

No. 650,114.

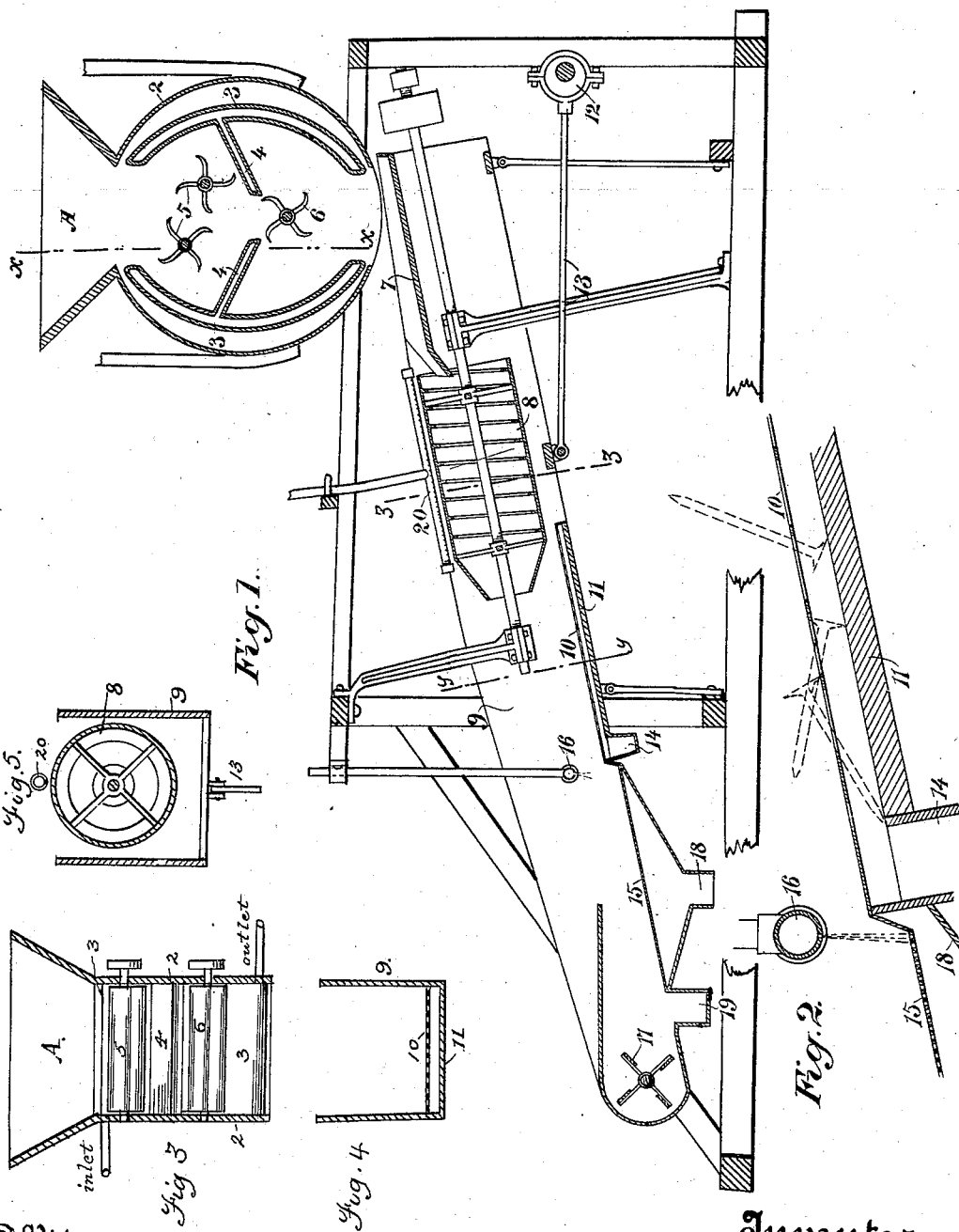
Patented May 22, 1900.

G. PORTER.

APPARATUS FOR REMOVING SURPLUS METAL FROM COATED ARTICLES.

(Application filed Nov. 20, 1899.)

(No Model.)



Witnesses:  
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# UNITED STATES PATENT OFFICE.

GEORGE PORTER, OF SAN FRANCISCO, CALIFORNIA.

APPARATUS FOR REMOVING SURPLUS METAL FROM COATED ARTICLES.

SPECIFICATION forming part of Letters Patent No. 650,114, dated May 22, 1900.

Application filed November 20, 1899. Serial No. 737,635. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE PORTER, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented an Improvement in Apparatus for Removing Surplus Metal from Coated Articles; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to an apparatus which is designed for the cleansing and preparation of nails which have been previously coated with molten zinc or equivalent protecting metal and which process is technically called "galvanizing."

The object of my invention is to provide a mechanism and apparatus by which the surplus fused metal adhering to the nails can be cleaned off and the nails left in a smooth and merchantable condition.

Referring to the accompanying drawings, Figure 1 is a longitudinal vertical section through the apparatus, showing portions of the framework omitted. Fig. 2 is a detail section of the coarse screen and connections. Fig. 3 is a reduced vertical transverse section on the line *xx* of Fig. 1. Fig. 4 is a reduced vertical transverse section on the line *yy* of Fig. 1. Fig. 5 is a similar view on the line *zz* of Fig. 1.

Nails and similar articles are coated with tin, zinc, or equivalent protecting metal which is less liable to corrosion than the iron of the nails by submerging the articles to be coated in the molten coating metal. It is difficult to afterward clean the nails of the surplus adherent metal so that they are in condition for use, and many times the nails become stuck together in masses when they cool by reason of this surplus metal.

