E. O. FOULK.

STRETCHING DEVICE.

APPLICATION FILED FEB. 26, 1914.

1,108,732.

Patented Aug. 25, 1914.

3 SHEETS—SHEET 1.

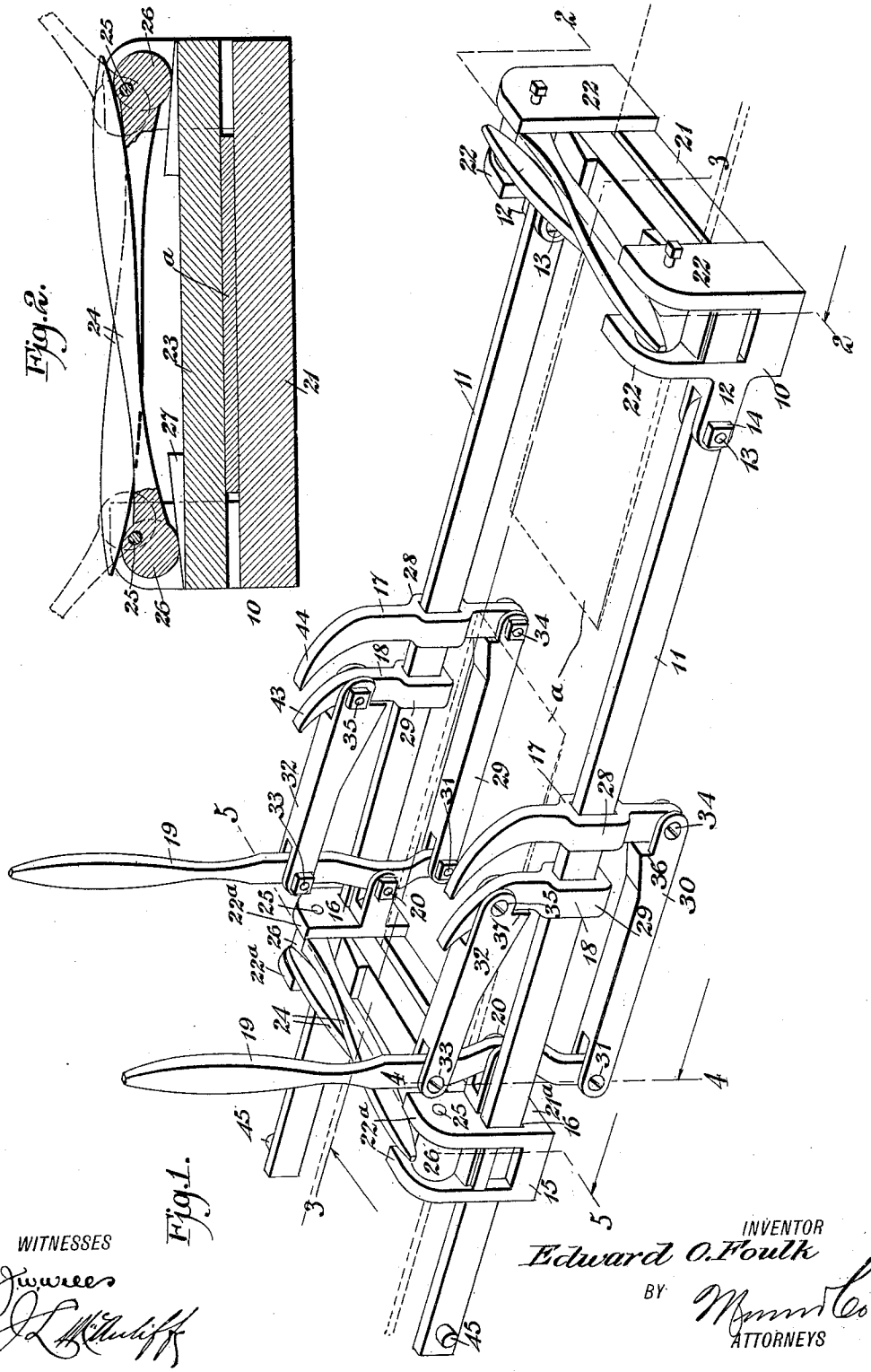

Fig. 1.

Fig. 2.

