(No Model.)

G. W. B. ELLIS & E. L. WARREN.

WIRE CLEANING APPARATUS.

No. 304,513. Patented Sept. 2, 1884.

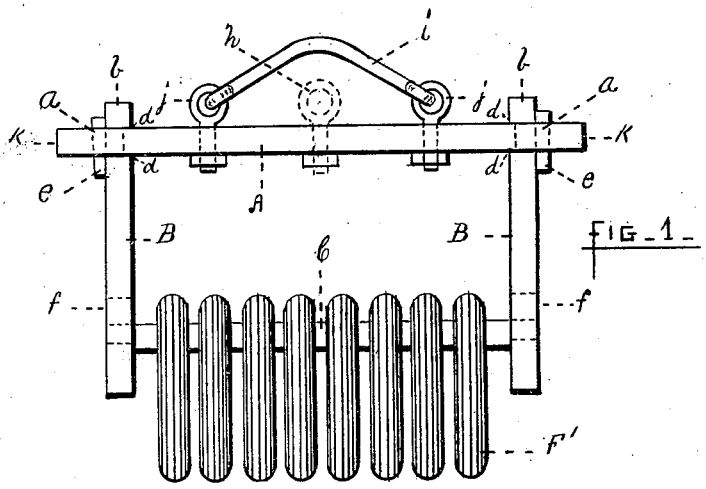

FIG. 1.

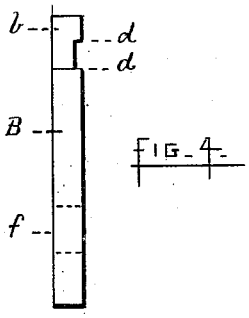

FIG. 4.

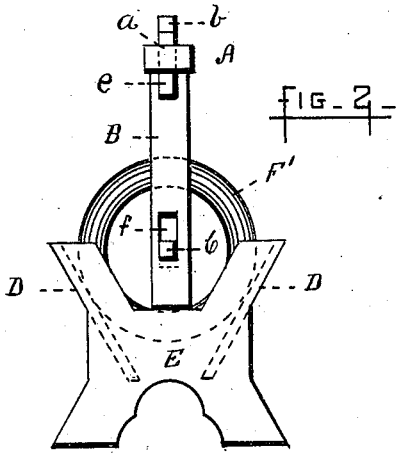

FIG. 2.

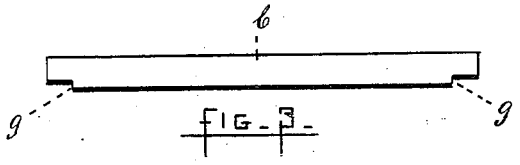

FIG. 3.

WITNESSES.

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UNITED STATES PATENT OFFICE.

GEORGE W. B. ELLIS AND EDWARD L. WARREN, OF WORCESTER, MASSACHUSETTS, ASSIGNORS TO THE WASHBURN & MOEN MANUFACTURING COMPANY, OF SAME PLACE.

WIRE-CLEANING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 304,513, dated September 2, 1884.

Application filed July 30, 1883. (No model.)

To all whom it may concern:

Be it known that we, GEORGE W. B. ELLIS and EDWARD L. WARREN, citizens of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Apparatus for Handling Wire Coils, of which the following is a specification, the accompanying drawings forming a part thereof, in which—

Figure 1 shows a front elevation of our improved device; Fig. 2, an end elevation with the V-shaped trough for holding the coils; Fig. 3, a detached view of the horizontal supporting-bar, and Fig. 4 a detached view of one of the upright bars B.

Similar letters refer to similar parts in the several views.

Our present invention relates to an apparatus to facilitate the handling of the coils of wire or wire rods in any of the processes of wire-making, and is designed particularly to aid in the manipulation of the coils of wire rods in that process known as "pickling," which consists in immersing the coils in an acid or cleaning bath for the purpose of removing from their surface oxide or foreign substances preparatory to their being drawn or plated. By the method now commonly employed the wire rods in coils of varying sizes and weight, according to the size and kind of wire, are strung upon an upright stem or post having arms or bars projecting radially from its lower end, and upon which the column of coils rests, the coils lying one upon another, and each coil receiving the weight of all those above it. The chain of the crane or hoisting apparatus is then attached to the upper end of the stem or post and the coils raised, carried over, and lowered into the vat containing the cleaning-solution. The coils thus wholly immersed are allowed to remain until the action of the bath upon the surface of the wire rods has produced its desired effect, when the coils are raised from the vat and "devitriolized," which ordinarily consists in subjecting them to a stream of water to remove any excess of acid, and thereby prevent its injurious effect upon the wire. By the above-described method each coil has to be lifted over the top of the upright stem or post, involving in the aggregate a large amount of labor. The coils and the separate strands in each coil, especially those near the bottom of the column, lie closely packed and compressed together, with their surfaces held in contact by the superincumbent weight of the coils above, thereby preventing free access of the cleaning-solution to all portions of the surface, resulting in the rods being unequally acted upon—some parts injuriously affected by the bath and some imperfectly cleaned. By our improved method of handling the coils of wire rods we seek to obviate these and other objectionable features of the present mode; and our invention consists, in its essential features, first, in a horizontal bar supporting the wire coils, and held by a suspensory frame or bail, to which the hoisting apparatus is attached, thereby permitting the entire surface of the coils, with the supporting-bar, to be immersed in the cleaning solution; second, in providing the suspensory frame or bail with projecting ends adapted to rest on the sides of the vat or other suitable support, so as to allow the coils to be held suspended thereby in the bath; third, in making the horizontal supporting-bar detachable at one or both ends from the suspensory frame or bail, so as to facilitate putting on and taking off the wire coils; fourth, in the combination, with the lifting and wire-supporting apparatus, of a V-shaped trough for holding the wire coils; and, fifth, in certain details of construction, as hereinafter set forth.

