Feb. 28, 1956 J. DUNGLER 2,736,082

CLOTH ENGAGING MEANS

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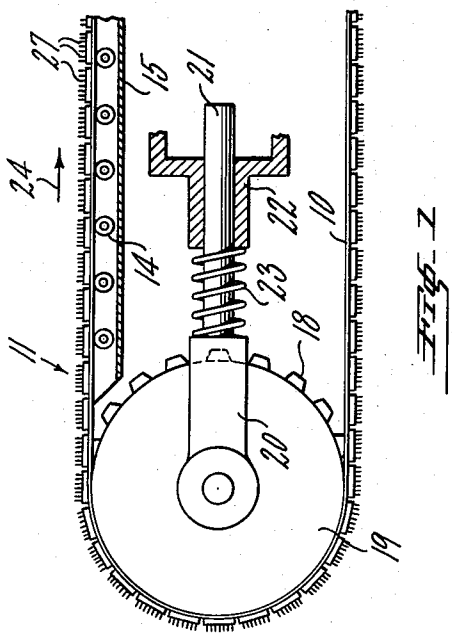


Fig. 1

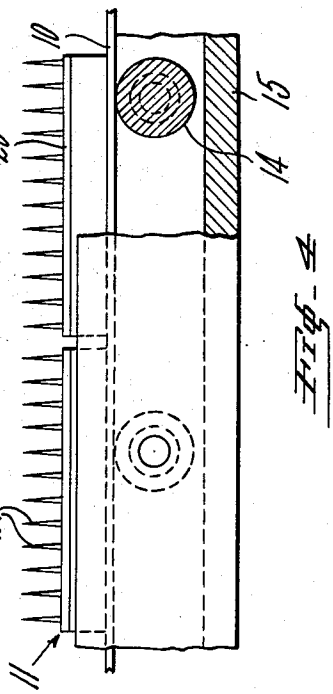


Fig. 4

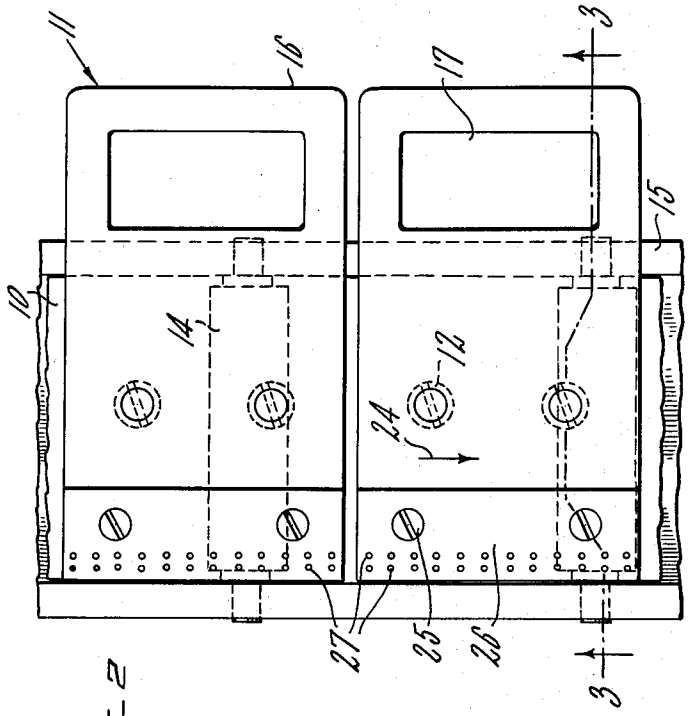


Fig. 2

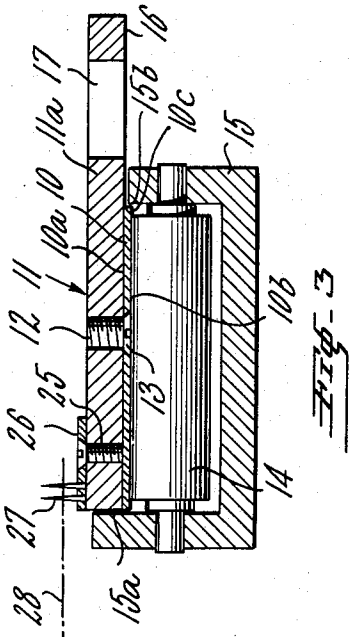


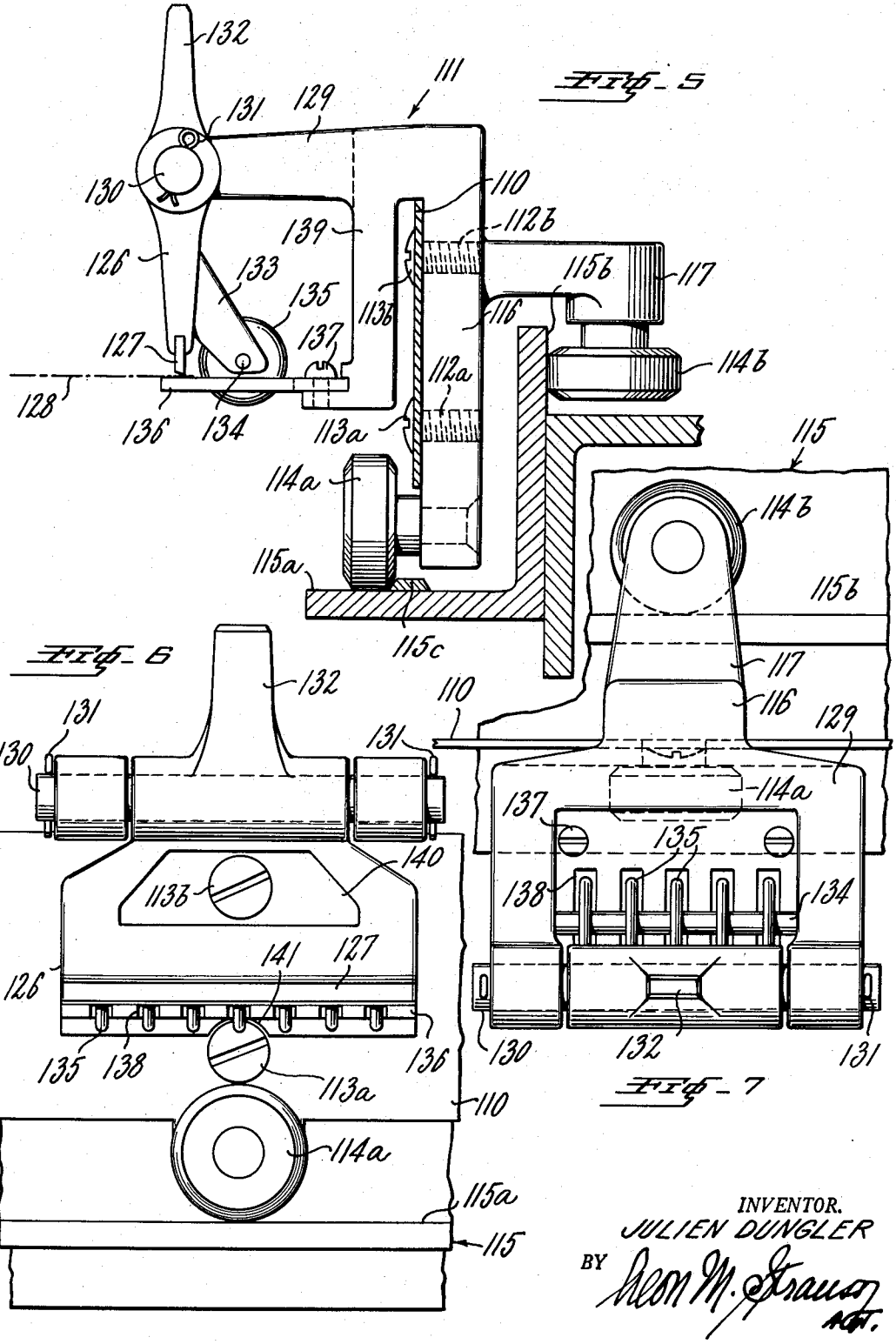
Fig. 3

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CLOTH ENGAGING MEANS

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6 Claims. (Cl. 26—61)

The present invention relates to cloth engaging means or devices for tentering and like machines in which the selvedge of the fabric, cloth and the like is engaged to travel along a predetermined path, e. g. through a treatment plant. For this purpose a number of such devices are arranged on endless carriers and extend alongside each of the selvedges of the fabric.

It is one of the objects of the present invention to provide means enabling uniform exposure of flexible band carriers, in particular steel bands, to the influence of an atmosphere of varying temperatures (as where the band over a portion of its path passes through a treatment chamber filled with hot fluids or vapors), which has the tendency to create stresses and other undesirable influences on the band.

It is another feature of the invention to provide means affording ready inspection of those areas of the band carrier immediately surrounding the points of fixation of the band with the cloth engaging devices for which rivets, screw bolts or like attachments are used.

Still another object of the invention is to provide means ensuring efficient and uninterrupted operation of tentering machines and like plants and avoiding damage or lesions to the band carrier.

It is still a further object of the present invention to provide means reducing the time of surveillance of the tentering and like machines to a minimum.

More particularly, it is a further object of this invention to provide means facilitating attachment of one or a series of cloth engaging devices on a flexible or band carrier in such manner that the body of each device makes contact with only one of the faces of the band carrier.

