

D. A. DORAN.

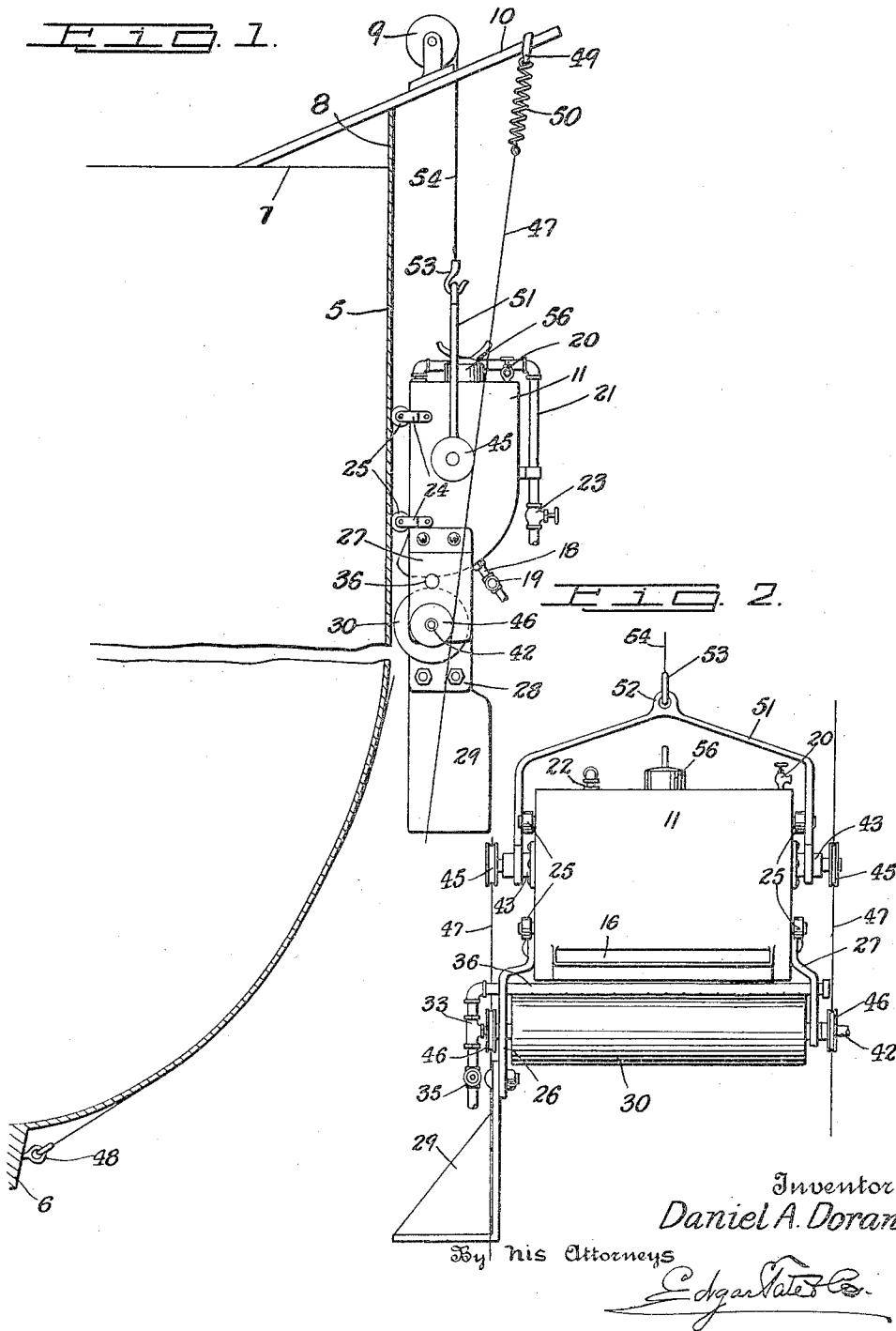
MACHINE FOR SPREADING HEAVY COATINGS ON SHIPS AND THE LIKE.

APPLICATION FILED SEPT. 28, 1918. RENEWED MAY 22, 1919.

1,326,484.

Patented Dec. 30, 1919.

