

March 5, 1940.

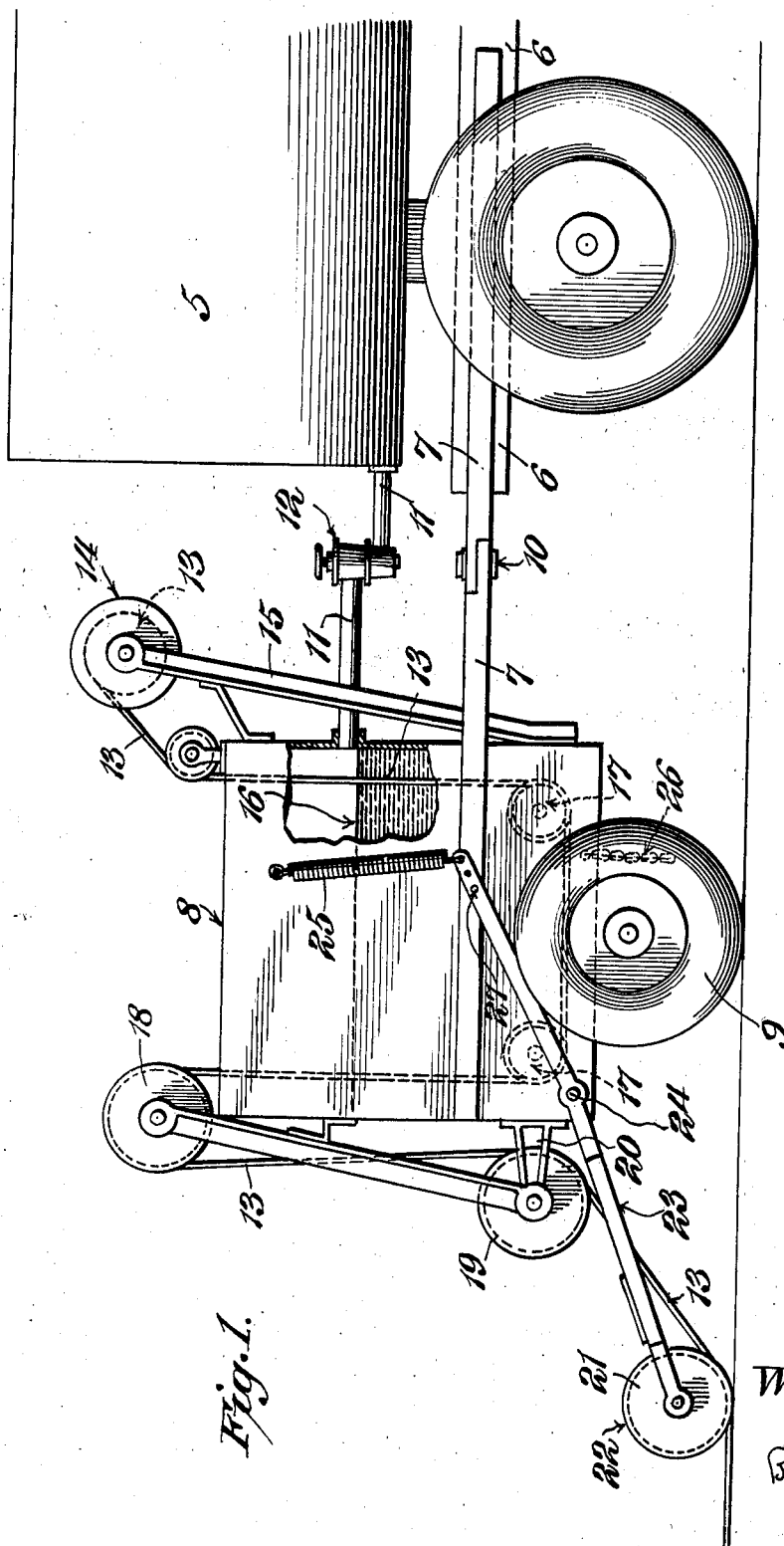
W. W. O'NEAL

2,192,290

APPARATUS FOR LAYING HIGHWAY MARKING TAPE

Filed March 23, 1938

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 2.

