April 1, 1924. 1,489,076

N. S. HARTER

METHOD OF AND MEANS FOR COATING WIRE FABRIC

Filed June 22, 1923 2 Sheets-Sheet 1

Fig. 1.

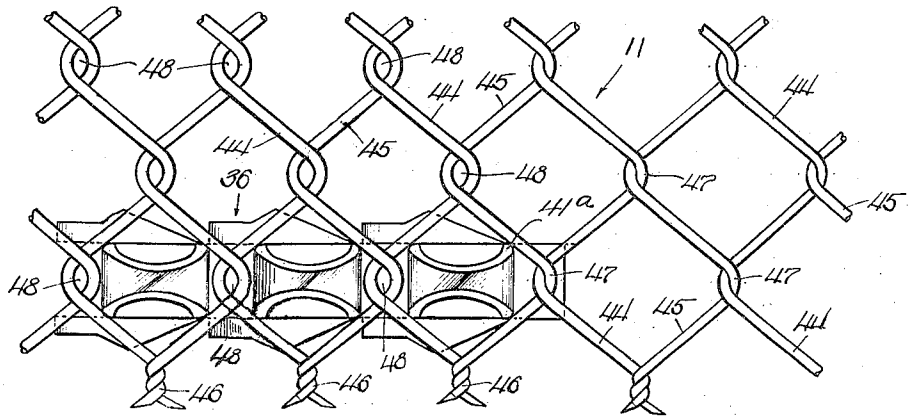
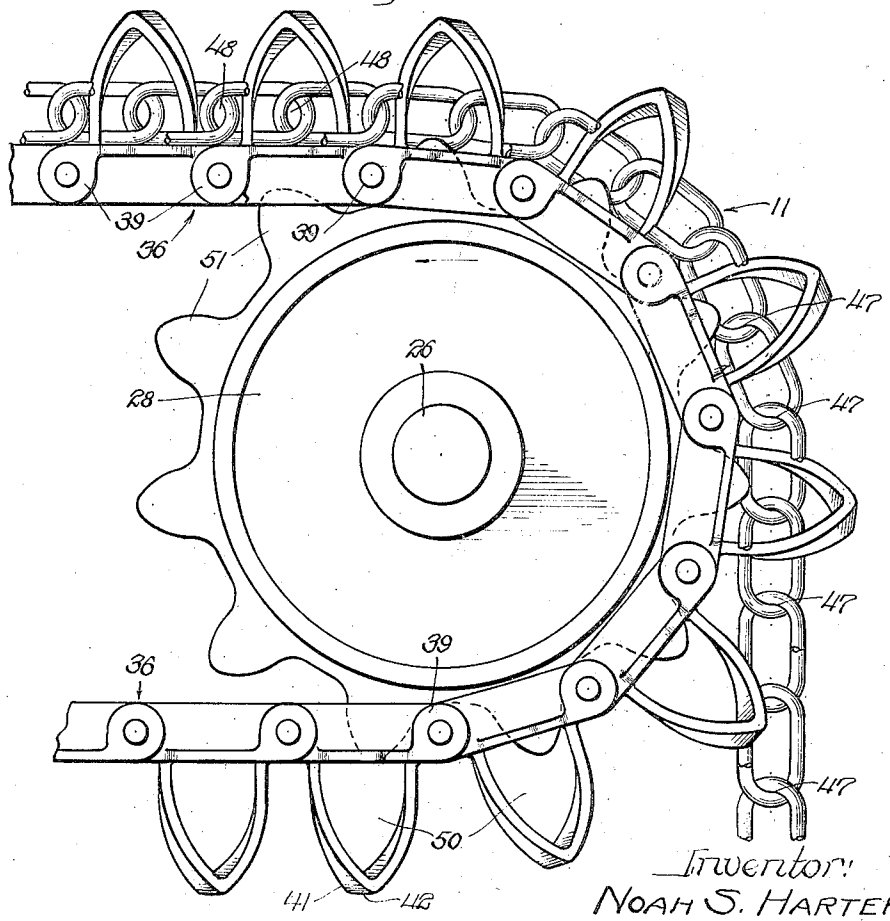


Fig. 2.



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Fig. 5.