WITNESSES

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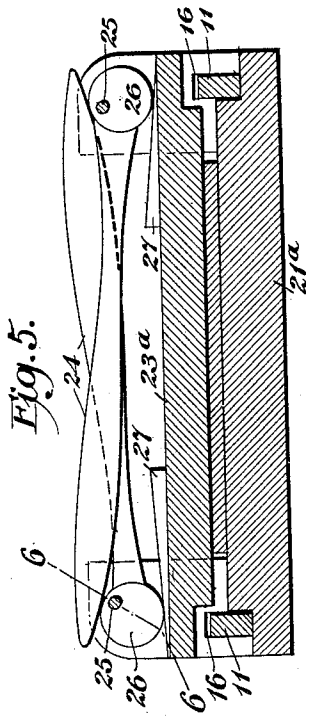

Fig. 5.

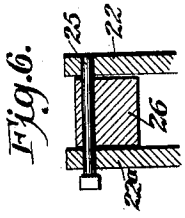

Fig. 6.

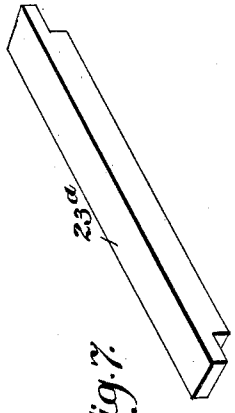

Fig. 7.

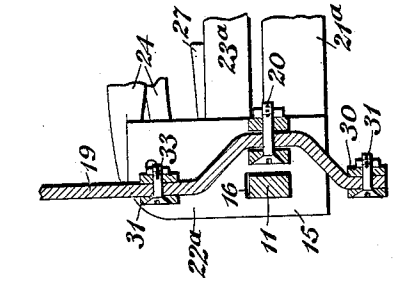

Fig. 4.

Fig. 3.

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3 SHEETS—SHEET 3.

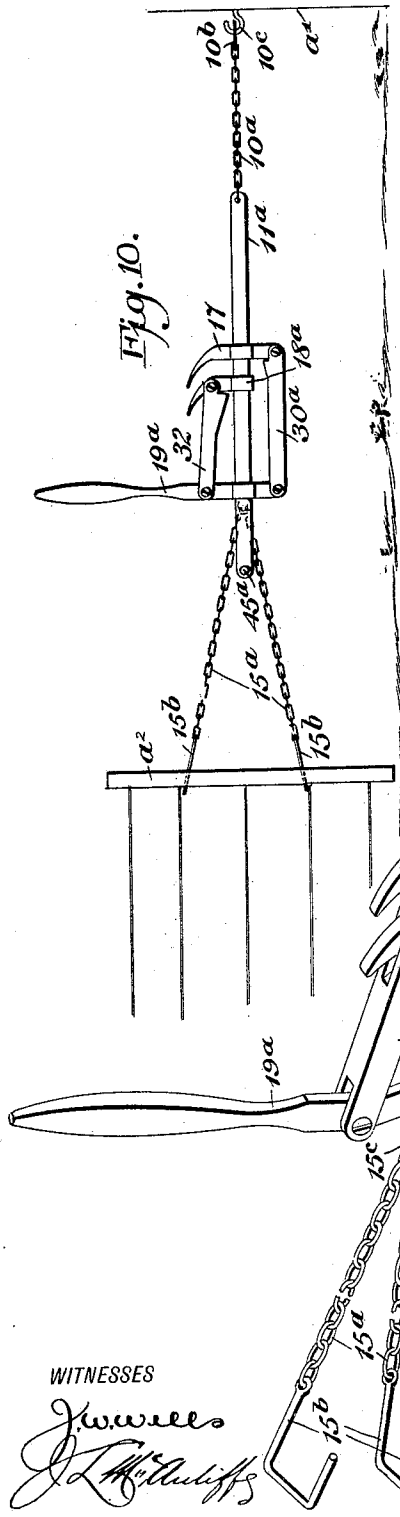

Fig. 10.

Fig. 11.

Fig. 9.

Fig. 8.

WITNESSES

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UNITED STATES PATENT OFFICE.

EDWARD OSCAR FOULK, OF PIONEER, LOUISIANA.

STRETCHING DEVICE.

1,108,732. Specification of Letters Patent. Patented Aug. 25, 1914.

Application filed February 26, 1914. Serial No. 821,282.

To all whom it may concern:

Be it known that I, EDWARD O. FOULK, a citizen of the United States, and a resident of Pioneer, in the parish of West Carroll and State of Louisiana, have invented a new and Improved Stretching Device, of which the following is a full, clear, and exact description.

My invention relates to an improved stretching means more particularly adapted for embodiment in a belt stretcher, and also useful for embodiment in a wire stretcher.

