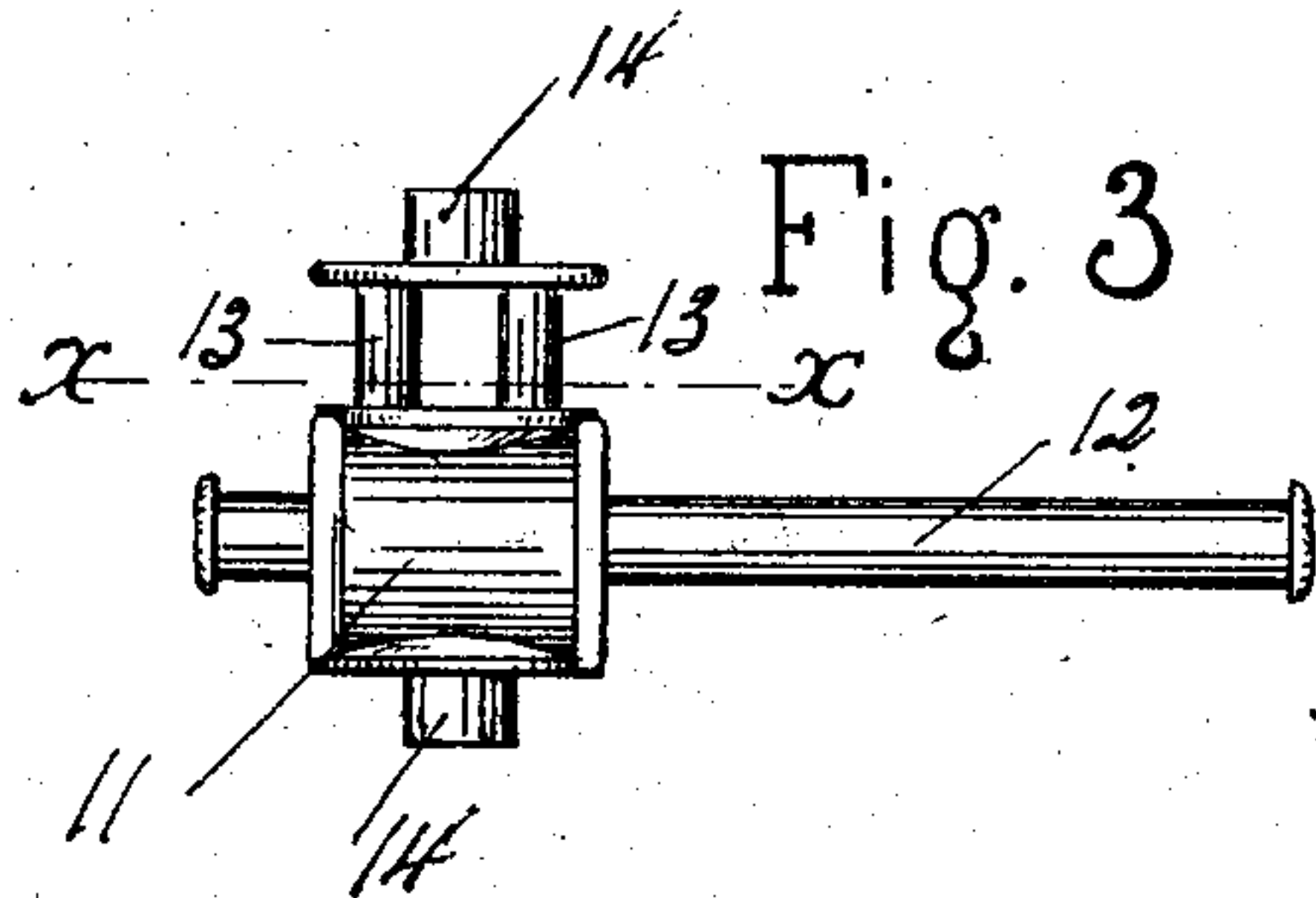
