Nov. 1, 1932. A. WINKLER 1,886,277

METHOD AND APPARATUS FOR GALVANIZING FANCY CHAINS AND THE LIKE

Filed April 17, 1930

Fig. 1

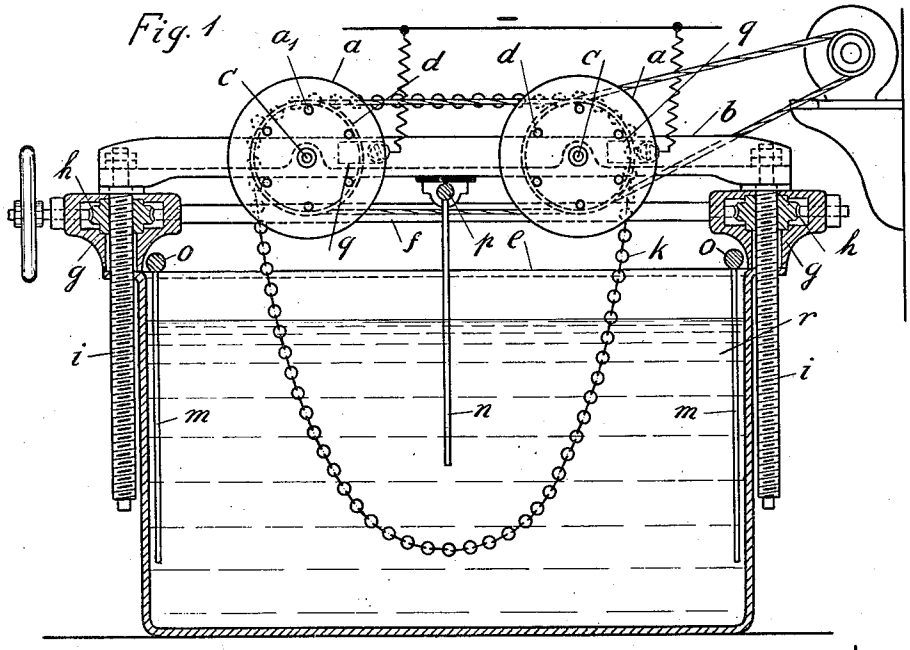


Fig. 2.

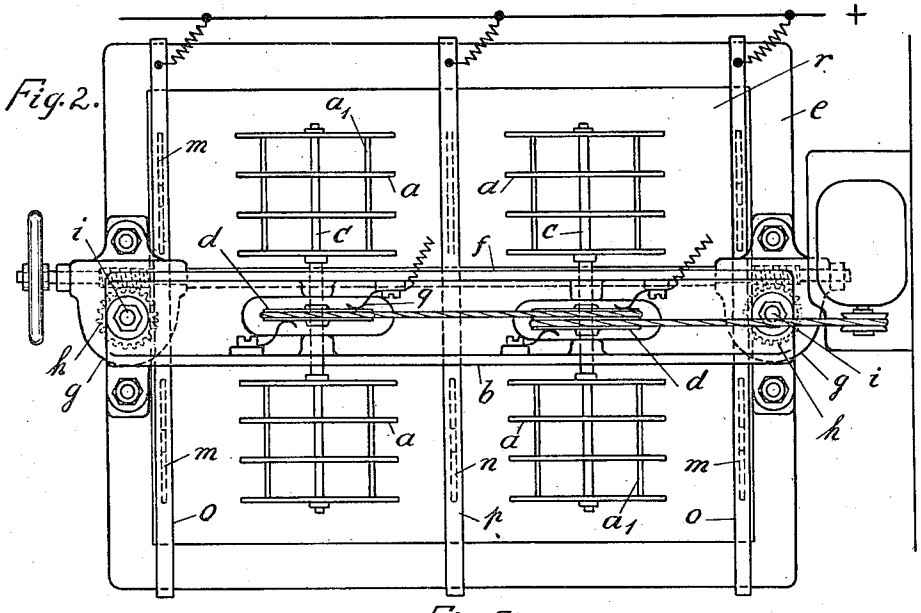
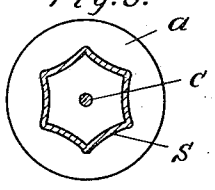


Fig. 3.



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METHOD AND APPARATUS FOR GALVANIZING FANCY CHAINS AND THE LIKE

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Fancy chains were hitherto suspended when galvanizing in bundles over a plurality of wire hooks projecting into the bath, the suspension device being shaken when necessary.

This method of holding the chain bundles is open to the objection that the chains receive a stronger current at the suspension points serving at the same time as current feed points and a gradually decreasing intensity of current on their remaining length, according to the distance from the suspension points, owing to the electric resistance of the chains, and consequently a gradually decreasing galvanic deposit so that a uniform deposit is never obtained.

