M. SULLIVAN.

MACHINE FOR MAKING PIPE FLANGE INSULATIONS.

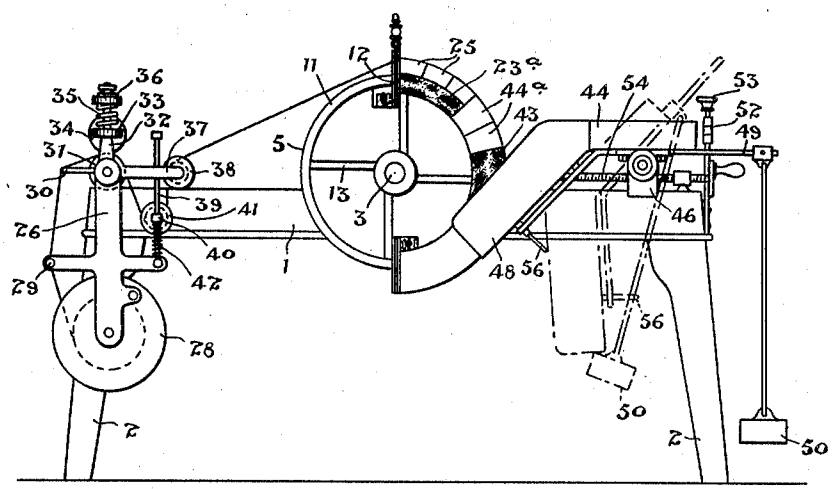
APPLICATION FILED MAY 31, 1919.

1,316,119.

Patented Sept. 16, 1919.

2 SHEETS—SHEET 1.

Fig. 1.



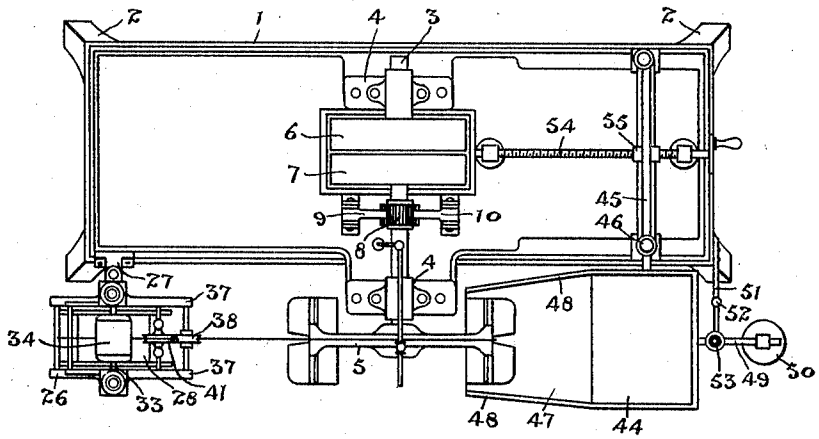


Fig. 2.

Inventor.

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2 SHEETS—SHEET 2.

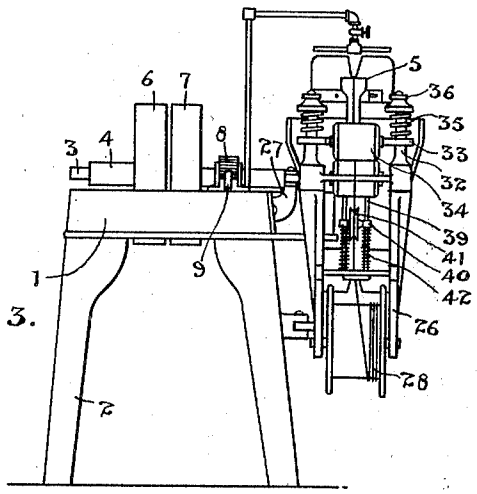


Fig. 3.

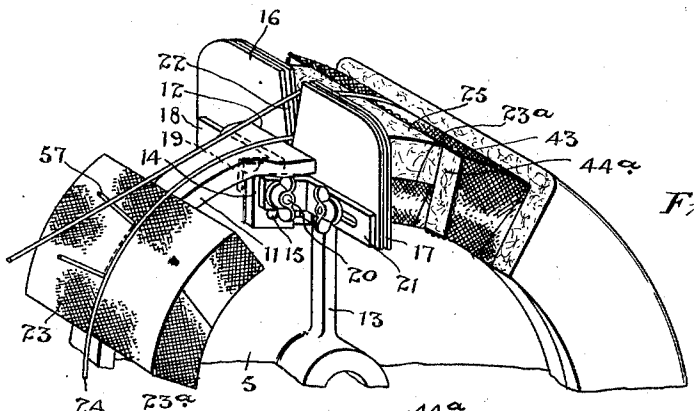


Fig. 4.