In my invention A is a hopper leading into a casing 2, into which the articles are first delivered. This casing may be of any suitable size or shape. In the present case it is shown cylindrical and having the segmental water-jackets 3, with their concaved faces presented toward each other upon opposite sides of the space through which the articles to be cleansed fall when they leave the hopper A. Within this space between the arched jackets 3 are inclined floors 4. Above these floors are revoluble shafts having agitating arms or beat-

ers, as shown at 5. These shafts extend across the case in the path of the falling articles, and by their revolution the beater-arms violently strike the articles and knock off a large portion of the adherent fused metal. The articles striking upon the inclines 4 fall through between them, and below the inclines they encounter one or more revoluble beaters 6, by which they are again struck and agitated. From this portion of the apparatus the articles fall upon an inclined table 7, down which they move and are delivered into a hollow cylinder 8, being mounted upon a longitudinal shaft suitably journaled, so that the cylinder may be revolved, and within the cylinder are spirals which act to carry the articles through it and to assist in further agitation thereof for the purpose of removing any remaining particles of metal adhering to the nails. The cylinder is here shown as journaled at an incline within an exterior open-topped trough 9. When the nails or other articles are discharged from the lower end of the cylinder 8, they fall upon a screen-surface 10. Beneath this screen is a close floor 11, which is sufficiently near to the lower portion of the screen to prevent the nails standing in the holes of the screen and sticking in place. The depth from the screen 10 to the floor 11 is so little that the nails will not stick, but will move over the screen, and this is sufficiently coarse to allow particles of metal which have been separated from the nails or other articles to fall through upon the floor 11.

The open-topped trough 9, in which the screen is carried, is given a shaking motion by means of a crank or eccentric 12 and a rod 13, connecting it with the trough, the latter being suitably suspended or supported by hangers or movable posts, so that the action of the crank or eccentric may be communicated to it. This shaking motion causes the nails to travel first down the incline 7 and be delivered into the rotating cylinder 8. Thence they are delivered upon the screen 10, together with any particles of metal which may have been previously separated from them, and in their movement over this screen the particles of metal fall through upon the floor 11, and by the shaking motion this metal is conducted to a discharge-chute 14, which collects any metal that has reached this point.

15 is another screen situated farther down the trough 9 and in position to receive the nails from the screen 10. This screen is somewhat finer than the screen 10, and as the nails pass over it they are subjected to a jet or spray of water from the supply pipe or tube 16, which assists to cool them. In addition to this I have also shown an air-blast fan at 17, which may be employed for the same purpose. Beneath this screen 15 is a converging hopper 18, by which the water is collected and conveyed away after passing through the screen. The nails after being cooled and made ready are discharged through a passage 19 in the lower end of the trough 9, or they may be collected in any other suitable manner.

By means of this apparatus I am enabled to rapidly and perfectly cleanse the nails or other articles from all surplus metal and to gradually cool them down as the operation proceeds until they are ready to deliver into packages in which they are to be stored or sold. The amount of coating material thus saved is from ten to twelve per cent., the number of men employed is reduced, and the output is greatly increased.

To cool off the cylinder 8, I have fixed a pipe 20 above the former. This pipe is provided with jets in its bottom to deliver a constant stream of water on the cylinder.

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

1. An apparatus for removing hot surplus metal from previously-coated articles, consisting of a chamber having convergent shelves interior thereto, revolving beaters journaled and turnable above and below said shelves, and a hopper for directing the articles into said chamber.

2. An apparatus for removing surplus hot metal from previously-coated articles, consisting of a chamber open at top and bottom having a supply-hopper, interior concaved water-jackets between which the articles pass from the supply, beaters journaled and turnable in the upper portion of the chamber, convergent shelves by which the articles are collected after passing the beaters, and delivered through the space between the shelves, and other revoluble beaters below the shelves in the path of the falling articles.

3. An apparatus for removing hot surplus metal from previously-coated articles, consisting of the chamber to which the articles

are directed, revoluble beaters by which they are agitated in their passage, an inclined shaking-trough having a table upon which the articles are received from the chamber and a journaled revoluble cylinder into which the articles are delivered from the table and through which they are caused to pass.

4. An apparatus for removing hot surplus metal from previously-coated articles, consisting of a chamber having beaters, directing-shelves and cooling-jackets, an inclined revoluble cylinder with spiral ribs, an inclined directing floor or chute by which the articles are conveyed from the first chamber to the cylinder, and a shaking-screen upon which they are delivered from the cylinder.

5. An apparatus for removing hot surplus metal from previously-coated articles, consisting of a chamber with beaters and cooling-jackets, an inclined spirally-ribbed revoluble cylinder, a directing-chute by which the articles are delivered from the first chamber to the cylinder, a screen upon which the articles are received from the cylinder, a close floor extending beneath the screen adapted to receive the particles of separated metal and a discharge opening or chute through which said metal is collected.

6. An apparatus for removing hot surplus metal from previously-coated articles consisting of a cooling-chamber with beaters, an inclined revoluble spirally-ribbed cylinder and a directing-board by which the articles are delivered from the first chamber to the cylinder, a shaking separating-screen upon which the articles and separated particles are received, a collecting-floor and discharge for the metal beneath the screen, a second screen upon which the nails are delivered and an air-blast and spraying device for cooling them as they pass over the second screen to the point of delivery.

7. An apparatus for removing surplus metal from coated articles including means for removing the surplus metal, a mechanically-agitated conveyer into which the articles are received, means for conducting the articles through the conveyer and means for separating said articles and the removed material.

In witness whereof I have hereunto set my hand.

GEORGE PORTER.

Witnesses:

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WM. M. MAGUIRE.