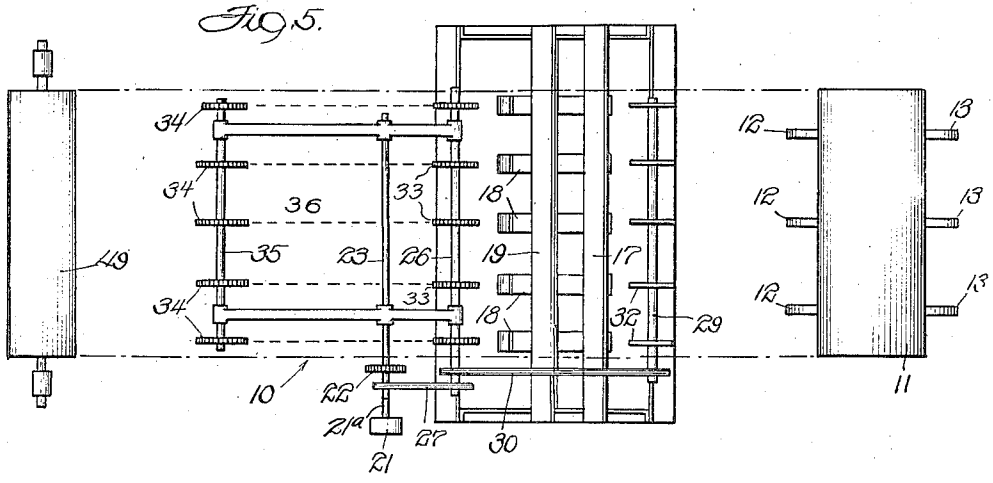


Fig. 6.

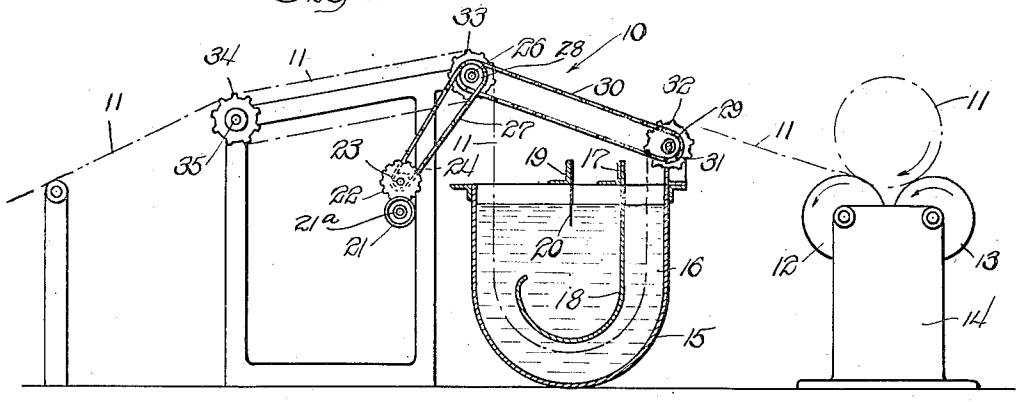


Fig. 3.

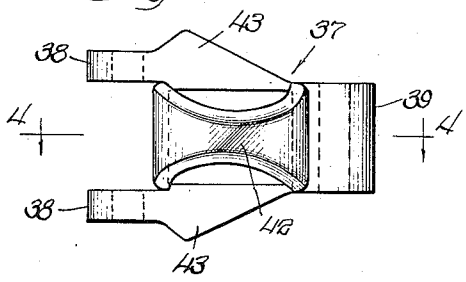
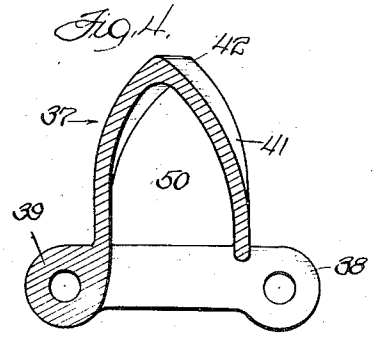


Fig. 4.



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UNITED STATES PATENT OFFICE.

NOAH S. HARTER, OF WAUKEGAN, ILLINOIS, ASSIGNOR TO CYCLONE FENCE COMPANY, OF WAUKEGAN, ILLINOIS, A CORPORATION OF ILLINOIS.

METHOD OF AND MEANS FOR COATING WIRE FABRIC.

Application filed June 22, 1923. Serial No. 647,096.

To all whom it may concern:

Be it known that I, NOAH S. HARTER, a citizen of the United States, residing at Waukegan, in the county of Lake and State of Illinois, have invented certain new and useful Improvements in Methods of and Means for Coating Wire Fabric, of which the following is a specification.

This invention relates to a method of and means for zinc-coating wire fabric after weaving.

