(No Model.)

J. A. LAEMLE.

PROCESS OF AND MACHINE FOR COATING SURFACES.

No. 303,296. Patented Aug. 12, 1884.

Fig. 1.

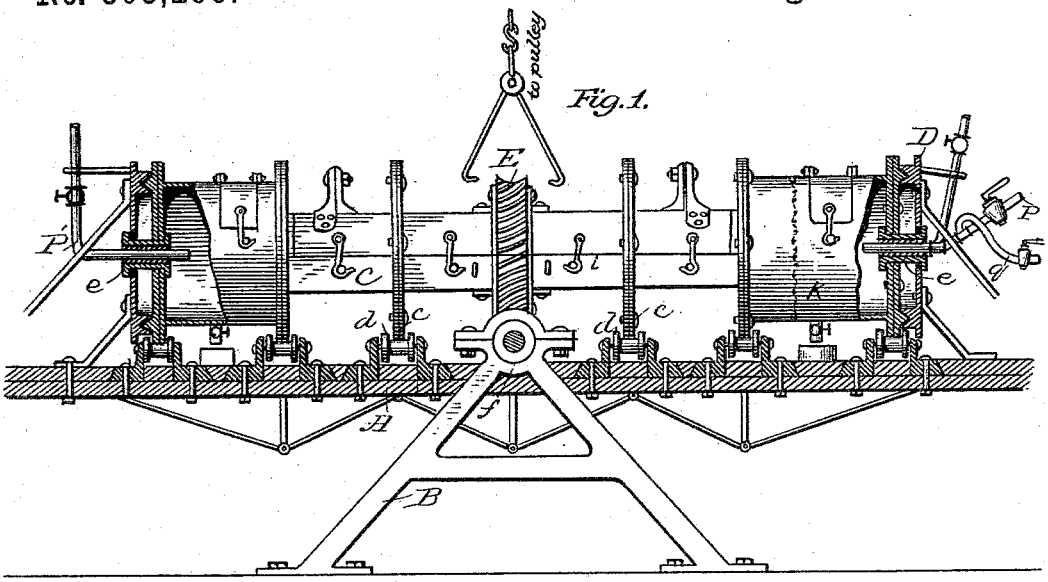


Fig. 2.

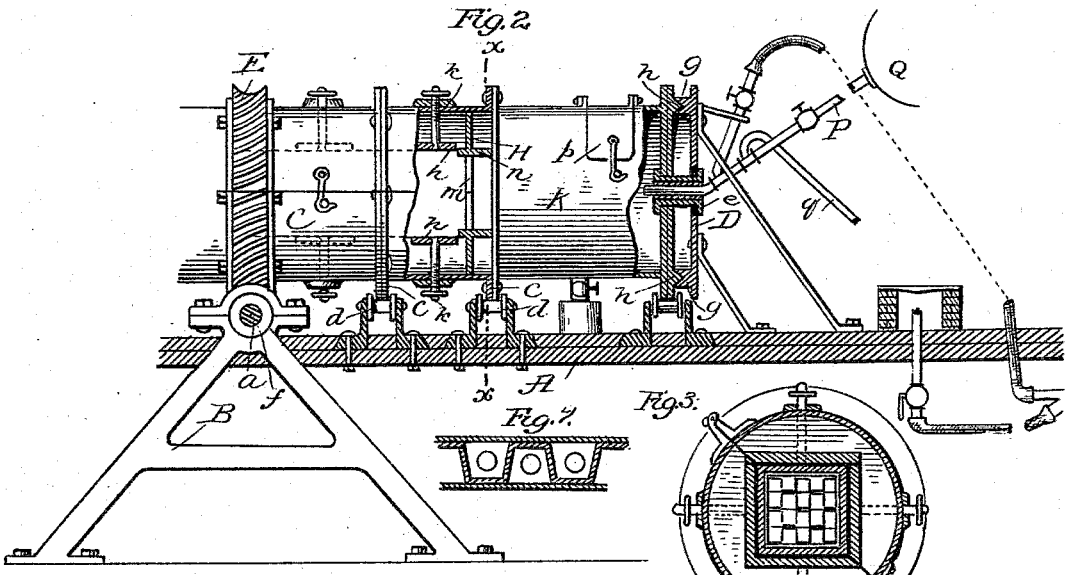


Fig. 7.

