A. A. SPERO.

EMBROIDERY FRAME.

APPLICATION FILED AUG. 2, 1921.

1,410,964. Patented Mar. 28, 1922.

Fig. 1.

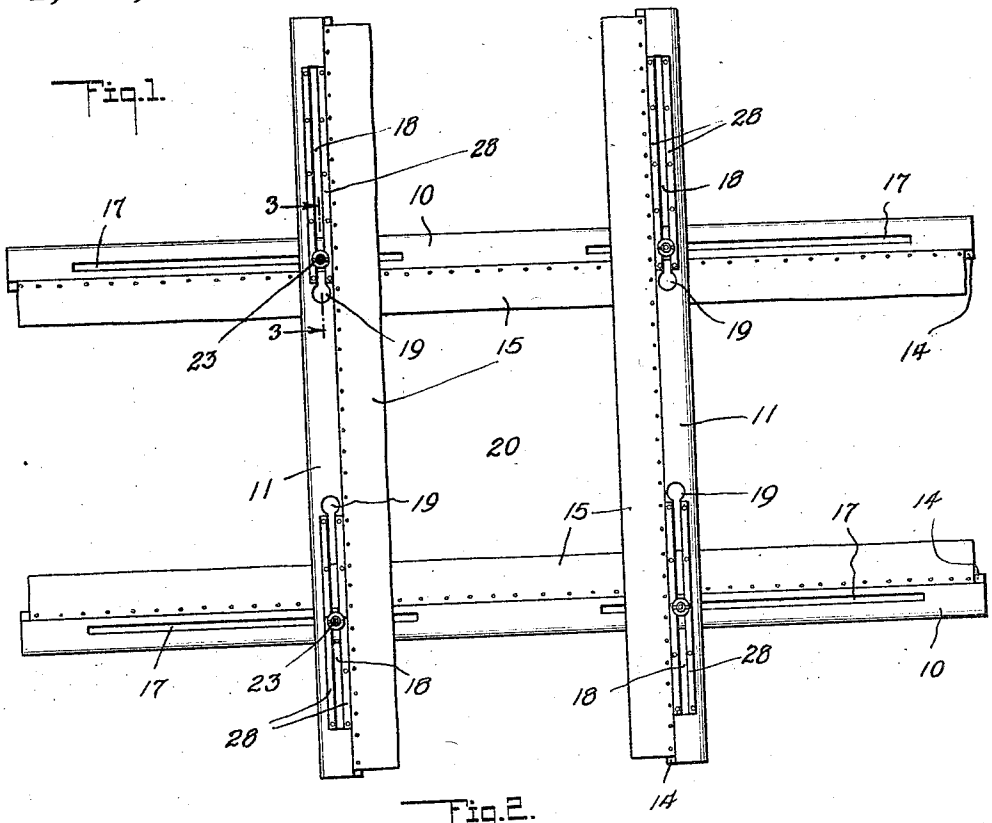



Fig. 2.

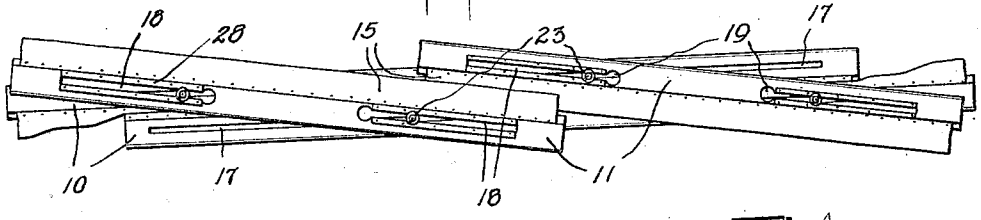



Fig. 3.

