(No Model.) 2 Sheets—Sheet 1.

J. A. & F. CRICH.

APPARATUS FOR REMOVING SURPLUS COATING METAL FROM WIRE.

No. 246,085. Patented Aug. 23, 1881.

Fig. 1

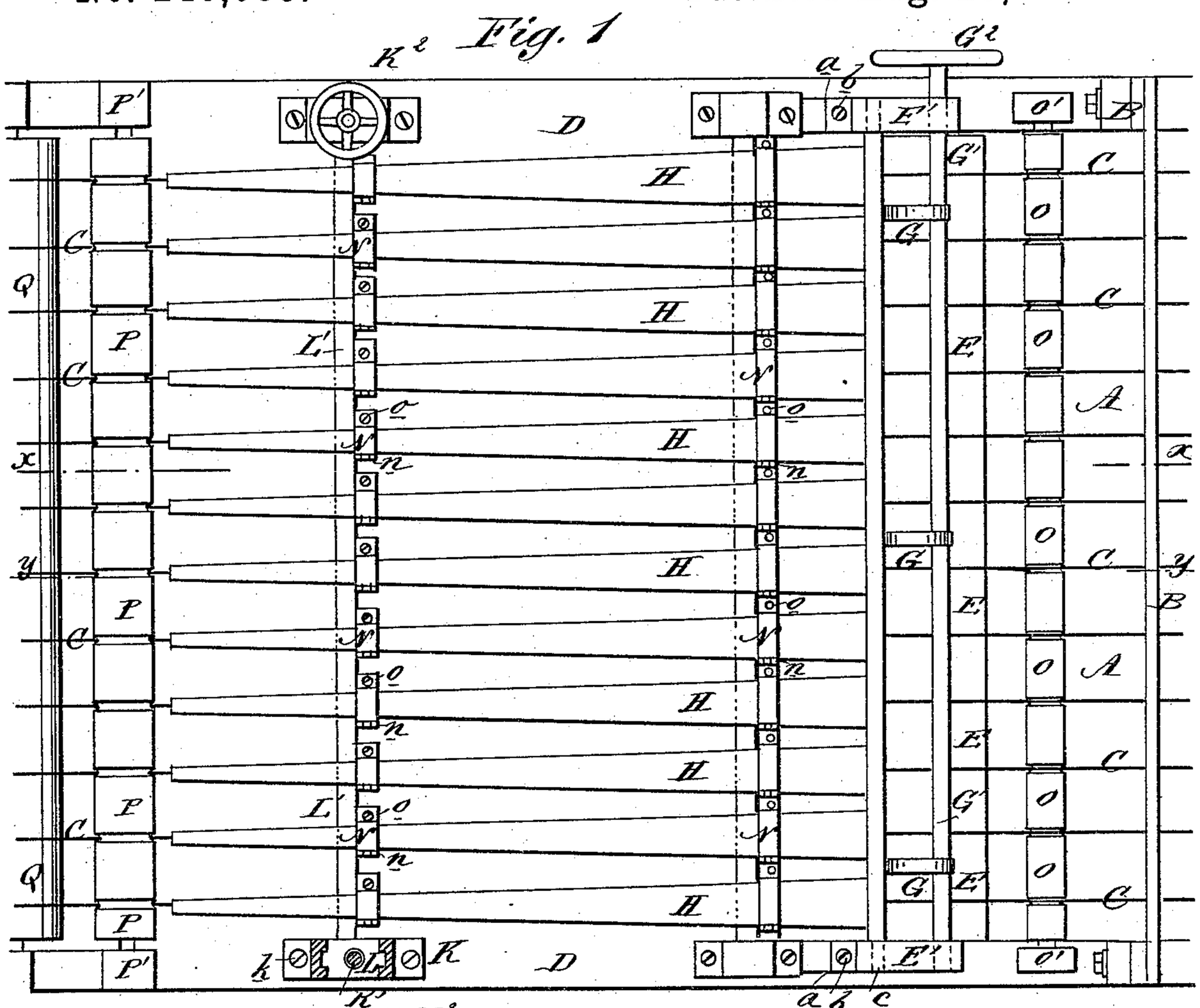
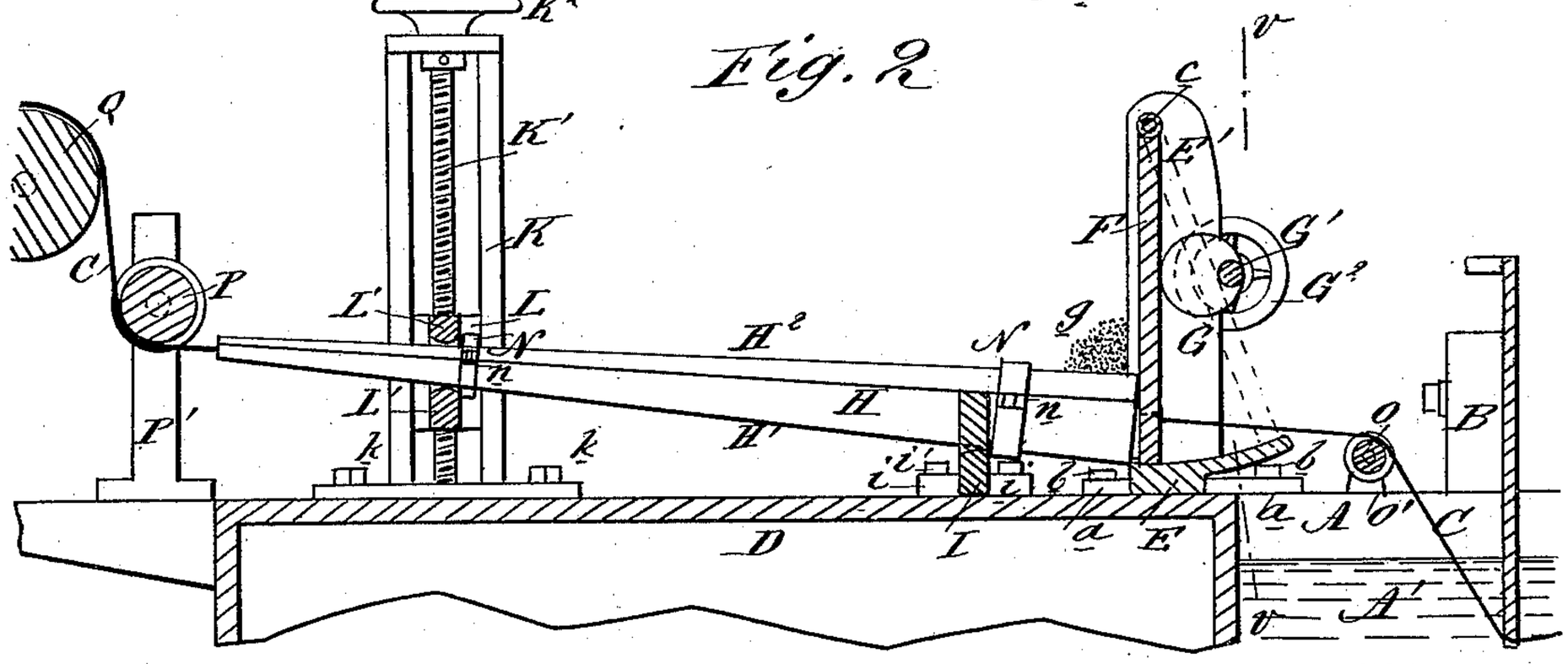


