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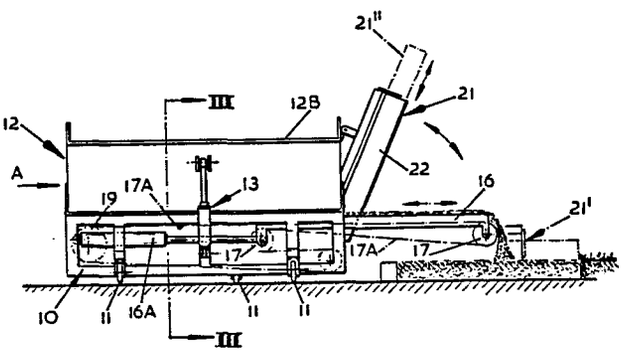
(54) Laying pavement.

(57) A side-paver apparatus for laying pavement on a path which lies adjacent a carriageway consists of a base or frame (10) adapted for travel on or over a carriageway and adapted to be carried or moved by an independent vehicle, a hopper (12) on the frame for holding paving material, a dispensing means (15, 16) on the frame and operable to convey paving material from the hopper laterally of the travel direction and being adapted to be laterally extendable and retractable selectively during dispensing operation, and a spreader or screeder (21) carried on the frame and incorporating a pivot or hinge means adapted and arranged to permit the spreader or screeder to be swung between an in-use disposition extended generally horizontally and laterally of the travel direction and a raised disposition for avoiding obstacles.



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LAYING PAVEMENT

This invention relates to a method and apparatus for use in laying pavement.

The invention is concerned particularly with the paving of footpaths such as lie adjacent a carriageway, especially, but not exclusively, in urban environments.

In the context of this description, the terms "paving" etc. refer generally to the depositing and screeding of material on a footpath for subsequent compacting for example by rolling to form a serviceable surface. Asphalt is a typical paving material.

Conventional apparatus for laying paving material on footpaths consists of an assembly or vehicle adapted for travel on the footpath and having a generally front-to-rear configuration of hopper, dispensing means and spreader or screeder. The conventional apparatus further incorporates a motor and drive transmission for road wheels, and an operator station with steering gear and control. The hopper is generally placed forward of the operator station; and the screeder to the rear. Thus, the fresh screed is formed behind the apparatus as it travels along the footpath.

One disadvantage of the conventional apparatus is that obstacles such as posts supporting lamps, signals, signs etc., and discontinuities associated with works for exposing underground equipment etc. have to be circumnavigated by the entire apparatus thus leaving a relatively large gap in the paving which has to be made good manually. This procedure is very time-wasting. Another disadvantage is that the conventional apparatus is awkward to manipulate in use where the footpath width is less than the track dimension of the apparatus, since one side of the apparatus must run over the adjacent carriageway which is usually stepped down from the footpath so necessitating

the provision of packing planks or the like for carrying the off-side wheels of the apparatus.

It has been proposed to modify the conventional apparatus by the addition thereto of a cross-conveyor which is disposed at the front of the main assembly and extends between the near-side and the off-side of the assembly or vehicle. Also, the modification incorporates a bridge conveyor of which an inner end is disposed to receive paving material from the cross-conveyor and an outer end of the bridge conveyor discharges at a fixed position spaced to one side or the other of the main vehicle. The modification further incorporates a screeder assembly carried by the main vehicle and disposed rearwardly of the bridge conveyor discharge. The screeder assembly has mutually spaced walls between which the screeder extends, these walls serving to retain a bulk of paving material discharged from the bridge conveyor. In operation of the modification, the bridge conveyor is operated to discharge a bulk deposit of paving material on to the surface to be paved, this bulk being retained within the area defined by the walls of the screeder assembly and the screeder bar per se. Forward travel of the entire apparatus effects shifting of the entire bulk deposit except for a layer as determined by the screeder. Although the bridge conveyor and the screeder assembly can be shifted relatively to the main vehicle to some extent for the purpose of clearing obstacles, there is a disadvantage in that the bulk deposit of paving material remains and must be shifted forward manually. There is also a disadvantage in that significant power is expended in dragging the bulk deposit of paving material and also in that little, if any, control is possible over the behaviour of the screeder assembly on uneven and/or cambered surfaces since the bulk deposit of paving material is self-distributing within the embrace of the screeder assembly.