2 SHEETS—SHEET 1.



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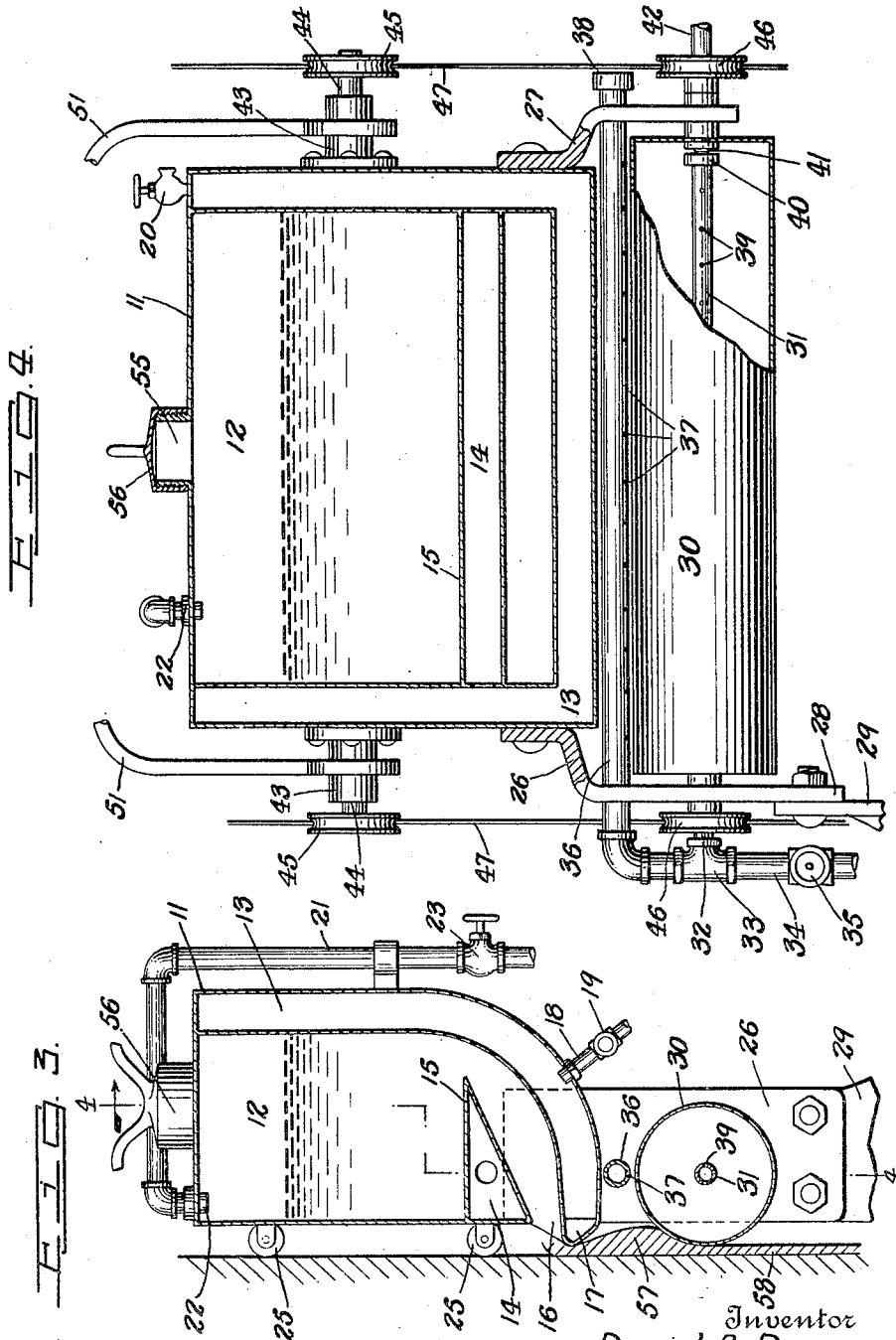
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By his Attorneys

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UNITED STATES PATENT OFFICE.

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MACHINE FOR SPREADING HEAVY COATINGS ON SHIPS AND THE LIKE.

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Specification of Letters Patent.

Patented Dec. 30, 1919.

Application filed September 28, 1918, Serial No. 256,037. Renewed May 22, 1919. Serial No. 299,073.

