June 4, 1940. C. M. HARVEY 2,203,529

STRIPING MACHINE

Filed May 5, 1938 3 Sheets-Sheet 1

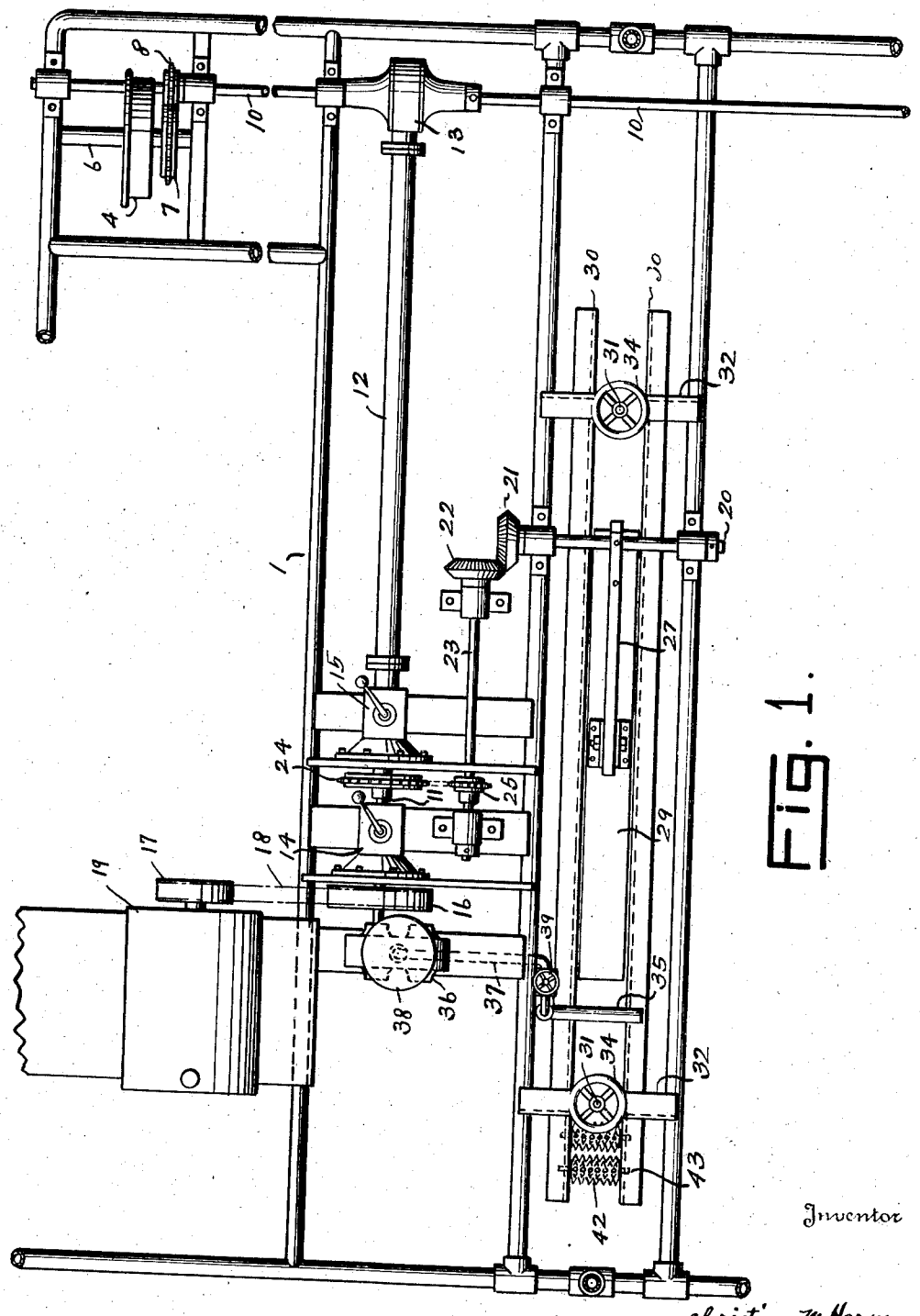


Fig. 1.

