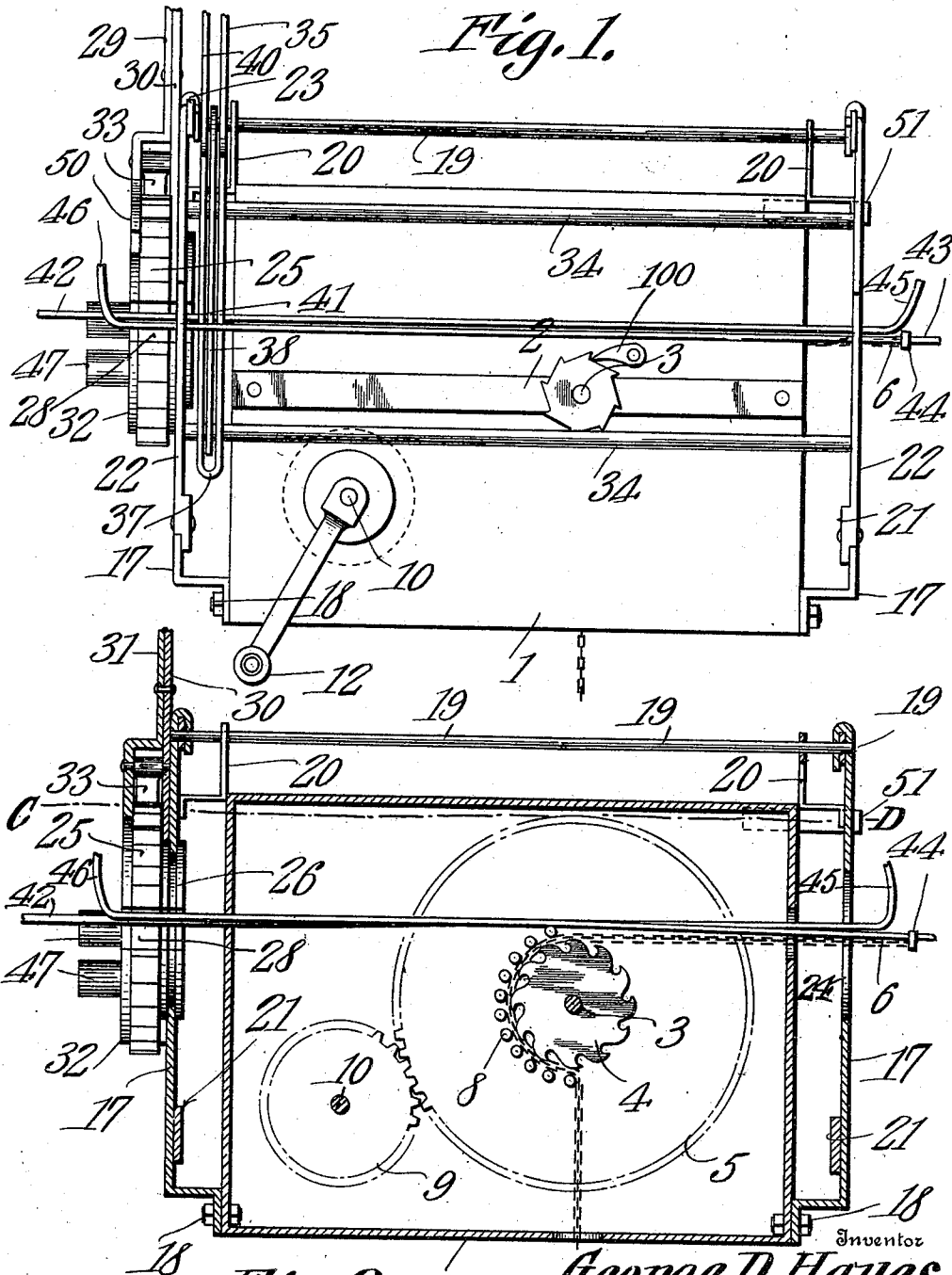


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WIRE STRETCHER AND SPLICER.
APPLICATION FILED NOV. 5, 1903.

