Feb. 27, 1940. A. E. ROGERS 2,191,626

BELT TIGHTENER

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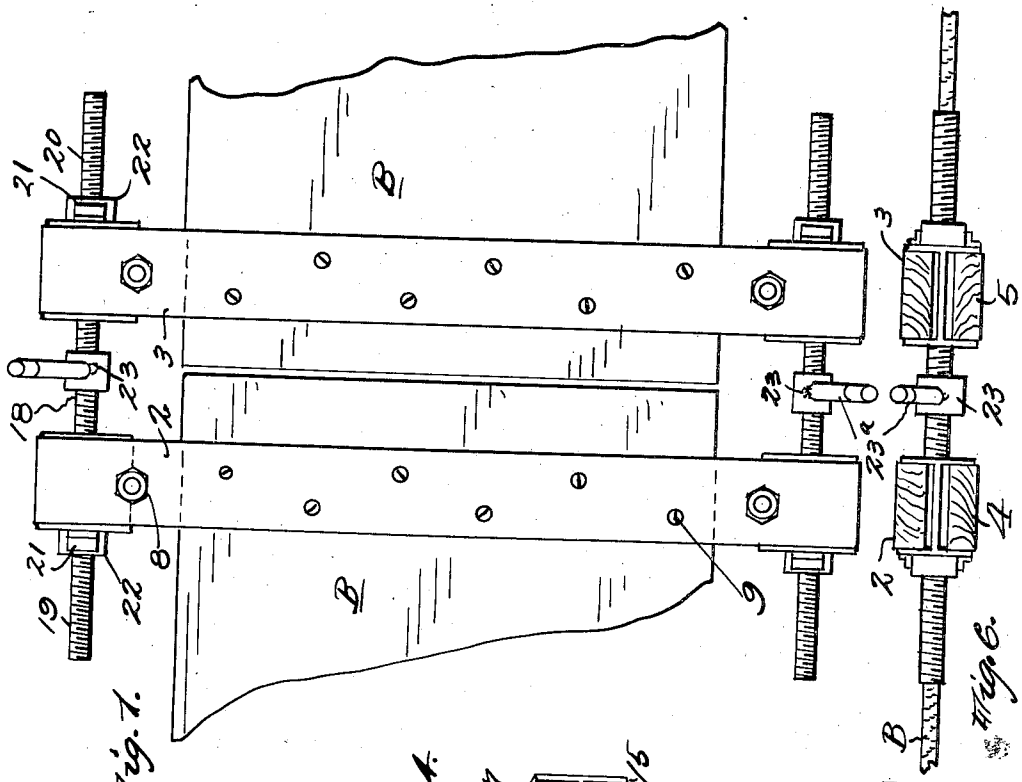


Fig. 1.

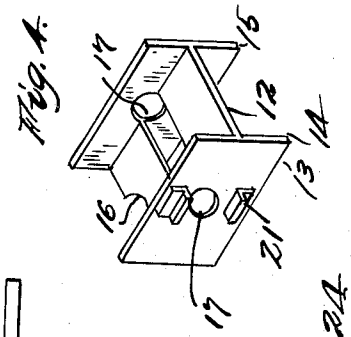


Fig. 4.

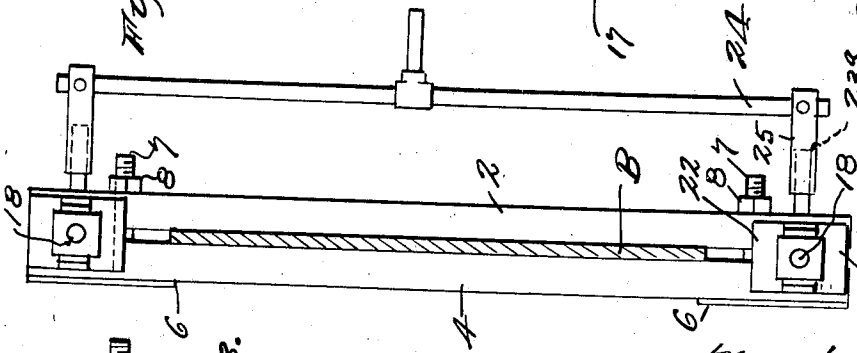


Fig. 2.

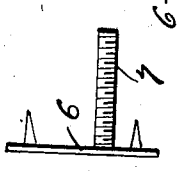


Fig. 3.

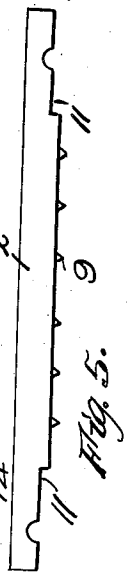


Fig. 5.

Fig. 6.

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BELT TIGHTENER

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Application September 1, 1939, Serial No. 293,087

5 Claims. (Cl. 254—54)

This invention is a belt tightener of the type used for drawing ends of a belt together for mutual connection.

A more definite name for the invention is belt end clamp and it is an object of the invention to provide a substantial, reliable, simple, low cost and easily applied, readily operated and quickly removed instrument for efficiently gripping contiguous ends of a belt, and which includes means operative with great effect for pulling the ends of heavy belts, whether rubber, canvas or any suitable combination in structure.

