H. M. NICHOLLS.

COATING MACHINE.

APPLICATION FILED JAN. 8, 1921.

1,400,310.

Patented Dec. 13, 1921.

2 SHEETS—SHEET 1.

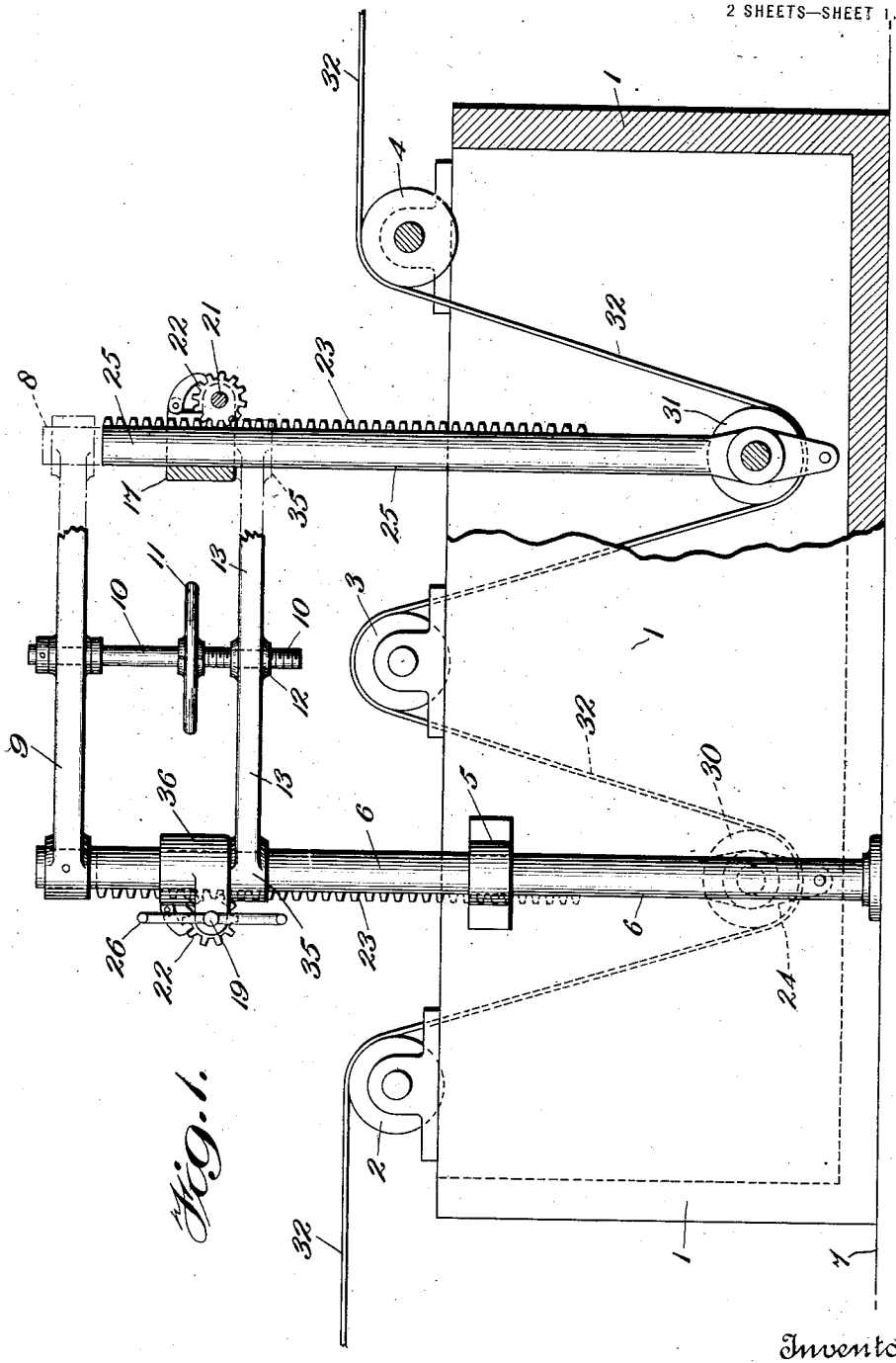


Fig. 1.

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2 SHEETS—SHEET 2.

Fig. 2.