977,869.

Patented Dec. 6, 1910.

2 SHEETS—SHEET 1.



Witnesses

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Fig. 2.

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By

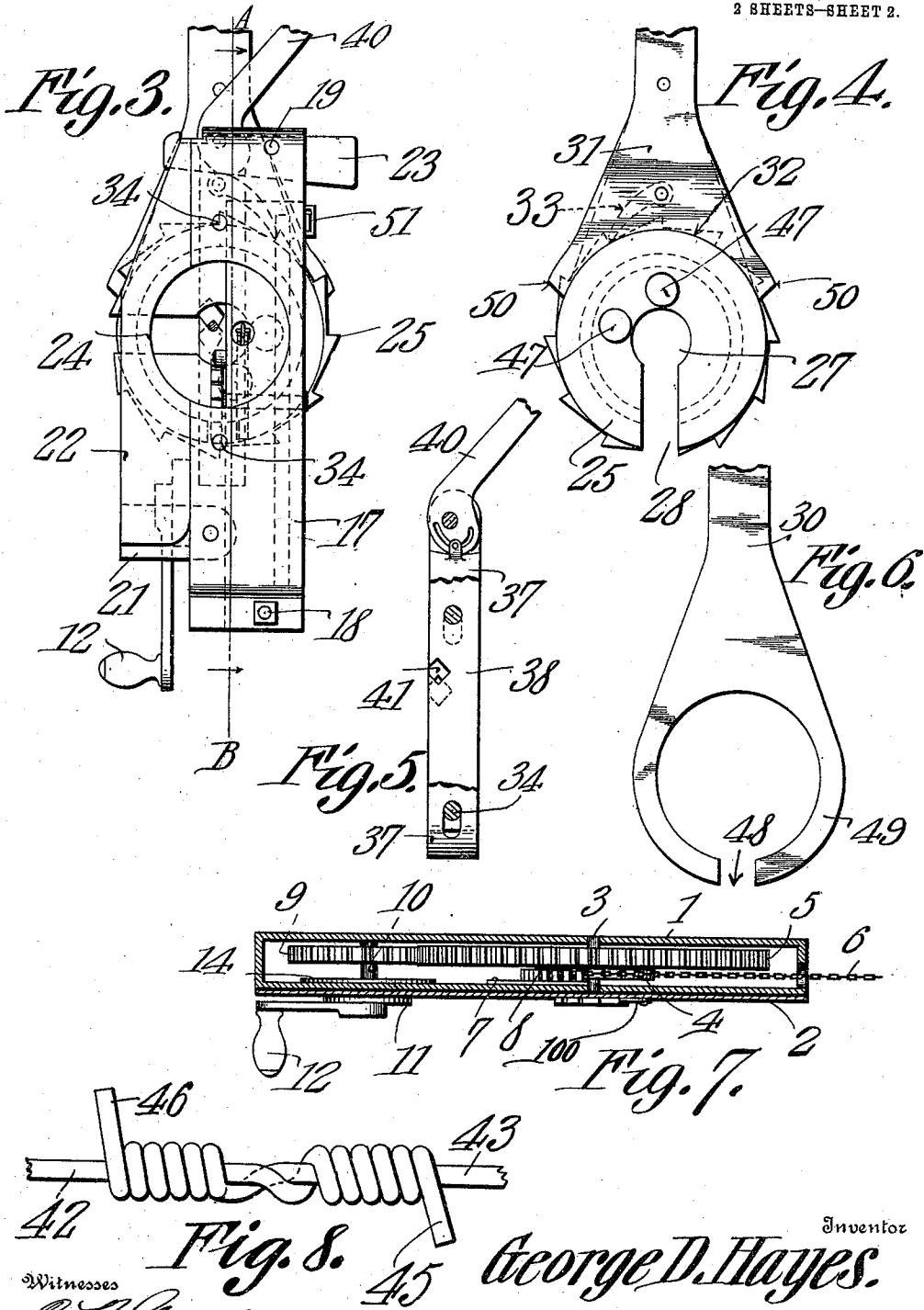
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UNITED STATES PATENT OFFICE.

