April 10, 1962 A. SCHWARZBERGER 3,028,649

MATERIAL CLAMPS

Filed March 23, 1960

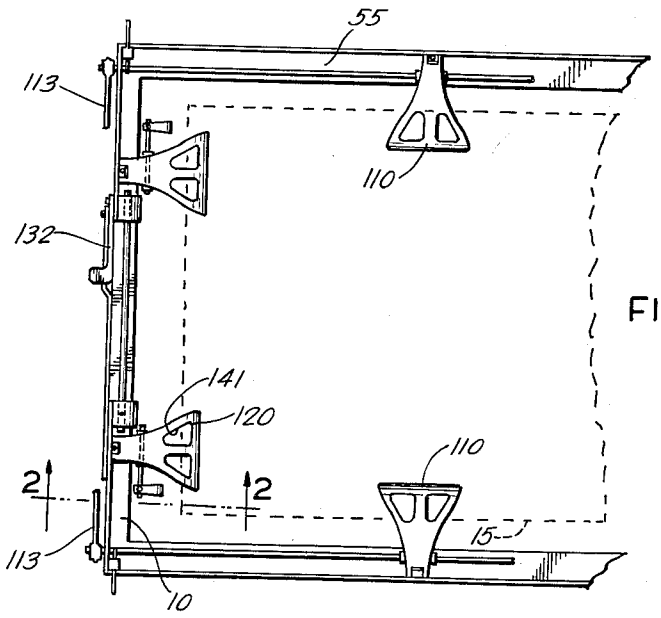


FIG. 1

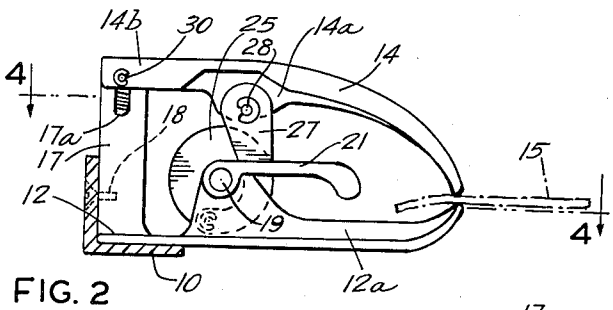


FIG. 2

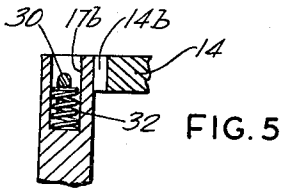


FIG. 5

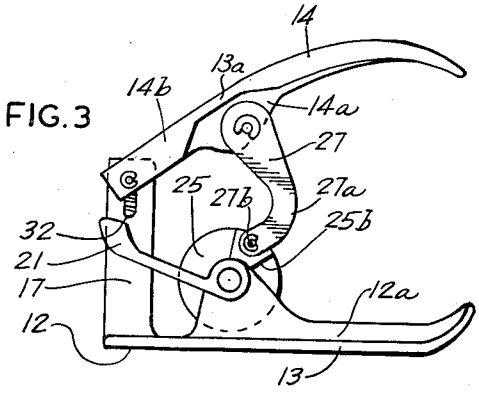


FIG. 3

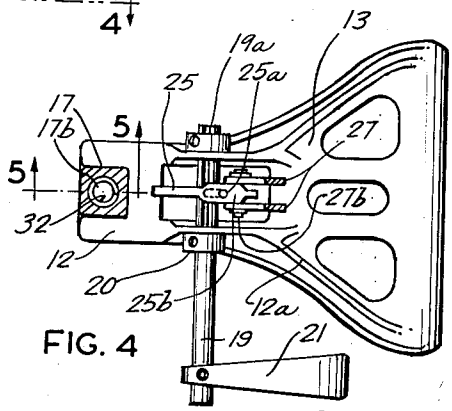


FIG. 4

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MATERIAL CLAMPS

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My invention relates to clamps for textile materials as treated in quilting machines and the like, and more particularly to clamps adapted to be carried by a frame in which the textile material is laid.

One object of the invention is to provide a clamp which is placeable along the sides and ends of the frame in which the textile material is laid, in order that such material may be gripped along the edges prior to stretching for the quilting operation.

A further object is to provide a clamp which is of unitary construction, and adapted to be operated manually.

Another object is to provide a clamp whose mechanism is designed for locking the clamp after it has obtained a grip on the textile material.

An additional object is to include a yielding factor in the novel clamp which will maintain the same in a locked position despite shocks or jars which the clamp or framework supporting it may receive.

An important object is to design a clamp of the above character which is self-contained and without projections in the region of its approach and application.

A better understanding of the invention may be had by reference to the accompanying drawing, in which

FIG. 1 is a top plan view of a portion of a clamp-supporting frame, showing illustrations of the improved clamp on the left-hand side;

FIG. 2 is an enlarged section on the line 2—2 of FIG. 1 and showing the clamp in the closed position;

FIG. 3 is a view similar to FIG. 2, showing the clamp in the open position;

FIG. 4 is a section on the line 4—4 of FIG. 2; and

FIG. 5 is a section on the line 5—5 of FIG. 4 taken in the top region of the clamp.

