A. W. WARNOCK.

CLAMP.

APPLICATION FILED APR. 25, 1921.

1,434,237.

Patented Oct. 31, 1922.

Fig. 1.

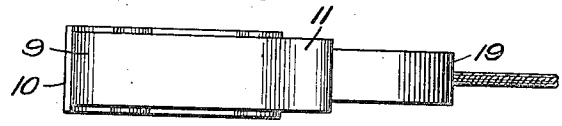



Fig. 2.

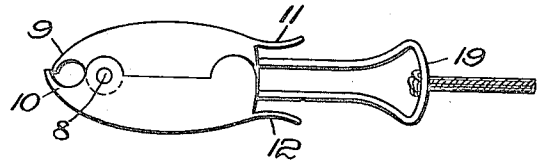
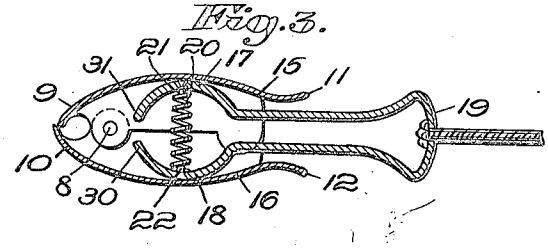



Fig. 3.




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# UNITED STATES PATENT OFFICE.

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## CLAMP.

Application filed April 25, 1921. Serial No. 464,169.

*To all whom it may concern:*

Be it known that I, AMOS W. WARNOCK, a citizen of the United States, and resident of Everett, in the county of Middlesex and State of Massachusetts, have invented an Improvement in Clamps, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention pertains to improvements in clamps, and more particularly, though not exclusively, to improvements in clamps for use in stretching leather on frames for drying and the like.

It is among the objects of the invention to provide a clamp of superior holding power which is easily operated and of simple and inexpensive construction.

The invention illustrated in the present application is a simplification and improvement of that shown in my copending application, Serial No. 458,454, filed April 4, 1921.

In the drawings, which show a preferred embodiment of one form of my invention:—

Figure 1 is a plan view of a clamp;

Fig. 2 is a side elevation of the clamp illustrated in Fig. 1; and

Fig. 3 is a section on the line 3—3 of Fig. 1; being partly in elevation.

Referring to the drawings and to the preferred form of my invention selected for illustrative purposes, I have shown a clamp including levers fulcrumed at 8 and providing jaw portions 9 and 10 and handle portions 11, 12. The levers may be stamped from sheet metal to provide lateral stiffening flanges and to provide central cam surfaces 15, 16 at the top and bottom of the clamp. Cooperating with the cam surfaces 15, 16, I preferably provide, as illustrated, suitable wedge means typified by the wedge surfaces 17, 18 connected to and preferably unitary with a tension member 19 extending into the interior of the clamp proper between the handle portions 11, 12. The tension member 19 may be of sheet metal and adapted to provide inherent resiliency adapted to urge the handle portions 11, 12 apart and therefore to actuate closing movement of the jaws 9, 10. The inherent resiliency of the tension portion 19 may conveniently be provided or supplemented by a spring 20 between the opposite sides thereof at its inner end. This spring may be conveniently held in position by bosses 21, 22 pressed inwardly from the metal of which the tension member is formed, the spring 20 urging the opposite sides of the tension member into engagement with the inner faces of the levers.

The inclination of the cam surfaces 15, 16 is preferably sufficient so that when the handle portions 11, 12 are pressed together the tension member will move forwardly, when there is little if any tension on the device, further pressure between the handle portions 11, 12 resulting in compression of the inner end of the tension member and in compression of the spring 20. When the device is not under tension, the clamp acts much as though no tension member 19 were provided and as though the spring 20 exerted direct pressure against the levers on the opposite side of the fulcrum 8 from the jaws 9, 10. When, however, tension is exerted on the tension member 19, the tension member will draw rearwardly relative to the levers, the initial portion of this movement resulting in pressing the opposite sides of the inner end of the tension member together until they abut, preferably at the points 30, 31, after which the wedge surfaces 17, 18, will exert considerable separating force on the corresponding ends of the clamp levers, this force being translated into leather gripping or clamping force of the jaws 9, 10.