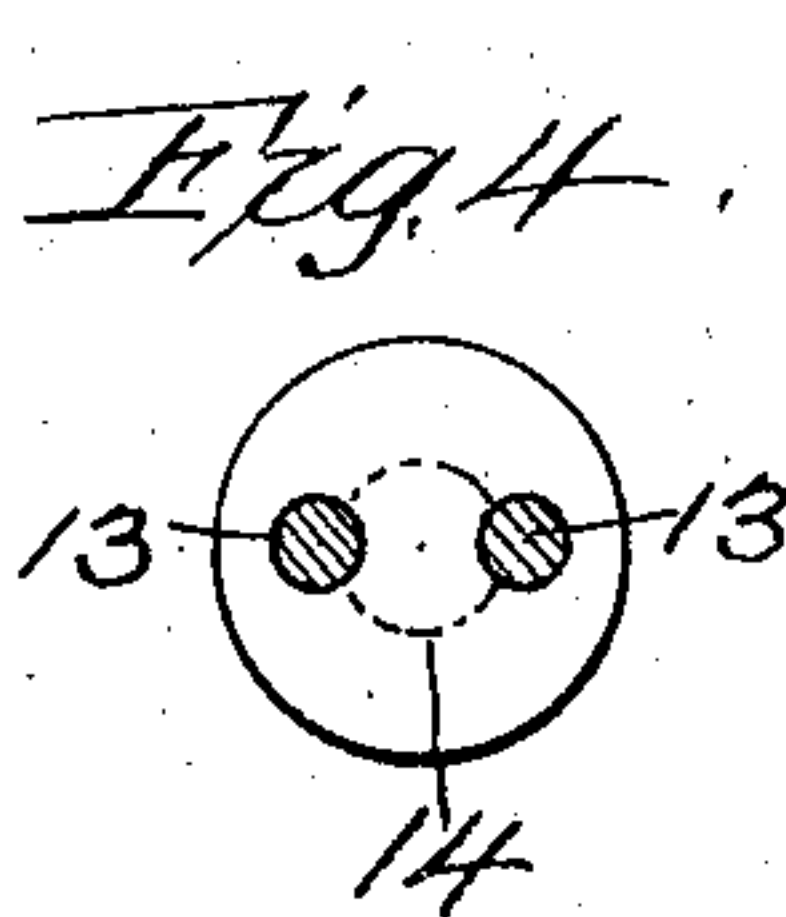
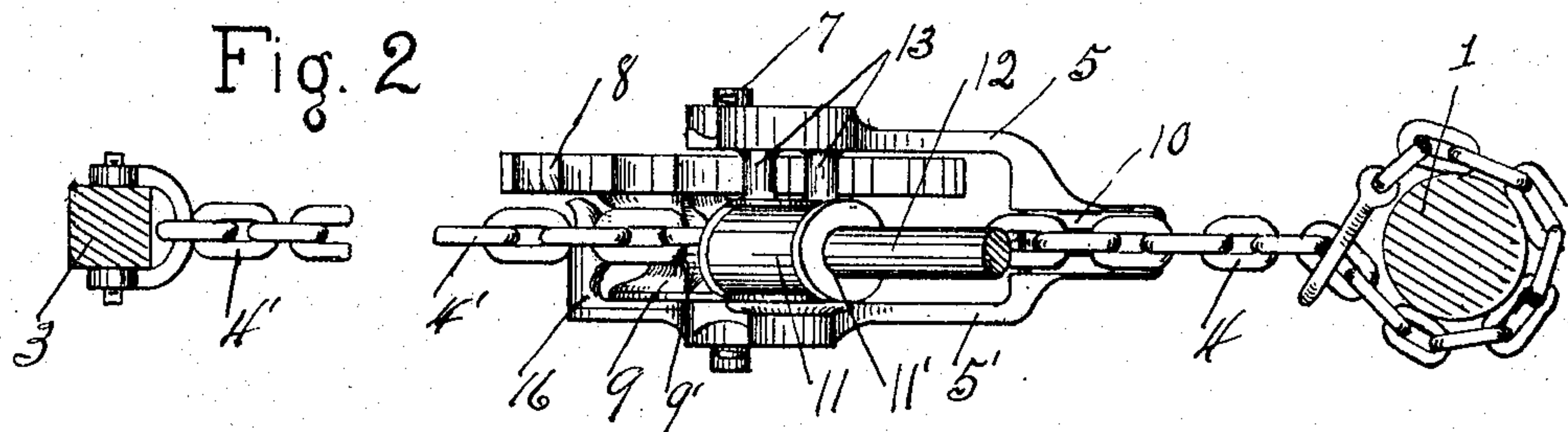