GEORGE D. HAYES, OF DAVENPORT, IOWA.

WIRE STRETCHER AND SPLICER.

977,869.

Specification of Letters Patent.

Patented Dec. 6, 1910.

Application filed November 5, 1909. Serial No. 526,447.

To all whom it may concern:

Be it known that I, GEORGE D. HAYES, a citizen of the United States, residing at Davenport, in the county of Scott and State

Iowa, have invented a new and useful Wire Stretcher and Splicer, of which the following is a specification.

The object of this invention is to provide a device adapted to engage the adjacent ends of two wires, to draw the said wires taut, means being provided for connecting the wires, at their adjacent ends, after the stretching operation has been completed, to form a secure union between the wires. With these ends in view, the invention consists in a novel mechanism for stretching the wires, and in a novel splicing mechanism, which is adapted to be moved from one end of the device to the other, in order that the ends of the two wires may be successively operated upon to complete the splice.

Other objects, incidental to the structure, will be pointed out as the description of the invention progresses.

The drawings show but one form of the invention, and it is to be understood that changes, properly falling within the scope of what is claimed, may be made, without departing from the spirit of the invention.

Similar numerals of reference are employed to denote corresponding parts throughout the several figures of the drawings, wherein,—

Figure 1 is a front elevation; Fig. 2 is a vertical longitudinal section on the line A—B of Fig. 3; Fig. 3 is an end elevation; Fig. 4 is a side elevation of the ratchet wheel and lever, parts being broken away; Fig. 5 is a side elevation of the grip. Fig. 6 is a side elevation of a portion of the lever shown in Fig. 4; Fig. 7 is a horizontal transverse section of the case, parts being omitted, the cutting plane being indicated by the line C—D in Fig. 2; and Fig. 8 is a plan showing the completed splice.

In the following description, the operator will be supposed to be facing the device when the same is disposed as shown in Fig. 1 of the drawings, and that side of the device which is toward the operator will be denominated the "front" of the device, the terms "right", "left", "back", etc., being selected accordingly. The primary member of the structure is a case 1 the same being in the form of a relatively narrow box, closed upon all sides, saving for a chain

opening at the right end thereof and a chain opening in the bottom. Reinforcing strips 2 extend longitudinally of the case 1, along the front and back thereof, and in these reinforcing strips 2, is journaled for rotation a shaft 3, carrying a sprocket 4, adapted to engage a chain 6, one end of which is adapted to be extended through the chain opening in the right end of the case 1, the other end thereof being adapted to extend through an opening in the bottom of the case 1, beneath the sprocket 4. A housing 7 is mounted inside the case 1 upon the front thereof, and this housing 7 carries a plurality of rollers 8 which are adapted to engage the chain 6 to hold the same upon the sprocket 4.

Secured to the shaft 3 is a pinion 5, in mesh with a smaller pinion 9, carried by a shaft 10 which is journaled for rotation in bearings 11 and 14. The shaft 10 extends upon the outside of the case 1 and is provided with operating crank 12, and the shaft 3 is provided with a suitable pawl and ratchet mechanism 100, whereby the tension in the chain 6 may be maintained.

The invention further includes end plates or members 17, secured to both ends of the case 1. The said plates are identical in construction and a description of one of them will suffice for the other. The intermediate portion of each end plate 17 is spaced apart from the end of the case 1, the lower extremity of the end plate 17 being brought into abutment with the case 1 and assembled therewith, pivotally, by means of a bolt 18 or other retaining element adapted to a like end. The upper extremities of the end plates 17 are connected by a tie bolt 19, and the end plates carry inwardly projecting brackets 20, mounted at their upper ends upon the tie bolt 19, and adapted to contact with the ends of the case 1, so that the end plates 17 may not spring at their upper extremities.

