C. H. MORGAN.

Apparatus for Plating Wire in Coils.

No. 150,774. Patented May 12, 1874.

Fig. 1.

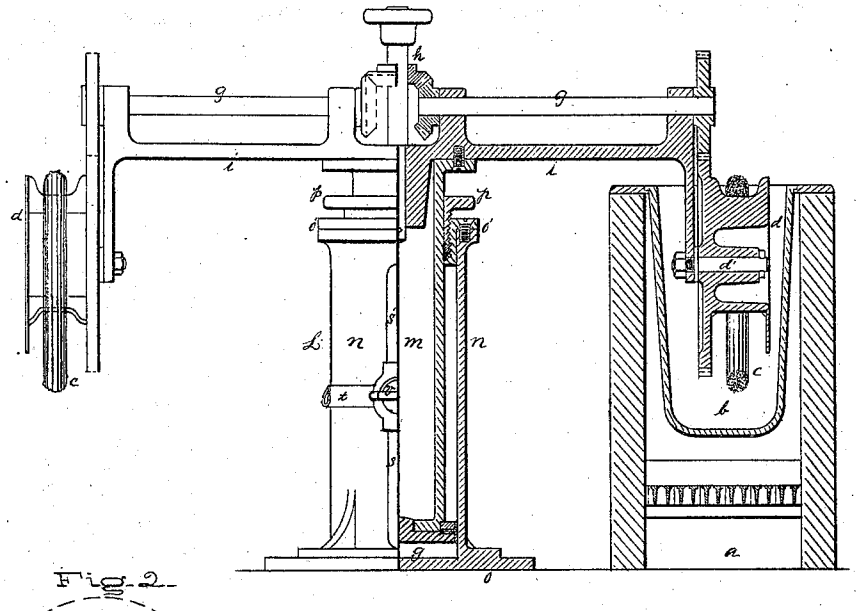


Fig. 2.

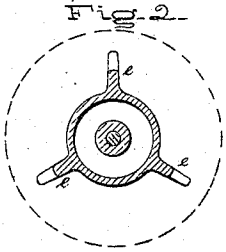
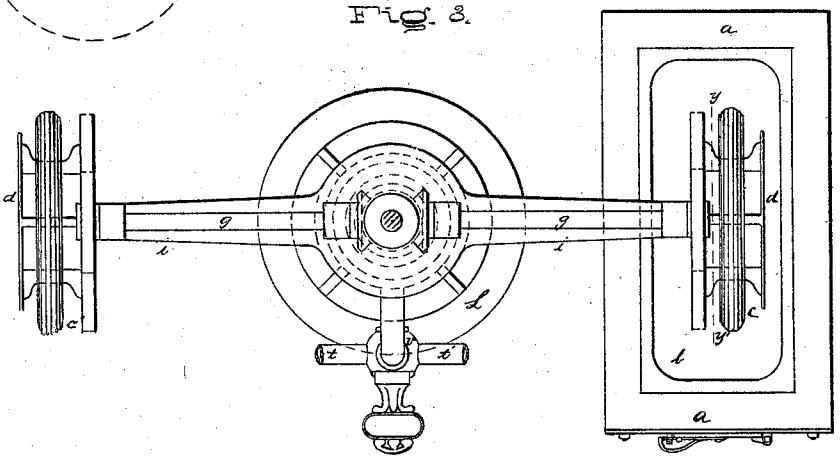


Fig. 3.



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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN APPARATUS FOR PLATING WIRE IN COILS.

Specification forming part of Letters Patent No. **150,774**, dated May 12, 1874; application filed February 17, 1874.

To all whom it may concern:

Be it known that I, CHARLES H. MORGAN, of Worcester, in the county of Worcester, in the State of Massachusetts, have invented a new and useful Process with Apparatus for Plating Wire in Coils; and I do hereby declare that the following is a full, clear, and accurate description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon.