One of the objects of the invention is to uniformly and smoothly coat zinc chain-link wire fabric after weaving in which the members or pickets thereof are interlinked with adjacent members and movable relatively thereto.

Another object is to provide an improved method of procedure and means for accomplishing the above mentioned object and to prevent the adjacent picket members from adhering together after galvanizing until the zinc-spelter has cooled and set, whereby the zinc coating is evenly distributed over the wire members forming said pickets.

A further and more specific object is to provide an improved apparatus for carrying out my improved process.

Other objects and advantages of my invention will become readily apparent to persons skilled in the art from a consideration of the following description when taken in conjunction with the drawings, wherein:—

Fig. 1 is a plan view of a fragment of the fabric and chain by which it is moved thru the bath.

Fig. 2 is an elevation thereof.

Fig. 3 is a plan view of a link of the conveying chain.

Fig. 4 is a central section thereof taken on line 4—4 of Fig. 3.

Fig. 5 is a schematic plan view of an apparatus for zinc-coating a "chain-link" fabric.

Fig. 6 is a side elevation thereof.

In all the views the same reference characters are employed to indicate corresponding parts.

The invention will be explained with respect to its use for zinc-coating fencing, of the type known as "chain-link" fabric, in which a series of transversely extending picket members are interlinked by interconnection of their mesh forming portions. As the interlinked portions of these pickets are loose and movable relatively to each other, to a limited extent, it is desirable that the arcuate bends of the interlinked portions be positively held apart after being zinc-coated until the coating has become hardened by cooling, or drying, to insure a smooth, uniform and evenly coated surface on the wires.

In any event the reticulated fabric is submerged in or drawn through a suitable bath of coating material, preferably zinc-spelter, and preferably while continuously moving said fabric, and after being submerged the coated fabric is allowed to cool and harden before being wound into a roll for shipment.

In the drawings I have illustrated schematically an apparatus by which my invention may successfully be carried into effect.

The apparatus is generally indicated by 10, in which a roll 11 of uncoated fabric, to be coated, is preferably mounted on a series of rollers 12 and 13 supported on a suitable pedestal 14.

A tub or kettle 15 contains the coating material, which may be molten zinc-spelter when the fabric is to be galvanized. The spelter 16, or other coating material, may be heated in the kettle or pan by any suitable means.

Located in the kettle and secured to an angle bar 17 are a series of J-shape fabric guide bars 18, and secured to an angle bar 19 is a dividing plate 20.

The fabric 11 is preferably moved through the kettle between the sides and bottom thereof and the guide bars 18, the guide bars preventing the fabric from rising in the bath out of contact with the coating material.

Any suitable means may be employed for operating the moving parts of the apparatus. The power may be applied to a pulley 21 on a shaft 21^a which is geared to a shaft 23 through suitable gear wheels, only one of which, however, is shown, being the gear wheel 22 on the shaft 23. A sprocket pinion 24 on shaft 23 drives shaft 26 thru a sprocket chain 27 and a sprocket wheel 28 on said shaft 26.

A shaft 29 mounted above the remote edge of the kettle 15 is driven from a sprocket wheel, not shown, on shaft 26 by a chain 30 which passes about a sprocket wheel 31 on shaft 29. By this means shafts 26 and 29 are preferably driven at the same speed.

A series of fabric-moving sprocket wheels 32 are mounted on the shaft 29. These sprocket wheels have sprockets properly spaced to enter into the mesh openings of the fabric, formed by its interlinked portions, to move the fabric.

Special sprocket wheels 33 are mounted on the shaft 26 and similar sprocket wheels 34 are mounted on shaft 35. These special sprocket wheels engage and drive special chains 36, shown in full lines in Figs. 1 and 2 and in dotted lines in Figs. 5 and 6, and said chains engage and move the fabric after it leaves the bath, as clearly shown enlarged in Figs. 1 and 2.

The chain 36, of which three links are shown in Fig. 1, is composed of a series of links 37 individually shown in Figs. 3 and 4. Each link 37 has spaced lugs 38—38 with aligned openings to receive a pintle which passes thru a perforation in the single lug 39 of an adjacent link as clearly shown in Fig. 2. Between the lugs of each link and rising therefrom is a tooth or hollow arch-like structure 41 tapered toward its top portion and slightly skewed, as at 42 to more readily enter the meshes of the fence fabric. The arch portion or tooth 41 of each link is substantially rectangular near its bottom end, in plan outline, to enter the meshes formed by adjacent wires to separate their arcuate and interlinked bends when the links of the chain are in a single horizontal plane, as shown in Fig. 1. Each link is provided with laterally extending side wings 43 to more properly support the fabric.