Pivotally connected with each end plate 17 adjacent its lower end, is, as shown most clearly in Fig. 3, a forwardly extending arm 21, to which is secured an upright movable jaw 22 disposed in alinement with the end plate 17. The tie bolt 19 is extended through the end plate 17, and serves as a pivotal mounting for the intermediate portion of a latch 23, adapted to engage the upper extremity of the movable jaw 22, to hold the adjacent edges of the movable jaw 22 and the end plate 17 in abutment.

These adjacent edges of the movable jaw and of the end plate are cut away to form a circular opening 24, adapted to receive a channel 26, formed in a laterally projecting neck of a ratchet wheel 25, the wheel 25 being provided with a centrally disposed opening 27 and with a radially disposed slot 28 extending from the opening 27 to the periphery of the wheel. The outer face of the ratchet wheel 25 is provided with an extension 32, from which outstand studs or elements 47.

For the rotation of the ratchet wheel 25, an operating lever 29 is provided, the same comprising an inner member 30, having arms 49 adapted to inclose the neck of the ratchet wheel 25, between the channel 26 and the body proper of the ratchet wheel, the arms 49 being spaced apart at their ends, as shown at 48. Secured to the member 30 of the lever, is an outer member 31, having arms 50 adapted to inclose a portion of the periphery of the extension 32 of the ratchet wheel. The member 31 is bent, intermediate its ends, to overhang the ratchet wheel 25, and, with the member 30 carries a pawl 33 adapted to engage the ratchet wheel 25.

By referring to Fig. 3 of the drawings, it will be seen that the end plates or members 17 are somewhat broader than the case 1, and in the portions of the end plates which outstand beyond the case 1, are terminally mounted guide rods 34, located relatively near to the front of the case 1. A grip 35 is slidably mounted upon the guide rods 34, and by referring to Figs. 1 and 5 of the drawings, it will be seen this grip 35 includes a U shaped member 37, between the arms of which is mounted, upon rods 34, a plate 38, a cam lever 40, pivotally mounted on the plate 38, being operatively connected with the member 37 to raise and to lower the same, the arms of the member 37 and the edge of the plate 38 being provided with openings 41, adapted to move into, and out of alinement with each other, under the action of the cam lever 40, to engage one of the wires which are being stretched and spliced.

In order that the end plates 17 may be maintained in a fixed relation with respect to the case 1, a bolt 51, or other simple locking device, may be assembled with the case 1 and arranged to engage one of the end plates 17. By releasing this bolt 51, the end plates 17, pivoting at 18, may, together with the rods 34 by which they are connected, be tilted outwardly, away from the front of the case 1, and toward the operator. The extremity of the chain 6 may be provided with a clamp 44, of any approved construction, adapted to engage and to hold one of the wires of the fence.

The operation of the device is as fol-

lows:—The wire 42 is engaged by the grip 35, the wire 42 extending through the grip 35 and along the front of the case, past the right hand end of the case. The wire 43 is then engaged by the clamp 44, a loose end of considerable length extending to the left of the member 44. The crank 12 is then operated, reeling in the chain 6 until the wires are drawn taut, the wires being retained in their taut relation by means of the pawl and ratchet mechanism 100. The ends of the wires 42 and 43 will, by the foregoing operation be extended across the front of the case, the end of the wire 43 passing through the opening 27 in the ratchet wheel, which, it should be understood, is, in the present instance, mounted at the left hand of the device.

