

Nov. 25, 1952

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2,619,138

STRAIGHT BEAM ADJUSTABLE JAW CAM CLAMP

Filed Oct. 7, 1949

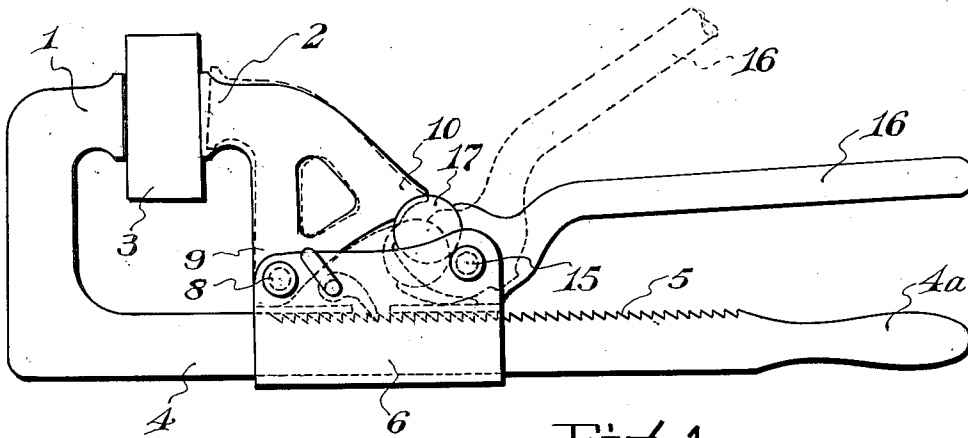


Fig. 1

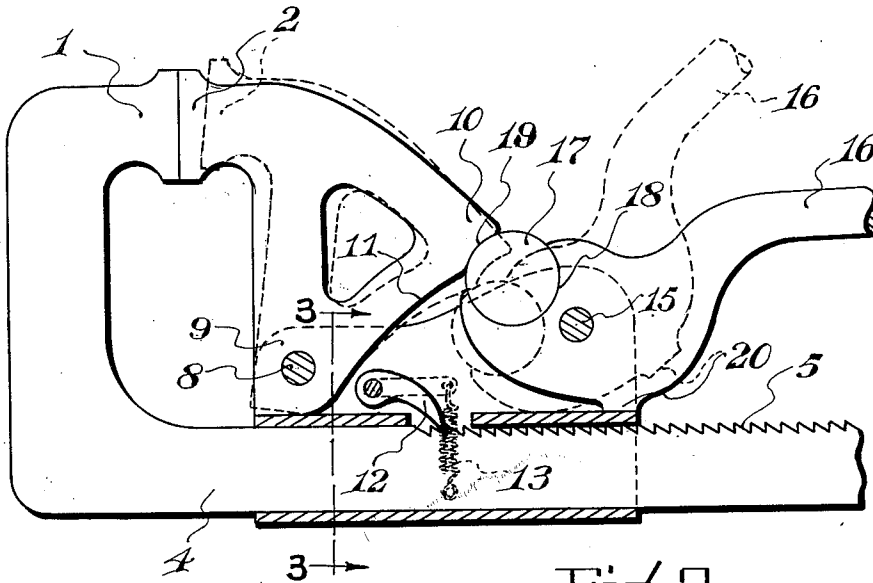


Fig. 2

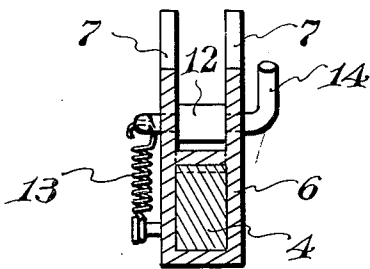


Fig. 3

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2,619,138

STRAIGHT BEAM ADJUSTABLE JAW
CAM CLAMP

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Application October 7, 1949, Serial No. 120,160

3 Claims. (Cl. 144—303)

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The invention relates to adjustable clamps of the sliding jaw type, and has for its object to provide a device of this kind wherein the sliding jaw is hingedly mounted on a sliding sleeve on the shank carried by the other jaw, and the slidable jaw provided with a pivoted lever having a cam roller cooperating with a cam surface on the outer side of the pivoted jaw, and forming means for the final clamping operation of an article between the jaws.

A further object is to provide the slidable sleeve with a ratchet cooperating with teeth on the shank for holding the sleeve against retrograde movement during the final clamping operation.

A further object is to provide the slidable sleeve with up-standing spaced flanges, between which flanges the cam lever is pivotally mounted, and to mount the cam lever roller in a recess in the cam lever. The roller is held against displacement by the shape of the bearing in the cam lever and the spaced flanges.

A further object is to provide the hinged jaw, at the end of the cam surface, with an arcuate recess, into which recess the roller moves for the final clamping operation, and for holding the pivoted lever against easy pivotal movement.

With the above and other objects in view the invention resides in the combination and arrangement of parts as hereinafter set forth, shown in the drawing, described and claimed, it being understood that changes in the precise embodiment of the invention may be made within the scope of what is claimed without departing from the spirit of the invention.

In the drawing:

Figure 1 is a side elevation of the adjustable clamp, showing an article clamped between the jaws.

