(No Model.)

P. LAFFEY.

APPARATUS FOR WITHDRAWING WIRE COILS FROM ANNEALING POTS.

No. 306,263. Patented Oct. 7, 1884.

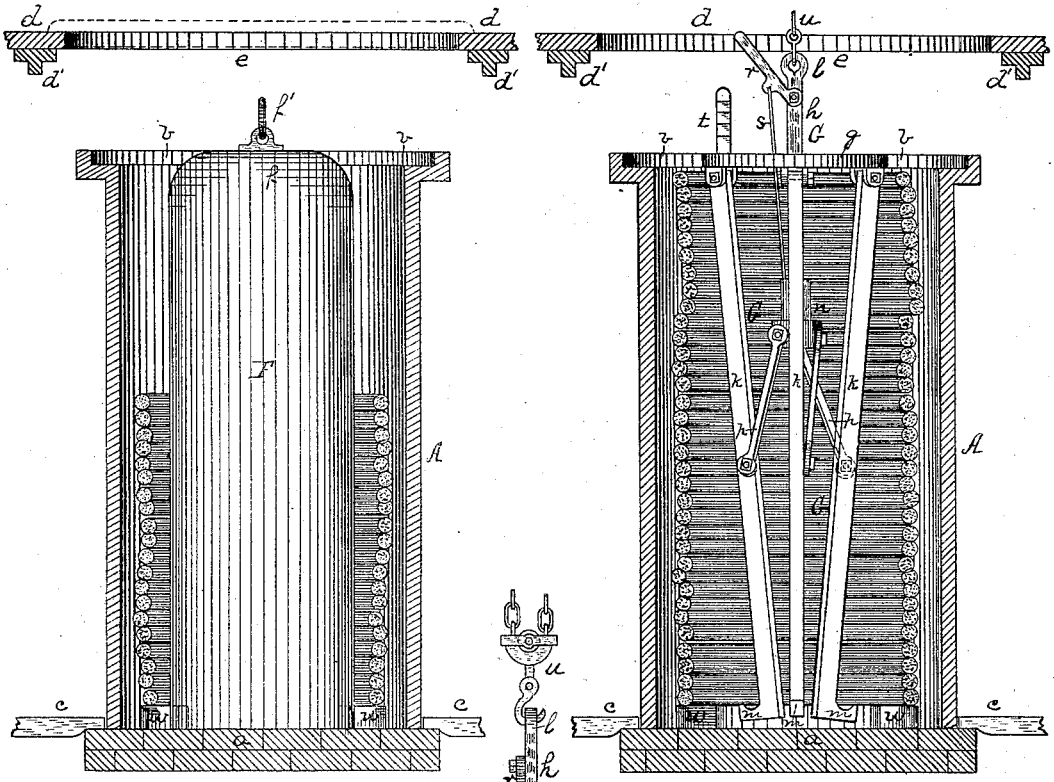

Fig 1.

Fig 2.

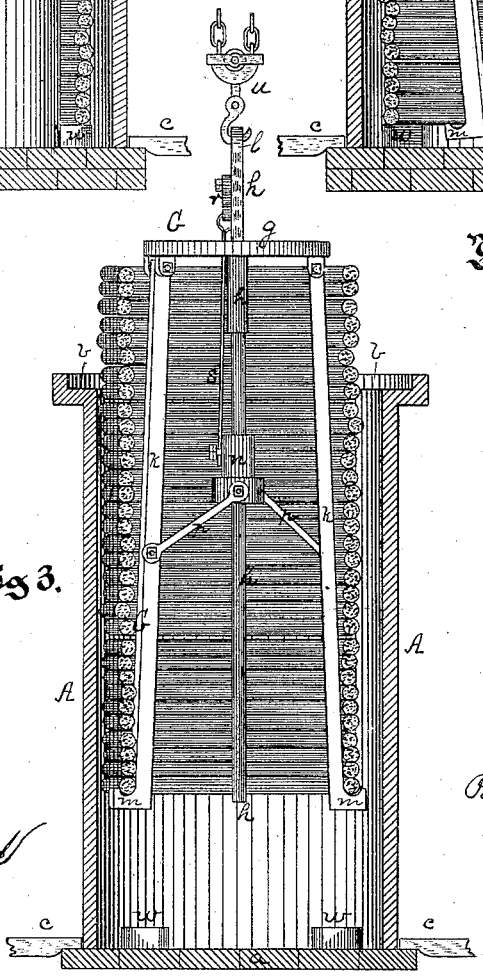

Fig 3.