I deem it wise at this point to outline clearly and in detail, the positions which the wires 42 and 43 occupy with respect to the several portions of the machine, and Figs. 4, 5 and 6 may be examined with profit in connection with Fig. 1. Beginning at the left hand end of the wire 42, the wire extends through the opening 27 in the ratchet wheel 25, between the arms 49 of the portion 30 of the operating lever 29, beneath the arms 50 of the portion 31 of the operating lever 29, through and engaged in the openings 41 in the members 37 and 38 and the grip 35, along the forward face of the case 1, and through the opening 24 in the end plate 17 and the movable jaw 22 which are located at the right-hand end of the machine. Beginning at the right-hand end of the wire 43, the wire extends through the clamp 44, through the opening 24 in the end plate 17 and the movable jaw 22 which are located at the right hand end of the machine, along the forward face of the case 1, across, but not engaged by, the grip 35 (since the hold of the parts 37 and 38 of the grip upon the wire 42 cannot be loosened to receive the wire 43), through the opening 27 in the ratchet wheel 25, between the arms 49 of the portion 30 of the operating lever 29, and beneath the arms 50 of the portion 31 of the operating lever 29, to protrude beyond the left-hand end of the case 1 as shown at 46. The lever 29 is then manipulated, causing a rotation of the ratchet wheel 25, the studs or elements 47 engaging the end 46 of the wire 43, and wrapping the same about the wire 42. After two or three turns are made about the wire 42, the wires 42 and 43 will be secured together. The pawl and ratchet mechanism 100 may then be thrown out, and the rotation of the ratchet wheel 25 continued, completing the wrapping of the end 46 about the wire 42. The rods 34 are free to slide in the gripping member 35 and, as the length of the wrapping 46 is increased, the case 1 may be slid to the left, so that the wrapping of the

end 46 about the wire 42 may at all times be kept within the reach of the studs 47. As this wrapping of the end 46 about the wire 42 is increased in length, the locking member 51 may be thrown out of engagement with the end plate 17, and the end plates tilted forward, toward the operator so that the wrapping of the end 46, as it increases in length, may pass readily along the front of the case 1.

When the wrapping of the end 46 about the wire 42 has been completed, the pawl 33 is thrown out of engagement with the ratchet wheel 25, and the ratchet wheel rotated, until the opening 28 therein is brought into alinement with the opening 48 in the member 30 of the lever. The latch 23 is then manipulated, so that the movable jaw 22 may be opened. The wrapping of the end 46 will then pass freely through the alined openings 48 and 28, the lever 29 and the ratchet wheel being removed from the left end of the device and mounted in place at the right end thereof. When the lever and the ratchet wheel are thus mounted, the operation hereinbefore described as taking place at the left hand end of the device is repeated at the right hand end thereof, the end 45 of the wire 42 being wrapped about the wire 43, in an opposite direction to that in which the end 46 was wrapped about the wire 42, it being of course understood that during the operation of stretching and tightening the wires, the grip or clamp 44 will have moved toward the end of the case 1, sufficiently, so that the end 45 may be wrapped about the wire 43 without engaging the chain 6. While this wrapping of the end 45 about the wire 43 is taking place, it is of course to be understood that the end plates or members will be tilted forwardly, as hereinbefore described, the case 1 being slid to the right, in order to keep the end 45 of the wire 42 within the reach of the studs or elements 47.

When the wrapping of the end 45 of the wire 43 has been completed, the two ends of the wires are securely spliced, and the splice as an entity may be removed from the splicing machine through the openings 28 and 48. The completed splice will appear as shown in Fig. 8.

Having thus described the invention what is claimed is:—

1. A device of the class described comprising a case; means carried by the case for stretching a pair of wires and overlapping their ends; wire-splicing mechanism arranged to be supported successively on opposite ends of the case to wrap the end of each of said wires about the other wire; and clamping means supported by the case to engage the wires.

2. A device of the class described comprising a case; tiltable members assembled

with opposite ends of the case; and wire-splicing mechanism arranged to be mounted successively in the members.

3. A device of the class described comprising a case; tiltable members assembled with opposite ends of the case; wire-splicing mechanism arranged to be mounted successively in the members; and a locking device for maintaining the members in fixed relation with respect to the case.

