(No Model.)

E. CLIFTON.

APPARATUS FOR REELING OR WINDING WIRE.

No. 345,832. Patented July 20, 1886.

Fig. 1.

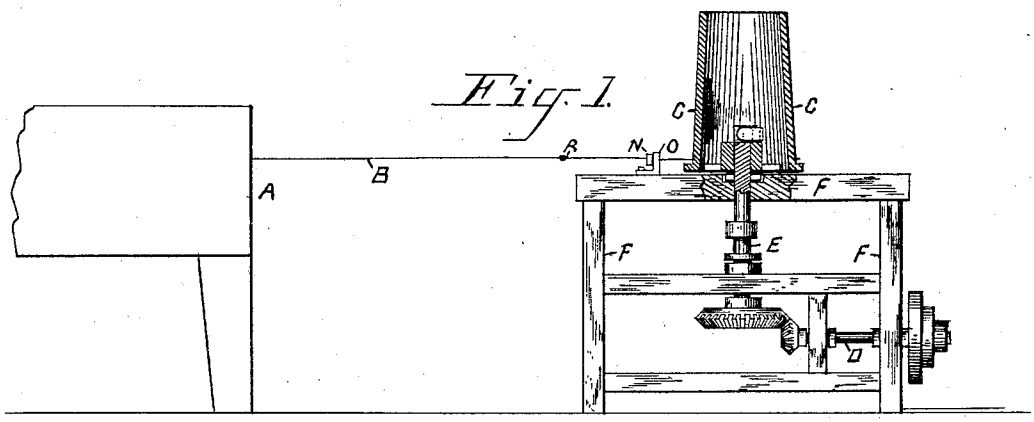


Fig. 2.

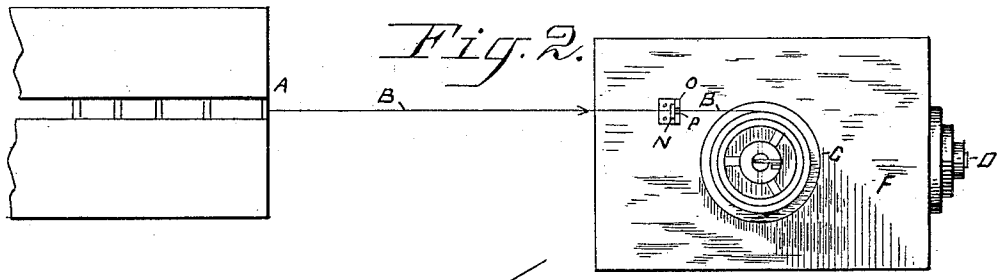


Fig. 3.

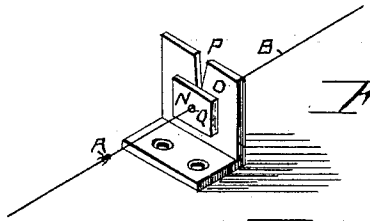


Fig. 4.

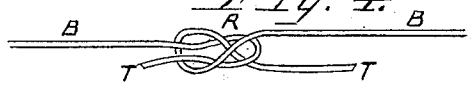


Fig. 5.



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UNITED STATES PATENT OFFICE.

EDWARD CLIFTON, OF LOWELL, MASSACHUSETTS.

APPARATUS FOR REELING OR WINDING WIRE.

SPECIFICATION forming part of Letters Patent No. 345,832, dated July 20, 1886.

Application filed May 11, 1885. Serial No. 165,119. (No model.)

To all whom it may concern:

Be it known that I, EDWARD CLIFTON, of Lowell, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Reeling Hardened and Tempered Wire, of which the following is a full, clear, and exact description.

In the process of hardening and tempering steel wire, as well known, and as the same is now practiced, the wire is continuously run in a series of separate lengths or pieces from coils, first, through a heating-furnace and an oil-bath, for hardening it, and thence through a tempering-oven and out thereof to vertical rotating blocks, a separate block for each length of the series of separate lengths, and upon which such length of wire is coiled. As each separate length of wire so runs, it passes through guides at suitable points, and its drawing, or rather movement or travel, as above stated, through the several apparatuses and guides above mentioned, is secured by the rotation of the block or reel upon which it is reeled as it issues from the tempering-oven. Again, in the practice of the process of hardening and tempering wire, as above stated, the wire of each spool which is to be hardened and tempered is passed at one end by hand through the several apparatuses and threaded, as it were, through the guides, and, finally, being attached to the winding-block therefor, located at the discharge end of the tempering-oven, the wire is then ready to be set in motion and the hardening and tempering thereof to begin. Such an adjustment or placing of the wires plainly causes on each occasion a more or less waste of time and a loss of production, the loss of production being practically that of the length of the wire so extended through the hardening-furnace, oil-bath, and tempering-oven. These difficulties can be remedied by running the wires endlessly, as it were, through the apparatuses referred to; and to that end this invention consists in uniting separate lengths of wires by tying them together at their ends, or otherwise, in any suitable manner, thus securing wires of endless lengths, as it were, and in providing a disk-block, or equivalent device, for the wire so connected to pass through after leaving the tempering-oven and before being reeled, of a construction and arrangement to cause the separation of said endless wire into its separate lengths, severing it at its said points of attachment, all substantially as hereinafter described.