Referring specifically to the drawing, **10** denotes an angle bar forming part of the frame to which the novel clamp is applied. The base of the clamp is shown at **12**, the lower jaw at **13**, a top companion to the base at **13***a*, and an extension of the top to form an upper jaw at **14**. It is seen from FIGS. 1 and 4 that the clamps are fan-shaped, in order that they may gain maximum width when engaging a sheet or assembly of textile material **15** as indicated in FIG. 1. The clamp jaws are also perforated in order to lessen their weight.

FIG. 2 shows that the clamp seats in the angle of the frame bar **10**, and that the clamp has a post **17** rising in the rear to receive a bolt **18** directed from the angle bar **10** in order to secure the clamp to the same.

FIG. 4 shows that the base **12** of the clamp has dual webs **12***a* rising in the same to form bearings for a cross-shaft **19**. The latter receive collars **20** on the outer sides of the webs **12***a* in order to lock the shaft against endwise motion. One end of the shaft receives a handle **21**; and the latter may be located at a distant point, as shown in the bottom part of FIG. 1.

The shaft **19** receives a disc **25** between the webs **12***a*, the shaft having a keyway **19***a* adapted to receive a pin **25***a* from the disc **25** in order to fix the same on the shaft; and the disc has a thickened portion **25***b* extending from both sides.

The top **13***a* of the clamp has a pendent web **14***a* in the center to which are pivoted the upper ends of a pair of links **27** as shown at **28**. The links **27** are curved in rearward direction, as indicated at **27***a*; and their lower

ends apply to the sides of the thickened portion **25***b* and are pivotally connected thereto as indicated at **27***b*.

The top **13***a* of the clamp is divided at the rear with arms **14***b* which extend along opposite sides of the post **17**. The latter has vertical slots **17***a* in such sides; and a cross-pin **30** extends between the arms **14***b* in the upper ends of the slots **17***a*. The post has a cavity **17***b* from the top as seen in FIG. 5; and a compression spring **32** is lodged between the pin **30** and the bottom of the cavity.

When the clamp is open, the handle **21** thereof is swung back as shown in FIG. 3. The clamp may now receive the textile material or assembly **15** in the position indicated by dotted lines in FIG. 1. In order to clamp such material, the handle **21** is swung toward the right as seen in FIG. 3, and toward the lowered position seen in FIG. 2. During this action, the upper jaw **14** of the clamp descends into engagement with the textile material, but the action of the clamp is not completed until the handle **21** has reached the horizontal position shown in FIG. 2. As the handle approaches this position, the disc **25**—which has drawn the upper jaw **14** down and the links **27** to straddle the disc—draws on the links with a wrapping action to bring their lower pivotal connections **27***b* past dead center. This action causes the arms **14***b* of the top **13***a* to bear down on the spring **32**, so that the spring **32** serves to hold the links against retracting motion, thus keeping the clamp locked against opening from jolts or jars in the operation of the quilting machine or in the handling of the textile material.

It will now be apparent that the novel clamp is constructed in a manner to open wide, as seen in FIG. 3, in order that the textile material may be inserted therein with facility. At the same time, the mechanism of the clamp is entirely within its confines, so that outside objects may not interfere with it. Further, the handle of the clamp is apart from the clamp and may even be located at a distant point, as seen in the lower part of FIG. 1, so that nothing extends from the clamp to cause injury or annoyance when it is approached or operated. Further, the mechanism of the clamp operates with an advantageous leverage obtained by the disc **25** and the upper jaw **14** through the agency of the links **27**. Further, these close with a lateral movement augmented by their curvature to bring their bottom pivot past dead center during the final movement of the handle **21**, the gripping point oft he clamp then forming the pivot for the pull on the upper jaw to compress the spring **32**. A clamp is thus had which is compact, efficient and simple.

I claim:

1. A clamp having a base, a support rising from one end thereof, a top companion to the base and connecting at one end with a pivot to said support to extend in poised position when the clamp is open, co-acting jaws formed at the other ends of said top and base, and means for closing the top jaw in relation to the base jaw, such means comprising a cross-shaft between the top and base and journaled in the latter, a rotary member carried by the cross-shaft between the top and base, and link means between the top and said rotary member, the rotation of the shaft effective to draw on said link means and close the top jaw as stated.

2. The structure of claim 1, and said link means curving in the direction of the support toward the lower end, whereby to give the latter a lead to pass dead center when the top jaw closes.

3. The structure of claim 1, said link means curving in the direction of the support toward the lower end, whereby to give the latter a lead to pass dead center when the top jaw closes, and a spring carried by the support and yielding to down-pressure by said pivot from the pull of the link means on the movable jaw to lock

the link means against receding from past-center position.

4. The structure of claim 1, said link means curving in the direction of the support toward the lower end, whereby to give the latter a lead to pass dead center when the top jaw closes, said support being a hollow post with vertical slots in its sides, the first-named end of said top comprising arms which straddle the slotted sides of the post, the pivot comprising a cross-pin connecting the arms by way of the slots, and a vertical compression spring seating in the post and supporting said cross-pin, such spring yielding to down-pressure by the rear portion of the top jaw from the pull of the link means on such jaw to lock the same against receding from the past-center position.

5. The structure of claim 1, and a handle carried by the cross-shaft for rotating the same, such handle being spaced from one side of said top and base.

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