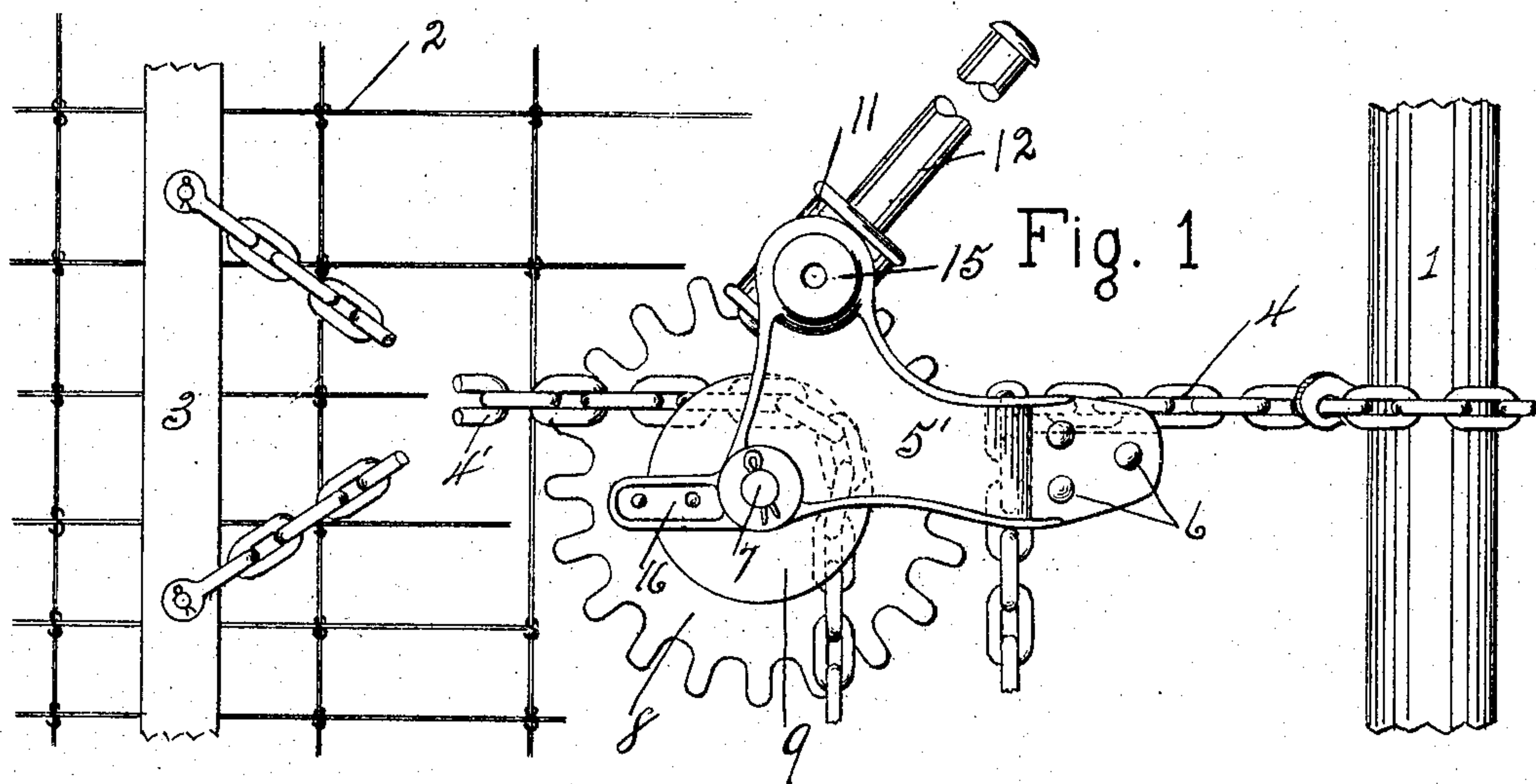


