

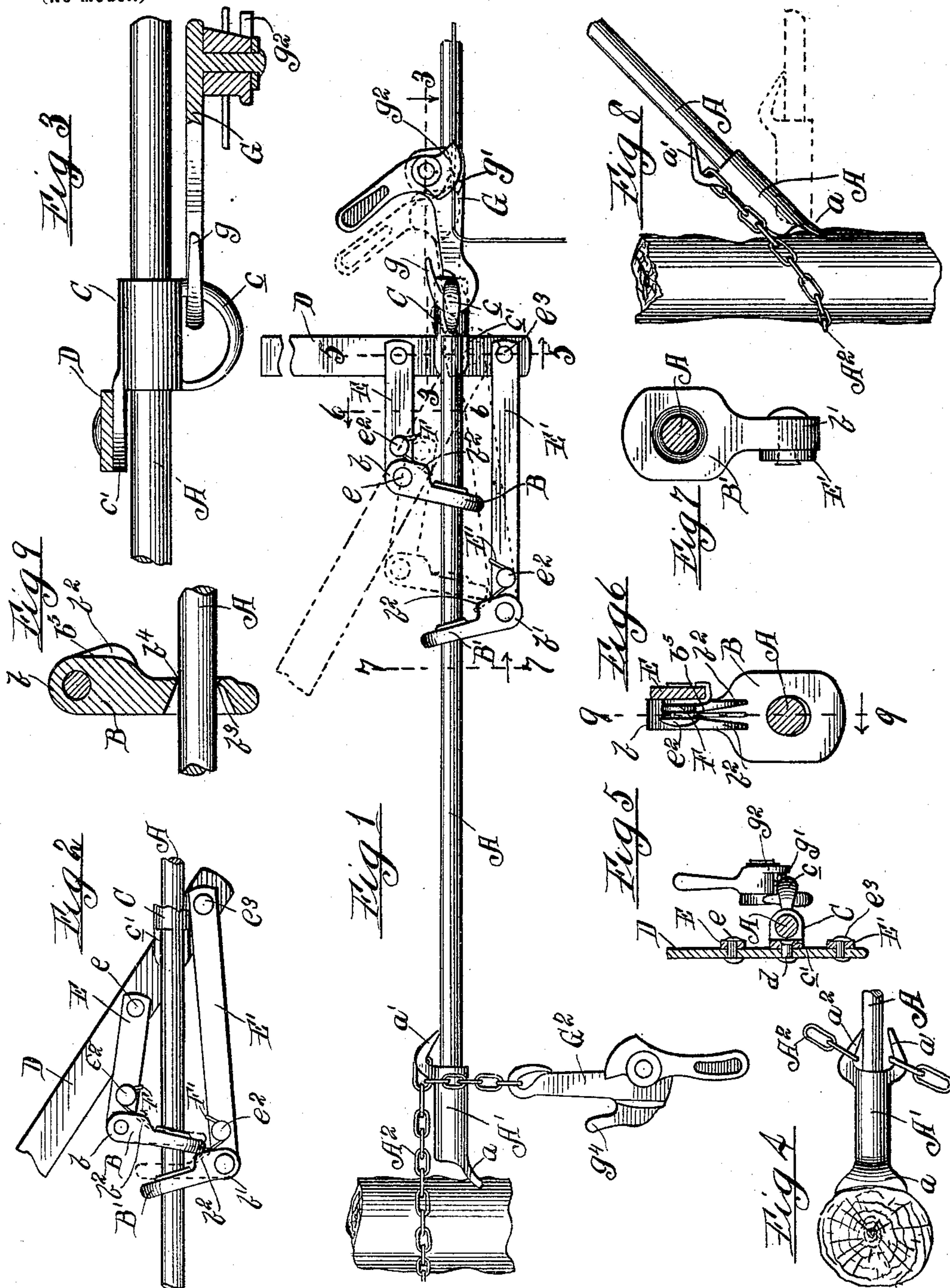
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Patented Dec. 26, 1899.

G. W. WARNER.  
WIRE STRETCHER.

(Application filed Jan. 23, 1899.)

(No Model.)



