Jan. 7, 1947. U. BAUMANN 2,414,010

CLIP OPENING DEVICE FOR TENTERING FRAMES

Filed July 11, 1945 2 Sheets-Sheet 1

Fig. 1.

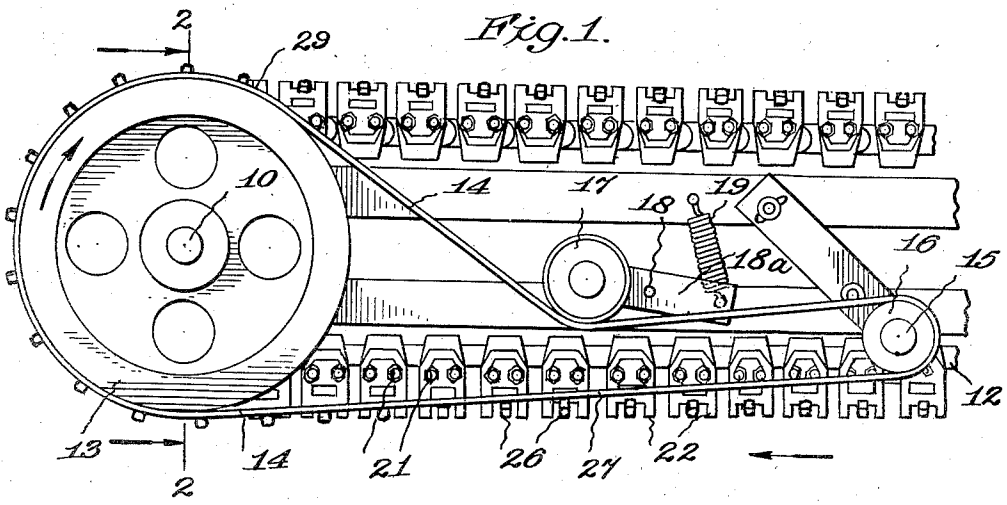
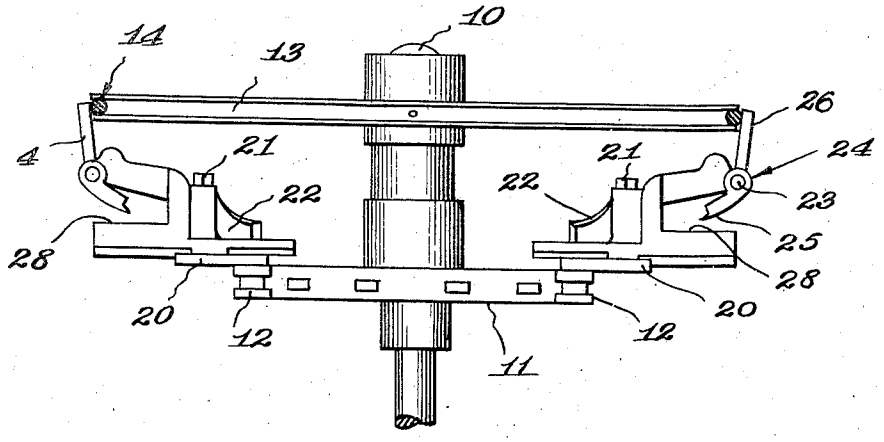


Fig. 2.



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Fig. 3.