Fig. 2



WITNESSES:

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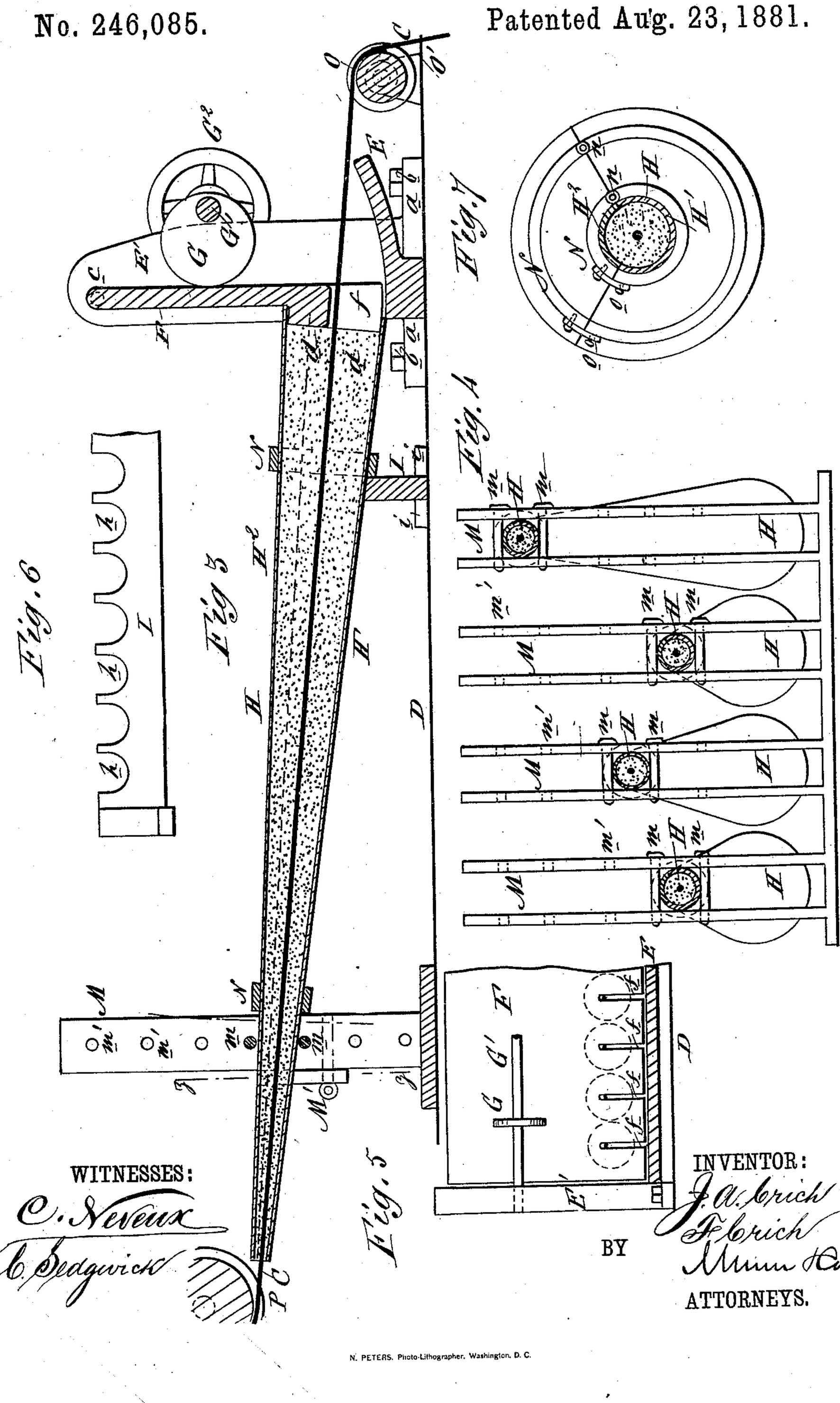

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UNITED STATES PATENT OFFICE.

JOHN A. CRICH, OF NAUGATUCK, CONN., AND FREDERICK CRICH, OF PITTSBURG, ASSIGNORS TO HENRY ROBERTS, OF ALLEGHENY CITY, PA.

APPARATUS FOR REMOVING SURPLUS COATING METAL FROM WIRE.

SPECIFICATION forming part of Letters Patent No. 246,085, dated August 23, 1881.

Application filed March 23, 1881. (No model.)

To all whom it may concern:

Be it known that we, JOHN A. CRICH, of Naugatuck, in the county of New Haven and State of Connecticut, and FREDERICK CRICH, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and Improved Apparatus for Removing Surplus Coating Metal from Wire, of which the following is a specification.

In coating wire with tin or zinc the usual method for removing the surplus tin or zinc from the wire as the latter leaves the bath is to draw said wire through a covering of sand, asbestus, or other non-combustible substance that is placed on the surface of the bath; but in this method tubes of scoriæ are quickly formed by the passage of the wire through the sand or asbestus, so that the latter ceases to wipe off the surplus molten tin or zinc or does so imperfectly, and when in operating upon a number of wires at a time the sand or other material about one wire becomes dirty or ineffective from scoriæ or from the surplus metal that is wiped from said wire, all the wires have to be stopped to replace the dirty with clean sand.

The object of this invention is to provide a device free from these objections, that will rarely require the changing of the sand or other wiping substance, and that is so arranged that the sand can be removed and replaced about one wire, when desired, without interfering with the other wires.

Figure 1 is a plan of the wire-cleaner, partly in section. Fig. 2 is a sectional side elevation of the same on line *x x*, Fig. 1. Fig. 3 is an enlarged sectional side elevation of the same on line *y y*, Fig. 1, showing a modification of the adjusting device. Fig. 4 is a sectional end elevation on line *z z*, Fig. 3. Fig. 5 is an end elevation, partly in section, on line *v v*, Fig. 2. Fig. 6 is a front elevation of a portion of one of the fixed supports of the tubes. Fig. 7 is an enlarged cross-sectional elevation of a single tube.

Similar letters of reference indicate corresponding parts.

In the drawings, A represents a tank containing the molten metal for coating the wires C, and B represents the sinker and its bearings in common use for holding the said wires C beneath the surface of the metal bath A′.

