

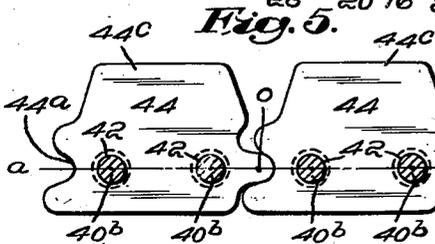
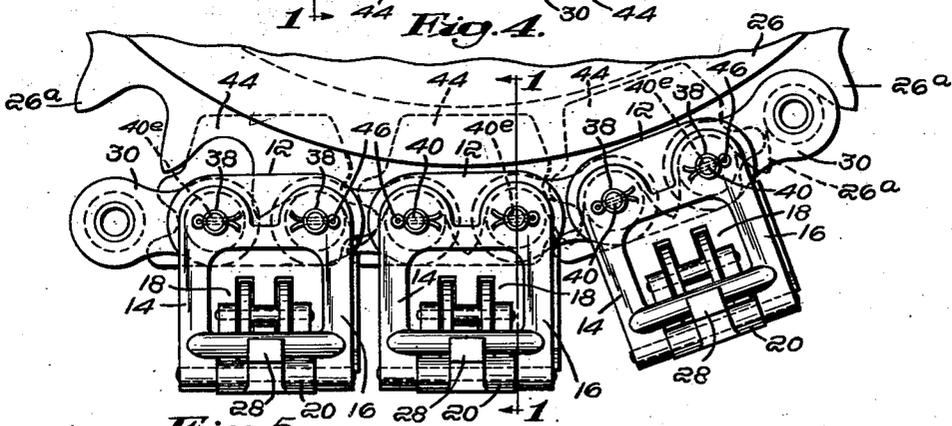
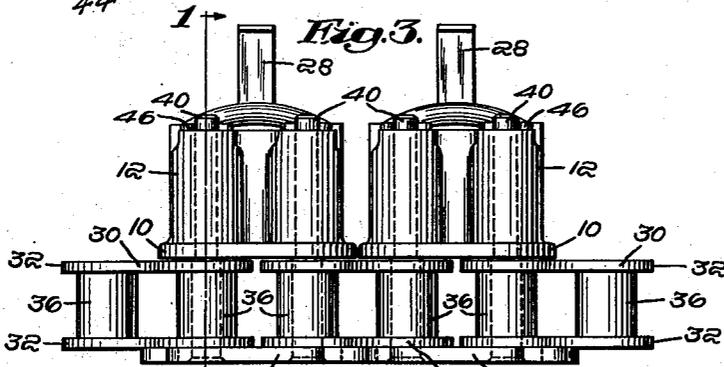
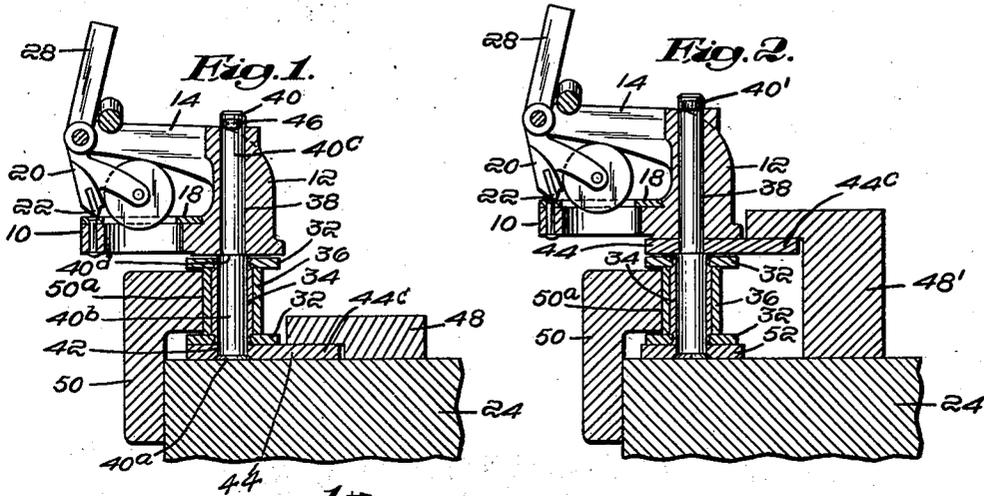
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TENTER CHAIN

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TENTER CHAIN

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This invention relates to improvements in tenter chains. More especially it has to do with that type of tenter chain which comprises a series of tenter clips combined with roller links. The particular improvement herein disclosed resides in the provision of means whereby the clips are maintained in desired alignment.