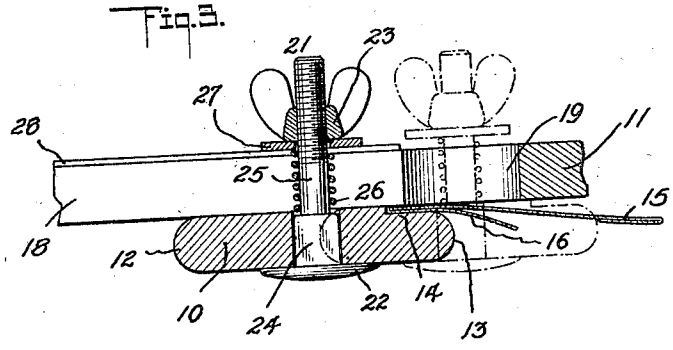
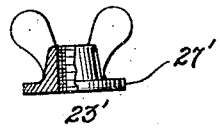



Fig. 4.




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## EMBROIDERY FRAME.

1,410,964. Specification of Letters Patent. Patented Mar. 28, 1922.

Application filed August 2, 1921. Serial No. 489,331.

*To all whom it may concern:*

Be it known that I, ANGELO A. SPERO, a citizen of the United States, residing at 300 East 101st street, New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Embroidery Frames, of which the following is a specification.

This invention relates to frames, especially frames of a collapsible nature commonly used for the making or working of embroidery, the drying or dyeing of fabrics, or the like.

Among the objects of the invention is to provide a frame embodying a plurality of frame members or bars adapted to be connected to one another at right angles or at any other desired angle and at any suitable relative length between the adjacent angles or corners.

Another object of the invention is to provide a means for attaching two adjacent bars to each other with the utmost convenience and facility, and yet providing means whereby all of the bars may be maintained connected to one another permanently if desired though they may be collapsed in form.

A still further object is to improve the means for attaching the work to the frame.

With the foregoing and other objects in view, but without restricting the invention unnecessarily as to materials, design, or the like, reference is had to the accompanying drawings, in which similar parts are referred to by like reference characters and in which—

Figure 1 is a plan view showing a preferred embodiment of the invention in assembled position.

Fig. 2 is a similar view showing the same structure folded or collapsed.

Fig. 3 is a vertical sectional detail on the line 3—3 of Fig. 1.

Fig. 4 is a detail view showing a slight modification.

Referring now more specifically to the drawings I show my improved frame as comprising two lower bars 10 and two upper bars 11 adapted to be detachably connected to one another, the lower bars being ordinarily parallel to each other, and the upper bars being likewise parallel to each other and at right angles to the lower bars. It will be understood, however, that the device is so constructed that the bars may not need to be parallel as indicated nor need the angles between the adjacent bars be right angles. These bars may be of any suitable length or dimension and they may be made of any suitable material, commonly a nice quality of wood suitable for taking a smooth and durable finish. Each bar is shown as substantially flat and with rounded parallel side edges 12 and 13. The upper portion of each bar adjacent to the edge 13 is rabbeted at 14 for the permanent attachment of a strip 15 of flexible material such as fabric to which the work may be pinned, tacked or otherwise secured temporarily while in place on the frame. The strip 15 is shown folded or doubled upon itself at 16 where it is laid into the rabbet 14 and beneath the main upper surface of the bar, so that the bar or any other object that may be positioned upon or placed to move over said upper surface will not be obstructed by the strip 15 interfering with such movement or causing damage to the strip, an item of importance considered in connection with the collapsibility of the frame as shown in Fig. 2.

Each bar 10 is formed along each end portion thereof with a slot 17, of any suitable length or location with respect to the extreme ends of the bar. These slots are preferably rectangular in cross section and connect with the upper and lower surface of the bar at right angles. Likewise the upper bar 11 is provided in each end portion with a slot 18 of a general nature similar to the slots 17 but merging at one end into an enlargement 19 of circular or cylindrical form. The cross sections of the slots 17 and 18 may be exactly the same, or if desired one may be narrower than the other. From Fig. 1 it will be noticed that any bar 10 or 11 may be adjusted longitudinally of itself in either direction because of the slots formed therein, and it may be adjusted laterally of itself and with respect to all of the other bars because of the slots in the members overlapped by the bar being adjusted. As illustrated in Fig. 1 the frame as a whole is adjusted to form an open central rectangular or square space 20 that is relatively small in dimensions, and that with adjustment of the bars outward from said center the space may be increased because of the length of the slots.