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# UNITED STATES PATENT OFFICE.

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## WIRE-STRETCHER.

SPECIFICATION forming part of Letters Patent No. 639,876, dated December 26, 1899.

Application filed January 23, 1899. Serial No. 703,045. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE W. WARNER, of Freeport, in the county of Stephenson and State of Illinois, have invented certain new and useful Improvements in Wire-Stretchers; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to an improvement in wire-stretchers of the kind used in the construction of wire fences and the like and embracing double-acting gripping-dogs and means for actuating the same.

The invention consists in the matters hereinafter fully set forth, and defined in the appended claims.

In the drawings, Figure 1 is a view in side elevation of a device embodying my invention. Fig. 2 is a detail view illustrating the manner of releasing the dogs. Fig. 3 is a view in section, taken on line 3 3 of Fig. 1. Fig. 4 is a plan view of the rear end of the wire-stretcher, showing the manner of engaging a post and attaching the chain. Fig. 5 is a view in section on line 5 5 of Fig. 1. Fig. 6 is a sectional view on line 6 6 of Fig. 1. Fig. 7 is a sectional view on line 7 7 of Fig. 1. Fig. 8 is a detail illustrating the manner of attaching the wire-stretcher to a post or other stationary object. Fig. 9 is a section on line 9 9 of Fig. 6.

In the drawings, A represents a cylindrical rod, and A' an enlargement at the forward or inner end of the same, provided with upwardly and rearwardly extending hooks  $a'$   $a^2$  and downwardly and laterally projecting prongs  $a$   $a$ , forming a laterally-extended bearing edge or surface  $a^3$ , located beyond the end of the rod and adapted for contact with the post or other object to which the rod is secured.

B B' indicate apertured dogs adapted to slide on said rod and to firmly grip the same when force is applied to one edge of the said dogs in a direction to thrust them rearwardly or away from the object to which the rod is attached.

C indicates a sleeve adapted to slide freely on the rod A and provided on one side with the loop  $c$  and on the opposite side, as illus-

trated in the drawings, with a rearwardly-projecting lug  $c'$ .

D represents a lever, which is pivotally secured to the said lug  $c'$  by means of a rivet  $d$  or other suitable means in such manner that one end of the said lever projects at one side of the rod A and the other end thereof extends therefrom at its opposite side and is adapted to be manually operated.

E E' indicate connecting-bars pivoted upon studs  $e'$   $e^3$  on the said lever D on opposite sides of the said sleeve and having engagement with lugs  $b b'$  on the dogs B and B', respectively. The said connecting-bars are each provided at a point adjacent to the said dogs with a stud  $e^2$   $e^2$ , respectively adapted to carry the springs F F', parts whereof engage each of the said dogs in such manner as to keep the free extremity of the same directed rearwardly.

The loop  $c$  on the sleeve C is provided with a cam-clutch G, consisting of a shank having at one end a hook  $g$ , adapted to be secured in the loop  $c$ , and at its opposite end a shoulder  $g'$  and a pivoted cam  $g^2$ , provided with a hand-lever adapted to grip a wire or other body interposed between the said cam and the shoulder  $g'$ . The forward end of the said rod A is provided with a chain A<sup>2</sup>, one end of which is permanently secured upon the hook  $a^2$  and the other end of which is adapted to be engaged by the second or open hook  $a'$ . At the extremity of the said chain the same is provided with a cam-clutch G<sup>2</sup>, similar to the cam-clutch G, but having a rearwardly-extended integral hook  $g^4$  attached to the shank thereof near its outer end.