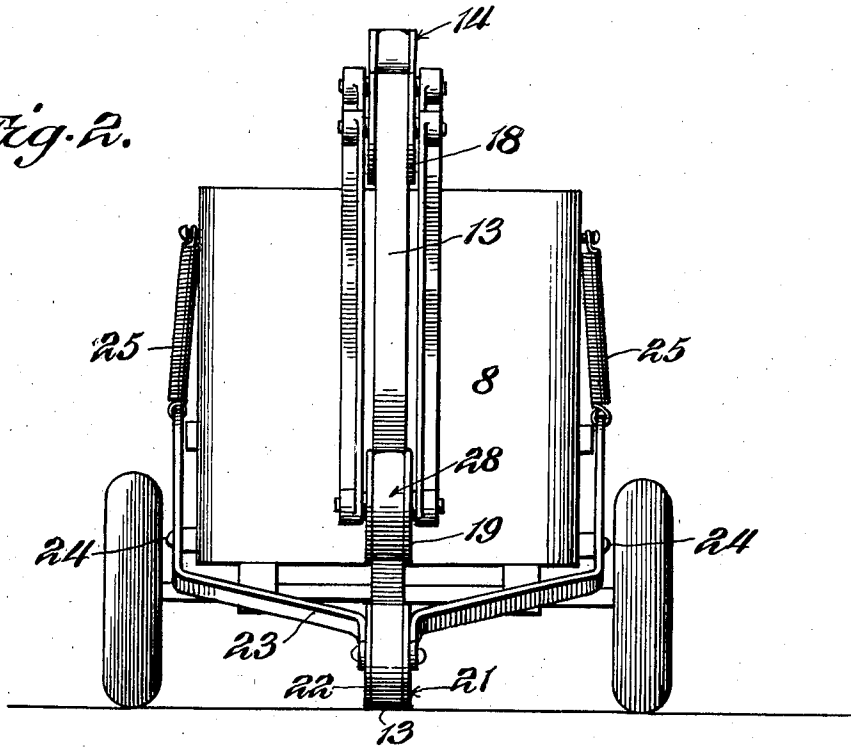


Fig. 3.

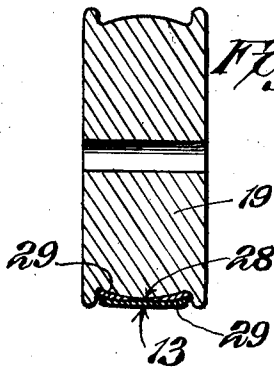


Fig. 4.

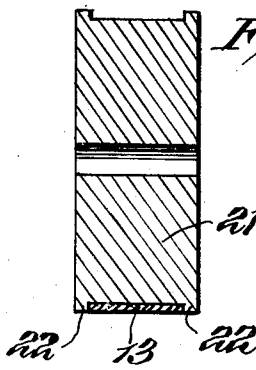


Fig. 6.

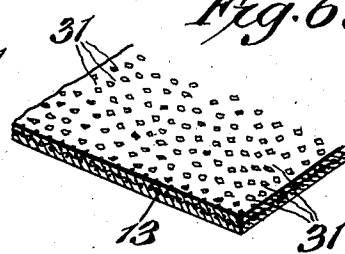
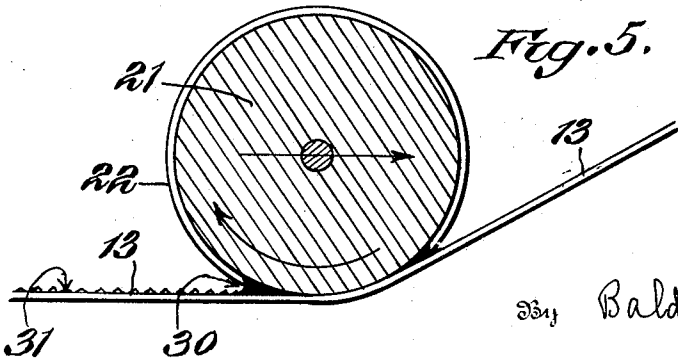


Fig. 5.