With belt stretchers of the ordinary form, the securing of the device to a belt is attended with much inconvenience and considerable expenditure of time, and ordinarily two workmen are necessary for the securing and operation of the stretcher. Moreover, the usual form of stretcher is slow in operation, and is liable to slip when under strain.

An object of my invention is to provide an improved device which, when embodied in a belt stretcher, may be quickly and conveniently applied to a belt by one man, and may be rapidly and conveniently operated to effect the desired stretching of the belt with a minimum loss of time.

The invention also has for its object to provide a stretching means possessing features that may advantageously be embodied in a simple form of wire stretcher.

The invention has also for its object to provide a stretching device improved in various particulars whereby to promote, in addition to efficiency in operation, economy of manufacture, convenience in effecting the assemblage of the parts, and simplicity of adjustment and control.

The invention resides in the various distinctive features characterizing the invention, and in the novel elements entering into the structural embodiment thereof.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a perspective view of a belt stretcher embodying my invention; Fig. 2 is a cross section on the line 2—2 of Fig. 1; Fig. 3 is a longitudinal vertical section on the line 3—3 of Fig. 1; Fig. 4 is a detail transverse vertical section on the line 4—4 of Fig. 1; Fig. 5 is a transverse vertical section on the line 5—5 of Fig. 1; Fig. 6 is a sectional detail on the line 6—6 of Fig. 5; Fig. 7 is a perspective view of one of the clamp elements included in the belt stretcher; Figs. 8 and 9 are detail longitudinal vertical sections showing the gripping dogs in different positions on the slide bar or pull bar; Fig. 10 is a side elevation of a wire stretcher constructed in accordance with my invention, showing the same in use; and Fig. 11 is a perspective view of the wire stretcher shown in Fig. 10, drawn to a larger scale.

Referring more particularly to Figs. 1 to 7, disclosing the invention as embodied in a belt stretcher, and to Figs. 8 and 9 showing details of the gripping dogs as embodied both in the belt stretcher and the wire stretcher or fence stretcher, the device comprises generally, two relatively movable structures provided with means for securing them to the belt ends so that there may be a relative movement of the one structure toward or from the other so as to draw the ends of the belt together. The one structure in the belt stretcher comprises a securing means in the form of a clamp designated generally by the numeral 10, and slide bars or pull bars 11 on which the coöperating structure has guided sliding movement. The bars 11 are pivotally secured to the clamp 10 in order that the clamp may assume different angular positions relatively to the bars in accommodating the stretcher to the relative positions of the belt ends. Thus the bars at one end are received between lugs 12 on the clamp 10, the connection being completed by bolts 13 and nuts 14.

The coöperating structure comprises a clamp designated generally by the numeral 15, having openings 16 extending therethrough, which receive the ends of the bars 11, the structure including also alternately and reversely operating gripping dogs 17, 18, slidable on the bars 11, as hereinafter more fully described, each pair of said dogs being operatively connected with a lever 19 at opposite sides of its fulcrum 20.

In the form shown, the clamps 10 and 15 are similar in essentials. Thus the clamp 10 comprises a base 21, rising from which at each end is a pair of lugs 22, the lugs of each pair being spaced apart and receiving between them a movable block or gripping jaw 23, which is loosely received at its end

between the respective pairs of lugs 22. Corresponding elements 21^a, 22^a, 23^a, are present in clamp 15, slightly modified, the base 21^a and block 23^a being rabbeted at the ends to accommodate the bars 11, and the lugs 22^a being formed with the openings 16 for said bars.

In order to exert pressure on the gripping blocks or jaws 23, 23^a of each clamp, so as to cause the belt ends *a* (Fig. 2) to be firmly clamped between the said jaws and the bases 21, 21^a, lever handles 24 are employed, pivoted by pins 25 or equivalent means to the lugs 22, 22^a, said levers being formed with cam heads or eccentrics 26 adapted to exert pressure on the jaws or blocks 23. In connection with the jaws 23 and the cam heads 26, one or more wedges 27 may be received between said jaws and the cam heads when made necessary by the thickness of the belt.

By the described arrangement of clamps it will be seen that a rocking of the lever will exert a pressure on the blocks 23, 23^a, or relieve said pressure as desired, for the gripping or release of the belt ends. It will be noted that the pivots 13 between the clamp 10 and the bars 11 constitute in effect, an articulation in the structure so that the clamp 10 may assume various angular positions relatively to the remainder of the stretcher.