As illustrated in the drawings, the rod A is a straight cylindrical rod, provided at its forward end with a casting or fitting, which is rigidly secured thereon, the said casting or fitting being provided with the chain-hooks  $a'$   $a^2$  and the downwardly and laterally projecting prongs  $a$   $a$ . Said prongs  $a$   $a$  are adapted to engage a post, tree, or other stationary object, whereby the rod may be rigidly secured in position while subjected to the tension of the stretching device. The essential portion of this part of the invention is the laterally-extended prongs  $a$   $a$ , projecting from the rod and located below the central axis of the said rod, and the hooks projecting above the said



central axis in such manner that when the rod is upwardly inclined and the chain  $A^2$ , one end of which is secured to one of the said hooks, is passed around a post, tree, or other stationary object and secured on the remaining hook the chain may be tightened by throwing the rod downwardly into its horizontal position. Obviously if the said prongs  $a$  be placed against the post or stationary object and the front end of the rod elevated sufficiently to allow the desired link of the chain to be passed over the open hook  $a'$  any desired tension of the chain may be secured. The prongs  $a$  being located below the rod, it is obvious that when the said prongs rest against the post and the chain is secured, as above described, upon the said hooks the rod  $A$  is in effect a lever of which the point of contact of the prongs with the post is the fulcrum. The method of applying the chain is clearly shown in Fig. 8. The dotted lines in the said figure show the position the rod will assume when the chain is tightened by the downward movement of the outer end of the lever. Fig. 1 illustrates clearly the position the rod will assume when held firmly against the post or other object by means of the tension of the said chain  $A^2$ , wherein it is clearly shown that the rod will be self-supporting upon the stationary object, if properly secured thereon in the manner indicated, the laterally-projecting prongs holding the rod from swinging sidewise at its rear end and also affording a secure hold of the rod on the post. The bearing edge formed by the two prongs  $a$  is shown as made of concave form, Fig. 4, so that the ends of the prongs will have bearing on the post when the latter has a rounded surface.

The dogs  $B$   $B'$  are provided with a central aperture slightly greater in diameter than the said rod  $A$ . At the forward side of the dog this aperture is reamed out or enlarged, as shown in Figs. 6 and 9, in such manner that the dog may have swinging movement with respect to the rod. Said dog is provided in the aperture with a sharp or acute holding edge  $b^4$  at the side of said aperture adjacent to the lug  $b$ . Within the aperture opposite the lug the dog is also provided with a sharp ridge  $b^3$ , projecting toward the central part of said aperture and located out of line with or somewhat forward of the edge  $b^4$ . This arrangement of the gripping edges results in the said dog acting to grip and firmly hold the rod when the lug thereof is drawn rearwardly, or, in other words, when the free end of the said dog is carried forwardly by the action of its actuating-spring. When, however, the free ends of the said dogs are pressed rearwardly to an extent sufficient to release the grip of the said gripping edges on the rod, the dogs slide freely on the rod. The dogs  $B$  and  $B'$  are provided with projections  $b^2$   $b^2$ , extending from the rear faces thereof adjacent to the lugs  $b$  and, as shown, constituting part of said lugs. Said projection

$b^2$  in the case of the forward dog  $B'$  forms a stop-surface or shoulder, against which the rearmost dog  $B$  strikes when the lever is swung so far as to bring the two edges into contact with each other, the parts being so constructed that the dogs may be so brought into contact in order to facilitate the release of the dogs from the rod when it is desired to slide them rearwardly along the rod, as will hereinafter appear. To secure better engagement of the spring  $F$  or  $F'$  with the lug  $b$  or  $b'$ , each dog is provided with a vertical groove  $b^5$ , formed in the rearwardly-projecting part  $b^2$  of the lug and adapted to receive one end of the said spring  $F$  or  $F'$ . The said springs  $F$   $F'$ , as herein shown, are coiled or spiral springs wound about studs  $e^2$   $e^2$  on the connecting rods or bars. One end of each of the said springs is secured upon its connecting-rod, and the other end thereof engages the lug of the dog in such manner that the action of the said spring will force the free end of the dog forwardly. The springs  $F$   $F'$  thus arranged tend to hold the dogs at all times in position to grip the rod. The rod  $A$  is secured by means of the chain  $A^2$  upon a post, tree, or other stationary object in the manner hereinbefore described. The free end of the wire desired to be stretched is secured in the cam-clutch  $G$ , attached to the sliding sleeve  $C$ . The lever  $D$  is then worked back and forth. In such backward and forward movement of the said lever the dogs will alternately grip the rod and slide along the same as backward and forward strain is brought on their outer ends, the dogs being thereby carried along the rod toward the end thereof which is attached to the post and the sliding sleeve  $C$  being drawn along the rod by reason of the connection of the hand-lever therewith. Obviously when either dog is held from movement by its grip on the rod the pivot through which the hand-lever is connected with such dog serves as a fulcrum on which the hand-lever turns in throwing backward the other dog and moving the sleeve along the rod. The wire to be stretched being attached to the sleeve, its end will be drawn toward the post as the sleeve is carried along the rod by the action of the dogs and hand-lever. When the hand-lever is thrown to the extreme limit of its rearward movement, as seen in Fig. 2, the dogs  $B$   $B'$  will be in contact, and the free end of the dog  $B$  will be brought against the lug of the dog  $B'$  and will be pressed against the same until said dog  $B$  has been swung or moved on its pivot far enough to reach a position in which its grip on the rod is released and it is free to slide backwardly along the same. When the parts are in this position, if it be desired to slide the sleeve and dogs back to the outer end of the rod in position for another operation of the device it will only be necessary to press with the hand rearwardly upon the free extremity of the dog  $B'$ , causing the same to assume the position shown in the dotted lines