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UNITED STATES PATENT OFFICE

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APPARATUS FOR LAYING HIGHWAY
MARKING TAPE

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10 Claims. (Cl. 216—20)

The invention relates generally to the art of marking highways for the purpose of aiding traffic control and seeks to provide a novel apparatus for laying a highway marking tape.

5 With the present ever increasing need for traffic regulation, much effort is being expended to provide means, methods and apparatus for suitably marking the highways so as to guide and control the flow of traffic thereover. Various
10 methods and forms of striping, and apparatus for effecting the striping, have been devised, but all of these efforts with which I have been acquainted have proven wholly or partially ineffectual for various reasons, among which are
15 the complicated, inefficient and expensive nature of the apparatus, the slippery nature of and the lack of lasting qualities in the at present used paint or coating film stripes, and the inability to economically and permanently affix striping
20 tapes or the like such as might otherwise possess the desired lasting and other qualities.

Therefore, in its more detailed nature, the invention resides in the provision of a novel, simple and efficient apparatus for thoroughly coating
25 and impregnating the tape and for continuously laying it upon and positively affixing it to the highway surface, rapidly and economically.

With the above and other objects in view that will hereinafter appear, the nature of the invention will be more clearly understood by following the description, the appended claims, and the several views illustrated in the accompanying drawings.

In the drawings:

35 Figure 1 is a side elevation illustrating the tape laying apparatus.

Figure 2 is a rear view.

Figure 3 is an enlarged detail vertical cross section of one of the idler or guide rollers and
40 illustrates the manner in which these rollers build up an abundance of the impregnating fluid at the edge portions of the tape.

Figure 4 is an enlarged detail vertical cross section of the applicator roller.

45 Figure 5 is an enlarged, somewhat diagrammatic, longitudinal view of the applicator roller and an engaged portion of tape.

Figure 6 is an enlarged detail sectional perspective view of a portion of the tape.

50 In the drawings, I have illustrated an example of embodiment of the invention in an apparatus including a supply tank 5 supported on a suitable automobile chassis 6, suitable connection being made at 7 between the chassis and a tank
55 8 in which the marking tape is impregnated in a

manner soon to be described. The tank 8 may be rigidly supported from the chassis if desired or it may be supported upon two or more wheels 9 and have a pivotal coupling at 10 in its connection with the chassis, as illustrated in Figure 1 of
5 the drawings. In order to maintain a constant and adequate supply of impregnating fluid in the tank 8, this tank may communicate through a duct 11 with the main supply tank 5, a suitable
10 control valve 12 being provided in the duct. When the tank trailer structure is pivotally connected with the truck chassis 6 as at 10, the control valve 12 may be in the nature of a pivot joint in the duct 11 and will then be disposed in axial alignment with the pivot 10.
15

A supply of cotton fabric tape 13 is provided on a spool 14 mounted as at 15 upon the tank 8. The tape impregnating fluid, preferably asphalt emulsion, is indicated at 16. The tape 13, when
20 paid off the spool 14, passes downward to the impregnating bath in the tank 8 and under one or more guide or idler rollers 17 immersed in the bath, thence upwardly out of the bath and over a similar guide or idler roller 18 supported on the tank, thence downwardly under another guide or
25 idler roller 19 supported as at 20 at the rear of the tank and finally under the applicator roller 21 by which it is gently applied to the highway surface, as indicated in Figures 1 and 5 of the drawings.
30

The applicator roller 21 is provided with projecting flanges at its lateral edge 22 and the flanges are of such a depth that they space the main periphery of the roller a distance from the highway approximating the thickness of the tape
35 so that the roller is adapted to bring the tape in contact with the highway surface without imparting squeezing pressure thereto which would undesirably displace the cotton fabric impregnation. The applicator roller 21 is supported at the rearwardly projected end of a frame 23 including
40 side arms pivoted as at 24 to the tank 8 or the frame structure in which it might be supported, and the arms are extended forwardly beyond the pivots 24 and connected to anchored tension springs 25 which serve to yieldably hold the flanges of the applicator roller in contact with the highway surface, as illustrated in Figure 1
45 of the drawings.
50

Whenever it is desired to discontinue the laying of the marking tape the applicator roller 21 can be elevated out of contact with the highway surface and the arms retained in inoperative position by suitable anchoring devices such as
55

chains 26 which may be hooked into receiving apertures 27 in said arms.