It is still another object of the invention to provide means rendering possible the assembly of a series of cloth engaging means, such as pins, clips, etc. on one surface of an endless flexible carrier, and the placement and location of the unobstructed and freely accessible area of the opposite surface of the band or carrier on guide means, such as rollers, for guidance and support thereon.

These and other objects of the invention will become more apparent from the following description of some embodiments of the invention, reference being had to the accompanying drawings in which:

Fig. 1 is a side elevation view of a part of a steel band carrier engaged by a driving end sprocket therefor, the band serving as a carrier for sets of pins devices according to the invention.

Fig. 2 is an enlarged top plan view of the band and the pins devices of Fig. 1.

Fig. 3 is a cross section taken along line 3—3 of Fig. 2.

Fig. 4 is an enlarged side elevation of the band and the pins devices shown in Fig. 1.

Fig. 5 is a side elevation of another form of cloth engaging device mounted on a steel band or tape in accordance with the present invention.

Fig. 6 is a front elevational view of Fig. 5, and

Fig. 7 is a top plan view of Figs. 5 and 6.

Referring now more particularly to Figs. 1 to 4, there

is shown an endless steel tape or band **10** serving as a carrier for a large number of spaced apart cloth engaging devices, such as pin supports **11**, which are closely spaced along the outer face **10***a* of the horizontally extending band **10** and are secured thereto by means of screws **12**. The heads **13** of the screws **12** are countersunk so as to be flush with the underface **10***b* of the band **10** which is enabled by means of its supporting plate **11***a* to pass along U-shaped guideway **15** at **15***a*, **15***b* over a set of guide rollers **14**, the latter being journaled in said angular guideway **15** extending below the upper run of the band **10**.

Each of the supporting plates **11***a* is formed with a lug **16** integral with and projecting beyond the edge of guide edge **10***c* of the band **10** and provided with suitable apertures **17**, these apertures mating with teeth **18** of a sprocket wheel **19** which is rotatably journaled in a bracket **20**. The bracket **20** is carried on an extremity of an arm **21** which is slidably mounted in a stationary support **22**, a coil spring **23** being inserted between the bracket and the support tending to displace the sprocket **19** toward the left (as viewed in Fig. 1), thereby tensioning the band **10** against a similar wheel (not shown) mounted opposite wheel **19**. It will be understood that the sprocket wheel **19** and/or its companion wheel may be driven to impart motion to the band **10** and, thereby, to the devices **11**, as indicated by the arrow **24** in Figs. 1, 2 and 4.

Secured by means of screws **25** to the body of each of the supports **11** is a strip **26** having embedded therein two rows of upstanding, tapering pins **27**; the points of these pins project above the strip **26** for a sufficient distance to enable these pins to grip the selvedge of a piece of fabric, indicated schematically at **28**, while these devices traverse the upper run of the band **10**. The pins **27** representing cloth engaging means advance with the fabric **28** together with their supports **11** which are in unilateral contact with and mounted on the carrier **10**; it will also be seen that the lugs **16** with their apertures **17** effectively form the links of a sprocket chain engaged by the wheel **19**.

It will be further recognized that the cloth engaging means **27** are disposed at one side of band **10**, whereas apertures **17** are arranged at the opposite side of band **10**, although both are positioned at one and the same face **10***a* of the band carrier.

Rollers **14** are disposed in a plane positioned substantially intermediate the plane in which said pins **27** and the plane in which apertures **17** extend.

Either or both of the sprockets associated with the band **10**, such as the wheel **19**, may be positively driven either continuously or intermittently by some independent drive mechanism (not shown).

Referring now to Figs. 5 to 7, there is shown a steel ribbon or band **110** arranged edgewise, so that the faces of which extend in vertical direction.

A set of clip devices **111**, of which only one has been shown, is secured to the band **110**, the clips being spaced therealong essentially in the manner indicated in Fig. 1 with respect to device **11**. Each clip **111** comprises a vertical arm **116** which is in contact with the band **110** and secured thereto only to one face of this band by means of screws **112***a*, **112***b* having heads **113***a*, **113***b*.

A stationary support **115** provides a track for the band **110** somewhat below the latter and to the rear thereof. The support **115** has a horizontal bearing surface **115***a* with guide element **115***c* facing the band **110** and a vertical bearing surface **115***b* remote from this band. A vertical roller **114***a*, journaled in the lower part of arm **116**, bears upon the surface **115***a* while a horizontal roller **114***b*, journaled in a projection **117** extending rearwardly from the arm **116**, bears upon the surface **115***b*. Since the center of gravity of the device **111** is located forwardly of the band **110** (to the left thereof as viewed in Fig. 5),

and also at least slightly forwardly of the roller **114***a*, the engagement of these rollers with the associated bearing surfaces will stabilize the device in the position shown.