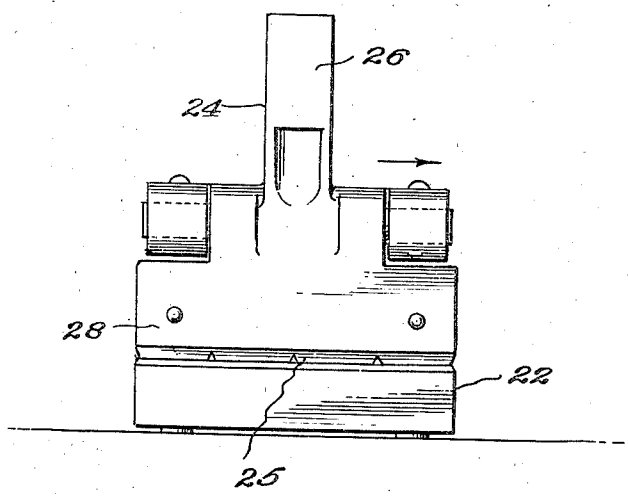
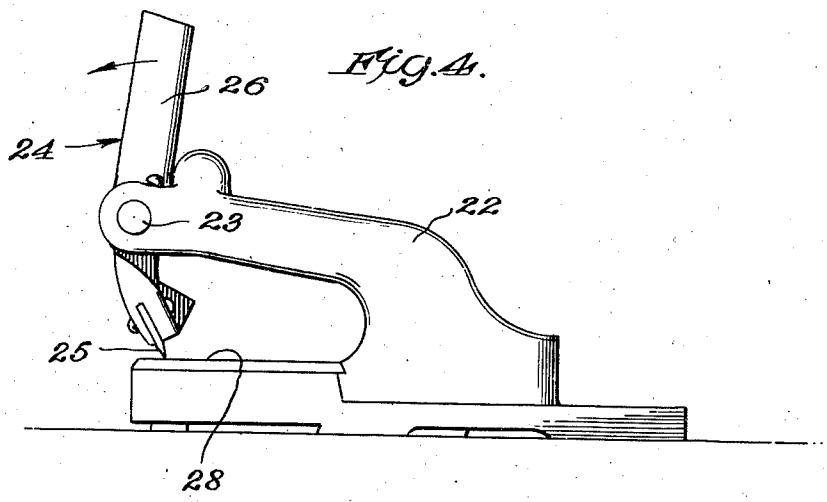


Fig. 4.



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CLIP OPENING DEVICE FOR TENTERING FRAMES

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Application July 11, 1945, Serial No. 604,431

8 Claims. (Cl. 26—61)

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This invention relates to tentering devices used in connection with fabric finishing machines, and more particularly to the means for releasing or opening the gripping clips which form a part of such tentering devices.

The means now commonly employed for opening the gripping clips comprises a stationary cam disk against which the upstanding lever arm of each of the clips is rapidly brought into contact to swing same upon its pivot for opening. This method of operating the clips has proven entirely unsatisfactory as the rapid and successive impacts between the lever arms and cam disk causes a great deal of noise and injures both the cam disk and lever arms. The damage thus caused necessitates the frequent repair or replacement of such damaged parts.

Furthermore due to the said noise and damage, the speed of the finishing machine, or the amount of fabric fed through the machine has to be kept down to a minimum.

It is an object of the present invention to overcome these undesirable features and disadvantages.

Another object is the provision of a noiseless means for gradually contacting the lever arms to operate or actuate the clip to release or open position.

A further object of the invention is to provide tentering means of the nature referred to in which the clips which are carried on a travelling endless chain or belt will be gradually opened without shock and maintained in said open position to a pre-determined point in said travel where they will become disengaged from the opening means and be allowed to assume gripping engagement with the fabric being finished.

Another object of the invention is to produce a device of the character described in which the maximum simplicity of construction and operation is secured.

Other objects and advantages will appear as the nature of the improvements is better understood, the invention consisting in the novel arrangement and co-relation of parts herein fully described, and illustrated in the accompanying drawings, wherein similar reference characters are used to describe corresponding parts throughout the several views, and then finally pointed out and specifically defined and indicated in the appended claims.

The disclosure made the basis of exemplifying the present inventive concept suggests a practical embodiment thereof, but the invention is not to be restricted to the exact details of this disclosure, and the latter, therefore, is to be understood from an illustrative rather than a restrictive standpoint.

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In a preferred embodiment of this invention it has been found desirable to affix a pulley to a rotating shaft at one end of the tentering device and provide a second but smaller pulley spaced at a convenient and desirable distance from the first pulley, then pass a belt about the said pulleys and tension same by means of a spring controlled idling roller.

The pulleys are so placed with respect to each other that one side of the surrounding belt forms an outwardly slanting line and acts as a camming surface for gradually contacting the lever arms of the on-coming gripping clips to open same and maintain them in open position for a pre-determined length of time, or until they reach a point where the opposite side of the endless belt slants inwardly towards the tensioning roller, where the contact between the belt and lever arms is broken and the clips are permitted to swing into clipping engagement with the fabric to be drawn through the machine for finishing. The same arrangement may be used for releasing the fabric when finished.

