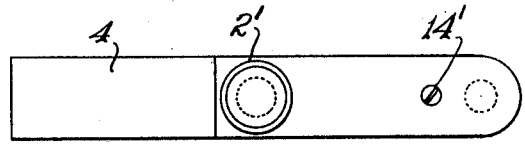


FIG. 2.

WITNESSES

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SCREW-CLAMP.

970,568. Specification of Letters Patent. Patented Sept. 20, 1910.

Application filed September 30, 1909. Serial No. 520,414.

To all whom it may concern:

Be it known that I, LAROY S. STARRETT, a citizen of the United States, residing at Athol, county of Worcester, Commonwealth of Massachusetts, have invented certain new and useful Improvements in Screw-Clamps, of which the following is a specification.

This invention relates to clamping devices and particularly to a jaw clamping device for holding work. In devices of this sort, and particularly in that class which is known as screw clamps, much trouble and annoyance is experienced in use by the tendency of the jaws to drop from their true position at right angles to the screws. This is due to the slight play necessary in one jaw for the final pinching when the clamp is tightened up upon the work. It, therefore, is usually necessary in adjusting a clamp after opening out the clamping screw proper to assist the jaw in its movement along it while the adjusting screw is being manipulated, as otherwise the tendency of the jaw to lag would bind on the clamping screw retarding its movement and causing wear upon the threads of the clamping screw. To the end, therefore, of providing for the maintenance of the moving jaw at a proper angle relative to the adjusting means and to the general improvement of the structure and arrangement of the parts of such implements, I have devised my present invention in which I have provided means for securing a unifying contact between the moving jaw and the adjusting means which will normally tend to keep it in a proper operating position while still permitting that play which is necessary between the parts.

The structure and operation of my device will be more fully disclosed in the specification which follows in which I have set forth an embodiment as illustrative of my invention, the same being shown and described as a metal screw clamp, although it is to be understood that the particular form shown, while that of an actual and operative clamp, is merely used for the purposes of illustrating the invention.

Throughout the specification and drawings like reference numerals are correspondingly used to indicate the same parts and in the drawings—

Figure 1 is a side view of a metal clamp embodying my invention with one jaw partly broken away to expose the leveling connection, and Fig. 2 is a plan view of the upper or moving jaw.

1 is a jaw, which I refer to as fixed as it contains the two threaded openings through which the front or clamping screw 2 and the rear or adjustable screw 3 work.

4 is the lower jaw which I have also termed the moving jaw as it is this jaw which is moved by the screws 2 and 3 relative to the jaw 1, these two screws each being provided with a milled and drilled capstan head 2^1 and 3^1 respectively for their convenient operation. The lower face or shoulder of the head 2^1 acts as the working abutment for the clamping of the jaw 4. The opening through which the screw 2 passes through the jaw 4 is an unthreaded opening slightly larger than the diameter of the screw 2 so as to permit the proper play of the jaw 4 in clamping.

At the rear end of the jaw and on its upper side is bored a recess 5 slightly larger than and adapted to receive the unthreaded head 6 of the screw 3. The head 6 is provided with a circumferential groove 7 which is engaged by the rounded head 9 of the plunger 10 which is seated in a socket 11 drilled from the rear end of the jaw 4 past the recess 5 a suitable distance into the body of the jaw. The plunger 10 is reduced at its rear end into a spindle 10^1 about which is coiled a spiral spring 12. The spring 12 thrusts with one end against the bottom of the hole 11 and with its opposite end against the shoulder formed between the spindle 10^1 and the main body of the plunger 10.

Just back of the rounded head 9 is a reduced portion 13 of sufficient length to permit an engaging and disengaging movement between it and the groove 7 past a pin 14 which locks the plunger in place by engagement with the reduced portion 13 while permitting the motion above described. The pin 14 has a threaded portion 14^1 which engages a corresponding recess tapped in the lower end of the vertical hole through which the pin 14 is inserted. It will, therefore, be seen that the plunger 13 while permitting the jaw 4 to rock slightly on the adjusting screw 3 tends normally to hold that jaw at right angles to said screw. The rocking movement of the jaw 4 permits the bringing of an extra strain on the outer end of the clamping jaws and therefore permits

a tighter clamping of small objects or a tighter clamping of large objects at some particular point.

The clamp is operated in the usual manner in which such a screw clamp is used except that it is not necessary for the workman to assist the jaw 4 during its movement along the screw 2.

As heretofore suggested, various modifications may be made in the device shown and described, all within the spirit of my invention if within the terms of the following claims.

What I therefore claim and desire to secure by Letters Patent is:—

1. In a device of the class described, a jaw, an operating member for said jaw and having a loose engagement therewith and transversely yielding means effective at right angles to said jaw in engagement therewith to normally support said jaw at right angles to the operating member.

2. In a device of the class described, a jaw, an operating member for said jaw and having a loose engagement therewith and a resilient contact transversely disposed to said member and effective at right angles thereto for normally supporting said jaw at right angles to said operating member.

3. In a device of the class described a pair of clamping jaws, a screw for relatively adjusting said jaws and having a threaded engagement with one jaw and a loose engagement with the other jaw and a resilient contact transversely disposed to the said screw at the point of its loose engagement and effective at right angles to said screw to normally hold said clamping jaws parallel.

4. A device of the class described, comprising a pair of clamping jaws, clamping means for bringing the jaws together, an adjusting screw having a threaded engagement with said one jaw and having its end loosely socketed in the other jaw, the end of said rear screw having a groove about it and a spring pressed plunger having a rounded head mounted in said first named jaw and adapted to engage said groove and yieldingly support said first named jaw at right angles to said screw.

5. A device of the class described, comprising a pair of clamping jaws, a forward clamping screw loosely engaging one jaw and having a threaded engagement with the other jaw, a rear adjusting screw also having a threaded engagement with said second named jaw and having its end loosely socketed in said first named jaw, the end of said rear screw having a groove about it, and a spring pressed plunger having a rounded head mounted in a recess, said first named jaw engaging said groove and adapted to yieldingly support said first named jaw at right angles to said rear screw.

6. A device of the class described comprising a pair of clamping jaws, a forward adjusting screw loosely engaging one jaw and having a threaded engagement with the other jaw, a rear adjusting screw also having a threaded engagement with said second jaw and having its end loosely socketed in the first named jaw and a resilient contact transversely disposed to the end of said rear screw and effective at right angles thereto to normally hold said clamping jaws parallel.

7. In a device of the class described, a pair of clamping jaws, a screw for relatively adjusting said jaws and having a threaded engagement with one jaw and transversely yielding means for detachably holding said screw in the other jaw.

In testimony whereof I affix my signature in presence of two witnesses.

LAROY S. STARRETT.

Witnesses:

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WILLARD G. NIMS.