According to the present invention, there is provided

a method of laying pavement on a path which lies adjacent a carriageway, wherein paving material is dispensed laterally from apparatus travelling on the carriageway and deposited on the said path by means of a continuously extendable and retractable conveyor.

By means of the continuously extendable and retractable conveyor, it becomes possible to discharge the paving material with control over the lateral position of discharge thus enabling control over distribution of the paving material directly in front of the screeder bar. This facility permits dispensing with the retaining walls at each end of the screeder bar, eliminates the need for a bulk deposit of paving material thereby reducing power consumption during operation of the apparatus, and makes possible selective depositing of paving material to cope with uneven surfaces and to achieve cambering. At any instant, the quantity of paving material dispensed by the cross-conveyor need be no more than is needed for the immediate zone being screeded, therefore no superfluous material or bulk deposit is required, as aforesaid.

Further, according to the present invention, there is provided apparatus for use in carrying out the method aforesaid, comprising a base or frame adapted for travel on or over a carriageway, a hopper on the frame for holding paving material, a dispensing means on the frame and operable to convey paving material from the hopper laterally of the travel direction and being adapted to be laterally extendable and retractable selectively during dispensing operation, and a spreader or screeder carried on the frame for spreading or screeding paving material from the dispensing means.

An embodiment of the present invention will now be described, by way of example, with reference to the accompanying drawings in which:-

Fig. 1 is a front elevation of pavement laying apparatus in accordance with the present invention;

Fig. 2 is a side elevation of the apparatus in the direction of arrow A in Fig. 1; and

Fig. 3 is a sectional view on the line 3-3 in Fig. 1.

In the drawings, the apparatus consists of a base or frame 10 adapted for travel on a carriageway on wheels 11. The travel direction is indicated in Fig. 2 by arrow B. The frame and wheel assembly 10, 11 is adapted to be moved by a tractor vehicle (not shown) which is coupled to the rear of the frame 10 simply to enable the tractor to push the apparatus along a carriageway parallel with a footpath to be paved.

A hopper 12 for holding paving material has a fixed containing portion 12A and a tipping portion 12B, the latter being associated with a tipping hydraulic ram 13. The tipping portion 12B of the hopper 12 is hinged to the frame 10 as at 14. The hopper 12 is disposed generally at the forward portion of the apparatus so that it can be charged with paving material conveniently from a vehicle backed up to the front of the apparatus. The quantity of paving material fed to the fixed portion 12A of the hopper 12 is generally controllable by means of the hydraulic ram 13 operation of which is effected by control means (not shown) positioned for operation by the driver of the tractor mentioned above.

A dispensing means is associated with the fixed portion 12A of the hopper 12 and consists of a scraper conveyor 15 constituted by scraper bars 15A which extend between mutually parallel conveyor chains 17A (shown by chain-dot line). The scraper bars 15A travel on the floor of the fixed portion 12A of the hopper 12, and also on an extendable and retractable floor 16 adapted and arranged to slide laterally with respect to the frame 10. The extendable floor 16 carried chain sprockets 17 and the conveyor chains 17A define a folded or re-entrant configuration so that the floor 16 can be extended and retracted during operation of the conveyor 15. A hydraulic

ram 16A is incorporated between the frame 10 and the extendable floor 16 for controlling movement thereof. This ram 16A is continuously operable by means of conventional controls (not shown) located for operation by an operator of the apparatus. The conveyor 15 is driven by a shaft 18 carrying the chain drive sprockets 19, the shaft 18 being driven from a gear box 20 adapted for connection to an auxiliary drive on the tractor vehicle.