4. A device of the class described comprising a case; tiltable members assembled with opposite ends of the case; wire-splicing mechanism arranged to be mounted successively in the members; a rod connecting the members; and a wire-engaging clamp slidably mounted upon the rod.

5. A device of the class described comprising a case; means carried by the case for stretching a pair of wires and overlapping their ends; tiltable members assembled with opposite ends of the case; wire-splicing mechanism arranged to be mounted successively in the members to wrap the end of each of said wires about the other wire; a rod connecting the members; and a wire-engaging clamp slidably mounted upon the rod.

6. A device of the class described comprising a case; tiltable members assembled with opposite ends of the case; movable jaws carried by the members; and wire-splicing mechanism arranged to be engaged successively by the jaws.

7. A device of the class described comprising a case; a radially slotted wheel arranged to be supported successively at opposite ends of the case and provided with laterally extending wire-engaging elements; and means for operating the wheel.

8. A device of the class described comprising a case; a radially slotted ratchet wheel arranged to be supported successively at opposite ends of the case and provided with laterally extending wire-engaging elements; and a lever for operating the wheel permanently assembled therewith.

9. A device of the class described comprising a case; means carried by the case for stretching a pair of wires and overlapping their ends; a radially slotted wheel arranged to be supported successively at opposite ends of the case and provided with laterally extending elements arranged to engage the end of each wire to wrap the same about the other wire; and means for operating the wheel.

10. A device of the class described comprising a case; means carried by the case for stretching a pair of wires and overlapping their ends; a radially slotted ratchet wheel arranged to be supported successively at opposite ends of the case and provided with laterally extending wire-engaging elements arranged to engage the end of each wire to

wrap the same about the other wire; and a lever for operating the wheel permanently assembled therewith.

11. A device of the class described comprising a case; tiltable members assembled with opposite ends of the case; a radially slotted wheel arranged to be mounted successively in the members and provided with laterally extending wire-engaging elements; and means for operating the wheel.

12. A device of the class described comprising a case; tiltable members assembled with opposite ends of the case; a radially slotted ratchet wheel arranged to be mounted successively in the members and provided with laterally extending wire-engaging elements; and a lever for operating the wheel permanently assembled therewith.

13. A device of the class described comprising a case; means carried by the case for stretching a pair of wires and overlapping their ends; tiltable members assembled with opposite ends of the case; a radially slotted wheel arranged to be mounted successively in the members and provided with laterally extending elements arranged to engage the end of each wire to wrap the same about the other wire; and means for operating the wheel.

14. A device of the class described comprising a case; tiltable members assembled with opposite ends of the case; a radially slotted wheel arranged to be mounted successively in the members and provided with laterally extending wire-engaging elements; a rod connecting the plates; a wire-engaging clamp slidably mounted upon the rod; and means for operating the wheel.

15. A device of the class described comprising a case; tiltable members assembled

with opposite ends of the case; a radially slotted ratchet wheel arranged to be mounted successively in the members and provided with laterally extending wire-engaging elements; a lever for operating the wheel permanently assembled therewith; a rod connecting the members; and a wire-engaging clamp slidably mounted upon the rod.

16. A device of the class described comprising a case; means carried by the case for stretching a pair of wires and overlapping at their ends; tiltable members assembled with opposite ends of the case; a radially slotted wheel arranged to be mounted successively in the members, and provided with laterally extending elements arranged to engage the end of each wire to wrap the same about the other wire; means for operating the wheel; a rod connecting the member; and a wire-engaging clamp slidably mounted upon the rod.

17. A device of the class described comprising a case; means carried by the case for stretching a pair of wires and overlapping their ends; tiltable members assembled with opposite ends of the case; movable jaws carried by the members; a radially slotted wheel arranged to be engaged successively by the jaws and provided with laterally extending wire-engaging elements; means for operating the wheel; a rod connecting the members; and a wire-engaging clamp slidably mounted upon the rod.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

GEORGE D. HAYES.

Witnesses:

W. A. MILLER,

A. WIESE.