The preferred form of clamp illustrated is particularly useful in connection with the stretching of leather on drying frames. Where the leather is likely to shrink during the drying operation, it is not necessary to put sufficient tension on the tension device to bring the surfaces 30, 31 into contact with one another. The shrinkage of the leather pulls the fulcrumed lever portions of the clamp forwardly relative to the tension device and relative to the wedge surfaces provided thereby, thus obviating any tendency to either break the cord holding the clamp or to tear the edge of the leather where gripped by the clamp, a substantially uniform pull being exerted by the clamp and tension device notwithstanding a very considerable shrinkage of the hide during the drying operation.

In assembling the preferred form of clamp illustrated, the tension member 19 may be assembled with its spring 20 and

the levers then placed in position on each side thereof, the fulcrum pin 8 being inserted as the last step of the assembling operation. The tension member can never pull entirely out from between the levers because the distance between the opposite sides of the tension device at its point of greatest width between the levers, even when compressed so that the points 30, 31 are in contact, is greater than the maximum amount which the handle ends of the levers can separate even when there is no leather or other material between the jaws 9, 10. The wedge surfaces 17, 18 have ample bearing on the interior cam surfaces 15, 16 of the levers so that but little wear will take place after extended use. The spring 20 being carried by the tension part 19 will not interfere with the reciprocation thereof between the levers, as would a compression spring inserted between the levers themselves, and the spring 20 is much more durable and simple to assemble than any form of torsion spring wrapped about the pivot 8 and tending to actuate leather gripping movement of the jaws 9, 10.

While I have shown and described a preferred embodiment of my invention, it will be understood that changes involving omission, substitution, alteration and reversal of parts may be made without departing from the scope of my invention, which is best defined in the following claims.

Claims:

1. A clamp for gripping the edge of a hide or the like, comprising opposed pivoted lever portions, each having a jaw at one side of the pivot and each providing a cam surface at the other side of the pivot, a tension device providing wedge surfaces between said cam surfaces and spring means urging said wedge surfaces into engagement with said cam surfaces.

2. A clamp for gripping the edge of a hide or the like, comprising opposed pivoted lever portions, each having a jaw at one side of the pivot and each providing a cam surface at the other side of the pivot, a tension device providing wedge surfaces between said cam surfaces, spring means urging said wedge surfaces into engagement with said cam surfaces, and limiting means for limiting the extent of compression of said spring means.

3. A clamp for gripping the edge of a hide or the like, comprising opposed pivoted lever portions, each having a jaw at one side of the pivot and each providing a cam surface at the other side of the pivot, a tension device providing wedge surfaces between said cam surfaces, said tension device permitting increase and decrease of the effective distance between said wedge surfaces, and means for limiting such increase and decrease of the effective distance between said wedge surfaces.

4. A clamp for gripping the edge of a hide or the like, comprising opposed pivoted lever portions, each having a jaw at one side of the pivot and each providing a cam surface at the other side of the pivot, and a tension device providing opposed portions contacting with said cam surfaces and exerting resilient pressure thereon when tension is not exerted on said tension device.

5. A clamp for gripping the edge of a hide or the like, comprising opposed pivoted lever portions, each having a jaw at one side of the pivot and each providing a cam surface at the other side of the pivot, and a tension device providing opposed portions contacting with said cam surfaces and exerting resilient pressure thereon when tension is not exerted on said tension device, said opposed portions exerting nonresilient pressure on said cam surfaces when a tension greater than a predetermined amount is exerted on said tension device.

6. A clamp for gripping the edge of a hide or the like, comprising opposed lever portions, each providing lateral flanges and each providing between said flanges at one side of the pivot a work-gripping jaw, and at the other side of the pivot handle portions presenting interior surfaces sloping away from one another as they approach the pivot, and a tension member entered between said lever portions, said tension member providing opposed elements contacting with said interior sloping surfaces and a compression spring between said opposed elements.

7. A clamp for gripping the edge of a hide or the like, comprising opposed lever portions, each providing lateral flanges and each providing between said flanges at one side of the pivot a work-gripping jaw, and at the other side of the pivot handle portions presenting interior surfaces sloping away from one another as they approach the pivot, and a tension member entered between said lever portions, said tension member providing opposed elements contacting with said interior sloping surfaces and a compression spring between said opposed elements, and said opposed elements contacting pursuant to a predetermined compression of said compression spring to limit the compression thereof and provide in effect an unyielding spreading element between said interior sloping surfaces.

In testimony whereof, I have signed my name to this specification.

AMOS W. WARNOCK.