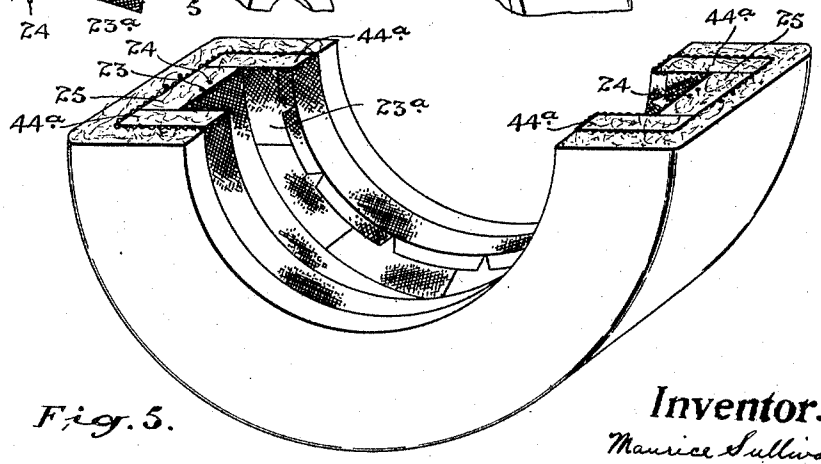


Fig. 5.

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UNITED STATES PATENT OFFICE.

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MACHINE FOR MAKING PIPE-FLANGE INSULATIONS.

1,316,119. Specification of Letters Patent. Patented Sept. 16, 1919.

Application filed May 31, 1919. Serial No. 301,080.

To all whom it may concern:

Be it known that I, MAURICE SULLIVAN, a citizen of the United States of America, and resident of the city of Toronto, county of York, Province of Ontario, in the Dominion of Canada, have invented certain new and useful Improvements in Machines for Making Pipe-Flange Insulations, as described in the following specification and illustrated in the accompanying drawings, that form part of the same.

The principal objects of the invention are, to simplify the production of split or sectional pipe flange covers, reducing the cost to the minimum and producing a finished product of a uniform size and quality.

A further object is to provide a machine of a portable nature which may be readily moved from place to place so that the covers may be manufactured on the premises where they are required, thereby eliminating the loss and expense in transportation.

The principal features of the invention consist in the novel construction and arrangement of parts, whereby the insulating material and reinforcements therefor are built up upon a rotatable member and secured thereon by having a wire properly tensioned wound thereabout until the insulation is completed and whereby a coating of plastic material is placed upon the body of material built upon said rotating member.

A further feature in the invention consists in the novel construction of the machine, whereby the various parts may be readily adjusted and the binding and plastering devices may be swung clear of the forming member upon which the insulation is built.

In the accompanying drawings Figure 1 a front elevational view of a machine constructed in accordance with this invention;

Fig. 2 is a plan view.

Fig. 3 is an end elevational view showing the binding wire tension device.

Fig. 4 is an enlarged perspective detail of a portion of the rotatable molding member.

Fig. 5 is an enlarged perspective detail shown partly in section of a segment of a completed insulation cover.

In providing insulation coverings for steam pipes it has always been a difficult matter to provide proper coverings for the flanges and these are mostly formed directly upon the pipes. This is a slow and costly method and it is the main purpose of this invention to provide a device which may be utilized in making covers of uniform size for any particular size of flange and which may be made very quickly and then placed in position.

The machine herein described is of a simple and rigid construction and comprises a rectangular shaped frame 1 supported upon legs 2 about the height of a bench.

A shaft 3 is mounted transversely of the frame 1 midway of its length in the bearings 4 and projects from the forward side having a molding wheel 5 mounted thereon. The shaft 3 is provided with fast and loose pulleys 6 and 7 driven by a suitable belt, or if desired a direct motor drive might be attached or in some instances it might be desirable to utilize hand power to rotate the shaft.

A spur wheel 8 is mounted on a shaft adjacent to the pulleys and a pair of ratchet dogs 9 and 10 are arranged one on each side thereof for the purpose of holding the shaft against rotation in either one direction or the other, or both as may be desired.

The molding wheel is provided with a circular rim 11 which is split transversely at two or more points forming the recesses 12, said recesses preferably being adjacent to the arms or spokes 13 of the wheel. Bosses 14 formed integral with the rim extend inwardly forming one side of the recesses 12 and these lugs are provided with transverse holes 15 which are parallel with the side wall of the recesses.