Any suitable means may be provided to connect the adjacent bars to each other, the means I prefer for this purpose being a bolt 21 adapted to pass upward through the slots in said bars. Any suitable kind of bolt may be used for this purpose, including a head 22 and a nut 23. The head 22 is preferably unusually broad and flat, coming squarely against the bottom surface of the bar 10. The shoulder 24 of the bolt is of the square type and substantially fills the slot 17 transversely so that the bolt is thereby held from rotation and yet is free to slide along the slot 17 when the nut is loose. The shank portion 25 of the bolt upward from the shoulder 24 is shown as considerably reduced in diameter for the accommodation of the spring 26 coiled therearound of an outside diameter not exceeding the width of the slot 18 along which it may glide when the nut is loose. The normal tendency of the spring is to expand or elongate so as to hold the washer 27 spaced freely above the upper surface of the bar 11, if the washer is used as shown in Fig. 3, although the nut 23′ may be provided with a broad washer-like base 27′ as shown in Fig. 4. The washer or base 27′ is wide enough to more than span the slot 18 and yet such washer and nut will pass upward freely through the enlargement 19 at the end of such slot 18 during the assembling or disassembling of the frame. The washer 27 or the base 27′ of the nut may bear squarely against the upper surface of the bar 11, but preferably I employ a pair of metal reinforcements 28 along the edges of each slot 18 as to prevent damage to or marring of the upper surface of the bars 11 because of bearing contact of the nuts or washers. The washer 27 need not be used if the nuts are wide enough to span the slots 18. Since there is no rotation of the bolts in the slots 17, and the heads 22 and the bolts are broad and flat, no washers are needed between the heads and the bars 10.

Ordinarily the bolts are never removed from the slots 17. If the frame is disassembled assemblage thereof will be effected as follows: Bars 10 with the bolts connected thereto are laid across any suitable base such as a table or chair backs at any suitable distance apart and with the nut ends of the bolts upward. The bars 11 are then laid across the bars 10, the fabric strip edges of the bars being toward the center of the space within the frame. With the bolts carried loosely in the slots 17 the operator then simply moves the bolts along the circular openings 19 while the bolts are held with their heads 22 from beneath against the bars 10. The broken lines in Fig. 3 show how the springs at this time hold the washers 27 up against the nuts in such position that the bolts may be moved relatively along the slots 18 from the openings 19 without requiring the operator to reach down into the openings to bring the washers up therethrough by the use of his fingers or some tool. In other words the operator with the fingers of one hand will grasp around the bar 10 and hold the bolt in place as described while with the other hand he will bring the upper bar 11 into proper position according to the effective size desired for the frame. When this position is reached the thumb of the hand grasping the bar 10 will be free naturally to bear upon the bar 11 holding the bars in an approximate position while with the other hand the nut will be tightened to clamp the bars as desired. The bolts need not therefore be removed from the bar 10 at any time. For ordinary purposes the frame may be folded or collapsed simply by loosening all of the nuts so as to allow the bars of each pair to come close against each other as shown in Fig. 2 and in this position the bars may be held firmly simply by tightening one or more of the nuts. Another purpose of the springs 26 is to insure a smooth action of the clamping means for adjustment of the bolts and for tightening of the nuts. They are however not stiff enough to make any material difference in the tightening of the nuts.

I claim:

1. In an adjustable frame, the combination of a plurality of bars arranged in pairs, all of said bars having bolt openings therethrough, the openings of one pair of bars being slots having enlargements at their ends, clamping members fitted permanently in one pair of bars and having nuts adapted to pass freely through said enlargements of the openings in the other pair of bars and movable thence along the slots thereof, a washer surrounding each clamping member, and a spring also surrounding the same member and acting on the washer to hold it against the nut, substantially as set forth.

2. A device as set forth in claim 1 in which the bars having the slots terminating in enlargements are provided with metal reinforcing strips along the edges of the slots to take the wear of the nuts.

3. A device as set forth in claim 1 in which the bolts are provided with square shoulders fitting slidably in slots in the bars to which the bolts are permanently attached, said bolts having reduced shanks around which the springs are fitted bearing at one end against the shoulders and at their other ends toward the nuts, the springs being movable freely along the slots of the bars having the enlargements.

In testimony whereof I affix my signature.

ANGELO A. SPERO.