Figure 2 is a vertical longitudinal sectional view through the device.

Figure 3 is a detail transverse sectional view taken on line 3—3 of Figure 2.

Referring to the drawing, the numeral 1 designates the stationary jaw, and 2 the pivoted jaw, which jaws are forced together for clamping an article 3. The stationary jaw 1 is provided with an elongated shank 4, the upper edge of the shank being provided with ratchet teeth 5. Slidably mounted on the shank 4 is an adjustable sleeve 6, which sleeve carries the mechanism hereinafter set forth.

The upper side of the sleeve 6 is provided with upwardly extending spaced flanges 7, and hingedly mounted on a transverse pin 8, between the

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flanges, is the lower corner 9 of the hinged jaw 2. Hinged jaw 2 has a rearwardly extending corner 10 which terminates to the rear of the pivotal point of the jaw and above the spaced flanges 7, as shown in Figure 2. The rear lower side of the jaw 2, between the corners 9 and 10, is provided with an arcuate cam surface 11, which curves upwardly and towards the handle end 4a of the device.

The sleeve 6 is held in adjusted position by the ratchet pawl 12, cooperating with the ratchet teeth 5, under the influence of the coiled spring 13. The ratchet is manually controlled for releasing purposes by the angularly disposed handle member 14 carried by the ratchet.

Pivotally mounted between the spaced flanges 7 on a pivot pin 15 is the clamping lever 16. Clamping lever 16 has a camming action on the cam surface 11 through the medium of a roller 17, which roller is transversely assembled in the lever 16 and in the arcuate bearing 18 in the inner end of the cam lever, and this assembling takes place before the lever is assembled between the flanges 7. Arcuate bearing 18 extends a distance greater than 180 degrees, therefore it will be seen that the bearing roller 17 will be maintained in the bearing 18 at all times.

In operation, when it is desired to clamp an object 3 between the jaws, the cam lever 16 is moved to the dotted line position shown in Figure 1, and the sleeve 6 slid towards the jaw 1, and when it approximately reaches the surface of the object 3, the handle 16 and 4a are forced together. This will cause the roller to move upwardly on the upper end of the cam surface 11 and into the arcuate depression 19 in the corner 10 of the pivoted lever 2, and at which time the centers of the roller 17, pin 15 and arcuate bearing 19 will be in the same plane, hence it will be seen that the jaw will be rigidly clamped against the object 3, and the cam lever 16 will be held against pivotal movement until considerable pressure is applied thereto. The lower side of the forward end of the cam lever 16 is provided with a limit stop 20, which stop cooperates with the upper side of the sleeve 6 so the roller will not pass upwardly out of the arcuate recess 19 after the clamping operation if too much pressure is applied.

From the above it will be seen that a quick adjusting clamping device is provided wherein the amount of pressure may be easily regulated, and a device wherein the parts can be easily manipulated incident to the roller bearing feature.

The invention having been set forth what is claimed as new and useful is:

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1. A clamping device comprising a stationary jaw, an angularly disposed shank carried by the stationary jaw, ratchet teeth on said shank, a sleeve slidably mounted on the shank, a spring actuated ratchet pawl carried by the sleeve and cooperating with the ratchet teeth, said pawl being spring biased into engagement with the ratchet teeth, a pivoted clamping jaw carried by the sleeve and cooperating with the stationary jaw, said sleeve, on the upper side thereof, being provided with spaced flanges, the lower end of said pivoted jaw being hingedly mounted between the flanges, a clamping lever hingedly mounted between the flanges to the outside of the pivoted jaw, said clamping lever having a roller mounted and captive therein and disposed between the flanges and an arcuate cam surface carried by the outer side of the pivoted jaw and with which surface the roller of the cam lever cooperates for forcing the jaws together after the final ratchet adjustment of the sleeve on the shank, the outer side of the pivoted jaw terminating in an arcuate roller recess, said recess being of the same radius as the roller.

2. A device as set forth in claim 1 wherein the roller is rotatably mounted in an arcuate bearing of over 180 degrees in the inner end of the cam lever, and disposed between the spaced flanges.

3. A clamping device comprising a stationary jaw, an angularly disposed shank carried by the stationary jaw, ratchet teeth on said shank, a sleeve slidably mounted on the shank, a spring actuated ratchet pawl carried by the sleeve and cooperating with the ratchet teeth, said pawl being spring biased into engagement with the ratchet teeth, a pivoted clamping jaw carried by the sleeve and cooperating with the stationary

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jaw, said sleeve, on the upper side thereof, being provided with spaced flanges, the lower end of said pivoted jaw being hingedly mounted between the flanges, a clamping lever hingedly mounted between the flanges to the outside of the pivoted jaw, said clamping lever having a roller mounted and captive therein and disposed between the flanges and an arcuate cam surface carried by the outer side of the pivoted jaw and with which surface the roller of the cam lever cooperates for forcing the jaws together after the final ratchet adjustment of the sleeve on the shank, an arcuate recess in the outer side of the pivoted jaw on the same radius as the radius of the roller and a stop carried by the cam lever and cooperating with the sleeve for limiting the upward movement of the roller and downward movement of the cam lever when the roller is in the arcuate recess.

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