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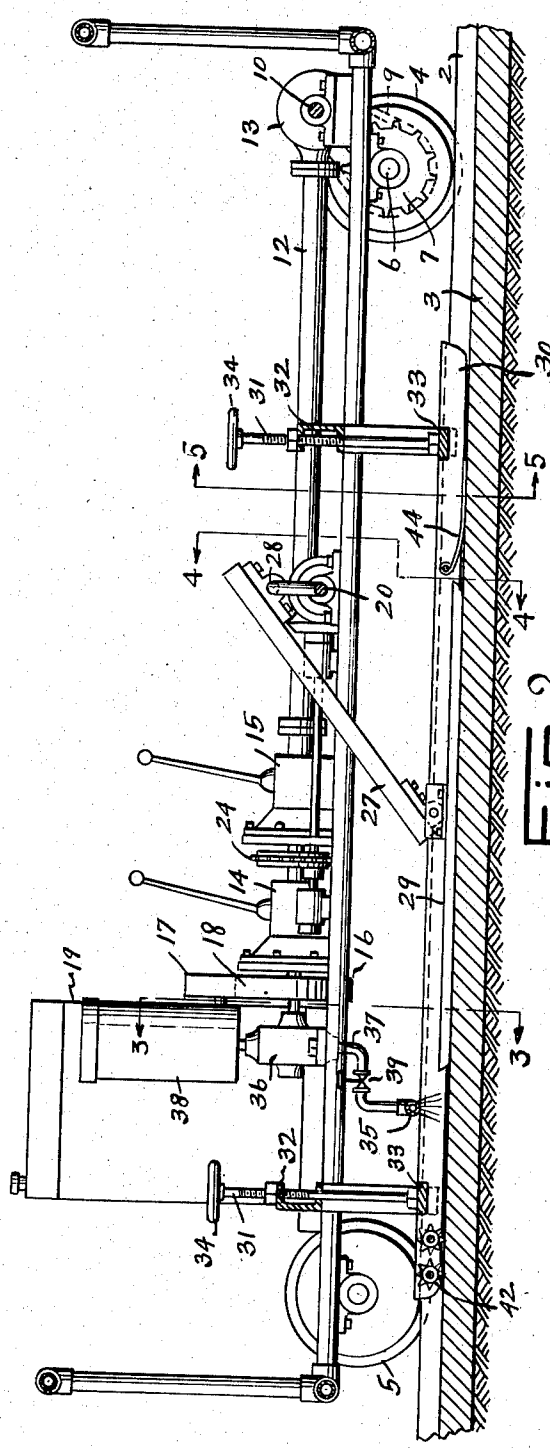


Fig. 2.

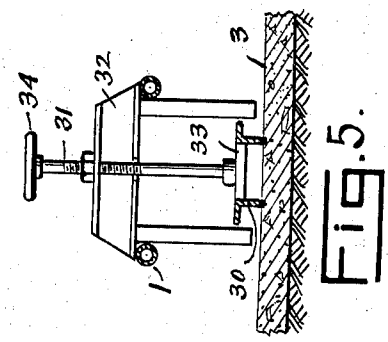


Fig. 5.

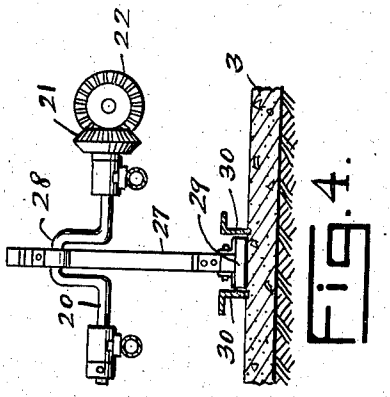


Fig. 4.

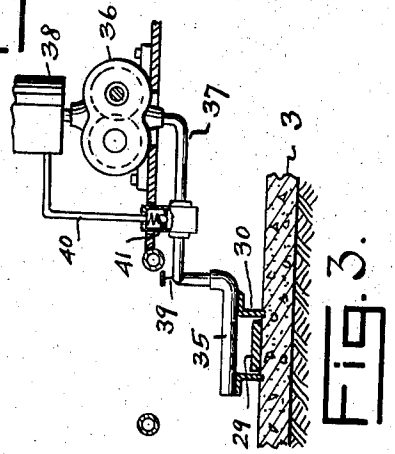


Fig. 3.