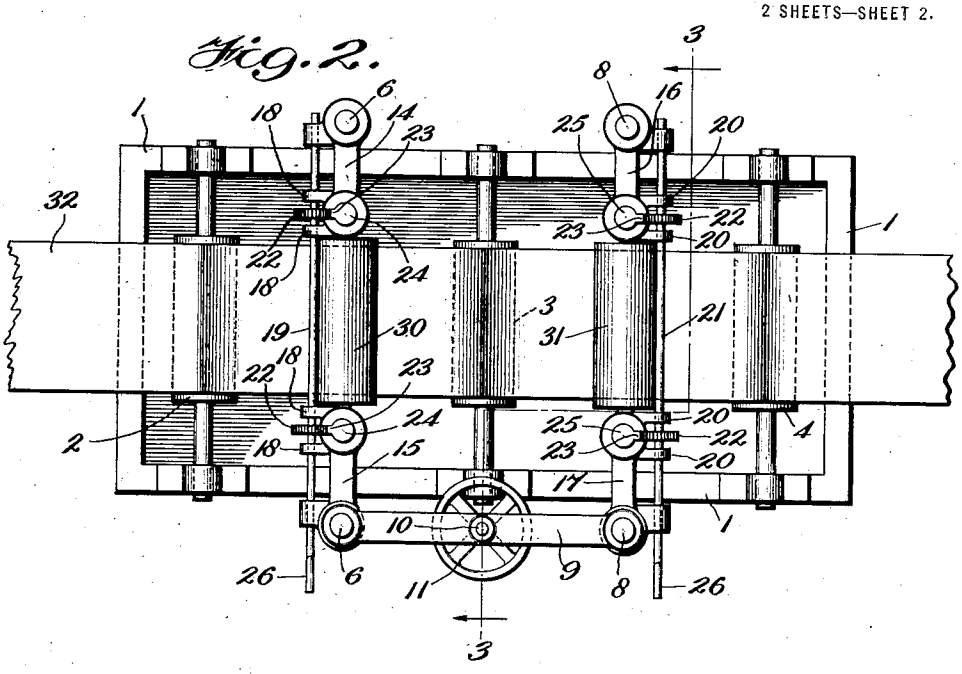
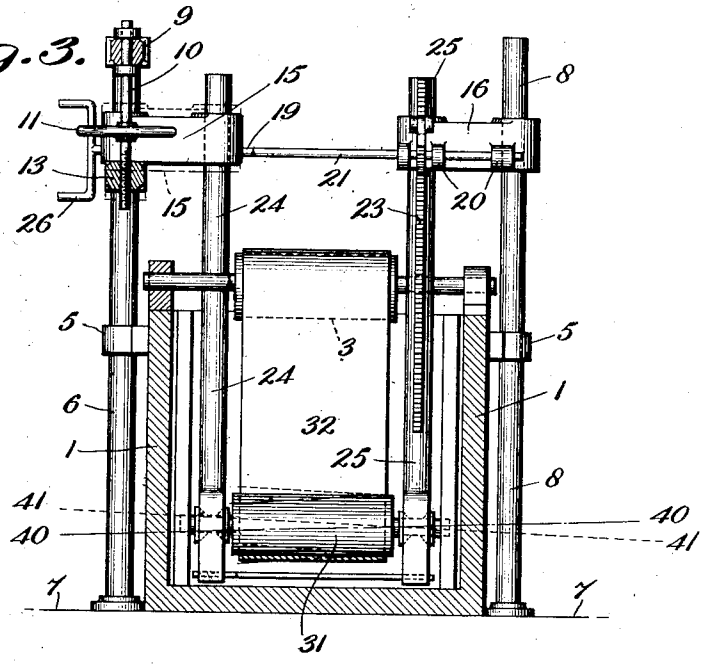


Fig. 3.



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COATING-MACHINE.

1,400,310. Specification of Letters Patent. Patented Dec. 13, 1921.

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To all whom it may concern:

Be it known that I, HENRY M. NICHOLLS, a citizen of the United States, residing at Lockport, in the county of Niagara and State of New York, have invented certain new and useful Improvements in Coating-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a machine for coating roofing material with asphalt and other substances, and has for its object to provide an apparatus of this character which will be comparatively inexpensive to manufacture and more certain and efficient in action than those which have been heretofore proposed.

With these and other objects in view, the invention consists in the novel details of construction and combinations of parts more fully hereinafter disclosed and particularly pointed out in the claims.

Referring to the accompanying drawings forming a part of this specification in which like numerals designate like parts in all the views:

Figure 1 is a diagrammatic side elevational view partially broken away of a machine made in accordance with this invention;

Fig. 2 is a plan view of the parts shown in Fig. 1; and

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 2 looking in the direction of the arrows.