All of the guide or idler rollers, or at least the roller 19, should have its tape engaging periphery convexly shaped as at 28. See Figure 3 of the drawings. By this means the cotton fabric tape passing over the roller or rollers will be spread or stretched laterally so as to facilitate perfect impregnation thereof and the presentation of the tape to the road in a smooth condition, and this particular form of roller and tape contact serves, as illustrated in Figure 3, to spread the impregnating fluid laterally from center to edge portion of the tape so as to provide an abundance of the fluid at each lateral edge of the tape, as indicated at 29. By thus assuring the provision of an abundance of the impregnating and coating fluid at each lateral edge of the tape, perfect adhesion between the tape and highway surface is assured and all danger of the tape edges upturning and tearing away is avoided.

It will be observed by reference to Figure 5 of the drawings that as the applicator roller surface leaves the surface of the tape being laid, the surface tension of the impregnating and coating fluid will cause it to tend to adhere to both the tape and the roller surface as indicated at 30. As this fluid divides away from the tape and roller surfaces as indicated at 30 in Figure 5, it will fall upon the exposed surface of the tape in the form of roughened portions or protuberances shown in exaggerated form at 31, and will thus provide a very desirable non-skid surface, in addition to the non-skid qualities inherent in the impregnated tape itself.

The cotton tape is continuously immersed in the viscid fluid impregnating bath, and flexed and spread laterally to facilitate impregnation and smoothing out of the tape, and is then laid gently upon the highway surface carrying an abundance of impregnating fluid along each lateral edge thereof. In the laying of the tape no squeezing pressure is applied such as would displace the impregnating fluid from the interstices of the tape, the tape being laid by a gentle rolling contact serving to impart to the exposed portion of the tape a roughened surface as hereinbefore described, and shown in Figure 5 of the drawings. The article or tape forming a part of the present invention is illustrated in detail in Figure 6 of the drawings. As hereinbefore described, this tape is in the nature of a web of cotton fabric thoroughly impregnated and waterproofed, preferably with asphalt emulsion. Obviously paint might be used for this purpose but the asphalt emulsion is preferred, since it contains water as the penetrating or carrying agent. It is known that cotton absorbs water quickly and by the use of asphalt emulsion as the viscid tape impregnating fluid every thread of the fabric receives a thorough impregnation and coating so that, when the tape is properly laid and set, a complete waterproofing and coating of every individual thread thereof is accomplished. It is well known that present known highway marking stripes are laid at great expense and are more or less objectionable for economic reasons and because they present slippery surfaces which at times have caused automobiles to skid dangerously. My improved tape presents marked advantages of longevity, neatness of appearance, and non-skid qualities. My tape also can be laid economically.

In one sense the fabric tape acts as a means for applying marking materials such as asphalt

to a roadway. Thus, when the impregnated tape is laid upon the roadway, it will carry with it a multiplicity of stems of asphalt extending through the tape. In other words, when the tape is applied to the roadway it will be coated with asphalt on both its top and bottom faces, and in between these faces asphalt will extend through the interstices in the tape between the warp and weft threads. When in use the coating of asphalt is worn off the top face of the tape, there will remain a composite asphalt structure comprising a multiplicity of upstanding stems of asphalt separated by threads of the tape structure. These stems, being minutely separated, will prevent the marker from wearing completely smooth, and therefore always will have non-skid qualities.

It is of course to be understood that the details of structure and arrangement of parts may be variously changed and modified without departing from the spirit and scope of my invention.