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3 Sheets-Sheet 3

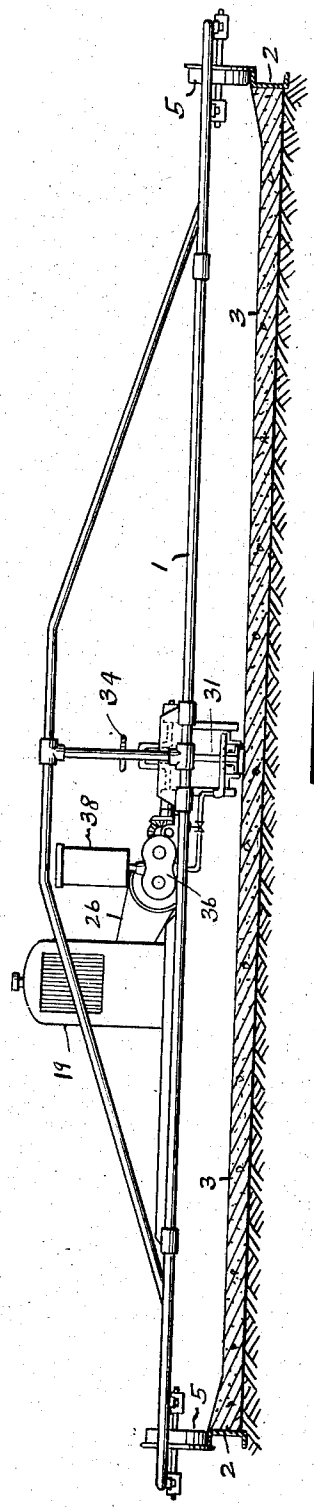


Fig. 6.

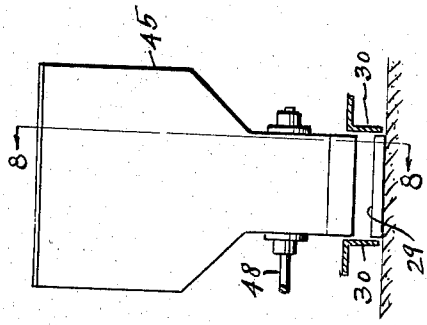


Fig. 7.

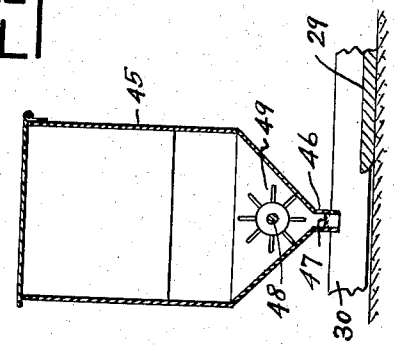


Fig. 8.

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Patented June 4, 1940

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UNITED STATES PATENT OFFICE

2,203,529

STRIPING MACHINE

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Application May 5, 1938, Serial No. 206,212

3 Claims. (Cl. 94—45)

This invention relates to a striping machine.

An object of the invention is to provide a machine of the character described for striping paving, and more particularly for striping roadways to define the traffic lanes.

An object of the invention is to provide a machine of the character described specially designed for applying striping material to a hard surfaced roadway while the surfacing material is still in a plastic state so that the striping material will penetrate into the material so as to form a permanent stripe although the machine may be employed for applying a striping material to the hard surface of the roadway after the surfacing material has set.

Heretofore it has been the practice to apply an asphalt or paint to the surface of the concrete after the concrete has set but this is objectionable for the reason that the striping material when merely applied to the surface is soon worn away and the roadway must be successively striped at intervals so as to maintain the traffic lanes well defined.

It is one of the prime objects of the present invention to provide a machine for applying the striping material and for causing it to penetrate into the plastic material of the roadway before said material has set.

