

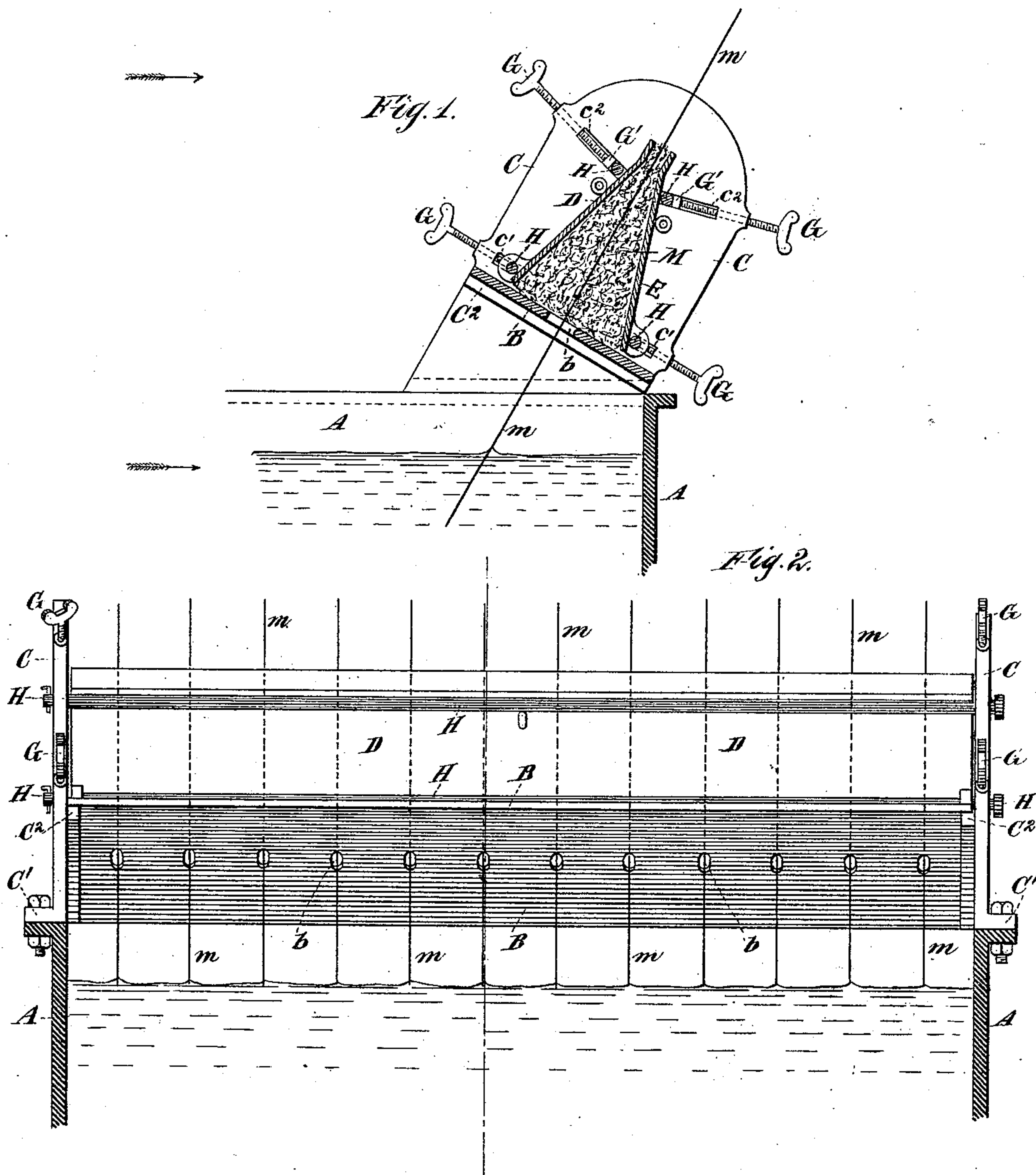
(No Model.)

F. CRICH.

APPARATUS FOR WIPING WIRE.

No. 275,364.

Patented Apr. 10, 1883.



WITNESSES

Charles R. Seale,  
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# UNITED STATES PATENT OFFICE.

FREDRICK CRICH, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO HENRY ROBERTS, OF SAME PLACE.