A tenter chain runs around sprockets located at a considerable distance from one another on the frame of a tenting machine. Between the sprockets the chain travels along an extended rail. There are two sets of rails, sprockets and chains on each tenter frame. The strip of cloth being processed is gripped along its opposite edges by the tenter clips and is gradually stretched sidewise as the rails diverge toward the discharge end. It is highly important that the clips as a whole be maintained in substantial alignment as they move with the cloth, in order that their pull on the cloth shall be as nearly uniform as possible. If the chain is permitted to "whip," as it were, thus allowing relative displacement between clips, the effect on the cloth is most undesirable. With clips mounted on or attached to an ordinary roller chain, this matter of whip has been quite objectionable because the usual link arrangement of such a chain is characteristically very flexible.

It is a principal object of my invention to provide a form of connection for the roller links which will enable tenter clips to be associated therewith and still be maintained in substantial alignment so long as the clips are engaged with the cloth being processed.

The best mode in which I have contemplated applying the principles of my invention is disclosed in the accompanying drawing, but it is to be deemed merely illustrative because it is intended that the patent shall cover by suitable expression in the appended claims whatever features of patentable novelty exist in the invention disclosed.

In the accompanying drawing:

Figure 1 is a vertical section, taken as on line 1—1 of Figure 3, or line 1—1 of Figure 4, showing a combination of a tenter clip and roller link embodying my invention;

Figure 2 is a similar vertical section showing a modification;

Figure 3 is an elevation of two clips and associated roller links, looking as from the right in Figure 1;

Figure 4 is a plan view of a portion of my im-

proved tenter chain and a portion of a sprocket; and

Figure 5 is a plan view of a pair of my improved cam links.

Referring to the drawing, and particularly to Figure 1, the tenter clip comprises a horizontally disposed base 10, a vertically upstanding body 12 and a pair of arms 14, 16 which project sidewise from the body to overlie the base. Secured to the latter is a bearing plate 18 and pivotally mounted between the arms 14, 16 is a jaw 20 having an inserted strip 22 at its lower edge between which and the plate 18 the edge of the cloth (not shown) is gripped as the tenter chain moves along a rail 24. When the tenter chain reaches sprocket 26 at the delivery end of the rail a suitable cam (not shown) engages an upstanding arm 28 of the pivoted jaw 20 causing the latter to swing away from plate 18 and disengage the cloth.

In my preferred arrangement (shown in all figures except Figure 2) the bodies of two adjacent clips are connected together by what I shall hereinafter call roller links 30 of a roller chain. Each such roller link has a pair of plates 32 rigidly secured to spacing sleeves 34 which serve also as bearings for rollers 36. This assembly of plates, spacing sleeves and rollers, is usually pivotally connected to another roller link by a pair of connecting links secured to axle pins which extend through the spacing sleeves 34. In applying such roller links to a tenter chain, I employ, in my preferred arrangement, the tenter clip itself as one connecting link and provide a particularly shaped plate as the other connecting link, so shaped as to afford a tongue and socket arrangement which keeps the tenter chain as a whole in proper alignment as it moves with the cloth.

As perhaps best seen in Figures 1 and 3, the body 12 of the clip is provided with two vertically disposed holes 38, through which pins 40 extend down below the clip body and into holes 42 in a plate which I shall hereafter term a cam link 44. The holes 42 are countersunk to permit the lower ends 40a of the pins 42 to be spread or flared outward so as to rivet them securely to the cam link. The portion 40b of each pin between the cam links and the body of the clip is of larger diameter than the portion 40c of the pin which extends through the body of the clip, thus providing a shoulder 40d on the pin against which the clip body is held in predetermined spaced relation to the cam link. At the top of each pin a hole 40e is provided at the proper dis-

tance from the shoulder 40d to receive a cotter pin 46. When the latter is inserted in this hole, the clip body is seated tightly against the shoulder 40d.

Between a clip body and its opposed cam link is disposed the hereinbefore described roller link 30. That is, the spacing sleeve 34 at one end of a roller link encircles one of the pins 40 extending between the clip body 12 and its cam link 44, while the spacing sleeve at the opposite end of the same roller link encircles one of the pins 40 of an adjacent clip and cam plate. Thus the roller links join the tenter clips and cam links together and, by the same token, the clip bodies and cam links join the roller links together. By properly arranging the tenter chain with respect to a sprocket 26 on the tenter frame, the teeth 26a of the sprocket may engage the rollers 36 and thus drive the tenter chain as a whole. As shown herein, the longitudinal distance between the axes of all the pins 42 is the same, and sufficient evenly-spaced teeth 26a are provided on the sprocket so that each roller is engaged by a tooth, but this arrangement is not important and, if desired, roller links having a greater distance between the axes of their rollers might be employed, in which case the sprocket teeth would be arranged to enter only the extended spaces between the rollers of a roller link.