Our improved apparatus may be made of wood or metal; but when used in the operation of pickling wire rods we prefer to construct it of wood, as otherwise a metal must be selected which will withstand the action of the cleaning-solution, while wood is much less expensive, is lighter, and is but slightly affected by the acid solution generally used in cleaning.

The method of constructing our wire-handling apparatus is as follows:

A is a bar having near each end the mortises *a a*, (shown by the broken lines in Fig. 1,) through which pass the tenons *b b* of the upright bars B B. The tenons *b b* have each

a transverse channel on the inner sides of the bars, forming shoulders *d d*, which are made to embrace the bar A when the tenons are in position by the keys *e e*. A short distance from the lower ends of the bars B B are mortises *f f*, of sufficient size to allow the bar C to pass freely. The bar C has shoulders *g g* at each end, which, resting against the inner sides of the bars B B, prevent any endwise motion of the bar C. In the center of the bar A may be an eyebolt, (shown by the broken lines at *h*,) or a curved rod, *i*, or chain attached by the eyebolts *j j* to the bar A at points equidistant from the center of the bar, to which the chain of a crane or other hoisting device may be attached.

In connection with the above-described frame we employ a V-shaped trough formed of the sides D D, and having ends, one of which is shown at E, Fig. 2, placed the same distance apart as the bars B B, and upon which their lower ends rest, the end pieces being cut away in the center, to allow the bars B B to bring the mortises *f f* low enough with reference to the wire coils F', placed on edge in the trough, so the bar C may be inserted through the mortises *f f*, and also through the centers of the coils F'. The frame is then raised by the hoisting apparatus, having the wire coils suspended on the horizontal bar C, as shown in Fig. 1, each coil resting apart from its neighbor, and touching the bar C at a single point at the top of the bar, the separate strands of wire in each coil hanging loosely, and allowing the cleaning-solution free access to all parts of its surface. After the wire has been withdrawn from the cleaning-bath, and while it is still held suspended by the hoisting apparatus, a whirling motion may be given to the frame, (the sustaining-chain having a swivel for that purpose,) and a stream of water played upon the coils, very effectually washing off all surplus acid, owing to the water obtaining free access to and between all the coils. The projecting ends K K of the bar C is adapted to rest upon the sides of the vat or upon suitable supports, to sustain the frame with the wire coils wholly immersed in the cleaning-solution whenever it is desired to leave the coils suspended for a time in the vat.

We do not confine ourselves to the specific construction as above described, as several of the features of our invention might be embodied in other forms of construction. For instance, that part of the jointed frame formed by the bar A and bars B B may be made in one piece when made of metal; or other forms of joint may be used; or the frame may be stayed by any of the systems of bracing known to carpenters and wood-workers; or, instead of a sliding bar, C, having shoulders *g g*, pins may be used passing through one or both ends of the bar C and one or both of the bars B B; or the bar C may be hinged at one end to one of the bars B B and have a suitable latching device at the opposite end; nor do we claim, broadly, suspending the wire coils from a horizontal bar, as that mode of suspension is common in many of the arts—such as dyeing, electroplating, &c.; but

What we do claim as our invention, and desire to secure by Letters Patent, is—

1. The wire handling apparatus as described, consisting of a rigid frame or bail, and a horizontal wire-supporting bar held by but detachable from said rigid frame or bail, and a single suspending cord or chain, upon which a whirling or rotary motion can be given to the coils of wire while they are being subjected to a current of water, the several parts being combined as and for the purpose set forth.

2. In a wire-handling apparatus, the combination, with a rigid frame or bail carrying a horizontal detachable wire-supporting bar, said frame or bail having means for attaching a suspending cord or chain, of projecting ends extending laterally from said rigid frame or bail, for the purpose of resting on the sides of the vat or other suitable support, said ends being at a sufficient distance above the horizontal wire-supporting bar to allow the complete immersion of said bar and the wire coils in the cleaning-vat, as and for the purpose set forth.

3. In a wire-handling apparatus, the combination of a wire-holding trough and a lifting frame or bail having a horizontal detachable wire-supporting bar, as and for the purpose set forth.

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