ABSTRACT

A machine for setting curbstones, sidewalk slabs and the like. The machine is upon a wheeled chassis and is provided with a magazine, an ejector mechanism and a belt conveyor to carry the curbstones to the bed or road. The machine is also provided magazines for feeding out aggregate and a binding agent such as asphalt.

3 Claims, 4 Drawing Figures
STONE SETTING MACHINE

The present invention relates to a machine for setting of curb stones and of the type indicated in the preamble of the first claim.

It is a principal object of the invention to provide a curb stone setting machine of the kind mentioned above, which makes possible an automatic setting of curb stones etc. with good precision.

Said purpose is reached by a machine according to the invention the characteristics of which are evident from the claims.

In the following a few embodiments of the object of the invention are described with reference to the accompanying drawings, in which:

FIG. 1 is a side elevational view of a curb stone setting machine according to the invention;

FIG. 2 is a side elevational view of a portion of a corresponding curb stone setting machine exhibiting a somewhat different design from the machine illustrated in FIG. 1;

FIG. 3 is a cross sectional view through a ready set curb stone and the portion of the bed next to the same; and

FIG. 4 is a side elevational view of a machine built according to the invention and serving the purpose of setting for example the slabs of side walk pavements.

The machine illustrated in FIG. 1 comprises a frame 1 which is supported by a front pair and a rear pair of wheels 2 and 3 respectively, of which the rear wheel pair is vertically displaceable for raising and lowering of the rear end of the frame 1. The frame 1 is arranged to be coupled together with for example a platform 4 of a truck at the side of said platform. A magazine 5 exhibits a number of curbstones 6 to be set which are stapled in several layers and arranged in the longitudinal direction of the frame 1. The staple of curb stones can suitably rest on an elevator platform, the high position of which being adjustable by means of a preferably hydraulic power cylinder 7. Another preferably hydraulic power cylinder 8 is located at the upper portion of the magazine and serves the purpose of ejecting the uppermost positioned curbstone of the magazine one at a time and so that they land on a belt conveyor 9 sloping downwards as seen towards the rear direction, said belt conveyor laid over a number of supporting rollers 10. The ejector mechanism can suitably be displaceable in the cross sectional direction of the magazine 5, and the side walls of the magazine can suitably converge in backwards direction towards the belt conveyor 9 in order to guide the curb stones onto the same. In addition feeder devices can suitably be arranged in the upper portion of the magazine which feeder devices actuate the hydraulic jack 7, when all of the curbstones positioned right in front of the upper end portion of the belt conveyor 9 are pushed onto said conveyor, so that said jack lifts the magazine in such a way that the next layer will arrive in a position flush with the belt conveyor. The belt conveyor is suitably driven at a speed which somewhat exceeds the speed at which the setting machine is transported along the plane 11 on which the curbstones shall be deposited. A cutter 12 rotatably supported by a supporting means 13 hanging down from the frame is in the first place intended for the milling of a guiding groove 14 in the bed 11, but said cutter can also be used to smooth down the bed in front of the curbstones just in turn to be deposited. A roller 15 like-wise supported by the supporting means 13 serves the purpose of producing the groove 14 in beds of softer structure by being pressed down in them. At the rear end portion of the frame a number of weights 16 are positioned. A tank 17 serves the purpose of for example an asphalt boiler or as a storage of adhesives. From the lower portion of the tank 17 a tubular conduct 18 is extending having its orifice a small distance above the bed and through which the contents of the tank 17 are arranged to be fed out onto the bed before the curbstone is deposited. A vibration means 19 of sleigh like appearance is towed behind the frame 1 and serves the purpose of ramming the slabs deposited on the bed. The curbstone illustrated in FIG. 3 is provided with a ridge 20 fitting into the groove 14, and in FIG. 3 and interposed layer 21 of material is illustrated which bind the curbstone to the bed. In addition to said binding to the bed by means of an adhesive material the curbstone can be connected by means of nails or similar penetrating into holes 22 made in the curbstone. In the embodiment illustrated in FIG. 2 the container of adhesive or the asphalt boiler 17 is provided with two outgoing tubular conducts 23. In addition the machine is provided with a tank 24 for aggregate to fill out possible mayor irregularities appearing in the path to be paved. An outlet pipe 25 has its discharge opening in the bottom of the tank 24 which outlet is located between nozzles fitted in the lower part of the discharge tubes from the tank 17, by means of which arrangement asphalt or adhesive automatically can be deposited on top as well as below the aggregate. An arm 26 is in its lower part provided with a feeder roll 27, said assembly forming a feeder device for the operation of possibly mounted equipment for smoothing down the path to be paved before the setting of the slabs. A guiding channel 28 follows immediately upon the conveyor 9, 10. By the fact that the speed of the conveyor belt 9 is slightly greater than the speed at which the setting machine is displaced over the bed, the belt 9 to a certain extent will drag against the curbstones which thereby will be pressed against each other by which arrangement the risk is eliminated that the curbstones will be deposited with an open space in between them. The curbstones to be set can suitably be stored on pallets which one at a time are placed on the storage space 5.