In the drawings:

Figure 1 is a plan view mostly diagrammatic of the clip actuating or operating device shown applied to one end of one side of a tentering device.

Figure 2 is a sectional view taken on line 2—2 of Figure 1.

Figure 3 is a front view of one form of clip used with the improved tentering device and

Figure 4 is a side view thereof.

Referring now to the drawings in detail 10 indicates a shaft at one end of one side of a tentering device, there being two spaced apart sides to each tentering device, between which the material to be finished is clamped. In as much as both sides of the device are alike and the ends of each side are identical only one end of one side is shown. Secured to said shaft 10 is a sprocket wheel 11 which is connected by means of a sprocket chain 12 to another similar sprocket at the opposite end not shown, the said other sprocket being driven by or from any suitable means.

The shaft 10 may have secured thereto a pulley 13 above the sprocket 11. The said pulley 13 may be grooved to receive an A type or V type belt 14. Spaced to the right of the shaft 10 as shown in Figure 1, is a short shaft or stud 15. Rotatably mounted upon the said stud 15 is a

pulley 16 which is preferably of smaller diameter than the pulley 13. The said pulley 16 is similarly grooved to the pulley 13 to accommodate the belt 14. An idler or tensioning roller or pulley 17 is carried at one end of a lever 18a pivoted at 18, the opposite end of the lever being actuated by a coiled spring 19 to draw the belt 14 tight about the pulleys 13 and 16. The upper links of the sprocket chain 12 may be provided with extensions or plates 20. Secured to each of the said extensions 20 by means of bolts 21 is a bracket 22 carrying a pivot pin or short shaft 23 upon which is pivotally mounted a clipping lever 24 provided with a lower or clipping portion 25 and an upstanding arm 26.

It will be seen by referring to Figure 1 of the drawings that the pulleys 13 and 16 are so arranged that the front or outer portion 27 of the belt 14 between the said pulleys slants outwardly from the pulley 16 to the pulley 13. The said slanting side 27 forms a moving cam, the movement being in the same direction as the movement of the sprocket chain 12 and the clipping devices 24.

It will now readily be seen that as the oncoming clips pass the pulley 16, the arms 26 will gradually and without shock engage the camming portion 27 of the belt 14 which engagement will cause the clipping member 24 to swing about its pivot 23 and become disengaged from clamping engagement with the surface 28 of the bracket 22. The clips will be held in this open position by the belt 14 which extends beyond the circumference of the pulley 13; until they reach a point 29 where the belt 14 suddenly dips downwardly towards the tensioning roller 17, thus permitting the clips to swing by gravity into clamping engagement with the surface 28 or any fabric resting thereon.

An identical clipping arrangement may be provided at the opposite end (not shown) in which position it acts to release the fabric after being finished.

From the foregoing it will be seen that the movable arrangement of the present invention in no way injures the clamping members and does not itself become injured. Furthermore with the use of the said movable camming device the speed of the machine may be increased as much as 50 per cent. With the old arrangement of a fixed camming disk the maximum amount of fabric finished was 200 yards per minute, while with the improved movable camming belt 300 yards per minute is easily finished and without injury to any of the machine parts.

What is claimed is:

1. In a tentering device including a travelling endless chain, a plurality of normally closed clamping mechanisms carried by said chain, a moving belt one side of which is obliquely disposed in the path of said clamping mechanisms so as to contact the said clamping mechanisms at a pre-determined point in the travel of same to progressively and successively open said mechanisms, and means for deflecting the opposite side of the belt as and for the purpose specified.

2. In a tentering device including a travelling endless chain, a plurality of normally closed clamping mechanisms carried by said chain, a moving belt one side of which is obliquely disposed in the path of said clamping mechanisms so as to contact the said clamping mechanisms at a pre-determined point in the travel of same to progressively and successively open said mechanisms, and to maintain the same in said open position for a further period of time, and means for deflecting said belt so that same breaks contact with the clamping mechanisms at the end of said further period of time.

3. In a tentering device including a travelling endless chain, a clamping mechanism carried by each chain link, said clamping mechanism comprising a bracket secured to the chain link, a clamping surface on the said bracket, a clamping lever pivotally mounted on said bracket, a depending end on said lever normally in clamping contact with the clamping surface of the bracket, an upstanding arm at the other end of said lever, a movable belt one side of which is obliquely disposed in the path of said clamping means so as to progressively and successively contact the upstanding arms at a predetermined point of its travel to disengage the clamping end of the lever from the clamping surface on the bracket and means for deflecting the opposite side of the belt out of the path of the clamping mechanisms for the purpose specified.