in Fig. 2, when both dogs will be free and may be pushed along the rod. The cam-clutch  $G^2$  is used to hold the end of the wire after it has been stretched by one operation of the device when it is found necessary to repeat the operation in order to make the wire sufficiently taut, said clutch being engaged with the wire and serving to hold it from becoming relaxed while the clutch  $G$  is released, the sleeve and attached parts slid back to the outer end of the rod, and the said clutch  $G$  secured upon the wire. The operation may be repeated any desired number of times until the wire is sufficiently taut. The clutch  $G^2$  may be also used in connection with the clutch  $G$  to draw together the ends of a broken wire, in which case it will not be necessary that the chain  $A^2$  be secured upon any stationary object; but the clutches  $G$   $G^2$  being secured upon the ends of the said broken wire the device may be operated to draw the two ends together, when the said wire may be spliced.

I claim as my invention—

1. A wire-stretcher comprising a rod, wire-stretching mechanism thereon having sliding engagement therewith and means for attaching the rod to a post or the like comprising a hook projecting upwardly from the rod, a chain or the like attached to the rod above its axis and adapted for engagement with the hook and bearing prongs or arms on the end of the rod extending laterally at the side of and below the central axis of said rod.

2. A wire-stretcher comprising a rod, gripping-dogs thereon, a sleeve sliding on the rod, a hand-lever pivoted to the sleeve, connecting-bars pivotally uniting the hand-lever with said dogs and springs applied between the dogs and bars to hold the dogs in their gripping position, the dog nearest the hand-lever being adapted for contact with the dog remote therefrom when the lever is swung to

the extreme limit of its movement in such manner as to release the dog nearest the lever from its gripping engagement with the rod. 45

3. A wire-stretcher comprising a rod, gripping-dogs thereon, a sleeve sliding on the rod, a hand-lever pivoted to the sleeve, connecting-bars pivotally uniting the said lever with the said dogs, and springs applied between the said connecting-bars and the dogs tending to hold the dogs in their gripping position, said dog which is remote from the sleeve being provided at its side adjacent to its connecting-bar with a projection adapted for engagement with the side of the other dog remote from its connecting-bar when the hand-lever is swung to the extreme limit of its throw. 50 55

4. A wire-stretcher comprising a rod, gripping-dogs thereon, a sleeve sliding on the rod, a hand-lever pivoted to the sleeve, connecting-bars uniting the hand-lever with the said dogs, laterally-projecting studs on said bars, and springs applied between the said connecting-bars and said dogs, said springs being coiled about the studs on the connecting-bars and the dogs being provided with holding-grooves in which rest the ends of the springs which bear on the dogs, the apertures for the rod in said dogs being of a flaring form and having in the smaller end at opposite sides thereof annular edges  $b^3$   $b^4$ , arranged out of line with each other or at different distances from the side faces of the dog. 60 65 70 75

In testimony that I claim the foregoing as my invention I affix my signature, in presence of two witnesses, this 5th day of January, A. D. 1899.

GEORGE W. WARNER.

Witnesses:

C. F. HILDRETH,  
W. B. BUNELL.