At the rear of the apparatus, on the near side thereof, there is mounted a spreader or screeder 21 which consists conventionally of a screed bar (not shown) and a heater hood 22. The screeder assembly is mounted on the frame 10 by means of a hinge on a fore-and-aft axis (not shown) so that the entire screeder assembly may be swung between a horizontal position as indicated by the broken lines 21' in Fig. 1 and a raised position. Control of the position of the screeder 21 is effected by means of a further hydraulic ram 23. The lateral width of the screeder is adjustable in known manner as indicated by broken lines 21" in Fig. 1.

The method of using the apparatus above described is as follows. With the hopper 12 loaded with paving material such as asphalt, the apparatus is moved on a carriageway parallel with a footpath to be paved. The screeder 22 is in its lowered working position, and the conveyor 15 and the extendable floor 16 (with ram 16A) are run under their respective controls (not shown) so as to deposit and distribute paving material as required on the footpath surface. Upon encountering any obstacle or discontinuity in the footpath, the conveyor 15 is stopped and the extendable floor 16 retracted fully. Then, the screeder 22 is swung to its raised position and the apparatus is moved to a position just past the obstacle. The paving operation may then continue as before with a minimum of lost time and a minimum requirement to shift manually any paving material. The method and apparatus provide

greatly improved flexibility and control over the deposition and distribution of paving material. The deposition of paving material on exceptionally narrow footpaths presents no problem, and uneven surfaces and cambering requirements are readily coped with by differential depositing of paving material under the control of the operator.

CLAIMS

1. A method of laying pavement on a path which lies adjacent a carriageway, wherein paving material is dispensed laterally from apparatus travelling on the carriageway and is deposited on the said path; characterized in that the dispensing of the paving material is effected by means of a continuously extendable and retractable conveyor.

2. Apparatus for laying pavement on a path which lies adjacent a carriageway, comprising a base or frame adapted for travel on or over a carriageway, a hopper on the frame for holding paving material, a dispensing means on the frame and operable to convey paving material from the hopper laterally of the travel direction, and a spreader or screeder extending laterally of the frame for spreading or screeding paving material from the dispensing means; characterized in that the dispensing means comprises an extendable and retractable conveyor (15,16).

3. Apparatus according to Claim 2; characterized in that the conveyor (15,16) has an endless conveyor member (17A) defining a folded or re-entrant configuration.

4. Apparatus according to Claim 2 or 3; characterized in that the conveyor (15,16) has scraper blades (15A) which slide on an extendable and retractable conveyor floor member (16).

5. Apparatus according to Claim 4; characterized in that the floor member (16) is shiftable by means of an actuator continuously operable by an operator of the apparatus.