In order that the precise invention may be the more clearly understood it is said: In the manufacture of asphalt and other roofing materials in which dry felt is passed through a tank containing molten asphalt or other liquid material, in order to thoroughly saturate it, it is well known that the strip of felt in threading through this tank, passes over rolls on the top of the tank and down under rolls immersed in the liquid asphalt, whence it passes again upwardly over other rolls which are located on top of the tank. It is also well known that should the felt strip not be started exactly right over the first upper roll, or should it get started more or less wrong in its path during the coating operation, a great deal of difficulty arises, owing to the fact that the said felt strip will have a tendency to move toward one end or the other of the said rolls.

Stated in other language, there has always been encountered a great deal of difficulty in the saturating tank to get the paper to run straight. The paper is carried out of a straight path sometimes on account of a slippage which it experiences due to the properties of the liquid asphalt and to the variations in the thickness of the paper itself which will cause the paper, even tho gh it be started straight at first, to creep first to one side and then to the other side of the tank. This said creeping of the saturated paper or felt, will ultimately cause a breakage and therefore a loss in production.

I have observed also that in the manufacture of this said asphalt coated paper the sheet or strip is apt to travel to that side of the roll over which it first gets started wrong, and I have therefore devised a means of lowering or raising one end of each of the lower or immersed rolls so as to correct the path of the paper in the saturating tank after it has once gone wrong, and thus guide the paper in a perfectly straight path throughout the saturating operation, and have thus succeeded in increasing the efficiency of the apparatus.

The means by which these desirable results are accomplished will be understood from the following description of the drawings, in which 1 indicates any suitable tank for holding molten asphalt or other liquid coating material, 2, 3, and 4 stationary guide rolls mounted on said tank, and 5 brackets carried on the outside of said tank for holding the vertically disposed pairs of standards 6 and 8 resting on the floor 7 or other support of said tank, as best shown in Figs. 2 and 3. The upper portions of one pair of the standards 6 and 8 are joined by a member 9 carrying the screw shaft 10 operated by the hand wheel 11, working in the nut 12 carried by the slidable member 13, all as will be clear from Figs. 1 and 2.

It thus results that as the wheel 11 and screw shaft 10 are turned the member 13 may be moved up and down relative to standards 6 and 8.

Each standard 6 is provided with a connecting member such as 14 and 15 slidable on its own standard 6, and overlying the top edge of the tank 1. Likewise, each of the standards 8 is provided with a similar

connecting member such as 16 and 17 disposed similarly to the members 14 and 15. Said members 14 and 15 are provided with the lugs 18 through which passes the resilient or easily bendable rod 19 and said connecting members 16 and 17 are provided with the lugs 20 through which passes the resilient or easily bendable rod 21. The rods 19 and 21 are provided with the pinions 22 taking in the racks 23 with which the inner pairs of standards 24 and 25 are provided.

It thus results that upon turning the handles 26 carried by the rods 19 and 21, the pinions 22 will raise and lower the racks 23 and with the latter will move the inwardly pairs of standards 24 and 25. During this last mentioned motion, the connections 14 and 15, 16 and 17, will remain stationary and serve as guides for said pairs of standards 24 and 25, as will be readily understood.

At the lower ends of the pair of standards 24 is supported on suitable bearings a lower roll 30, and at the lower ends of the pair of standards 25 is supported a lower roll 31. The strip of felt 32 or other material to be coated, as will be clear from Figs. 1 and 2, first passes over the stationary roll 2 down into the tank 1, under the lower roll 30, up out of said tank over the stationary roll 3, down into the tank under a second lower roll 31 and up out of the tank over a stationary roll 4, whence it may be passed one or more times down into the tank again, or else if sufficiently coated, it may be carried out of the tank for further treatment.

It will therefore be seen that, as stated above, in so far as has now been disclosed, unless there is some provision for canting or inclining the axes of the rolls 30 and 31, should the paper or other sheet or strip 32 be, from any cause, guided out of a straight path, it will move to one end of the other of the said rolls 30 and 31 and thus be liable to cause a breakage, or stoppage, of the machine, and a considerable loss in production.

In order to obviate this most undesirable result, I, in this machine, turn the hand wheel 11 so as to move upwardly or downwardly the cross member 13, whose ends 35 underlie the extreme ends 36 of the members 15 and 17, see Fig. 1, so that said ends 36 will be moved upwardly or downwardly, all as will be clear from the full lines in Fig. 1 and the dotted lines in Figs. 1 and 3.

The movement of the said ends 36 of the two members 15 and 17 will cause corresponding movements of the lugs 18 and 20 of the said members 15 and 17, and therefore, said movements will cause corresponding movements in the handle portions of the resilient or bendable rods 19 and 21 and in the pinions 22 carried by said rods. But, owing to the resilient nature of the said rods the pinions 22 located near the ends of the said rods opposite to the handles 26 will not be moved. The movements of these said first named pinions 22 will cause corresponding movements of the corresponding standard 24 and in the corresponding standard 25 which can slide upwardly and downwardly through the said connecting members 15 and 17 respectively.