According to the invention the chains are moved as endless strands over two uniformly rotated reels arranged side by side on parallel axles above the bath and connected with a pole of a circuit between anodes arranged outside and inside of the strand suspended in the bath.

In this manner the chain strands are continually moved by the current discharge through the bath so that the points of different current voltages travel along the chains, the chain being led through the different dispersioned zones of the anodes, the chain links being turned to all sides and also moved in relation to one another. All these facts combine to produce a uniform galvanic coating, such as has hitherto never been attained.

For example for the purpose of chroming, the chain strands are suspended over raisable and lowerable reels or over a raisable and lowerable bath so that, as experience has shown to be necessary, the articles are immersed and again removed from the bath, when the current is switched on. The raising and lowering of the chain strands serves further for regulating the current intensity.

The arrangement for carrying out the method consists of a plurality of subdivided pairs of reels, arranged on horizontal uniformly rotated axles on both sides of a bridge arranged over the galvanic bath, these reels being connected by sliding contacts, fastened on the bridge, with the minus pole of the supply main. This bridge or the bath is adapted to be raised and lowered by means of suitable mechanical devices.

An embodiment of the invention is illustrated by way of example in the accompanying drawing in which:

Fig. 1 is a side elevation in vertical section of the apparatus.

Fig. 2 is a top plan view of Fig. 1 and

Fig. 3 is a cross section through a solid wall reel.

The method consists in that the chain strands *k* are suspended on pairs of reels *a*, *a* arranged side by side on parallel axles *c* over the liquor in the bath *e*, and conveyed through the bath *e* by the uniform rotation of the reels *a*, and that they are dipped under current into and removed from the bath *e*, for example when chroming, for regulating the current intensity.

The apparatus for carrying out the method illustrated by way of example comprises a plurality of pairs of reels *a*, which are mounted on both sides of a bridge *b* on axles *c* and subdivided by intermediate discs. Driving wheels *d*, for example rope pulleys or toothed or worm wheels or the like, are mounted on the axles *c* and driven simultaneously by suitable transmission elements, such as belts, chain wheels, worms or the like, from a source of power.

The bridge *b* is arranged to ascend and descend above the bath *e*. For this purpose worm wheels *h* driven by means of a common worm shaft *f* are mounted in worm gear cases *g* on the edge of the bath *e*, screw threaded spindles *i*, which carry the bridge *b*, engaging in the female thread of the driven worm wheels *h*.

The chains are suspended in endless strands *k* over two reels *a*, *a*, arranged side by side, so that they hang in a loop into the bath *e*. On the outer sides of these hanging chain strands *k* anodes *m* are arranged in the bath *e*, and inside the suspended strands *k* an anode *n*, the carrying rods of the outer anodes *m* being placed in the usual manner on the edge of the bath *e*, whereas the carrying rod *p* of the central anode *n* is fastened and insulated on the bridge *b* so that it par-

ticipates in the ascending and descending movements of the chain strands *k*.

The current is conducted from the chain strands through slidable contacts sliding on rings or discs fixed insulated on the bridge mounted on the driving wheels, on the reels, or on the axles *c*. The carrying rods *o*, *p* are connected by means of movable wires or in other suitable manner the one with the other and with the other pole of the source of current.

The raising and lowering device can be arranged on a special frame instead of on the bath *e*, or the bath *e* may be raised and lowered instead of the reels *a*.

The reels *a* are preferably not made cylindrical, but multicornered. Such a reel is obtained for example by the arrangement of spokes a_1, parallel to the axles *c* of the reel and rigidly fixed in the transverse discs of the reels. In the case of fine chains it might happen, that the smaller links tend to wind on the spokes a_1. This would cause difficulties in transporting the chain strands. In this instance it is advisable, to make the multicornered reel with solid walls and to curve the walls of the solid body *s* slightly inwards, as shown in Fig. 3, so that in the ordinary way the chains only come into contact with the edges, but not with the wall of the body *s*.

The use of multicornered reels for transporting the chain strands through the bath present the great advantage that the chains are continually shaken so that the bath liquid also reaches the suspension points of the links and therefore these points also participate in the galvanizing.

I claim:—

1. A method for galvanizing fancy chains and the like, consisting in suspending the chains in endless strands in the galvanizing bath, in passing current through said bath, in moving these strands through the bath and in dipping and removing the chain strands together with an anode arranged between them into the bath under current.

2. An apparatus for galvanizing fancy chains, comprising in combination with a bath, a bridge arranged on said bath, parallel axles journalled on both sides of said bridge over said galvanic bath, pairs of non-circular reels carrying the chains in closed endless strands mounted on said axles adapted to be driven in the same direction to draw said chains through the bath and impart a shaking movement to same during their passage through the bath, and insulated sliding contacts connected with the plus pole fastened on said bridge adapted to pass current through said bath.

In testimony whereof I affix my signature.

ALFRED WINKLER.