A further object is to provide a belt tightening clamp which is light in weight and is constructed of sets of duplicate, low-cost parts effecting inexpensive upkeep.

An additional object is to provide for the individual tension of either side of a wide belt as is often desired, and to provide also for the tensioning of the belt equally and in one operation.

The invention consists in certain advancements in this art as set forth in the ensuing disclosure and having, with the above, additional objects and advantages as hereinafter developed, and whose constructions, combinations, and subcombinations and details of means, and the manner of operation will be made manifest in the description of the herewith illustrative embodiment; it being understood that modifications, variations and adaptations may be resorted to within the spirit, scope and principle of the invention as it is more directly claimed hereinbelow. In the absence of description of kinds of material employed in the structure it is understood that materials best adapted for the functions of the parts would be selected as an expert in the art may determine.

Figure 1 is a plan of the tightener as applied to and drawing up the ends of a belt, to be joined.

Figure 2 is a side elevation; from the left side of Fig. 1.

Figure 3 is a detail of one of the anchored clamp bolts.

Figure 4 is a perspective of a two-place cradle for cross-bars of the tightener.

Figure 5 is a detail view of one of the top bars of the device.

Figure 6 is an end elevation of the applied tightener.

The tightener includes a coplanar, top pair of duplicate cross-bars 2 and 3, and a coplanar, bottom pair of duplicate cross-bars 4 and 5 which are exactly like the top bars except that the ends of the lower bars have rigidly attached fish or anchor plates 6, on their bottom faces, which have heavy stud bolts 7, each, to pass up through holes therefor in both upper and lower bars for the reception of suitable clamp nuts 8 bearing down on the top bars 2—3. Thereby the near ends of a belt B may be firmly gripped by impaling, screw-points 9, of suitable screws 10, projecting from the belt-engaging faces of the several bars.

Each of the bars has its belt-side face suitably recessed at its ends 11 to fit onto the cross-web 12, Fig. 4, of a suitable cradle 13, which is preferably formed of a suitable length of channel-iron whose side flanges 14—15 slidably fit the sides of the relative cross-bar, as bar 2 in the upper place of the cradle above the web 12, and bar 4, in the lower place of the cradle. Thus the pair of bars 2 and 4 may open or close in their cradle to receive belts of different thicknesses and of less width than the distance between the inner ends of the spaced cradles on the ends of the bars 2—4. The web of each cradle 13 contiguous to the relative stud bolt 7 is notched out, to clear the bolt, as at 16, Fig. 4.

Means are provided whereby to effect the concurrent pulling of the clamped ends of the belt together, or to permit the application of differential tension to either side of a wide belt as is sometimes needed to effect the proper stretching of the belt for its full loop-length. To this purpose each cradle 13 is bored from flange to flange and through its web as at 17 for the reception of a substantial tension rod 18 of a length to pass from one cradle to the other on one side of the belt B, Fig. 1, and each rod having its ends provided with screw-threads 19 and 20, one of right-hand pitch and the other left-hand. On the outer side of each cradle there is provided a suitable nut stop 21 to engage and retain a relative nut 22, on a contiguous end of the relative rod 18, from rotation when the rod is turned.

Thus there is a separate tension rod for each side of the belt clamp, and each rod, when properly mounted in its belt-side cradles, is operable to pull up on its side of the belt in the clamp device when the rod is turned in one direction. While the rods may be turned separately if so desired, by wrench or other means, the rods may be joined by a suitable actuator to enable them to be turned in unison in one direction to tension the belt by pulling up both its ends in one operation. The rods are here shown as provided, at about mid-length, each with a substantial ratchet wrench 23 working on a complementary tooth ring (not shown) provided on the rod. These wrenches may be manipulated individually,

as alluded to above, or they may be connected by a link 24 having slip-on sockets 25 to telescope over the ends of the wrench handles 23a.

What is claimed is:

1. A belt tightener including a pair of coplanar top bars and a pair of coplanar bottom bars, means to clamp adjacent top and bottom bars as a pair onto an interposed belt, and end flat and solid web, I-section cradles mounted between and for each clamp pair and in which ends of the bars are adjustable for reception of belts of different thicknesses.

2. The tightener of claim 1, and including belt-side rods mortised directly into the bars and having end nuts for tensioning the belt and the said nuts being interlocked with and seated in said cradles; the rods passing transversely through the flat webs of the cradles.

3. The tightener of claim 1, and screw rods mounted in threaded parts provided on the cradles and directly seated, against end shift as to and, in the bars, and relatively connected ratchet means for concurrently turning the rods for tensioning the belt; the flat webs being bored out transversely from flange to flange and the rods passing through the bores and operating to hold the cradles against end shift as to the bars.

4. In a belt tightener, a cradle device having a flat, cross-bored web with end flanges forming upper and lower places for interposed ends of a pair of clamp bars.

5. A belt tightener including a pair of tension rods having reversely threaded ends, cradles of I-section having thin, flat webs which are perforated from flange to flange and therein receive respective ends of said rods, nuts for said rods non-turnably seated on flanges of the cradles, a pair of sets of complementary clamp bars each having an end seated in a place therefor at the upper or lower channels of each cradle and said bars being mortised to fit the rods and prevent shift of the cradles and their rods endwise of the bars, and means for clamping the bars of each set onto an interposed belt.

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