D is a bed for supporting the tubes H and their operating mechanism. On this bed D the bottom E of the tube-frame is secured by blocks and bolts *a b*, or other suitable device, and at the opposite ends of the bottom E are the standards E′, that complete the said frame. This bottom E is curved rearward and upward to conform with the sweep of the swinging door or valve F, that is pivoted on a rod, *c*, which extends across from the top of one standard E′ to the other. Said door or valve F is designed for the purpose of holding the sand (represented at *d*) in the tubes H, and is forced and held against the larger and lower ends of said tubes H by means of eccentrics G, which are fixed on a rod, G′, that is journaled on the standards E′ and is operated by hand-wheel G². The lower edge of said door or valve F is provided with series of parallel vertical slots *f*, through which the wires C pass into the tubes H. The sand or other non-combustible wiping substance may be introduced into the tubes H at a point designated at *g*, Fig. 2, and the valve F be retracted, as indicated in dotted lines, Fig. 2, for that purpose, and then forced by the eccentric G into the position shown in full lines, thereby carrying and pushing said wiping substance into the tubes H.

Near the larger end of tubes H, and supporting the same, is a support, I, having semicircular edge depressions, *h*, in which said tubes H rest. Said support I is secured on the bed D by blocks and bolts *i i′*.

Near the smaller ends of the tubes H, and secured on the bed D by bolts *k* at either side thereof, are standards K, in which are fixed vertical screws K′, operated by hand-wheels K²; and on the screws K′, and vertically movable in the standards K, are blocks L, which support the opposite ends of a bar, L′, that extends beneath the tubes H, so that by turning the screws K′ the smaller ends of said tubes H may be elevated or depressed at will.

A modification of this device is shown in Figs. 3 and 4, in which a pair of standards, M, are set, one on each side of each tube H in the bed D, and the tubes H are separately supported and secured between them by pins *m*,

passing through holes m' in said standards M, so that said tubes H can separately be adjusted at any desired elevation, as shown in Fig. 4. A supporting-bar, m', is also secured to the standards m for a supplementary support to said tubes H. The tubes H are constructed in two longitudinal sections, H′ H², the lower section, H′, forming in cross-section about three-quarters of a circle, and the upper section, H², forming about a quarter-segment. In a tube of this form the lower section, H′, will hold most of the sand or other wiping substance and prevent the escape of any when the section H² is moved for renewing the sand, for taking up a broken wire, or for other purposes.

Collars N are riveted or otherwise secured about the tubes H, the upper section of a collar, N, being hinged to the lower section thereof, as shown at n, and fastened, when closed, by hooks, clamps, or other convenient device, as indicated at o. These collars N serve as hinges for the parts of the tube H, and also to stiffen said tube, and bearing against the rear faces of the support I and supporting-bar L′, prevent the said tubes H from moving in the direction of the pull of the wire C.

O represents a grooved rod or a series of rolls mounted in suitable standards, O′, said roll O being designed to guide, direct, and support the wires C as they pass from the tank A to the tubes H.

P represents a grooved roll or series of rolls mounted on suitable standards, P′, for guiding the wires C onto the drum Q, on which the said wires C are wound. As the wires C are drawn through the conical tubes H some portion of the sand is drawn forward into them, and because of the increasing taper of said tubes H such sand becomes more and more firmly packed toward the smaller ends of said tubes H, so that the pressure of the sand upon the wires C is gradually increased.

It will be seen that this arrangement (this device) will apply equally well to one or any number of wires.

We are aware that wire from the zinc-bath is drawn through asbestus in a chamber and there compressed by a plunger; also, that wire from the reels has passed round one series of rolls, over and under another series, and thence between two friction-plates, over a roller, and into a box containing sal-ammoniac. Thence it is transferred to the metal bath.

What we claim as new and of our invention is—

1. In an apparatus for removing surplus metal from wire, a conical tube containing sand or other cleaning material, said tube being set with its larger end toward the bath, whereby the wire is wiped with an increasing pressure in passing through the cleaning material, as set forth.

2. In an apparatus for removing surplus coating metal from wire, the combination of tube H, tube-frame E E′, and swinging valve F, arranged and operated as set forth.

3. In the construction of an apparatus for removing surplus coating metal from wire, a conical tube, H, made in two longitudinal sections, substantially as herein shown and described, whereby the sand is retained in the tube when the upper tube-section is opened, as set forth.

4. In an apparatus for removing surplus coating metal from wire, the combination, with the tube H, of the adjusting-screws K′, blocks L, and bar L′, supported in standards K, substantially as herein shown and described.

5. In an apparatus for removing surplus coating metal from wires, the combination, with the tube H, of the collars N, substantially as herein shown and described, said collars serving to stiffen said tube, and serving also as hinges therefor, as set forth.

6. In an apparatus for removing surplus coating metal from wire, the combination, with tube-frame E E′, swinging valve F, and tube H, of the roll O, substantially as herein shown and described, said roll being designed to guide, direct, and support the wire as it is drawn through said tube from the bath, as set forth.

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FREDERICK CRICH.

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