To all whom it may concern:

Be it known that I, DANIEL A. DORAN, a citizen of the United States, and residing at Yonkers, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Machines for Spreading Heavy Coatings on Ships and the like, of which the following is a specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to machines for spreading coatings such as pitch on the hulls of vessels, steamers, barges and the like; and the object of the invention is to provide a machine of this class which in operation is adapted to be moved transversely or vertically on the hull; a further object being to provide means for keeping the coating substance employed in machines of this class at a predetermined temperature; a still further object being to provide means for controlling the discharge of the coating substance; and a still further object being to provide a roller for rolling a predetermined thickness of the coating substance upon the hull of a vessel; and with these and other objects in view the invention consists in a machine of the class and for the purpose specified, constructed and operating as hereinafter described and claimed.

The invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which the separate parts of my improvement are designated by suitable reference characters in each of the views, and in which:—

Figure 1 is a transverse diagrammatic sectional view of the hull of a vessel and indicating the method of suspending my improved machine therefrom and moving it transversely thereof;

Fig. 2 a face view of my improved machine detached;

Fig. 3 a transverse section of the machine as shown in Figs. 1 and 2, on an enlarged scale and indicating the method of applying the coating to the hull of a vessel; and,

Fig. 4 a view similar to Fig. 2 but showing part of the machine in section, the section being partially on the line 4—4 of Fig. 3.

In Fig. 1 of the drawing, I have indicated at 5 a part of one side of the hull of a vessel, at 6 a keel and at 7 the deck construction having an upstanding rail 8 and, in prac-

tice, my improved machine is suspended from a suitably operated drum 9 mounted on a beam 10 supported upon the deck 7 and rail 8 in any desired manner.

The machine consists of an approximately rectangular casing 11 provided with a reservoir 12, the back sides and bottom of which are provided with a steam jacket 13, as shown in Figs. 3 and 4, and the opposite sides of the steam jacket 13 are placed in communication by a by-pass 14 formed by a baffle device 15 at the bottom portion of the reservoir 12, as clearly shown in Fig. 3.

The bottom portion of the reservoir 12 opens outwardly through an extension 16 which extends the full width of the reservoir as shown in Fig. 2, and the bottom of the steam jacket 13 is extended as shown at 17, beneath the opening at 16 so that the steam in the jacket 13 will keep the substance employed in the reservoir at the desired temperature until it has been discharged therefrom. A steam supply 18 is connected with the bottom portion of the jacket 13 as clearly shown in Figs. 1 and 3 and a valve 19 is placed in said supply and adapted to control the passage of steam into the jacket 13. The top portion of the steam jacket 13 at one side of the casing 11 is provided with an automatic pressure discharge valve 20 such as usually employed in steam radiators whereby the increased pressure of steam in the jacket 10 may be discharged therefrom as will be readily understood.

An air pressure supply pipe 21 is connected with the top front portion of the casing 11 and in communication with the reservoir 12 as shown at 22 and a valve 23 is mounted in the pipe 21 and adapted to control the supply of compressed air to the reservoir 12. The compressed air supplied to the reservoir 12 through the pipe 21 serves to force the contents of the reservoir out through the opening at 16, and when the compressed air supply is shut off the vacuum in the top of the reservoir will retain the contents within the reservoir and prevent the discharge therefrom.

Secured to the opposite side of the casing 11 and adjacent to the top and bottom portions thereof are brackets 24 carrying rollers 25 which serve to guide the machine in its movement transversely of the hull as illustrated in Figs. 1 and 3. Secured to the bottom of the side portions of the casing 11 are downwardly directed brackets 26 and 27,

the bracket 26 being longer than the bracket 27 as shown at 28, and with which is connected a workman supporting attachment 29 of any desired form and construction and upon which a workman may stand or sit in the operation of the machine.

A tubular roller 30 is rotatably mounted in the lower end portions of the brackets 26 and 27 and a tubular shaft 31 passes into said roller through one end thereof, as shown at 32 to which end is secured a T-coupling 33 mounted in a water supply pipe 34, having a controlling valve 35. The supply pipe 34 extends above the coupling 33 and is provided with a sprinkler tube 36 which ranges parallel with and over the roller 30 in the brackets 26 and 27, and the bottom portion thereof is provided with a plurality of discharge holes 37 through which water passes and is discharged onto the face of the roller 30 to cool the same in the operation of the machine. The free end of the sprinkler tube 36 is closed as shown at 38.

The tubular shaft 31 is provided within the tubular roller 30 with a plurality of apertures 39 through which water is discharged into said roller for the purpose of cooling the same and the end of said shaft is closed as shown at 40. The water collected within the tubular roller 30 is discharged through the inner end 41 of a tube 42 at the other end portion of the roller 30, as clearly shown in Fig. 4 of the drawing.