## APPARATUS FOR WIPING WIRE.

SPECIFICATION forming part of Letters Patent No. 275,364, dated April 10, 1883.

Application filed April 24, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, FREDRICK CRICH, of Pittsburg, Allegheny county, in the State of Pennsylvania, have invented certain new and useful Improvements in Wire-Wiping Apparatus, of which the following is a specification.

It is common to coat iron or steel wires with zinc, in the process known as "galvanizing," by drawing them slowly through preparatory materials—as acid and sal-ammoniac—then through the bath of melted zinc, and immediately afterward through a quantity of material which performs an important function by wiping off the surplus of melted zinc, leaving a uniform thin coat covering the wire. Twelve or other considerable number of wires are thus taken together through the metal bath, and through the preparatory and subsequent treatment, being carried a sufficient distance apart to avoid contact, and to allow the several operations to be successfully performed.

The present invention relates to the means for holding and operating the wiping material.

The following is a description of what I consider the best means of carrying out the invention.

I place the wiping-box, as usual, over one end of the metal bath, so that the zinc wiped off may flow back into the same. I provide an approximately tight bottom of iron or other suitable material a few inches above the surface of the melted metal, having holes properly arranged to receive the several wires, and sufficiently larger than the wires to allow the passage of the knots or junctions which are roughly made where one length of wire terminates and another begins. These knots, which seem to be essential to the rough and rapid working necessary in this art, are important to be considered in the wiping mechanism, as it renders impracticable the presenting of any close-fitting rigid parts in contact with the wire. I support the apertured bottom referred to on ledges from uprights—one at each side of the bath. Above the bottom plate I mount two side pieces or wings, which extend across the bath and converge upward. The wiping material is held in position by these side pieces or converging wings, the proper pressure being imparted to the material through thumb-

screws operating in the end supports, and bearing with variable force against the wings through the medium of longitudinal rods or bars. I provide two slots in each of the end pieces to accommodate the traverse of these rods.

The accompanying drawings form a part of this specification.

Figure 1 is a transverse section of the wiping-box and of a portion of the bath-containing tank. Fig. 2 is a section of the bath-tank, taken at right angles to Fig. 1, showing a rear elevation of the wiping-box.

Similar letters of reference indicate corresponding parts in the figures.

A is a portion of the vessel which contains the bath of melted metal.

B is a plate of cast-iron, having holes *b*, properly arranged to allow the passage of the several wires *m* side by side. This plate is held at an inclination, being supported on ledges on the inner faces of end pieces, which are bolted or otherwise secured upon the vessel A.

C C are these end pieces, certain portions being designated, when necessary, by additional marks, as C' C<sup>2</sup>.

C' are feet by which the whole is bolted down.

C<sup>2</sup> are the inner ledges, which support the plate B.

D and E are converging sides of the wiping-box. They are near together at the top and wide apart at the bottom; but the positions of both are changeable within considerable limits.

The wiping material is indicated by M. It may be of any character adapted to smoothly remove the surplus of melted zinc and to endure the high temperature and severe abrasion to which it is exposed. The vitreous fibrous material known as "mineral wool" serves well. I prefer a compound of such material with vegetable fiber and a small quantity of grease. Such compound will be made the subject of a separate application for patent.

The positions of the sides D and E may be varied with nicety by means of thumb-screws G, tapped in the end pieces, C, and pressing either directly or through the medium of blocks G' against removable bars H, which extend along on the outer faces of the sides D and E, and hold them to their work. There



are considerable slots in the end pieces, C, which, as the thumb-screws G are turned, allow the bars H, and consequently the corresponding side pieces, D and E, to be moved together to increase the pressure of the wiping material from time to time.

The lowermost slots are marked  $c'$ , the uppermost  $c^2$ . The upper slots should be long to allow a wide opening or separation of the upper edges of the side pieces, D and E. This is important in filling the box with fresh material. The lowermost slots may be considerably shorter.