4. In a tentering device including a travelling endless chain, a clamping mechanism carried by each chain link, said clamping mechanism comprising a bracket secured to the chain link, a clamping surface on the said bracket, a clamping lever pivotally mounted on said bracket, a depending end on said lever normally in clamping contact with the clamping surface of the bracket, an upstanding arm at the other end of said lever, a movable belt one side of which is obliquely disposed in the path of said clamping means so as to progressively and successively contact the upstanding arms at a pre-determined point of its travel to disengage the clamping end of the lever from the clamping surface on the bracket, and to maintain the same in said open position for a further period of time and means for deflecting the opposite side of the belt out of the path of the clamping mechanisms for the purpose specified.

5. In a tentering device including a travelling endless chain, a clamping mechanism carried by each chain link, said clamping mechanism comprising a bracket secured to the chain link, a clamping surface on the said bracket, a clamping lever pivotally mounted on said bracket, a depending end on said lever normally in clamping contact with the clamping surface of the bracket, an upstanding arm at the other end of said lever, and a movable belt one side of which is obliquely disposed in the path of the clamping means forming an outwardly slanting area to progressively and successively contact the upstanding arms at a pre-determined point of its travel to disengage the clamping end of the lever from the clamping surface on the bracket, and to maintain the same in said open position for a further period of time, at which time contact is broken between the belt and upstanding arms to permit the clamping end to close against the clamping surface of the bracket by the action of gravity.

6. In a tentering device including a travelling endless chain, a clamping mechanism carried by each chain link, said clamping mechanism comprising a bracket secured to the chain link, a clamping surface on the said bracket, a clamping lever pivotally mounted on said bracket, a depending end on said lever normally in clamping contact with the clamping surface of the bracket, an upstanding arm at the other end of said lever, and a movable belt, one side of which is obliquely disposed in the path of said clamping mechanisms and forming an outwardly slanting area

commencing at a pre-determined point of the travel of said clamping mechanisms to progressively and successively contact the upstanding arms to disengage the clamping ends of the levers from the clamping surfaces on the brackets and maintain same in open position for a pre-determined period.

7. In a tentering device including a travelling endless chain, a clamping mechanism carried by each chain link, said clamping mechanism comprising a bracket secured to the chain link, a clamping surface on the said bracket, a clamping lever pivotally mounted on said bracket, a depending end on said lever normally in clamping contact with the clamping surface of the bracket, an upstanding arm at the other end of said lever, a movable belt, one side of which is obliquely disposed in the path of the clamping mechanisms and forming an outwardly slanting area commencing at a pre-determined point of the travel of said clamping mechanisms to progressively and successively contact the upstanding arms to disengage the clamping ends of the levers from the clamping surfaces on the brackets and maintain same in open position for a pre-determined period and means for producing an inwardly slanting area on the said belt for breaking contact between the belt and lever arms to permit the clamping end to close against the clamping surface of the bracket by the action of gravity.

8. In a tentering device, a shaft, a sprocket wheel secured to said shaft, an endless travelling chain for rotating said sprocket wheel and shaft, a bracket secured to each chain link, a clamping surface on the said bracket, a clamping lever pivotally mounted on said bracket, a depending end on said lever normally in clamping contact with the clamping surface of the bracket, an upstanding arm at the other end of said lever, a pulley secured to the shaft, a second rotatable pulley spaced inwardly of the first mentioned pulley, a belt encircling said pulley, an outwardly slanting area on the said belt intermediate and at one side of the pulleys, a tensioning device to form a downwardly slanting area on the belt at the other side of the pulleys, outwardly slanting area on the belt being adapted to progressively and successively contact the upstanding arms to disengage the clamping ends of the levers from the clamping surfaces on the brackets and maintain same in open position for a pre-determined period and the downwardly sloping area of the belt being adapted to cause a break in the contact between the belt and upstanding arms to permit the clamping ends of the levers to be closed by gravity against the clamping surfaces on the brackets.

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