Secured to the opposite sides of the casing 11 approximately centrally thereof are outwardly directed studs 43 having trunnions 44 on which are mounted grooved guide rollers 45 and similar guide rollers 46 are mounted on the tubular shaft 31 and tube 42, and these guide rollers are adapted to operate on vertical guide cables or ropes 47, the lower ends of which are secured to the keel 6 as shown at 48, and the upper ends to the beam 10 as shown at 49 through a tensional device 51, as clearly illustrated in Fig. 1 of the drawing.

A suitable bail 51 is connected with the studs 43 and the central portion of which is provided with a ring or eye 52 with which is connected a hook device 53 suspended from the end of a rope or cable 54 wound on the hoisting drum 9, and by means of this construction the machine is raised and lowered upon the hull as will be readily understood. As hereinbefore stated the drum 9 may be operated in any desired manner and the speed at which the machine is raised may be governed by a signal from the operator on the machine.

In the operation of the machine the same is first brought as close to the keel 6 of the vessel as is possible, and before doing this the reservoir 12 is filled with the substance employed by passing it through an opening

55 in the top of the casing 11, said opening being closed by a closure cap 56. It will be noted that when the machine is in a position adjacent to the keel, the same will be in an inclined or approximately horizontal position and in putting the same into operation and after steam has been admitted into the jacket 13 through the supply 18, the valve 23 is opened to admit air under pressure to the top portion of the reservoir 12, which operation will force the heavy substance in the reservoir out through the opening at 16 onto the hull, and such material will collect between the opening 16 and the roller 30 approximately as indicated at 57, and as the machine is raised by the operation of the drum 9, the roller 30 lays such material upon the hull at an even thickness as shown at 58 in Fig. 3.

The above operation of laying the material upon the hull is accomplished by reason of the fact that the material employed is a heavy but flowing substance, which when chilled dries quickly, and by reason of the sprinkler tube 36 and perforated tubular shaft 31, the roller 30 is constantly kept cool and thus accomplishes the desired result.

When the machine reaches the highest point, or the top portion of the hull, the supply of air under pressure is shut off by closing the valve 23 and this immediately stops the discharge of the material from the reservoir 12, by reason of the vacuum created in the top portion of said reservoir. The machine may be then lowered and shifted to one side of the work just accomplished, and the above operation repeated until the entire hull has been coated.

It will be understood that when the machine is in a horizontal, or approximately horizontal, position, the compressed air will be at one side of the reservoir or what would be the top of the reservoir when in its horizontal position, and the object of the baffle device is to retard the flow of the contents of the reservoir to a certain extent, and by providing a bypass steam chamber through the baffle device, the substance employed is kept heated at all points and especially at the lower or discharge end of the reservoir, this being due to the fact that the contents usually employed for the purpose specified becomes hard very quickly when chilled.

The machine herein described is particularly designed in applying coatings to the greatest surface of hulls of vessels and especially to vessels the hulls of which are composed partially or entirely of concrete and by using machines of this class a great saving of time and labor is obtained, and it will be understood that such parts of the hull that cannot be coated with my machine will be coated by hand in the manner now commonly practised, and while I have shown certain details of construction for carrying

the invention into effect, it will be understood that my invention is not limited to such details, and various changes therein and modifications thereof may be made, within the scope of the appended claims, without departing from the spirit of my invention or sacrificing its advantages.

While I have stated that the function of the sprinkler tube 36 is to cool the outer surface of the roller 30, this tube is also designed to moisten the outer surface of said tube to prevent the pitch or other material employed in the machine from adhering thereto in the operation of rolling it upon the hull of the vessel or the like.

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

1. In a machine of the class described, a casing, a steam jacketed reservoir in said casing, means for admitting the material employed into said reservoir, the bottom portion of the reservoir being provided with a discharge opening, means for controlling the discharge of the contents of the reservoir, and a roller mounted beneath the reservoir and adapted to lay the material discharged from said reservoir upon the surface over which the machine passes.

2. In a machine of the class described, a casing, a steam jacketed reservoir in said casing, means for admitting the material employed into said reservoir, the bottom portion of the reservoir being provided with a discharge opening, means for controlling the discharge of the contents of the reservoir, a roller mounted beneath the reservoir and adapted to lay the material discharged from said reservoir upon the surface over which the machine passes, and means for cooling said roller.