In the "chain-link" fabric illustrated, each picket consists of two wires 44 and 45 formed with alternately disposed angular bends and interlinked with each other and with adjacent wires and twisted together at their terminal ends, as at 46. When the fabric is not under stress the pickets may be moved relatively to each other. Normally the interlinked arcuate bends of the wires 44 and 45 are in mutual contact, as shown at 47, when hanging by their weight or when strain is applied to them, tending to separate them.

As the fabric is drawn from the bath by the chains 36, the teeth 37 thereof, which first enter the meshes between the respective wires forming the fabric, radiate from the axes of the sprocket wheels 28, see Fig. 2, and as they each successively assume an approximately common horizontal plane and their arch like structures 41 enter the meshes formed by the angular interlinked portions of adjacent wires, and the interlinked arcuate bends 47 of said wires settle down between the rectangular bases of said teeth 37 the corners 41^a of said rectangular bases and the interposition of the interlinked arcuate bends 47 of the wires between the bases of the teeth 37 act to separate the interlinked arcuate bends 47, as at 48, by forcibly restricting the distance of separation between adjacent wires, and they are so forcibly held until after the release of the fabric by the chains as they pass around the sprocket wheels 34. Such separation of the wires, as at 48, takes place before the coating has set, and immediately after the changing position of the angular bends in the wires, due to their movement over the sprocket wheels 28, so that the coating may have a chance to uniformly cover the bends in the wires before setting and thereby produce an evenly coated fabric thruout, to be subsequently rolled on the reel 49 for shipment or storage.

The part or tooth 41 of each link of the improved chain is hollow, as at 50, to receive the tooth 51 of the sprocket wheels 28. The teeth 51 bear against the single lug 39 to drive the chain and the teeth 37 drive the superimposed chain, which in this instance is the chain fabric 11.

The relation of the sprocket wheels to the molten bath 16 and their speed is such, that the fabric is drawn from the bath and the wires separated before the coating has sufficiently cooled to allow the zinc-coating to spread uniformly over the wires, due to the angular bends therein and the positions they are caused to assume as they are carried over the sprockets 28. The molten spelter will normally flow over the angular bends in the wires as they are drawn from the bath owing to their being at an inclination to the surface of the bath when leaving the same, and the surplus spelter will naturally drain back into the bath and yet, at the same time, leave a comparatively heavy coating of spelter on the wires.

Having described my invention what I claim as new and desire to secure by Letters Patent, is:—

1. The method of coating wire fabric composed of wires movable relatively to each other, which consists in subjecting the fabric to a coating bath, and separating the wires after removal from the bath and until the coating has cooled.

2. The method of coating wire fabric composed of wires movable relatively to each other, which consists in continuously moving the fabric thru a coating bath, and separating the wires after removal from the bath and until the coating has cooled.

3. The method of coating wire fabric composed of a plurality of interlinked wires, movable in relation to each other, which consists in subjecting the fabric to a hot zinc-spelter bath, and in separating the interlinked portions of the wires after their removal from the bath and until the coating has cooled.

4. The method of coating wire fabric composed of a plurality of interlinked wires movable in relation to each other, which consists in continuously moving the fabric thru a hot zinc-spelter bath, and in separating the interlinked portions of the wires after their removal from the bath and during their movement and until the coating has cooled.

5. The method of coating a wire fabric composed of wire pickets having alternate angular bends interlinked to adjacent pickets and movable relatively thereto, which consists in continuously moving said fabric thru a bath of molten spelter, removing the fabric from the bath so that the pickets are moved laterally from the bath and their angular bends thereby removed from the bath at an inclination to its surface, and separating the interlinked portions of the pickets after their removal from the bath and until the coating has cooled.

6. In an apparatus of the character described, in combination, a bath containing molten metal, means for moving a woven wire fabric thru said bath, said fabric including relatively movable picket wires, and means for moving said picket wires apart after they leave said bath and for retaining the same in such relation for a predetermined period.

7. In an apparatus of the character described, in combination, a bath containing molten metal, a plurality of continuously moving chains adapted to move a fence fabric of "chain-link" character thru said bath, the pickets of which are movable relatively to each other, said chains including means arranged to separate said pickets at a predetermined point in their movement after removal from said bath, and to retain the same in such relation until the coating has cooled.

In testimony whereof I hereunto subscribe my name.

NOAH S. HARTER.