No. 780,637.

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A. & C. A. CHURCH.  
WOVEN WIRE STRETCHER.  
APPLICATION FILED NOV. 7, 1903.



WITNESSES:  
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# UNITED STATES PATENT OFFICE.

ANDREW CHURCH AND CHARLES A. CHURCH, OF ADRIAN, MICHIGAN.

## WOVEN-WIRE STRETCHER.

SPECIFICATION forming part of Letters Patent No. 780,637, dated January 24, 1905.

Application filed November 7, 1903. Serial No. 180,177.

*To all whom it may concern:*

Be it known that we, ANDREW CHURCH and CHARLES A. CHURCH, citizens of the United States, and residents of Adrian, in the county of Lenawee and State of Michigan, have invented certain new and useful Improvements in Woven-Fence Stretchers; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

Our invention relates to an improved stretcher for wire or other woven fences, and has for its objects to provide a machine of simple and cheap construction that is capable of exerting a greater strain or pull upon the fence being stretched and of being operated with greater rapidity and with more efficient and satisfactory results than the machines commonly employed for such purposes.

A further and most important object of our invention is attained by reason of the peculiar construction of certain parts of the machine whereby the gearing to which the winding-drum is secured is caused to be locked when the lever-arms are in substantially a horizontal position, thus checking any backward or unwinding movement by reason of the strain of the fence on the tightening-chain and preventing the sudden release of the tightening-cable when the hand is removed from the lever. This locking, however, does not affect the turning of the gear in either direction by the manual manipulation of said lever-arms when it is desired to operate said machine.

The invention is fully described in the following specification, of which the accompanying drawings form a part, in which—

Figure 1 is a vertical side elevation of our machine in operative position, showing portions of a fence-post and the fence being stretched. Fig. 2 is a plan view of Fig. 1 with the woven fence eliminated therefrom. Fig. 3 is a similar view of the lever mechanism of our invention, and Fig. 4 is a vertical cross-sectional view taken on the dotted line  $\alpha \alpha$  in Fig. 3 and showing the location of the

lever-pins with relation to the supporting-trunnions.

Referring to the drawings, 1 represents a fence-post; 2, the wire or other woven fence to be stretched; 3, the clamp adapted to have transverse engagement with said fence and to be secured thereto in any suitable manner, and 4 and 4' the anchor and tightening chains, which have connection, respectively, with the post 1 and clamp 3 and engage the stretcher, as hereinafter described.

The frame of our invention is shown as comprising the two horizontally-disposed elongated side plates or members 5 and 5', which have their rear ends either formed integral or rigidly clamped together by means of the bolts 6 and their forward portions separated and vertically broadened to enable the tightening mechanism to be journaled and held therebetween, substantially as shown in Figs. 1 and 2. A shaft 7 is journaled in bearings 7', formed in the forward lower portions of the members 5 and 5', and has mounted thereon between said members the spur-gear 8 and winding-drum or pulley 9, which are either formed integral or secured rigidly together in any suitable manner. The drum or pulley 9, which we have shown as being considerably smaller in diameter than the spur-gear 8, is provided with a concaved or grooved periphery and has the transverse ribs 9' formed thereon, the said ribs being adapted to mesh with the links of the chain 4', and thus prevent the same from slipping thereon when being tightened. The upper surface of the pulley 9 is in substantial horizontal alinement with the upper horizontal surface of the connected portions of the plates 5 and 5', the said portions having their upper meeting edges chamfered to form the groove 10 therein and their inner vertical edges notched to receive and retain the engaging links of the anchor-chain 4, substantially as shown in Figs. 1 and 2, thus enabling an even endwise pull to be had on the chains 4 and 4' without tipping or changing the normal horizontal position of the machine.

The lever mechanism of our invention comprises the slightly-elongated member 11, which is provided with an opening 11' therethrough



for the reception of the lever-rod 12, the said rod being longitudinally movable therein, and with the pins 13 13, which are spaced a desired distance apart and project longitudinally from one end of said member 11, the whole being provided with the journals 14 14 at the outer ends of said member 11 and pins 13 13 and pivotally mounted or fulcrumed in suitable bearings 15, provided in the vertical portions of the members 5 and 5'. The journals 14 of said lever are mounted in substantial vertical alinement with the shaft 7 and in substantial axial alinement with the periphery of said spur-gear, thus adapting the pins 13 to mesh with the spurs of the gear 8. I wish it understood, however, that I do not confine myself to any particular location of the bearings 15. Inasmuch as the pins 13 13 have their fulcrum-point substantially in the line of the curve described by the periphery of the gear 8, and therefore when in this position are caused to be forced directly against or away from said point by the pressure of said gear thereon, it will be apparent that one of said pins 13 will at all times be in engagement with the teeth of the gear 8 and that when the handle or rod 12 is in a substantially horizontal position both pins will be more or less in engagement with said teeth and a backward or unwinding movement of the gear 8 occasioned by the strain on the chain 4' thereby prevented. It will also be understood that the gearing is not locked against any movement occasioned by the manual manipulation of the lever, but only against an unwinding movement of the parts when the lever-handle has been released.

In order to prevent the tightening-chain 4' from clinging to and being carried entirely around the periphery of the pulley 9 in its rotary movement, as is sometimes the case, a stripper 16 is employed, which is a substantially L-shaped member having one arm secured to and projecting forwardly from the member 5' and the other arm extending transversely of and in juxtaposition to the periphery of the pulley 9, thus adapting it to disengage the chain from the teeth of said pulley when carried around thereby.