3. In a machine of the class described, a casing, a steam jacketed reservoir in said casing, means for admitting the material employed into said reservoir, the bottom portion of the reservoir being provided with a discharge opening, means for controlling the discharge of the contents of the reservoir, a roller mounted beneath the reservoir and adapted to lay the material discharged from said reservoir upon the surface over which the machine passes, means for cooling said roller, and a spray tube mounted upon the roller and adapted to discharge water upon the surface of the roller to cool the same.

4. In a machine of the class described, a casing, a steam jacketed reservoir in said casing, means for admitting the material employed into said reservoir, the bottom portion of the reservoir being provided with a discharge opening, means for controlling the discharge of the contents of the reservoir, a hollow roller mounted beneath the reservoir and adapted to lay the material

discharged from said reservoir upon the surface over which the machine passes, a spray tube mounted above the roller and adapted to discharge water upon the outer surface of the roller to cool the same, and means for introducing water into the hollow roller to cool the inner surface thereof.

5. In a machine of the class described, a casing, a steam jacketed reservoir in said casing, means for admitting the material employed into said reservoir, the bottom portion of the reservoir being provided with a discharge opening, means for controlling the discharge of the contents of the reservoir, a hollow roller mounted beneath the reservoir and adapted to lay the material discharged from said reservoir upon the surface over which the machine passes, a spray tube mounted above the roller and adapted to discharge water upon the outer surface of the roller to cool the same, means for introducing water into the hollow roller to cool the inner surface thereof, and means for discharging the water collected in said hollow roller from one end portion thereof.

6. In a machine for applying heavy coatings to the hulls of vessels and the like, a frame or casing, means for supporting said frame or casing and moving it over the outer face of the hull, a reservoir in said frame or casing, a steam jacket for said reservoir, means for introducing steam into said jacket, means for filling the reservoir with the substance employed, the bottom portion of the reservoir being provided with a discharge opening, and means for introducing air under pressure into the reservoir for discharging the contents thereof through said openings.

7. In a machine for applying heavy coatings to the hulls of vessels and the like, a frame or casing, means for supporting said frame or casing and moving it over the outer face of the hull, a reservoir in said frame or casing, a steam jacket for said reservoir, means for introducing steam into said jacket, means for filling the reservoir with the substance employed, the bottom portion of the reservoir being provided with a discharge opening, means for introducing air under pressure into the reservoir for discharging the contents thereof through said opening, a baffle device in the reservoir adjacent to said opening, and means whereby the steam in the steam jacket may pass through said baffle device.

8. In a machine for applying heavy coatings to the hulls of vessels and the like, a frame or casing, means for supporting said frame or casing and moving it over the outer face of the hull, a reservoir in said frame or casing, a steam jacket for said reservoir, means for introducing steam into said jacket, means for filling the reservoir with the substance employed, the bottom portion of the

reservoir being provided with a discharge opening, means for introducing air under pressure into the reservoir for discharging the contents thereof through said opening, a baffle device in the reservoir adjacent to said opening, means whereby the steam in the steam jacket may pass through said baffle device, a roller mounted adjacent to the discharge end of the reservoir, and means for cooling said roller to chill the material discharged from the reservoir in the operation of applying it to the hull of a vessel.

9. In a machine for applying heavy coatings to the hulls of vessels and the like, a frame or casing, means for supporting said frame or casing and moving it over the outer face of the hull, a reservoir in said frame or casing, a steam jacket for said reservoir, means for introducing steam into said jacket, means for filling the reservoir with the substance employed, the bottom portion of the reservoir being provided with a discharge opening, means for introducing air under pressure into the reservoir for discharging the contents thereof through said opening, a baffle device in the reservoir adjacent to said opening, means whereby the steam in the steam jacket may pass through said baffle device, a roller mounted adjacent to the discharge end of the reservoir, means for cooling said roller to chill the material discharged from the reservoir in the operation of applying it to the hull of a vessel, and a workman's support suspended from said frame or casing.

10. In a machine for applying heavy coatings to the hulls of vessels and the like, a frame or casing, means for moving said casing transversely of the hull, means for guiding said frame or casing in such movement and for holding it at a predetermined distance from the hull, a reservoir in said frame or casing, means for filling the reservoir with the substance employed, a discharge opening at one end portion of the reservoir, a baffle device in said reservoir adjacent to the discharge opening, a steam jacket at the ends, one side and bottom of said reservoir and through said baffle device, means for introducing steam into said jacket, an automatic discharge valve for said steam jacket, and means for introducing air under pressure into said reservoir and discharging material therein through the discharge opening.