When operating the machine according to FIG. 1 the cutter 12 and the pressure roller 15 make the groove 14 in the bed, whereafter asphalt or adhesive material is fed through the tube 18 via a nozzle fitted in the lower part thereof which nozzle suitably is given a width and shape corresponding to the underside of the curbstones. Thereafter the curbstones are deposited on the bed and a good adherence to the underlying stratum is secured by means of the action of the sleigh like vibrator device 19.

When operating the machine illustrated in FIG. 2 the bed is smoothed down by means of the smoothing down equipment actuated by the feeder device 26, 27 and the groove 14 is cut out at a means of the cutter 12 and the pressure roller 15 whereby a layer of asphalt or adhesive is deposited on the bed. On top of said layer of asphalt or adhesive, aggregate is fed from the tank 24 in such spots, where an extra filling is required. Thereafter an additional layer of asphalt or adhesive is deposited before the setting of the curbstones on the bed is taking place, and a good adherence is secured by means of vibration in the same manner as has been de-
scribed above in connection with the machine illustrated in FIG. 1.

The machine illustrated in FIG. 4 is in the first place intended for setting of slabs of side walks or similar. This machine comprises a chassis 29 which is supported by front and rear wheels 30 and 31 respectively, of which the rear pair is made in the shape of a roller. A magazine 32 contains slabs to be deposited which magazine in its lower part equipped preferably with a pneumatic vertical elevator mechanism 33. An ejector 34 transfers the slabs on a conveyor belt 35 sloping downwards as seen in the direction away from the rear of the chassis, said conveyor belt being supported by a number of supporting rollers 36. A vertically as well as horizontally pivotal beam of a crane mounted on the setting machine is indicated at 37. Below the free end of the beam 37 the crane supports a lifting plate 38 equipped with suction devices, said plate to be used by way of example when obstacles of different kinds arise during the slab setting operation. The beam can be telescopically prolonged. The operator attending the setting operation stands on a platform 39, the control of the machine being carried out by means of a wheel handle 40. The machine can suitably be driven by a motor 41 which also can drive the conveyor belt 35. A vibration sleigh 42 towed behind the setting machine corresponds the sleigh 19 of FIG. 1. A number of vertically displaceable means 43 serve to smooth down the bed on which the slabs shall be deposited. Before the setting operation takes place with the machine illustrated in FIG. 4 a thin layer of so called setting sand is suitably deposited on the bed which is smoothed down by means of the smoothing down devices 43. The machine can suitably be equipped with feeler devices controlling the smoothing down organs 43 which feelers can follow for example the edge of a sidewalk.

The present invention is not limited to the embodiments described above and illustrated in the drawings by way of example only, as they can be varied in their details within the scope of the following claims.

I claim:

1. Machine for the setting of curbstones, sidewalk slabs and similar elements comprising a chassis of a vehicle capable of travelling on a bed on which elements are to be deposited, a magazine being supported by said chassis and capable of storing a plurality of said elements, an ejector mechanism connected to said magazine, an even and driven belt conveyor being arranged for receiving and transporting said elements from said ejector mechanism of said magazine to a delivery zone, in which said elements extend longitudinally of said chassis, when the setting operation is going on, or leaving said chassis, the direction of transportation of said conveyor belt at least in the setting zone being opposed to the intended direction of travel of said chassis and having a greater speed than the speed for which said chassis is arranged to be driven during the setting operation, whereby said elements in the setting zone with those of their edges which are perpendicular to the direction of travel of said belt conveyor, are pressed against each other at the same time as they are dragging against said belt conveyor, a feeler device arranged on said chassis which feeler device is positioned to follow said bed, a magazine equipped with a feeding out device for aggregate, said feeding device connected with said feeler device in such a manner that aggregate is automatically fed out at such spots, where said feeler device feels cavities in said bed, a magazine and a feeding out device for a binding agent such as asphalt, being carried by said chassis and positioned for binding said bed material or pasting of said elements, said feeding out device for aggregate is located between two discharge openings of said feeding out device for the binding agent.

2. Machine according to claim 1, including a vibration means arranged in the setting zone and capable of vibrating said elements deposited in succession immediately upon their having been deposited in order to obtain a good adherence of said elements to said bed.

3. A machine according to claim 1 including a cutter connected to said chassis and positioned below said chassis ahead of said two discharge openings for the binding agent, in the direction of travel of said chassis.