The nature of my invention consists in organizing a process with apparatus whereby the coil of wire to be plated is immersed in a bath of plating-metal, in a molten state, while suspended from a revolving reel. This reel is so constructed as to give to coil a shaking as well as revolving motion. These two motions are both necessary in order to insure a uniform deposit of the plating-metal, and to prevent adhesion of the strands of the coil during the process of cooling. The shaking motion is in this case imparted to the coil of wire by means of radial blades on the surface of the reel, which constantly lift and drop the coil. Any mechanical equivalent may be substituted for this reel. Forming a part of the apparatus is a lift, to be operated by water, steam, or other pressure, having arms radiating horizontally in opposite directions, and each supporting at its extremity one of the reels above described. These reels are kept revolving by means of shafts and gearing on the lift, so arranged as to permit perfect freedom in the motions of the lift, whether vertically or in horizontal rotation. The lift is so arranged in connection with the plating-bath, that by its horizontal revolution the reels may be successively brought over the bath, and it is designed that while one coil is in the bath that on the opposite reel shall be cooled and replaced by another coil to be plated.

The apparatus for this process will be fully understood by reference to the accompanying drawings, in which—

Figure 1 is a half-elevation and half-vertical section. Fig. 2 is a vertical cross-section through the reel at *y y*, Fig. 3. Fig. 3 is a plan.

Like letters on the different figures refer to like parts.

a a is a furnace, within which is a bath, *b*, containing the plating-metal in a molten state for plating the coil of wire *c*. *d* is a revolving reel, by means of which the coil of wire is kept revolving, while the blades *e e* upon its surface impart to the coil a shaking motion. The reel *d* is hung on a spindle, *d'*, and is kept revolving by being geared to the shaft *g* above. The shaft *g* in turn receives its motion through its geared attachment to the upright shaft *h*. This shaft *h* is driven from above, and is arranged so as to permit vertical, while continuing its rotary, motion. The reels, shafts, and gearing thus far described are supported by the arms *i i* of the lift L. This lift consists of a cylinder, *n*, furnished with heads *o o'* and containing a piston, *q*, fitted to the cylinder by packing about its circumference. Forming a part of the piston, and passing out through the gland *p*, is the trunk *m*. Passing across the top of this trunk *m*, and securely fastened to it, are the arms *i i*, each supporting at its extremity one of the reels *d*. *s* is a pipe opening into the bottom of the cylinder *n* and provided with a three-way cock, *v*, so that the pressure-medium may be admitted to the cylinder from the pipe *t* or exhausted therefrom through the pipe *t'*. The pipe S' serves a like purpose at the top of the cylinder *n*.

Having now described the nature of my process, and the apparatus for its accomplishment, I will proceed to describe the operation thereof. Having reduced the plating-metal in the bath *b* to a molten state by means of the furnace *a*, hang a coil of wire to be plated on one of the reels *d d*. Open the valve *v* and raise the lift till the coil *c* will swing over the bath. Revolve the lift till the coil *c* is over the bath, and then turn the valve *v* so as to exhaust the lift, and permit the coil to descend into the bath. Hang a fresh coil of wire on the opposite reel *d*, and when the first coil has received sufficient deposit of plating raise the lift as before, and allow the surplus plating-metal from the freshly-plated coil *c* to drip off into the bath. Then revolve the lift one hundred and eighty degrees, and exhaust it as before, bringing a new coil to be plated into the bath. As soon as the first coil is cool enough for handling, replace it by a fresh coil. By this time the coil in the bath is ready for re-

moval, and, by the same process as before, it may be removed and replaced by another ready for plating.

Having set forth the nature of my process, and construction and operation of its apparatus, what I claim, and desire to secure by Letters Patent, is—

1. The method of plating wire in the coil, consisting in the combined rotating and shaking motion imparted to the coil after it is raised from the bath of molten metal, to equalize the deposit of plating-metal and prevent the strands from adhering, substantially as described.

2. A lift carrying a series of reels, which reels, in addition to a rotary motion around their own axis, can be raised, lowered, and turned, in series, upon and by the axis of the lift, substantially as and for the purpose described.

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Witnesses:
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