I have not deemed it necessary to represent the reels which give off the several wires, the acid bath and furnace which give the preliminary treatment to the wires, nor the reels which, being turned uniformly by power, receive and by winding up the wire thereon draw it through the entire apparatus, of which my wiping-box may form the terminal portion. It will be understood that the wires move upward in inclined and approximately uniform and parallel paths from the hot mass of metal in the vessel A up through the holes in the bottom plate, B, and through the mass of wiping material M, emerging in a smoothly-wiped condition from the narrow top of the wiping-box, and, with or without subsequent treatment, being wound in proper coils on the several take-up reels. (Not represented.) The surplus melted zinc is removed near the base of the wiping material. My experiments indicate that it will flow back and return to the bath in a considerable stream from each wire. The remainder of the passage of the wires through the wiping material is mainly for the purpose of smoothing the surface and insuring an even distribution of the small quantities of zinc allowed to remain on the wires. The wiping material is exposed to wear along the whole line of contact with each wire, and when a roughly-twisted junction or knot of two lengths of wire moves upward through the wiping material it violently scratches away a considerable quantity. From both causes—the uniform wear of the regular wiping and the harsh abrasion of the knots at long intervals—the wiping material is removed around each wire, and requires to be replaced by the pressing inward of fresh quantities from the mass at more distant points. The wiping material is sufficiently mobile to allow this to be performed by forcing inward the plates D and E at intervals. The attendant must exercise some judgment in regard to this matter. Inspection of the wires from time to time will inform him of the general condition of the wiping material. When the box is freshly supplied, the plates D and E are wide apart. As the use is continued they are screwed gradually together. At intervals of a few days, more or less, the work is stopped, the screws G set back, the bars H removed, which can be done by drawing them out endwise, the side pieces, D and E, taken out and the entire remaining mass of wiping material removed,

and either thrown away or mixed with fresh to be resupplied. The fresh material may be introduced between the plates at the top when they are adjusted in the most widely-opened condition, and a little judgment being exercised in ramming the material evenly, and especially at the commencement of the operation, the apparatus will be in condition for another long period of working, without requiring any further attention than the setting inward of the several screws G to a small extent at frequent intervals, and with some kinds of material an occasional dampening of the upper surface to prevent the rise of dust, and an occasional packing or stirring of the wiping material M with a pointed tool introduced from above will be advantageous.

Modifications may be made in the forms and proportions of the details without departing from the principle or sacrificing the advantages of the invention. Parts may be used without the whole. The wires may be led up through the wiping-box at a greater or less inclination. The wiping-box may be varied in its inclination relatively to the wires. The depth of the wiping-box may vary. Only one side instead of both sides of the wiping-box may be movable. The bottom B may be movable. The upper edges of the sides D and E may be alone adjustable, the lower portion of the wiping-box being always kept of a uniform width; or the reverse conditions may obtain. The bottom may be contractible, while the top remains uniformly fixed at only a sufficient distance apart to allow the knots to pass, provision being made, by opening the plates or otherwise, for sufficiently liberal access in replenishing. The sides D and E may be curved instead of plane. A very desirable form, for many reasons, would be attained by curving each of the plates inward, giving a more rapid narrowing of the wiping-box in the lower than in the upper portion. Instead of the bars H extending quite across the apparatus and engaging in both the heads or end pieces, C, shorter bars may serve, operated like door-bolts; but it is important that some equivalent of these bars be used to allow the sides D and E to be widely separated with facility when it is necessary to take away the old wiping material and supply fresh.

What I claim is—

1. The combination, with a vessel, A, containing melted metal, of the wiping-box having a perforated base, B, and adjustable sides D E, and means, G, for gradually contracting the dimensions from either side and compressing the wiping material, substantially as herein specified.

2. The removable bars H, extending from end to end of the box, in combination with the adjustable sides D E and screws G, and wiping material M, confined in and suitably compressed by the adjustable sides D E, substantially as and for the purposes herein specified.

3. In combination with the vessel A, containing melted metal, and the slotted ends C



*c' c'*, and duplicate sets of adjusting means, G, for setting from either or both sides, the movable sides D E and inclined perforated bottom B, arranged for joint operation, substantially  
5 as herein specified.

In testimony whereof I have hereunto set my hand at Pittsburg, Pennsylvania, this 30th day

of March, 1882, in the presence of two subscribing witnesses.

FRED. CRICH.

Witnesses:

W. H. CASSIDY,  
CHARLES C. STETSON.