In carrying out this invention any construction and arrangement of hardening-furnace, oil-bath, and tempering-oven may be used, provided they are adapted for the continuous travel of lengths of wire through them from end to end, each of said lengths as it passes from the tempering-oven being wound or reeled upon a rotating block, all as is well known.

Apparatuses suitable for the purposes of the invention are shown and described in Letters Patent of the United States issued to me, dated September 5, 1882, No. 263,859, and reference is hereby had thereto; but as such apparatuses constitute no part of this invention they are not herein particularly described or illustrated in the drawings, the drawings illustrating simply a die for separating the wire passing through it into lengths, a block for reeling the wire, mechanism for rotating said blocks, and the tying together of the separate lengths of wire, all as hereinafter fully appears.

In the drawings, Figure 1 is a side elevation of the several parts of the mechanism just above referred to as the parts illustrated. Fig. 2 is a plan view of Fig. 1. Fig. 3 is a perspective view of the die and its support detached and on an enlarged scale. Figs. 4 and 5 are views illustrating the tying together of the ends of two separate lengths of wires, making them into one continuous length, the length of wire so united being separated in their separate lengths at said knotted portions as the wire passes through the die, as will hereinafter fully appear.

In the drawings, A represents the discharging end of a tempering-oven, from which a length, B, of wire previously tempered therein passes to a vertical block, C, of ordinary or other suitable construction to be reeled thereon. The block C has a continuous rotary movement imparted to it by means of driving mechanism connected therewith, (shown in the drawings,) and consisting, essentially, of a horizontal driving-shaft, D, geared to a vertical shaft, E, carrying the reeling-block C, the whole

carried by a supporting-frame, F, having suitable bearings for the shaft D.

N is a die-block located between the tempering-oven and reel-block C, and in the line of travel of the wire between the two. This die-block in position is vertical and rests against a vertical stationary support, O, slotted vertically, as at P. The die-block N has an eye, Q, through it of sufficient diameter for the free and unobstructed passage of the wire, except where it is knotted or tied, as at R, and at such portions to resist the passage of the wire and hold it against further travel, and thus, through the tension or pull upon the wire so held, caused by the rotation of the reel-block, finally secure its breaking at or near said knotted portion into separate pieces of lengths practically corresponding, as the operation of tempering and reeling continues, in length to the wire, as it were, in its separate lengths before being tied together and made into a continuous length preparatory to the entrance thereof into the hardening-furnace to pass through the oil-bath and tempering-oven to be heated, hardened, and tempered, as well known and practiced in the process of hardening and tempering wire.

Uniting the several lengths of wire into one continuous or endless length by tying its separate lengths together enables a continuous and, as it were, endless travel of the wire to be secured, thereby economizing in time, and in production of hardened and tempered wire, and obviating, practically, any loss of the same.

The separation of the endless wire into its original separate lengths, as described, enables the wire to be reeled in its separate lengths, (although, as to the hardening and tempering apparatus it is practically endless,) which it is desirable it should be, so as to keep it in skeins of the weight, substantially desired in each. On the separation of the wire, as described, the block reeled with wire is removed, another substituted for it, and the end of the length of the wire from which the wire reeled on the block has been separated is then, being first relieved of any remaining portions of the knot, threaded through the die and connected with the block on which the wire is next to be reeled, and the operation goes on as before. The lengths of wire are preferably tied together with a square knot, (see Figs. 4 and 5,) and the loose ends T T of the wire turned back relative to the direction of travel, so that they cannot catch in any of the guides or other mechanisms of such apparatuses.

The knotting or connection of the wires may be made in various forms other than that particularly described and shown, and in all cases it must be such as to secure the separation of the wire into separate lengths by the action of the die or equivalent device therefor upon the traveling wire under the tension or pull of the reeling-block.

Having thus described my invention, I claim—

In apparatuses for hardening and tempering wire and the like, an obstructing device—such, for instance, as a die, N—which is located at the discharging end of the tempering-oven, between it and the reeling-block or other reeling device for the wire, and is constructed for the travel of the wire through and for the obstruction of said travel by it, all substantially as described, for the purpose specified.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

EDWARD CLIFTON.

Witnesses:

WM. S. BELLOWS,

ALBERT W. BROWN.