A preferred shape of the cam link is shown in Figure 5, where is also shown the pins 40 in section, with their axes (indicated by the dots) in longitudinal alignment, as along the line *a-a*. One side of the cam link is formed with a semi-circular recess 44a, its center being on the line *a-a*. At the opposite side of the cam link is a tongue 44b having a semi-circular end which fits within the recess of the next adjacent cam link. This tongue and recess arrangement permits the clips and associated parts to turn relatively with respect to one another about the axis *o* of the tongue and recess, thus readily permitting the chain to follow along with the edge of a sprocket as suggested in Figure 4. But except for this pivotal movement, the tongue and recess connection prevents any relative displacement between the cam links and hence between the tenter clips. As a result when the tenter chain is moving along the extended rail 24, and more especially when it leaves the end of this rail and traverses the short open space between it and the sprocket, the clips are maintained in substantial alignment thus providing a uniform pull on the edge of the cloth.

The extended plate-like portion 44c of each cam link is provided for engagement under a top casing member 48 attached to the rail 24. When the clips engage the cloth between the bearing plate 18 and the strip 22, the pull on the clip is toward the left as seen in Figure 1. To prevent any tilting or displacement of the clip because of this pull, the extended portion 44c of the cam link is provided for engagement with the overhanging top casing 48. At the cloth side of the rail there is a front casing 50 which projects upward above the rail and provides a vertical bearing surface 50a along which the rollers 36 roll.

In the modification shown in Figure 2, the cam link 44 is disposed between the body 12 of the clip and the upper plate 32 of the roller link. At the bottom of the pins 40', a simple flat, rectangular plate link 52 is substituted for the cam link, and this plate link receives the pins 40' which,

of course, are slightly longer in this arrangement than are the pins 40 of the other figures of the drawing. Likewise the top casing 48' extends to a greater height from the rail 24 so as to engage the plate portion 44c of the cam link. While in this modification I have shown the cam link 44 as a separate element, it is obviously within the scope of my invention to make this cam link as an integral portion of the clip body. Since the latter is usually formed as a casting, it is preferable to provide the cam link as a separate element and thus enable it to be made of more durable metal than is ordinarily used for the casting of the clip body.

I claim:

1. A tenter chain for holding cloth comprising, in combination, a series of tenter clips connected by roller links and means associated with each clip engaging corresponding means associated with adjacent clips for maintaining the tenter chain in alignment while holding the cloth and permitting relative rotational movement between the clips and links to enable the chain to engage and move with the toothed periphery of a sprocket.

2. A tenter chain for holding cloth comprising, in combination, a series of tenter clips each having a body; pins extending through said body and providing separated bearing portions below said body; a roller link mounted on each said bearing portion; and a cam link carried by said pins of each clip having a recess at one end and a tongue at the other end; the tongue of one cam link engaging an adjacent cam link in the recess thereof to thereby maintain the tenter chain in alignment while holding the cloth.

3. A tenter chain for holding cloth comprising, in combination, tenter clips each having a pair of bearing elements depending therefrom; a roller link mounted on a bearing element of one clip and on a bearing element of the next adjacent clip thereby to connect the clips together; and a cam link associated with each pair of bearing elements of each clip; adjacent cam links having a tongue and recess connection for normally maintaining the clips and roller links in alignment while the tenter chain is holding the cloth but permitting relative pivotal movement between the clips and links to permit the chain to engage and move with a sprocket.

4. A tenter chain adapted to move along a tenter rail and around a sprocket comprising a series of tenter clips pivotally connected together by intermediate roller links; a cam link associated with each of said clips having a tongue and recess engagement with adjacent cam links whereby the clips and links are maintained in alignment while the chain moves along the rail and whereby said clips and links are permitted to rotate relatively to one another to engage the sprocket.

5. A tenter chain for holding cloth comprising a series of tenter clips pivotally connected with intermediate roller links, and a cam link associated with each clip having cam surfaces at opposite ends arranged to engage corresponding cam surfaces on adjacent clips; the said cam links maintaining the tenter chain in alignment while holding the cloth and permitting relative rotational movement between the clips and links to enable the chain to engage and move with the toothed periphery of a sprocket.

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