It is another object of the invention to provide a road striping machine of the character described having means for propelling the machine along the roadway, for supplying the striping material, for confining said striping material to a definite width so as to form a uniform well defined stripe and for causing the material to penetrate into the surfacing material of the roadway to thereby form a well defined permanent stripe.

It is another object of the invention to provide a machine of the character described which will leave the plastic surface of the roadway smooth after the application of the striping material thereto.

It is a further object of the invention to provide a road striping machine of the character described constructed to utilize striping material either in liquid or powder form.

With the above and other objects in view the invention has particular relation to certain novel features of construction, operation and arrangement of parts, an example of which is given in this specification and illustrated in the accompanying drawings, wherein:

Figure 1 shows a fragmentary, plan view.

Figure 2 shows a transverse, sectional view.

Figure 3 shows a cross-sectional view taken on the line 3—3 of Figure 2.

Figure 4 shows a cross-sectional view taken on the line 4—4 of Figure 2.

Figure 5 shows a cross-sectional view taken on the line 5—5 of Figure 2.

Figure 6 shows a side elevation of the complete machine.

Figure 7 shows an elevational view of another embodiment of the feeding means, and

Figure 8 shows an elevational view thereof, partly in section.

Referring now more particularly to the drawings wherein like numerals of reference designate the same parts in each of the figures, the numeral 1 designates the framework, as a whole. This framework may be of any selected construction, and is adapted to move along the tracks such as 2, 2 arranged on opposite sides of the roadway 3. The machine is equipped with the carried wheels 4, 4 and 5, 5 which move along said tracks as shown. The wheels 4, 4 are fixed on and driven by the axles 6, 6. These axles have the sprocket wheels 7, 7 fixed thereon which are driven from the aligned sprocket wheels 8, 8 through the sprocket chains 9, 9. The sprocket wheels 8 are fixed on the respective transverse shafts 10, 10 which are driven from a main driving shaft 11 within the housing 12 through a conventional differential 13. The driving shaft is equipped with conventional front and rear change speed transmissions 14, 15 of conventional construction and has a pulley 16 fixed thereon which is driven from an aligned pulley 17, through a driving belt 18. The pulley 17 is driven from the motor 19 mounted on the framework of the machine. Means are thus provided for propelling the machine along.

There is a transverse crank shaft 20 mounted in suitable bearings on the framework and having a beveled gear wheel 21 on its inner end which is in mesh with, and driven by the corresponding bevel gear wheel 22 which is fixed on the rear end of the longitudinal drive shaft 23. The shafts 11 and 23 have sprocket wheels 24, 25 thereon in alignment, the latter being driven from the former by a suitable sprocket chain 26. There is a connecting rod 27 provided, at one end with a bearing on the wrist 28 of the crank shaft 20 and at its other end the connecting rod is pivotally connected to a longitudinally reciprocal float 29 of any selected length and width, the width of the float being approximately the same as that of the stripe to be formed. The float, or trowel 29, works between, and is confined against lateral

movement by the longitudinal, spaced, depending, side flanges 30, 30 which are vertically adjustable on, and depend from, the framework of the machine and whose lower margins penetrate, slightly into the plastic material of the roadway to form shallow grooves which define the side margins of the stripe, said flanges confining the striping material to the desired size so as to form well defined margins.

The zone-defining flanges 30 are adjustable vertically by means of vertical screw shafts 31, 31 which are threaded through the cross-bars 32, 32 supported on the main frame, and the lower ends of the shafts 31 have swiveling connections with the cross-braces 33, 33 whereby the flanges 30, 30 are connected at their respective ends. The upper ends of the screw shafts 31 have the hand wheels 34, 34 fixed thereon and by which said shafts may be turned and the required adjustment accomplished. In front of the float 29 there is a transverse nozzle 35 for feeding liquid striping material on to said defined zone in front of the float and leading to this nozzle from a pump 36 there is a delivery pipe 37. The pump is driven by the forwardly extended shaft 11. It may be here stated that the shaft 11 is in section, the sections thereof being operatively connected by the change speed transmissions 14 and 15.