Each dog 17, 18, is formed with a yoke or loop through which the bar 11 passes, these yokes being designated respectively by the numerals 28, 29. The dog 17 connects with the adjacent lever 19 by a link or connecting rod 30, which is pivoted to said lever at 31; and the dog 18 is connected with the lever by a link or connecting rod 32 pivoted to the lever as at 33, these links being disposed at opposite sides of the fulcrum of the lever. Similarly the said links are both pivotally connected with the dogs 17, 18, at opposite sides of the adjacent bar 11, that is to say, above and below said bar, as at 34, 35, respectively.

By the described arrangement of the lever and dogs, the said dogs will be alternately advanced along a bar 11 by a movement of the actuating lever 19, a forward movement of the lever in the direction of the clamp 10 advancing the dog 18 along the adjacent bar 11, and a reverse movement of the lever serving to advance the dog 17. As one dog is advanced the other will exert a gripping action on the bar 11, because each dog is caused to have a parallel movement on the bar in one movement of the lever, and is tilted to effect a gripping action in the opposite movement of the lever. The parallel movement of a dog is insured by forming on the links 30 and 32, shoulders 36, 37, said shoulders being adjacent to the pivots 34, 35, and acting as stops so that a forward movement of either link will square the yoke 28 or 29 of the advancing dog with its actuating link 30 or 32. On the other hand, when a link 30, for instance, is drawn rearwardly, the dog 17 carried thereby will be tilted. The gripping action of the dogs will be better understood from Fig. 9, in which the dog 17 is indicated as square or perpendicular with its actuating link 31, the shoulder or stop 36 of said link engaging the said dog. It will be clear that a forward movement of the link 31 will press the shoulder 36 against the dog 17, and shift the said dog longitudinally with the yoke 28 thereof parallel with the bar 11. In the same figure the link 32 and the dog 18 carried thereby are indicated in the positions they will assume when the said link is moved rearwardly, the result being that the yoke 29 will be tilted. In the tilted position and rearward movement of the dog 18, the upper rear angle 40 of the gripping yoke 29 and the diagonally opposite angle 41 at the forward lower side of said yoke, will grip the bar 11, so that the rearward movement of the link 32 and dog 18 will exert a pulling action on the bar 11, and will thus move the one clamp 10 carried thereby in the direction of the opposite clamp 15.

It will be obvious that the reverse movement of the links 31, 32, will cause a parallel movement of the dog 18 and a gripping movement of the dog 17, so that the said dog 17 will hold the bar 11 in the position to which it has been pulled by the dog 18, until the said dog 18 is again advanced toward the dog 17 and reversed to give a pulling action.

It is desirable for the convenient and rapid adjustment and operation of the stretching device, that provision be made for bringing the two dogs of each pair into proper parallel position relatively to the adjacent pull bar 11, to permit the dogs to be slid in unison along the bar without either gripping. To the desired end each dog is formed with a finger 42, 43, which are curved or inclined in the direction of the adjacent actuating lever 19. By reason of the said fingers, the dogs will engage each other when brought together as indicated in Fig. 8, and the dogs may then be freely moved in unison along the bar 11 for adjusting the dogs in any particular position along the length of the said bar.

Each bar 11 has a removable pin 45 inserted therein, which is simply utilized to prevent complete separation of the relatively movable structures. The removal of the pins will permit the bars 11 to be entirely disconnected from the clamp 15 and the dogs 17, 18.

In Figs. 10 and 11 a single pull bar or slide bar is employed in connection with a single lever and a single pair of dogs with their complement of links or connecting

rods. In this form of the invention the slide bar 11^a has a securing means which may consist of a short length chain 10^a provided with a hook 10^b adapted to engage a hook 10^c or equivalent on a post or any other fixed structure or support indicated conventionally by the line a'. The handle lever 19^a has a yoke or eye 16^a, in which the slide bar 11^a is received, so that there may be a relative movement between the said lever and the slide bar. The yoke 16^a thus constitutes the rocking point or fulcrum of the lever, the said yoke having a certain looseness for permitting the lever to rock on the bar for the operation of the dogs 17^a, 18^a, said dogs being in all respects like the corresponding elements in the belt stretcher, the dogs being connected with the lever by means of links or connecting rods 30^a, 32^a, as previously described. Since the dogs and links are the same in all respects as those first described, no further description need here be given. The slide bar is provided with a removable pin 45^a corresponding with the pins 45. To secure the lever 19^a with its complement of dogs to a fence, wire or the like, securing means consisting of short lengths of chains 15^a are provided, having any approved form of hook members 15^b. The said chains may be secured to the lever by a swivel hook 15^c secured by a transverse pin 15^d engaging one side wall of the yoke 16^a.