Witnesses.
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PATRICK LAFFEY, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO NATHAN S. BROKAW, OF SAME PLACE.

APPARATUS FOR WITHDRAWING WIRE COILS FROM ANNEALING-POTS.

SPECIFICATION forming part of Letters Patent No. 306,263, dated October 7, 1884.

Application filed November 8, 1883. (No model.)

To all whom it may concern:

Be it known that I, PATRICK LAFFEY, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Apparatus for Withdrawing Wire Coils from Annealing-Pots; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to apparatus for withdrawing wire and like strips—such as the wire of barbed fences, &c.—from annealing-pots.

In the ordinary process of annealing wire in which the coils have been placed in cylindrical cast-iron pots, the pots holding forty coils of the average weight of one hundred pounds. These pots are then closed and heated until the wire is properly annealed, and when the heat of the pots was sufficiently reduced they were opened and each coil of wire lifted out by means of hooks.

In large manufactories it was found impracticable to allow the pots to cool entirely, and because of the heat of the furnace and coils the labor of withdrawing the wire by means of the hooks was severe, requiring generally about five men to withdraw and two to pile, and it was considered a day's work to fill and empty from twelve to thirteen annealing-pots, an ordinary work having about fifty pots requiring about twenty-eight men for this purpose.

Devices have been arranged in the pots in which the coils of wire were placed and by which they were lifted out after the annealing process; but as these devices remained in the pots during the annealing process it was found that they also became annealed, and for this reason were too weak to withdraw the number of coils placed within the pots, and for this reason the only practicable way found has been to withdraw each coil separately, as above described.

In pickling wire suitable reels have been formed for inserting the wire-pickling vat and withdrawing it therefrom; but these are not found applicable to the annealing-pots, and have not been employed.

The object of my invention is to provide means for withdrawing these coils of wire from the annealing-pots, which can be inserted in the pot after the annealing of the wire and lift the entire charge therefrom.

It consists, essentially, in a hoist or lifting-frame suspended from a suitable crane, and adapted to be folded together and lowered within the coils in the pot and to catch under the lower coil, and thus raise all the wire out of the pot at one operation, and in certain details of construction hereinafter set forth.

In the drawings, Figure 1 is a sectional view of an annealing-pot partly filled, and showing the guide-drum in full lines. Fig. 2 is a like view of the pot filled, showing the hoist or frame folded and lowered therein; and Fig. 3 is a like view showing the hoist or frame spread out and raising the wire out of the pot.

Like letters of reference indicate like parts in each.

In the drawings, the annealing-pot A is made of cast metal, and is supported on a suitable foundation, *a*, the pots being generally about eight feet deep and four feet in diameter. The pot is closed by one or more lids or covers fitting into a seat or seats, *b*, at the top of the pot, and sealed with sand or clay, if desired. The pots are inclosed in suitable furnaces or heating-ovens, the grates of which are indicated at *c*, and the roof of which is indicated at *d*, the roof being formed of heavy plates supported on girders *d'*, and forming the standing-floor for the workmen in filling and emptying the pot. In this floor is the working-hole *e*, the hole being closed by a suitable lid. (Shown in dotted lines, Fig. 1.) These parts are of the ordinary construction.