11. In a machine for applying heavy coatings to the hulls of vessels and the like, a frame or casing, means for moving said casing transversely of the hull, means for guiding said frame or casing in such movement, and for holding it at a predetermined distance from the hull, a reservoir in said frame or casing, means for filling the reservoir with the substance employed, a dis-

charge opening at one end portion of the reservoir, a baffle device in said reservoir adjacent to the discharge opening, a steam jacket at the ends, one side and bottom of said reservoir and through said baffle device, means for introducing steam into said jacket, an automatic discharge valve for said steam jacket, means for introducing air under pressure into said reservoir and discharging material therein through the discharge opening, a hollow roller mounted adjacent to the discharge opening of the reservoir, and means for cooling the inner and outer faces of said roller.

12. In a machine for applying heavy coatings to the hulls of vessels and the like, a frame or casing, means for moving said casing transversely of the hull, means for guiding said frame or casing in such movement and for holding it at a predetermined distance from the hull, a reservoir in said frame or casing, means for filling the reservoir with the substance employed, a discharge opening at one end portion of the reservoir, a baffle device in said reservoir adjacent to the discharge opening, a steam jacket at the ends, one side and bottom of said reservoir and through said baffle device, means for introducing steam into said jacket, an automatic discharge valve for said steam jacket, means for introducing air under pressure into said reservoir and discharging material therein through the discharge opening, a hollow roller mounted beneath and at a predetermined distance from the discharge end of the reservoir, a tubular shaft passed into said roller, a sprinkler tube mounted above the roller, and means for supplying water to said tubular shaft and sprinkler tube to cool the inner and outer faces of said roller.

13. In a machine for applying heavy coatings to the hulls of vessels and the like, a frame or casing, means for moving said casing transversely of the hull, means for guiding said frame or casing in such movement and for holding it at a predetermined distance from the hull, a reservoir in said frame or casing, means for filling the reservoir with the substance employed, a discharge opening at one end portion of the reservoir, a baffle device in said reservoir adjacent to the discharge opening, a steam jacket at the ends, one side and bottom of said reservoir and through said baffle device, means for introducing steam into said jacket, an automatic discharge valve for said steam jacket, means for introducing air under pressure into said reservoir and discharging material therein through the discharge opening, a hollow roller mounted beneath and at a predetermined distance from the discharge end of the reservoir, a tubular shaft passed into said roller, a sprinkler tube mounted above the roller, means for supplying water to said tubular shaft and sprinkler tube to cool the

inner and outer faces of said roller, and means for discharging the water from one end of said hollow roller.

14. In a machine for applying heavy coatings to the hulls of vessels and the like, a frame or casing, means for moving said casing transversely of the hull, means for guiding said frame or casing in such movement and for holding it at a predetermined distance from the hull, a reservoir in said frame or casing, means for filling the reservoir with the substance employed, a discharge opening at one end portion of the reservoir, a baffle device in said reservoir adjacent to the discharge opening, a steam jacket at the ends, one side and bottom of said reservoir and through said baffle device, means for introducing steam into said jacket, an automatic discharge valve for said steam jacket, means for introducing air under pressure into said reservoir and discharging material therein through the discharge opening, a hollow roller mounted beneath and at a predetermined distance from the discharge end of the reservoir, a tubular shaft passed into said roller, a sprinkler tube mounted above the roller, means

for supplying water to said tubular shaft and sprinkler tube to cool the inner and outer faces of said roller, means for discharging the water from one end of said hollow roller, and a workman's support connected with said frame or casing.

15. In a machine for applying heavy coatings to the hulls of vessels and the like, means for supporting the machine at a predetermined distance from the hull, means for moving the machine transversely of the hull, said machine being provided with means for carrying the coating material employed, means for discharging the material from said machine, and means for applying a predetermined thickness of the material on the face of the hull in the movement of the machine thereover.

In testimony that I claim the foregoing as my invention I have signed my name in presence of the subscribing witnesses this 26th day of Sept., 1918.

DANIEL A. DORAN.

Witnesses:

C. E. MULREANY,
H. E. THOMPSON.