Separating plate members 16 adapted to be secured in the recesses 12 are formed of a pair of thin plates separated by a thin strip 17 secured at the bottom.

A bracket 18 is rigidly secured to the plates and strip at one side and is formed with a lug projection 19 through which a bolt 20 is passed to extend into one of the holes 15 in the boss 14.

An adjustable bracket 21 is secured to each of the separating members 16 and is adapted to be secured against the opposite side of the boss 14 of the wheel. The separating mem-

bers are thus held securely transversely of the wheel and extend well to both sides of the rim. A central V-shaped slit 22 is formed in the separating members 16 in alinement with the transverse center of the rim of the molding wheel.

The insulating covering is built up upon the molding wheel by placing upon the flange of said wheel an inner supporting reinforcement 23 preferably woven wire of a suitable mesh, the edges 23^a of which are flanged inwardly. This is placed in lengths to extend between the separating plate members 16 and is held upon the wheel by means of a wire wrapping 24 which enters the slits 22 in the separating members and binds the wire mesh to the wheel. When the woven wire is thus bound, the blocks 25 of a suitable insulating material such as magnesia are placed upon the periphery of the molding wheel and these are bound in position by means of the wire wrapping.

The wire is fed to the molding wheel by means of a suitable tension device which is herein shown in the form of a frame 26 which is pivotally secured to swing horizontally on a bracket 27 extending from the front side of the frame 1.

The wire reel 28 is rotatably mounted at the bottom of the frame and the wire passed upwardly through a pair of cross bars 29 and 30 and over a roller 31 the spindle of which is supported in the side portions of the frame 26 at the top.

Studs 32 extend upwardly from the sides of the frame above the supports of the roller 31 and the spindle 33 of a roller 34 is formed with eye-shaped ends loosely encircling said studs.

Compression springs 35 encircle the studs and the pressure upon the roller 34 is controlled by thumb screws 36 to regulate the tension on the wire.

A pair of arms 37 extend from the upper part of the frame 26 toward the molding wheel and carry a spindle on which is mounted a grooved wheel 38.

A pair of vertically disposed rods 39 are secured to the lower part of the frame and extend upwardly between the roller 31 and the spindle of the grooved wheel 38 and a cross bar 40 is adapted to slide up and down upon said rods and carries a grooved pulley 41 arranged in alinement with the grooved wheel 38.

The wire from the reel after passing between the tension rollers 31 and 34 passes under the pulley 41 and over the wheel 38. Tension springs 42 tend to pull the pulley 41 downwardly and are adapted to take up any slack in the wire between the molding wheel and the wire feed.

In starting the work the end of the wire is suitably fastened by making a hook in the end and inserting it into the slit 22 in one of the separating plates 16. When the inner wire reinforcement pieces are placed in position the wheel is rotated once or twice thus wrapping the wire firmly around the same. The segmental shaped magnesia blocks are then packed about the periphery and as the wheel is rotated the wire encircles the blocks and binds them securely in position. After the blocks are so placed the outer reinforcement 43 of woven wire is placed around the outer periphery and bound by a further wrapping of wire which is then cut and the end fastened securely.

Segmental blocks 44^a of insulating material are then placed against the edges of the blocks 25 and the edge flanges of the inner reinforcement and the projecting edges of the outer reinforcement are bent inward and secured to the edges of the inner reinforcement 23.

The segments thus partially constructed are to be covered on the periphery and outer sides with a coating of a plastic composition. The plastic material is placed within a receptacle 44 which normally is maintained in a horizontal position being supported upon a bar 45 which is rotatably mounted in a carriage 46 slidable longitudinally upon the top of the frame. The receptacle is formed with a downwardly sloping trowel portion 47 which projects in close to the molding wheel 5 and is formed with converging side flanges 48 adapted to spread the plastic coating material which feeds down from the receptacle 44 on to the surface of the built up body on to the molding wheel.

An arm 49 extends outwardly from the receptacle 44 and upon this is adjustably arranged a pendant weight 50 such weight being adapted to be adjusted to hold the lower end of the trowel in contact with the form upon the molding wheel to effect the placing of the outer covering of plastic material.

A bracket 51 is secured to the end of the frame 1 and supports a hinged member 52 carrying a thumb screw 53. The hinged member swings over the arm 49 of the trowel and the screw is set to limit the downward throw of the trowel. This arrangement accurately gages the thickness of the plastic material spread upon the mold form. The carriage 46 is slidably adjustable upon the frame, being operated by means of a screw spindle 54 secured in suitable supports on the top of said frame and engaging a suitable nut 55 on the carriage to adjust the position of the trowel in relation to the mold according to the size of flange covering being made.