Liquid striping material is contained in the tank 38, mounted above the pump and from which the liquid is fed downwardly to the pump. The delivery pipe is equipped with a suitable valve 39 by means of which the delivery of striping material therethrough may be controlled or entirely cut off and leading from the delivery pipe, between the pump and the valve 39, and terminating in the tank 38 there is a return line 40 which is equipped with the back pressure valve 41 adapted to open, when the pressure of the pumped liquid exceeds a predetermined amount, to permit the return of said liquid to the tank 38.

As hereinabove indicated the roadway will be striped while the surfacing material is in plastic state. As the machine moves along the striping material will be delivered through the nozzle 35 on to the roadway between the flanges 30 in front of the float or trowel, 29. It may be found desirable to roughen, or scarify, the material in front of the nozzle 35 to obtain better penetration. For this purpose one or more drums as 42 are mounted between the flanges 30 in front of the nozzle 35. These drums are mounted on axles 43 which are mounted in vertically elongated bearings in the flanges 30 and have radial teeth to penetrate into, scarify or roughen the plastic material before the striping material is delivered thereto. The trowel following the nozzle will trowel the striping material into the material of the roadway and will smooth down the roughened surface thereof. Attached to the rear ends of the flanges 15 and extending rearwardly therefrom there is a flexible apron 44 formed preferably of fabric material which drags over the surface of the roadway behind the trowel smoothing and giving a finished surface to the same. It may be found desirable to use a dry striping material in powdered, or substantially powdered, form. In such event the pump, the pipes 38, 40 and the nozzle 35 will not be used but in lieu thereof a hopper 45 may be mounted above the flanges 30 to contain the dry striping material. This hopper terminates in a downwardly directed nozzle 46 preferably spanned by a wire mesh 47 through which the dry material is sprinkled over the zone to be striped in advance of the float. This hopper is equipped with an agitator 48 mounted on a shaft 49 and which may be driven in an obvious manner from the forward end of the shaft 11. In other respects the construction will be the same as shown in Figures 1 to 6, inclusive.

The drawings and description disclose what are now considered to be preferred forms of the invention by way of illustration only, while the broad principle of the invention will be defined by the appended claims.

What I claim is:

1. A machine for striping a concrete highway having a finished upper surface while in a plastic state, comprising a carriage spanning the roadway and adapted to be moved longitudinally of the roadway, spaced elongated guide members depending from the carriage and movable therewith and disposed parallel to the direction of movement of the carriage along the roadway and having substantially straight lower edges adapted to contact with the surface of the concrete so as to confine striping material therebetween and sharply define the margins of the stripe to be formed, an elongated trowel fitting between and adapted to be guided by the guide members longitudinally of the roadway, and means carried by said machine for reciprocating the trowel longitudinally between the guide members while the machine is being moved along the roadway.

2. A machine for striping a concrete highway having a finished upper surface while in a plastic state, comprising a carriage spanning the roadway and adapted to be moved longitudinally of the roadway, spaced elongated guide members depending from the carriage and movable therewith and disposed parallel to the direction of movement of the carriage along the roadway and having substantially straight lower edges adapted to contact with the surface of the concrete so as to confine striping material therebetween and sharply define the margins of the stripe to be formed, an elongated trowel fitting between and adapted to be guided by the guide members longitudinally of the roadway, and means carried by said machine for moving the machine longitudinally of the roadway and simultaneously reciprocating the trowel longitudinally between the guide members.

3. A machine for striping a concrete highway having a finished upper surface while in a plastic state, comprising a carriage spanning the roadway and adapted to be moved longitudinally of the roadway, spaced elongated guide members depending from the carriage and movable therewith and disposed parallel to the direction of movement of the carriage along the roadway and having substantially straight lower edges adapted to contact with the surface of the concrete so as sharply to define the margins of the stripe to be formed, an elongated trowel fitting between and adapted to be guided by the guide members longitudinally of the roadway, means for feeding a striping material between the guide members in advance of the trowel, and means carried by said machine for moving the machine longitudinally of the roadway and simultaneously reciprocating the trowel longitudinally between the guide members.

CHRISTIAN M. HARVEY.