I claim:

1. In apparatus of the character described, a mobile tank containing a tape impregnating and coating bath, means for supporting a fabric tape supply movable with the tank, roller means immersed in the bath and serving to flex and laterally spread tape passing thereover, and means for continuously presenting to the highway surface, without exertion of squeezing pressure, tape drawn from said supporting means and over said roller means.

2. In apparatus of the character described, a mobile tank containing a tape impregnating and coating bath, means for supporting a fabric tape supply movable with the tank, roller means immersed in the bath and serving to flex and laterally spread tape passing thereover, and means including a tape laying roller having lateral edge flanges extending from the main periphery of the laying roller a distance approximating the thickness of the tape for continuously presenting to the highway surface, without exertion of squeezing pressure, tape drawn from said supporting means and over said roller means.

3. In apparatus of the character described, a mobile tank containing a tape impregnating and coating bath, means for supporting a fabric tape supply movable with the tank, roller means immersed in the bath and serving to flex and laterally spread tape passing thereover, means including a tape laying roller having lateral edge flanges extending from the main periphery of the laying roller a distance approximating the thickness of the tape for continuously presenting to the highway surface, without exertion of squeezing pressure, tape drawn from said supporting means and over said roller means, and means for yieldably holding said laying roller flanges in contact with a highway surface.

4. In apparatus of the character described, a mobile tape impregnating tank, means for supporting a supply of fabric tape movable with the tank, an applicator roller for continuously laying tape upon a highway surface, and guide roller means for directing tape from said supporting means through the impregnating bath and to said applicator roller including at least one convexly surfaced tape spreading and flexing roller.

5. In apparatus of the character described, a mobile tape impregnating tank, means for drawing the tank along a highway and for supplying it with a bath of impregnating and coating material, means for supporting a supply of fabric tape movable with the tank, an applicator roller for continuously laying tape upon a highway sur-

face, and guide roller means for directing tape from said supporting means through the impregnating bath and to said applicator roller including at least one convexly surfaced tape spreading and flexing roller.

6. In apparatus of the character described, a mobile tape impregnating tank, means for supporting a supply of fabric tape movable with the tank, an applicator roller for continuously laying tape upon a highway surface, guide roller means for directing tape from said supporting means through the impregnating bath and to said applicator roller, and means for yieldably pressing the applicator roller against a highway surface including a frame pivotally mounted intermediate its ends and supporting said applicator roller at one of its free ends and an anchored spring connected with the remaining free end of the frame.

7. In apparatus of the character described, a mobile tape impregnating tank, means for supporting a supply of fabric tape movable with the tank, an applicator roller for continuously laying tape upon a highway surface, guide roller means for directing tape from said supporting means through the impregnating bath and to said applicator roller, and means for yieldably pressing the applicator roller against a highway surface including a frame pivotally mounted intermediate its ends and supporting said applicator roller at one of its free ends and an anchored spring connected with the remaining free end of the frame, and means engageable with said frame for holding said applicator roller out of contact with the highway surface against the tension of said spring.

8. In apparatus of the character described,

means for continuously impregnating and laying a cotton fabric tape including a bath of viscid fluid through which the tape is drawn, and a roller for guiding movement of the tape and including a convexed periphery for flexing and spreading the tape and serving to accumulate an abundance of the viscid fluid along each lateral edge of said tape.

9. In apparatus of the character described, means for continuously impregnating and laying a cotton fabric tape including a bath of viscid fluid through which the tape is drawn, and an applicator roller for gently applying the tape to a highway surface without exerting a fluid displacing squeezing pressure and including a tape guiding periphery and highway surface engaging flanges projecting from the lateral edges thereof to an extent approximating the thickness of the tape.

10. In apparatus of the character described, means for continuously impregnating and laying a cotton fabric tape including a bath of viscid fluid through which the tape is drawn, and a roller for guiding movement of the tape and including a convexed periphery for flexing and spreading the tape and serving to accumulate an abundance of the viscid fluid along each lateral edge of said tape, and an applicator roller for gently applying the tape to a highway surface without exerting a fluid displacing squeezing pressure and including a tape guiding periphery and highway surface engaging flanges projecting from the lateral edges thereof to an extent approximating the thickness of the tape.

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