In the operation of the machine comprising our invention the same is first anchored to a post by means of the anchor-chain 4, and the end of the tightening-chain 4', which has connection with the clamp 3, secured to the fence 2 being stretched, is placed in engagement with the pulley or winding-drum 9, the links thereof meshing with the ribs or teeth 9' of said pulley. When the machine has been thus suspended, the lever-handle 12 is turned to the left as far as possible and then drawn longitudinally through the opening 11' and the operation repeated, thus causing the member 11 to rotate in the bearings 15. This operation is continued until the fence has been stretched to the proper tension, the pins 13

engaging alternately with the teeth of the spur-gear 8. The leverage generated by reason of the arrangement of the several parts and the contiguous position of the pins 13 13 to their fulcrum-point 14 is very powerful, thus enabling a very strong pull to be exerted upon the fence being stretched with the exercise of little effort on the part of the operator. When the fence has been drawn to the desired tension, the same is secured to the proper post and the machine removed, the above operation being continued until the entire line of fence has been strung. We desire to call attention to a further most important advantage in the operation of our invention. In erecting wire fences above four feet in height it is customary to use two stretchers, one being attached to the top and one to the bottom of the clamping-bar, thus bringing the upper one so high from the ground that it is necessary to use blocking in order to elevate the operator to a suitable height to enable him to operate the lever from the top side of the stretcher, which position would be necessary in the operation of the stretchers of the ratchet-and-pawl class now commonly used, as otherwise the pawl would drop out of engagement with the ratchet as the lever is operated. Inasmuch as the usual ratchet and pawl are eliminated from the construction of our apparatus, it is apparent that the same can be operated equally as well in any position that is most desirable or convenient for the operator, whether it be in an upright position, as shown in the drawings, or bottom side up with the lever-handle suspended.

It will be obvious that such changes in the form, proportion, and minor details of construction of the parts as fairly fall within the scope of our invention may be made without departing from the spirit or sacrificing any of the advantages thereof.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a fence-stretcher, a bifurcated frame having right-angularly-disposed surfaces at the stock end of the same for engaging a chain or cable, a toothed-wheel and chain engaging device journaled in and between the arms of the frame at the front lower ends thereof, and an actuating device for the toothed wheel journaled in and between said arms at the upper portion of the same and comprising a barrel, an integral trunnion projecting from one side thereof, a pair of pins projecting from the opposite sides of the barrel, a complementary trunnion at the outer ends of said pins and integral therewith, said trunnions being journaled in the frame, and a handle axially shiftable in the barrel, substantially as described.

2. In a fence-stretcher, a bifurcated frame having engaging means at the stock end thereof, a drum and toothed wheel rigid therewith



5 journaled between the arms of the frame,  
and an actuating member located between said  
arms and comprising a barrel having a trun-  
nion projecting from one side thereof, a pair  
10 of pins projecting from the opposite side of  
the barrel disposed on diametrically opposite  
sides of the axis of the trunnion, a head inte-  
gral with the outer ends of the pins, a comple-  
mentary trunnion projecting from said head,  
15 bearings in the side arms for said trunnions,  
and a handle fitted to the barrel, substantially  
as described.

3. In a fence-stretcher, a bifurcated frame  
having chain-engaging means at the stock end  
15 thereof, a toothed-wheel and chain engaging  
device journaled between the outer ends of the  
arms of said frame, means for rotating the  
toothed wheel comprising a member having  
end trunnions journaled in the side arms of  
20 the frame and pins located between said trun-  
nions and arranged on opposite sides of the  
axis thereof, said pins intermeshing with the  
toothed wheel, and means for rotating said  
member, substantially as described.

25 4. In a fence-stretcher, a bifurcated frame

having chain-engaging means at the stock end  
thereof, a toothed wheel, an integral winding-  
pulley, having a concave periphery, journaled  
between the outer ends of the arms of the  
frame, means for rotating the toothed wheel, 30  
comprising a member having end trunnions  
journaled in the side arms of the frame and  
pins arranged on opposite sides of the axis  
of the trunnions which intermesh with the  
toothed wheel, means for rotating said mem- 35  
ber, an L-shaped member having one part se-  
cured to the end of one of the arms and pro-  
jecting in advance of the same and its other  
laterally-extending portion provided with a  
surface projecting within the concavity of the 40  
periphery of the pulley.

In testimony whereof we have signed our  
names to this specification in the presence of  
two subscribing witnesses.

ANDREW CHURCH.  
CHARLES A. CHURCH.

Witnesses:

D. B. MORGAN,  
C. W. OWEN.