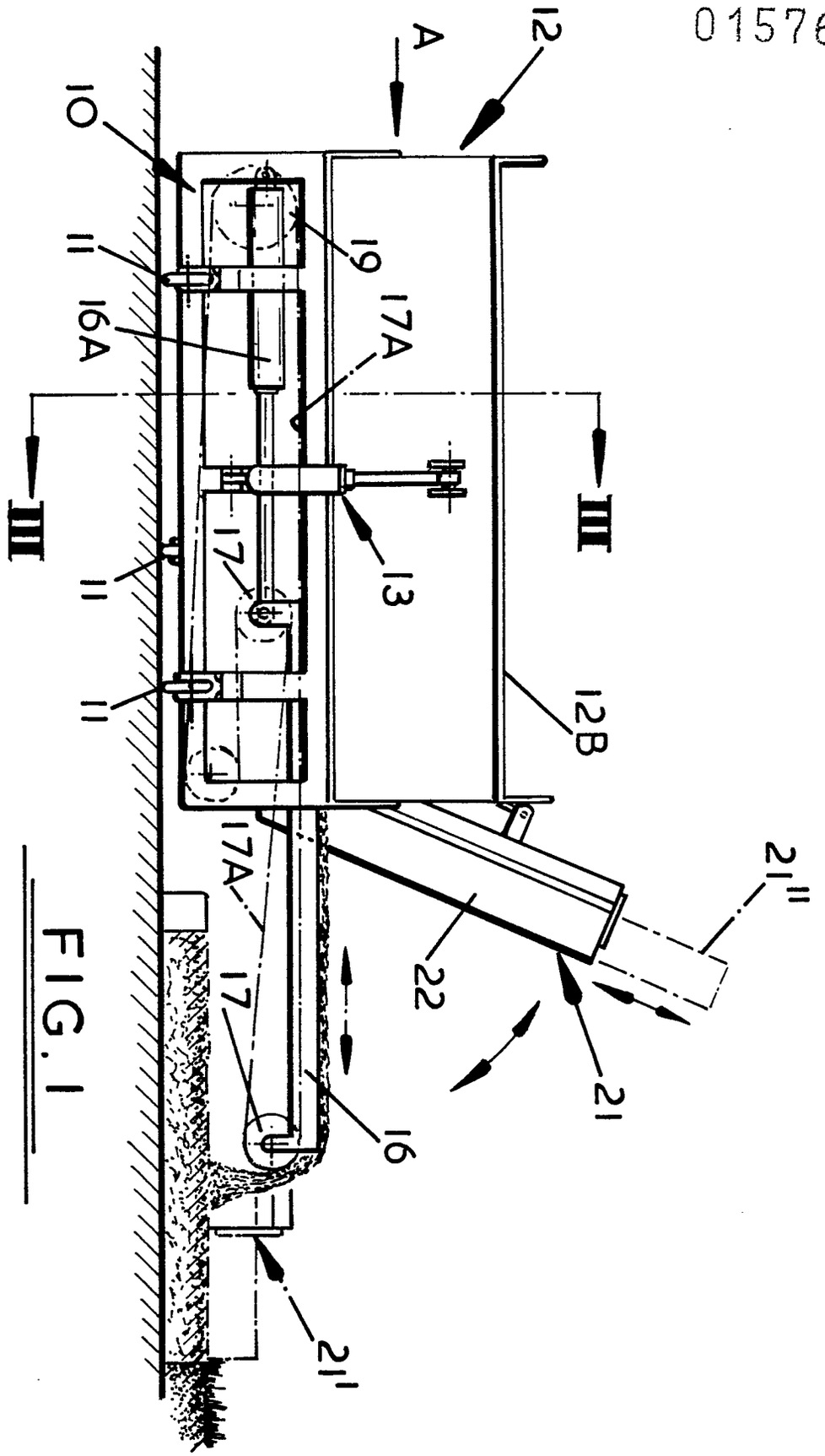

FIG. 1

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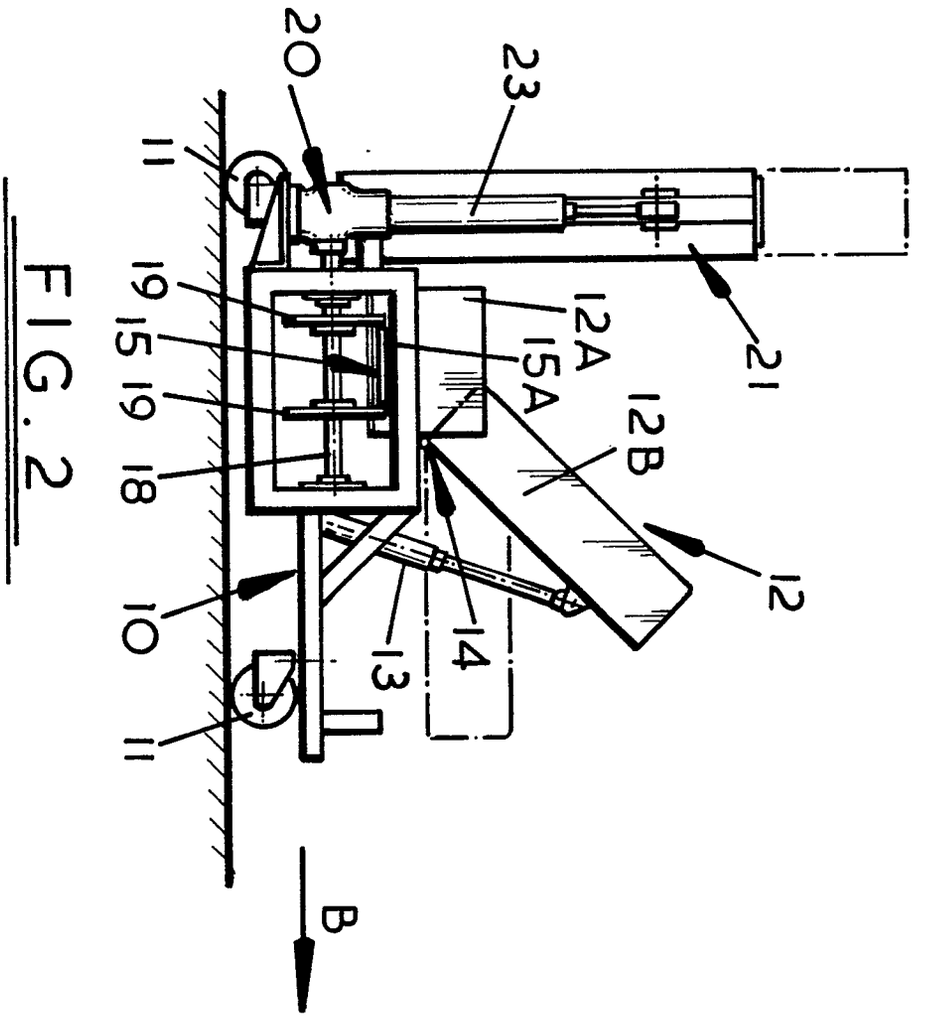

FIG. 2

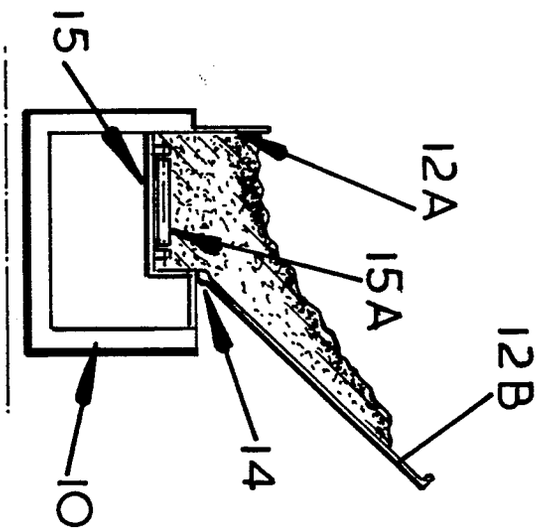

FIG. 3

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EUROPEAN SEARCH REPORT

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Application number

EP 85 30 2254

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
X	DE-B-1 235 358 (THE JAEGER MACHINE CO.) * Complete document *	1	E 01 C 19/48
A		2	
A	DE-B-2 556 547 (SCHLICKSBIER) * Column 3, line 59 - column 4, line 44; figures 1,2 *	1,2	
A	DE-B-1 241 861 (DOMENIGHETTI) * Column 2, line 35 - column 3, line 21; figures 1-4 *	3,4	
A	GB-A-1 295 159 (BLAW KNOX CONSTRUCTION EQUIPMENT INC.)		TECHNICAL FIELDS SEARCHED (Int. Cl.4)
A	DE-A-1 658 563 (WALZ)		E 01 C 19/00
A	DE-U-7 222 321 (RASTREI RANDSTREIFEN UND BANKETTHERSTELLUNG GMBH)		
A	DE-A-2 351 962 (U. AMMANN, MASCHINENFABRIK AG)		
A	DE-A-2 346 897 (STRABAG BAU-AG)		

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
BERLIN	05-06-1985	PAETZEL H-J

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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E : earlier patent document, but published on, or after the filing date
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