No. 721,155. PATENTED FEB. 24, 1903.

H. CLAUS.

ENAMELING MACHINE.

APPLICATION FILED MAY 19, 1902.

NO MODEL.

Fig. 1

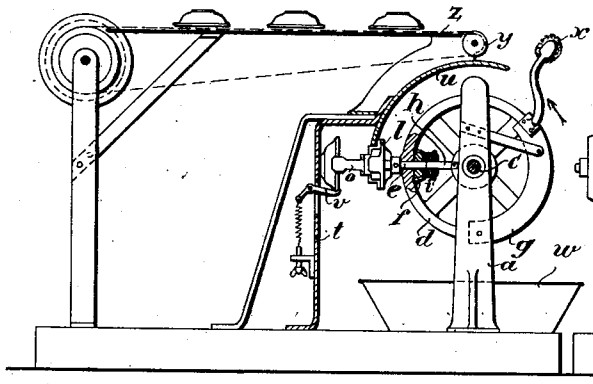
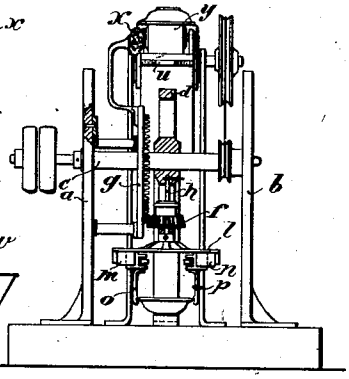


Fig. 2.



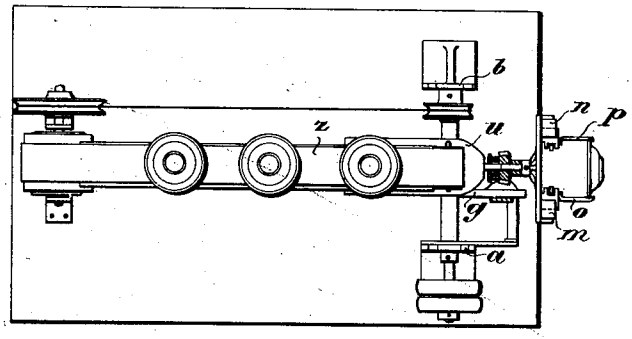
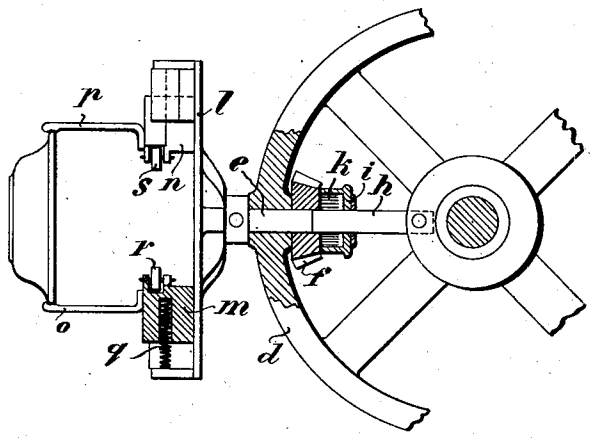


Fig. 3.

Fig. 4.



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ENAMELING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 721,155, dated February 24, 1903.

Application filed May 19, 1902. Serial No. 107,976. (No model.)

To all whom it may concern:

Be it known that I, HUBERT CLAUS, a subject of the Emperor of Germany, and a resident of Berlin, Germany, have invented certain new and useful Improvements in Enameling-Machines, of which the following is a specification.

My invention relates to enameling-machines, and has for its object to provide mechanical means for applying enamel to the articles to be treated, for uniformly distributing the enamel, and for removing any excess thereof. For this purpose I employ a machine of novel construction, which is provided with revolving arms arranged to automatically seize and then carry along with them the articles to be enameled, whereupon the said arms bring the articles into appropriate relation to the enameling device proper, the said arms then performing a rotary movement for the purpose of distributing the enamel and an additional movement for throwing off any excess of enamel. Finally the articles are released from said arms and deposited on a suitable support, such as a conveyer. I may also provide a wiper arranged to engage the articles before they are released from the rotating arm for the purpose of removing any accumulation of enamel at the edges.

My invention applies as well to the art of enameling with a solution as to enameling processes in which the enamel is used in the form of powder.

A typical example of my invention is shown in the accompanying drawings, in which—

Figure 1 is a side elevation of the machine with parts in section. Fig. 2 is an end elevation thereof with parts in section. Fig. 3 is a plan; and Fig. 4 is a plan, partly in section, showing one of the carrying-arms upon an enlarged scale.

It will be understood that my invention is not limited to the details shown, the scope of the protection desired being indicated in the appended claims.