The trowel member is adapted to be swung into the position shown in dotted lines in Fig. 1 and the rod of the weight 50 is hooked into a hook 56 secured on the bottom of the trowel and the wire tension member carrying the reel 28 being pivotally supported

upon the frame may be swung outwardly, thus leaving the mold wheel clear for the operator to work around in shaping the wire reinforcements and fitting the blocks of insulating material in place.

When the covering has been completed it is removed from the mold wheel in a very simple manner by the insertion of a cutter between the separated plates of the members 16 to sever the circumferential binding wires. The segments may then be lifted clear of the wheel and are complete and ready to be applied to the flange for which they are designed.

It may be found desirable to more firmly secure the inner and outer reinforcements and this may be done by inserting the ends of U-shaped wires 57 through the meshes of the inner reinforcement before it is placed on the wheel. These wires extend outwardly between the blocks 25 and through the outer reinforcement and the ends are hooked over the binding wires.

What I claim as my invention is:—

1. A machine for forming pipe flange insulations, comprising a rotatable mold, a wire carrying member having means for adjusting the tension of the wire as it is wound upon the mold, a trowel member adapted to be adjusted in relation to the mold, and means for regulating the pressure upon the trowel in spreading the plastic material on the mold.

2. A machine for forming pipe flange insulations, comprising, a rotatable mold adapted to have segmental reinforcing members and blocks of insulating material placed on the periphery, means secured to said mold projecting radially and dividing the members mounted thereon and having transverse spaces separating the segments, means for guiding wrapping wires circumferentially around said mold and through said transverse spaces, and means for spreading a plastic material over the insulating material.

3. A machine for forming pipe flange insulations, comprising a frame, a rotatable mold mounted on said frame having transverse recesses in its periphery, radial separating plate members each formed of a pair of plates spaced apart and secured in the recesses in said wheel, said plates having radial slits arranged centrally of their width, means for feeding binding wires circumferentially around said mold to secure the base materials thereto, and a trowel adjustably supported on the frame and adapted to spread a coating of plastic material upon the base materials secured upon the mold.

4. A machine for forming pipe flange insulations, comprising a frame, a mold rotatably mounted centrally of the frame, a member mounted on the frame at one end and supporting a wire reel, a pair of tension rollers arranged above said wire reel, means for regulating the tension of said rollers, and means for taking up the slack of the wire between the rotatable mold and the tension rollers.

5. A machine for forming pipe flange insulations, comprising, a frame, a mold rotatably mounted centrally of the frame, a member mounted on the frame at one end and supporting a wire reel, a pair of tension rollers arranged above said wire reel, a grooved roller arranged in fixed relation to said tension rollers, a member adjustably arranged between said grooved roller and the tension rollers and supporting a grooved roller under which the wire from the reel is passed and spring means for automatically operating said adjustable member.

6. A machine for forming pipe flange insulations, comprising a rotatable mold adapted to have segmental reinforcing members and blocks of insulating material placed on the periphery, means secured to said mold projecting radially and dividing the members mounted thereon, means for securing the members mounted on said mold, a trowel member pivotally supported to spread plastic material upon the mold, a pivotally pendant counterbalance weight adjustably secured to said trowel, and means for holding the trowel away from the mold.

7. A machine for forming pipe flange insulations, comprising a rotatable mold adapted to have segmental reinforcing members and blocks of insulating material placed on the periphery, means secured to said mold projecting radially and dividing the members mounted thereon, means for securing the members mounted on said mold, a trowel member pivotally supported to spread plastic material upon the mold, a counter-balance arranged on said trowel, and means for limiting the movement of said trowel to regulate the thickness of the material placed upon the mold by said trowel.

8. A machine for forming pipe flange insulations, comprising a rotatable mold adapted to have segmental reinforcing members and blocks of insulating material placed on the periphery, means secured to said mold projecting radially and dividing the members mounted thereon, means for securing the members mounted on said mold, a trowel member pivotally supported to spread plastic material upon the mold, a counter-balance arranged on said trowel, a pivotal bracket member, and a screw member arranged in said bracket adapted to engage said trowel to limit its movement in relation to the mold.

9. A machine for forming pipe flange insulations, comprising a rotatable mold adapted to have segmental reinforcing members

and blocks of insulating material placed on the periphery, means secured to said mold projecting radially and dividing the members mounted thereon, means for securing the members mounted on said mold, a trowel member pivotally supported to spread plastic material upon the mold, a carriage slidably mounted on said frame and supporting said trowel, and a threaded spindle supported on the frame and engaging said carriage to move the trowel to and from the mold.

MAURICE SULLIVAN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."