Stated in other language, since there is nothing to prevent the said last two mentioned standards 24 and 25 from rising, supposing the movement of the ends 35 to be upwardly, then the corresponding pinions 22 meshing with said standards 24 and 25 will rise with the corresponding lugs 18 and 20 and will carry said standards 24 and 25 bodily upward, thus canting the rolls 30 and 31, as will be clear from Figs. 1 and 3. Should it be desired to cant the rolls 30 and 31 in an opposite direction it is only necessary to lower the member 13, whereupon the members 15 and 17 will be lowered, and with them the corresponding ends of the rolls 30 and 31, so that no matter in which direction the wheel 11 is turned, there will be a canting of the two axes of the rolls 30 and 31, as is indicated by the lines 40, and 41, shown in Fig. 3.

Suitable pawls shown in Fig. 1, but not lettered, prevent the pinions 22 from turning during the above described operations. When, however, the handles 26 are turned, said pawls are thrown out of engagement by hand.

It therefore follows that an adjustment of the wheel 11 will slightly cant the axes of the rolls 30 and 31 to the end that the path of the felt or other strip 32 may be kept straight at all times.

Of course, it is obvious that other materials than felt and paper may be coated by this machine, and it is further obvious that other materials than asphalt may be used in the tank 1.

Accordingly, it is obvious that those skilled in the art may vary the details of construction as well as the arrangement of parts without departing from the spirit of the invention, and therefore I do not wish to be limited to the above disclosure except as may be required by the claims.

What I claim is:

1. In a machine for coating flexible material the combination of a container for the coating composition; a guide roll for said flexible material located outside said container; a guide roll for said material immersed in said composition; means comprising a slidable horizontally disposed member to cant the axis of said last named roll during the coating operation; and a screw

member to actuate said means substantially as described.

2. In a machine for coating flexible material the combination of a container for the coating composition; a stationary guide roll for said flexible material located outside said container; a movable guide roll for said material immersed in said composition; slidable, horizontally disposed means to vertically move one end of the axis of said last named roll during the coating operation; and a screw member to actuate said means, substantially as described.

3. In a machine for coating a fabric with a roofing composition the combination of a plurality of stationary guide rolls for said fabric; a tank for said composition; a guide roll immersed in said composition under which said fabric is adapted to pass; means comprising a slidable, horizontally disposed member to move vertically one end of said roll relatively to the other while said fabric is passing thereunder; and a screw member to actuate said means, substantially as described.

4. In a machine for coating a fabric with a roofing composition the combination of a plurality of stationary guide rolls for said fabric; a tank for said composition; a guide roll immersed in said composition under which said fabric is adapted to pass; vertically disposed means for adjusting said last named roll up and down in said tank; and means to move a portion of said adjusting means to displace vertically one end of said roll relatively to the other while said fabric is passing thereunder, substantially as described.

5. In a machine for coating a fabric with a roofing composition the combination of a plurality of stationary guide rolls for said fabric; a tank for said composition; a guide roll immersed in said composition under which said fabric is adapted to pass; supports in said tank for said roll, means comprising racks and pinions for moving said supports up and down in said tank; and means comprising a screw means and connections to move vertically a portion of said supports to cant one end of said roll relatively to the other while said fabric is passing thereunder, substantially as described.

6. In a machine for coating a fabric with a roofing composition the combination of a plurality of stationary guide rolls; a plurality of movable guide rolls; a tank for the coating composition in which said last named rolls are located; and means comprising a pair of standards located outside of said tank, a screw means and connections by which one end of said last named rolls may be adjusted up and down relatively to the other end of said last named rolls, substantially as described.

7. In a machine for coating a fabric with a roofing composition the combination of a plurality of stationary guide rolls; a plurality of movable guide rolls; a plurality of movable standards carrying racks for supporting said last named rolls; a tank for the coating composition in which said last named rolls are located; means for moving said standards and racks up and down in said tank; and means comprising a pair of standards located outside of said tank; a screw means; and connections by which one end of said last named rolls may be adjusted up and down relatively to the other end of said last named rolls, substantially as described.

8. In a coating machine the combination of a tank; a plurality of stationary rolls carried by said tank; a plurality of stationary standards located outside said tank; a plurality of vertically movable standards located inside said tank; connections between said first named and said last named standards; rack and pinions for moving said last named standards up and down; a plurality of movable guide rolls carried by said last named standards; and means for inclining to the vertical the axes of said movable guide rolls while the machine is running, substantially as described.

In testimony whereof I affix my signature.

HENRY M. NICHOLLS.