Fig. 3.

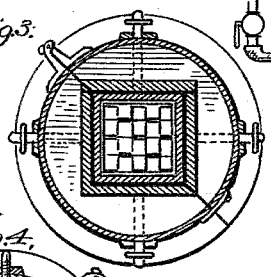


Fig. 5.

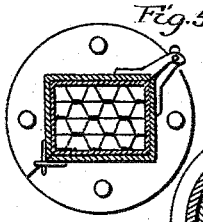


Fig. 6.

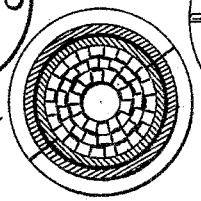
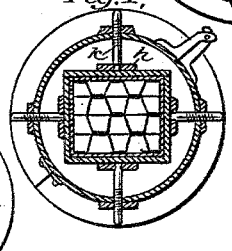


Fig. 4.



WITNESSES

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PROCESS OF AND MACHINE FOR COATING SURFACES.

SPECIFICATION forming part of Letters Patent No. 303,296, dated August 12, 1884.

Application filed June 5, 1883. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH A. LAEMLE, of Stapleton, Staten Island, in the State of New York, have invented a new and useful Improvement in Processes of and Machines for Coating Surfaces; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention, broadly, is an apparatus for coating surfaces. It is especially designed for the coating of boxes, &c., of the class shown in an application filed by me in the United States Patent Office of even date herewith, but is applicable to other forms and constructions of boxes for the same purpose.

The invention consists in the construction of the apparatus and in the mode of using an air or superheated-steam blast therewith.

In the accompanying drawings, Figure 1 shows a side elevation of the apparatus with the ends partly broken away. Fig. 2 shows a like view of a part of the machine. Fig. 3 shows a section on line *x x*, Fig. 2; Fig. 4, a section on line *y y* of Fig. 1. Fig. 5 shows a reduced section on line *y y* of Fig. 1. Fig. 6 shows a modified form of box. Fig. 7 shows a single chamber, with means for rolling and smoothing the interior.

The principal idea of this invention is to hold the box (or a series of boxes, &c.) which is to be lined or smeared with a liquid substance within a drum or case, and to impart to the drum or case rotary movement upon its longitudinal axis, and also oscillating movement on a transverse axis, whereby the material is caused to flow evenly through and into the boxes or various compartments. Each box is intended to constitute a part or section of a continual channel or series of channels for electric conductors, or for any other use.

In the drawings, A represents a suitable platform, which is suspended over a transverse shaft, *a*. The platform is hinged upon frames B B. Upon this platform is mounted the drum or case C. It is made of cylindrical or other shape, and has peripheral ribs *c*, which rest and run upon flange-rollers *d*, which are journaled in suitable bearings in standards on the platform. The cylindrical case is pivoted on end plates, D D', by means of sleeves *e*, which serve to guide and steady the drum in its rotary movement and to admit the material and blast; also, the appliance for generating the heat necessary, as the pipes leading therefrom to the drum or cylinder are rigid. The other pipe, which supplies different material or air, may be conveyed in flexible hose from fixtures and apparatus placed in close proximity and resting or affixed to different floors. The platform may be trussed in any suitable manner. It will be understood that the shaft *a*, which has its bearings in the side frame, permits the platform A to be tipped within certain limits in either direction, and it is balanced so as to tip easily. About the center of the drum is placed a circular rack-bar, E. It is fixed to the drum, and is fitted to mesh with the worm-gear on the sleeve *f*, placed over the shaft *a*. This sleeve projects upon one side, and it is provided with pulleys or gears connected to suitable driving mechanism, whereby it may be rotated in either direction at will. Rotation of this sleeve imparts to the drum a slow rotary motion on the longitudinal axis, and it may be caused to rotate first in one direction and then in another.