The cloth engaging means of the device **111** is a clip of any suitable construction. It includes a blade **127** extending along the lower edge of a lever **126** which is pivoted in a bifurcate forward extension **129** of the arm **116**, the pivot being constituted by pin **130** the ends of which are traversed by cotter pins **131**. The lever **126** terminates at the top in a finger piece **132** and also has two downwardly slanting, rearwardly extending side arms **133** between which extends a shaft **134** carrying a set of disks **135**. A depending lug **139** integral with the extension **129**, positioned forwardly of the band **110**, carries a horizontal contact plate **136** which is fastened thereto by screws **137** and which is provided with a plurality of slots **138** receiving the disks **135**, the latter projecting through these slots whenever the fabric **128**, designed to be engaged by the clip, is sufficiently withdrawn that only its selvedge remains between the plate **136** and the blade **127**. In this position the weight of the disks **135** combines with the pull of the fabric **128** to bind the latter between the lever **126** and the plate **136**, this being the position illustrated in Fig. 5.

The lever **126** is provided with a cutout or window **140** aligned with a similar window in the lug **139**, thereby giving access to the head **113***b* of screw **112***b*; access to the head **113***a* of screw **112***a* is gained through an arcuate recess **141** provided at the underside of lug **139**. Both of these measures enable the area surrounding these bolts to be observed and inspected at all times without necessitating removal of the clip device **111** from the band **110**.

The arms **116** of all the clip devices **111**, mounted in close succession on the band **110**, effectively constitute the teeth of a bendable or flexible rack adapted to mate with the teeth of a sprocket or gear wheel similar to wheel **19** of Fig. 1, for the purpose of tensioning and, if desired, advancing the band **110** and the devices **111** as previously indicated.

It will thus be seen that in the embodiment of Figs. 5–7, the clip device **111** (through its arm **116**) is in contact with but one of the faces of the carrier **110** which enables the cloth engaging parts **127**, **136** to travel with the fabric **128**. It may be mentioned that at a point where the band **110** approaches the end of its loop, means for releasing the selvedge of the cloth **128** from the grip of the clip parts **127**, **136**, are provided (not shown) operating to pivot the finger piece **132** to lift the blade **127** from the plate **136**.

It is to be understood that the embodiments described hereinabove and shown in the drawing have been given merely for purposes of illustration and not as a limitation on the scope of the invention which is capable of various adaptations and modifications without exceeding its scope as defined in the appended claims.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent, is:

1. The combination, with a movable steel band, of tentering clip devices including cloth engaging means spaced from one of the faces of said steel band, and a support for said cloth engaging means, said support being in contact with only the other of the faces of said steel band, and fastening means securing said support to said steel band, said support being provided with an extension overlying but spaced from said one of said band faces, said fastening means comprising at least one screw bolt, said extension being provided with a cutout giving access to said screw bolt.

2. The combination according to claim 1, wherein said steel band and said extension are vertically disposed, said cloth engaging means including a horizontal plate secured to the lower end of said extension and projecting forwardly of said steel band.

3. The combination, in a tentering and like cloth treating machine, of a substantially flat and flexible band carrier, of cloth engaging means, supporting means for said cloth engaging means fixed to and in contact with one surface only of said carrier, actuatable means disposed on said supporting means and above said carrier to facilitate movement of said carrier and said cloth engaging means, and guide means positioned in a plane substantially intermediate that of said cloth engaging means and that of said actuatable means.

4. In a tenter clip structure having a clip plate; a substantially flat and flexible band carrier having opposite surfaces, said band carrier extending perpendicular to said clip plate and spaced therefrom, an arm forming part of said clip structure and in contact with one of said surfaces of said carrier, a plurality of spaced roller means supporting said arm, the exis of one of said roller means being substantially perpendicular to the axis of another of said roller means, whereby said band carrier is positioned intermediate said roller means, and guide means for said roller means and maintaining said band carrier substantially in upright position with respect to said clip plate, said arm extending over said band carrier and being provided with a lug spaced from the other surface of said band carrier and supporting said clip plate, said arm forming a tooth facilitating movement of said band carrier.

5. Means for carrrying cloth engageable elements for tenter machines; comprising a substantially flat steel band, means supporting said cloth engageable elements in spaced relation to said steel band, said supporting means being attached to and in contact with one surface only of said steel band, roller guide means for carrying said supporting means, and operable means forming part of said supporting means and facilitating movement of said steel band by said guide means, said operable means being positioned at a level at least partly above said steel band and above that of at least some of said roller guide means, each of said latter roller guide means rotating about an axis extending in a plane below that in which said steel band is positioned.

6. Means for carrying cloth engageable elements according to claim 5, wherein a base plate forms a part of said cloth engageable elements, said base plate extending in a direction perpendicular to that of said steel band.

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