By the described construction of wire stretcher a relative movement is given the lever with its dogs and the bar 11^a by an alternate forward and backward rocking movement of the lever, the same as described in connection with the belt stretcher, so that the fence or the like a^2 will be drawn toward the fixed structure a'.

It will be obvious that the stretching device may be very conveniently and quickly applied to a belt, fence, or other article to be stretched, and the stretching of the article may be very expeditiously effected by the rapid rocking of the lever.

The described construction affords a practical means for carrying my invention into effect, and I would state in conclusion that I do not limit myself strictly to the mechanical details herein illustrated, since manifestly the same can be considerably varied without departing from the spirit of the invention.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A stretching device of the character described, comprising relatively movable structures, each having securing means for attaching the device in proper position relatively to the article to be stretched, one of said structures having a slide bar on which the other structure has guided movement, the said other structure having a lever, a pair of dogs slidable and rockable on the bar, and links connecting the lever and dogs, said links being pivoted to the lever at opposite sides of the fulcrum thereof, and having yokes embracing the slide bar, the said links being connected with the respective dogs at opposite ends of the latter and at opposite sides of the said bar to rock oppositely in response to the rocking of the lever, said links furthermore having shoulders adjacent to the dogs and opposite to that side of the dogs facing the lever to contact with the dogs in the forward movement of the links, the dogs being free to rock away from the shoulders upon reverse movements of the links, adjacent ends of the dogs having corresponding fingers adapted to engage and lie against each other when the dogs are brought together, for disposing the yokes of the dogs in parallel relation to each other and to the bar.

2. A stretching device comprising two relatively movable structures having securing means at opposite ends to secure said structures in proper relation to the article to be stretched, the one structure having a slide bar and the other structure having sliding guided movement on said bar and comprising a lever, a pair of dogs slidable and rockable on the bar relatively to the bar, and links connecting the lever and dogs, the links being disposed at opposite sides of the fulcrum of the lever and oppositely connected with the dogs to alternately rock the same into gripping engagement with the bar by reverse movements of the lever.

3. A stretching device of the character described, comprising two relatively movable structures having securing means at opposite ends to secure said structures in proper relation to the article to be stretched, the one structure having a pull bar, the other structure having guided movement on said bar and comprising a lever rockable relatively to the bar, a pair of dogs having yokes embracing the bar, and links connecting the lever and dogs, the links being disposed at opposite sides of the fulcrum of the lever and connected with the respective dogs at opposite sides of the yokes to alternately rock the same into gripping engagement with the bar by reverse movements of the lever.

4. In a device of the character described, two relatively movable structures having securing means at opposite ends, one of said structures having a bar and the other structure having guided movement on said bar and comprising dogs formed with loops embracing the bar, and links connecting the lever with the respective dog at opposite sides of the fulcrum of the lever, the said links having shoulders adjacent to the dogs at the sides of the latter facing the

lever to engage the dogs and dispose them perpendicularly to the bar upon forward movements of the links, the dogs being free to rock relatively to the links and shoulders upon reverse movements of the links.

5. In a device of the character described, two relatively movable structures having securing means at opposite ends to secure said structures in proper relation to the article to be stretched by a movement of the structures toward each other, the one structure having a slide bar, the other structure having guided movement on the slide bar and comprising a pair of dogs formed with yokes slidable on the bar, a lever, and links connecting the lever and dogs, the links being disposed at opposite sides of the fulcrum of the lever and connected with the dogs at opposite sides of the yokes to alternately rock the dogs into gripping engagement with the bar by reverse movements of the lever, the said dogs having adjacent ends inclined in the direction of the lever and adapted to engage each other to dispose the yokes in parallel relation.

6. In a stretching device of the character described, two relatively movable structures each comprising a clamp, the one structure having a pull bar connected with its clamp and the other structure having guided movement on said bar, said other structure comprising a clamp through which the bar extends, dogs through which the bar extends, and links connecting the dogs to the lever at opposite sides of the fulcrum of the lever to alternately rock the dogs into gripping engagement with the bar by reverse movements of the lever.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDWARD OSCAR FOULK.

Witnesses:
G. R. WININGER,
M. H. O'CONNELL.