The end plates, D D, may be braced as shown, and are provided with angular grooved ribs *g*. Correspondingly-shaped ribs, *h*, are formed on the ends of the drum, and this serves to guide and steady the drum and to take the strain off from the sleeves *e*. The drum is formed in two parts, the upper part hinged to the lower and connected thereto by hooks *i*, so that the drum may be opened and the box placed within. In order to hold the box securely in place, I provide screws *k*, which turn in nuts in the shaft, and carry on their inner ends pivoted plates. These plates bear against the box on opposite sides, and by turning the screws are made to fit any size of box and hold it securely in place. Only two sets of these screws and plates are shown, but four will be used to bear against the four sides of the box. Within the drum is formed a central chamber, of proper length to receive the box, by means of partition H. These partitions have central openings at *m* and flanges *n*, so that the material for coating the box can flow in only at the openings, and is guided by the flanges directly to the box. The outer chamber (shown on

the right-hand end of the box at K) is provided for the covering material. It is divided by means of a partition of wire-netting, which forms a kind of sieve to keep back any lumps or unmelted material. The material may be introduced through the door *p*, or it may be run in from an outside tank through a pipe, P, which leads from a melting or other tank, Q, placed upon or near the platform. An air or steam pipe or hose, *q*, leading from any suitable blowing device, and with an intermediate heating-coil, joins the pipe P, and thus communicates with the interior of the drum. This serves to keep the material in a heated condition, when necessary, and drives it through the tubes. The pipe P passes through the sleeve *e* into the chamber K. On the other end a pipe, P′, serves as a chimney for the escape of vapors and gases and the surplus air, which is provided with the stop-cock by which the air may be cut off or regulated.

The heating apparatus has a blower upon a separate stationary platform with flexible pipe-connections. In the operation of the machine, the material with which the box is to be coated is introduced in the manner heretofore explained, either in a cold fluid state or melted and hot state. A hot blast turned on melts the material and drives it forward, or a cold material within is hardened and solidified by the heat. The platform is tipped back and forth and rotated so as to cause the material to be distributed evenly and uniformly throughout the inner surfaces. The hot blast tends to promote this distribution and to prevent any obstruction in the passages when a liquid requires to be hot, and when a cold material is used a longitudinal bar, not close-fitting, may be introduced, and by the drum or cylinder rotating the weight of such a bar tends, to pack and solidify the material used, after which a hot blast is introduced to harden the compounds used.

Instead of the round drum, I may use a square or polygonal case such as that shown in Fig. 1. The hinges may also be those shown. I may also make my boxes round, and fit them to the shape of the drum or case, as shown in Fig. 6.

I may, under some circumstances, desire to roll or compress the material upon the inner surface of the chambers. For this purpose I place a rod of iron or other metal extending the entire length of a chamber. As the box rotates the rod rolls over the surface and presses the material thereon.

I lift the cover and lower the box into place by means of a suitable pulley and lifting device attached above the cylinder to any suitable beam or structure.

I am aware that it is old and well known to pitch the interiors of casks, barrels, &c., and that machines have been devised for giving the casks operated upon a combined rotary and tilting movement. I do not, therefore, claim, broadly, this process and apparatus, except in the particulars hereinafter specified.

What I claim is—

1. The method of coating a series of channels and binding the same together to form a box, consisting in placing the same within a suitable closed case, supplying melted material to said case, and then revolving and tilting said case to cause the melted material to flow evenly over the exposed surface of the channels inside and out, as set forth.

2. The method of coating a box having a series of channels by placing said box in a closed case or drum and then supplying heated covering material thereto and tipping and rolling the case and forcing hot air or steam through the said case, as set forth.

3. The combination of the tilting platform and the revolving case, with pipes, substantially as described, for supplying melted material, hot air, or steam, as set forth.

4. In an apparatus for coating surfaces, the revolving and tilting chamber, adapted to receive the article to be coated, and resting upon a supplemental platform, substantially as described, and for the purpose set forth.

5. The combination of a chamber adapted to receive the article to be coated, and resting upon a platform adapted to be oscillated and to revolve the said chamber, with a furnace on the same platform, and with suitable pipe-connections from a blast to said furnace and interior of the chamber, whereby the interior will be kept heated and the coating evenly spread without setting, substantially as described.

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

JOS. A. LAEMLE.

Witnesses:
F. L. MIDDLETON,
JOHN R. THOMPSON.