F is my improved guide drum or frame, which corresponds in height with the height of the pot, and is of smaller diameter than the inner diameter of the coils to be annealed, so that they will pass over it easily and be guided by it to place, so packing more evenly and having a clear space for the entrance of the hoisting-frame, as hereinafter referred to. The drum or frame is preferably made of light plate or sheet metal, as it has no openings into which the ends of the wire coils might enter, the wire being sometimes coiled loosely. An open

frame-work of bars may, however, be employed, and will answer the purpose well. The upper end of the drum is curved, as at *f*, so that the coils will not catch upon it when thrown into the pot, and it is provided with a hook or loop, *f'*, by means of which it is withdrawn from the pot. The hoist or lifting-frame G is formed of the body *g*, center or lift bar, *h*, ribs *k*, and apparatus for folding or drawing them in and spreading them out to catch under the coils. The body is made of a heavy metal plate, and may be suitably braced or strengthened, if desired. Extending through the center of the body is the lift-bar *h*, this bar being rigidly secured to the plate and having a suitable hook or loop, *l*, at the top, by means of which it is suspended from the derrick or crane.

Hinged or pivoted to the body *g* are the ribs *k*, which correspond in length to the pot, and are provided at the base with the hooks *m*, which extend out so as to catch under the lower coil of wire.

Sliding on the bar *h*, below the body *g*, is the hub *n*, and the ribs *k* are connected by the link-bars *p* to this hub, so that by sliding the hub on the bar *h* the ribs will be spread out or drawn or folded together.

Pivoted to the lifting-bar *h*, above the body *g*, is the lever *r*, and the hub and lever are connected by the rod *s*, the hub being raised and lowered on the center bar by this lever. This lever catches in a suitable rack, *t*, on the body, and so holds the ribs in any desired position.

The hook and chain of the derrick or crane are represented at *u*.

The operation is as follows: At the base of the annealing-pot are suitable blocks, *w*, to support the bottom coil of wire sufficiently above the bottom of the pot to permit the hooks *m* to enter under them. The guide-drum F is lowered by means of the crane into the pot, and the coils of wire are then thrown or dropped through the working-hole *e* in the standing floor around the drum and are directed to place thereby, so that they pack evenly and regularly within the pot. As they are thus prevented from falling irregularly within each other they are packed more closely, and a larger number packed in each pot. The drum also preserves a clear space within the coils for the entrance of the hoisting-frame. The drum is then withdrawn, the lid or lids are placed on the pot, the hole *e* closed, and the pot brought to the proper heat and allowed to cool. When sufficiently cool, the pot is opened, and by means of the crane the hoist or lifting-frame G is lowered into the pot within the coils of wire until it rests on the bottom. The ribs *k* are then spread out by means of the lever *r* until the hooks *m* pass under the lowest coil of wire and the lever is caught by the rack, thus holding the ribs out until the hoist is raised and the hooks catch under the coil, when the weight of the wire will hold them in place. By means of the crane or derrick all the wire in the pot is then raised out at one operation, and carried by the crane to the storing-place, when the ribs of the frame are drawn in and the frame lifted out of the pile of coils.

The operation of emptying the pot requires but little time, and with the one set of apparatus fifty or more annealing-pots can be filled and emptied in one day. The apparatus requires only about five men to operate it, as it both withdraws and piles the wire, thus saving greatly in labor. As the wire is often very hot when withdrawn and the coils are kept together in a regular pile when withdrawn, they cool more gradually than when they are withdrawn and piled separately, and are consequently better annealed.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In apparatus for raising wire coils out of annealing-pots, in combination with a pot and blocks or equivalent devices for holding the coils above the base thereof, a lifting-frame having hooked ribs pivoted thereto and apparatus for folding together and spreading out said ribs, substantially as set forth.

2. In apparatus for raising wire coils out of annealing-pots, the combination of the body *g*, ribs *k*, pivoted thereto and having hooks *m*, center bar, *h*, hub *n*, and link-bars *p*, substantially as and for the purposes set forth.

In testimony whereof I, the said PATRICK LAFFEY, have hereunto set my hand.

PATRICK LAFFEY.

Witnesses:

NATHAN S. BROKAW,

JAMES I. KAY.