As shown in the drawings, *a b* are posts or standards in which is journaled a shaft *c*, driven in any suitable manner. Upon this shaft is mounted rigidly a wheel or carrier *d*, in which is journaled an arbor *e*, disposed in a radial direction, or approximately so. If desired, the carrier *d* may be provided with a plurality of such arbors. Upon this arbor is rigidly secured a pinion *f*, arranged to engage periodically a stationary toothed segment *g*, which may be secured to the standard *a*. The inner extremity of the arbor *e* is made of a reduced diameter, and over this reduced end extends the tubular outer end of a rod *h*, rigidly secured to the carrier *d*. A casing *i* surrounds the portion of the rod *h* adjacent to the shaft *e*, and within this casing is arranged a coiled spring *k*, one end of which is secured to the rod *h* and the other end to the pinion *f* or the shaft *e*. It will therefore be understood that this spring has a tendency to swing the arbor *e* back to its initial position after the said arbor has been turned by the engagement of the pinion *f* with the toothed segment *g*. The outer end of the arbor *e* carries a transverse arm *l*, provided with guideways for slides *m n*, respectively, each of which is fitted with holding or clamping members *o p*, respectively, the said slides being pressed toward each other—for instance, by means of springs *q*. At the inner ends of the slides *m n* are located suitable engaging devices, such as rollers *r s*, respectively, which are adapted to ride upon a stationary curved guide *u*, adapted to fit between them, as indicated in Fig. 2. To the segmental gear *g* may be secured an arm carrying a sponge or wiper *x*. Adjacent to the forward end of the guide *u* is located a conveyer *z*, supported on rollers *y*, and at the other or lower end of the guide *u* is located a support *t*, carrying a spring-pressed arm *v*, adapted to support the articles to be enameled. Adjacent to the lower part of the carrier *d* is located the enameling device—for instance, a vessel *w*, adapted to contain liquid or solid enamel.

The operation is as follows: The articles to be enameled are placed one after the other upon the yielding supporting-arm *v*. Then the clamping-arms *o p*, being held apart by the engagement of the rollers *r s* with the guide *u*, come into registry with the rim of the article and are pressed against the same by the springs *q* as soon as the rollers leave the guide. The article is then carried downward by the holders *o p*, the arm *v* yielding to let it pass. When the article gets to the lower part of the machine, it dips into the

enameling vessel w and is thus caused to become coated with enamel. While the article is within the enamel it is given a rotary movement, owing to the engagement of the pinion f with the toothed segment g, and thus the enamel is uniformly distributed on the article. This rotary movement continues after the article has left the enamel. The spring k is put under tension during this movement, and as soon as the pinion f leaves the upper end of the toothed segment g the spring will suddenly rotate the arbor e, with the article held between the members o p, in the opposite direction to that imparted by the segment, and this sudden movement will by the action of centrifugal force cause the excess of enamel to be thrown off the article. While the article thus rotates it comes into contact with the sponge or wiper x, and any enamel which may have accumulated at the edge is removed therefrom. The sponge may be kept moist in any suitable manner. When the spring k has again brought the arbor e to its initial position relatively to the carrier d, the rollers r s then come into engagement with the guide u, which is preferably tapered at its forward end, as indicated in Fig. 3. The further rotation of the carrier thus forces the slides m n and the holders o p apart, thereby releasing the enameled article. This may be so arranged as to take place when the article is over the upper run of the conveyer z.

It is not necessary that the article should be rotated while it is within the enamel, and the segment g may be so arranged as to rotate the article only after it has been lifted out of the enamel. The sponge x may be omitted. The enameling device, instead of consisting of an enamel vessel through which the article is passed, may be constituted by a device for pouring enamel over the article or sprinkling enamel thereon. When the enamel used is in the form of powder, the article may be passed through a suitable moistening device before the enamel is applied thereto.

I claim as my invention—

1. An enameling-machine comprising a rotary carrier, an article-holder mounted to revolve therewith and also capable of a rotary movement relatively to the carrier about an axis perpendicular to that of the carrier, a device arranged to apply enamel to the article as it is carried around by the holder, means operated by the rotary movement of the carrier for rotating the holder relatively to the carrier while the article has its coat of enamel, and means for releasing the article from the holder.

2. An enameling-machine comprising a rotary carrier, an article-holder mounted to revolve therewith, and also capable of a rotary movement relatively to the carrier, an enameling device arranged to apply enamel to the article as it is carried around by the holder, means operated by the movement of the carrier for rotating the holder relatively to the carrier while the article has its coat of enamel, and means for releasing the article from the holder.

3. An enameling-machine comprising a movable carrier, an article-holder held to move with said carrier, and capable in addition of a rotary movement about its own axis, a device for applying enamel to the article, means for rotating the holder while the article has its coat of enamel, a spring tending to turn the said holder in the opposite direction, so as to give it a sudden backward rotation when the first-mentioned mechanism for rotating the holder ceases to be operative, and means for releasing the article from the holder.

4. An enameling-machine provided with a movable carrier, a holder mounted to move therewith, and capable in addition of a rotary movement about its own axis, an enameling device arranged to apply enamel to the article, means, operated by the movement of the carrier, for rotating the holder relatively to the carrier in one direction while the article has its coat of enamel, and means, likewise controlled by the movement of the carrier, for rotating the holder with the enamel-coated article in the opposite direction as the movement of the carrier continues.

5. An enameling-machine comprising a movable carrier, an article-holder mounted to move therewith, and capable in addition of a rotary movement about its own axis, a device for applying enamel to the article, mechanism for rotating the holder in one direction while the article has its coat of enamel, and a spring for turning the holder in the opposite direction when said mechanism ceases to be operative.

6. An enameling-machine comprising a movable carrier, an article-holder mounted to move with said carrier and also capable of turning relatively thereto, the said article-holder comprising holding-arms movable toward and from each other in a direction perpendicular to the axis of rotation of the article-holder, and a stationary guide arranged to force the said arms apart so as to release the article and to bring them in proper position to clamp another article.

7. An enameling-machine comprising a movable carrier, a holder mounted to move therewith, but capable in addition of a rotary movement about its own axis, a device for applying enamel to the article, and means for turning the holder first in one direction and then with increased speed in the opposite direction.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HUBERT CLAUS.

Witnesses:
WOLDEMAR HAUPT,
HENRY HASPER.