

(19)



Europäisches Patentamt

European Patent Office

Office européen des brevets



(11)

EP 0 710 746 A2

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
08.05.1996 Bulletin 1996/19

(51) Int. Cl.⁶: **E01C 19/18**

(21) Application number: **95306372.4**

(22) Date of filing: **12.09.1995**

(84) Designated Contracting States:
AT BE DE DK ES FR GB IT NL

(30) Priority: **01.11.1994 GB 9421956**

(71) Applicant: **Colas Limited**
Crawley, West Sussex RH10 4NF (GB)

(72) Inventor: **Kilner, David Nicholas**
Nr Horsham, West Sussex RH13 8PD (GB)

(74) Representative: **Hucker, Charlotte Jane**
Gill Jennings & Every
Broadgate House,
7 Eldon Street
London EC2M 7LH (GB)

(54) **Surfacing apparatus and method**

(57) A screed laying-box has an open bottom, a portion of which is closed by a shutter that is variable in width across the box. This allows application of road-surfacing material, e.g. microasphalt, in different widths, allowing economic usage of the material, and providing an aesthetically-pleasing result.

EP 0 710 746 A2

Description

Field of the Invention

The present invention relates to apparatus and a method for surfacing substrates such as roads.

Background of the Invention

Traditionally, microasphalts have been applied to road surfaces using a screed laying-box, or screed box, of fixed application width. Generally, the minimum practical application width is about half the width of the screed box. However, this results in costly and unsightly overlaps of material when applications are made to carriageways whose widths are not exact multiples of half the width of the screed box.

Expandable screed boxes are known, and are capable of varying the application width of a material. However, they are complex in design, and rely on the processed material having a relatively low viscosity for their success.

Microasphalt materials, and in particular "textured" microasphalt materials, have relatively high viscosities and, therefore, require good agitation and efficient conveyance while contained in the screed box. To achieve this, the screed box is typically equipped with paddle shafts and augers. While expandable screed boxes of this type may be feasible, they are not practical. In addition, during use, the augers within the screed box would be subject to high levels of stress.

Summary of the Invention

The present invention is based upon an appreciation of the problems described above, and utilises a shutter to close at least a portion of the bottom of a standard screed box, the shutter being of variable width across the box, thereby allowing the application of different widths of material. For example, material can be applied in widths of up to approximately a quarter of the width of the screed box. Preferably, the width of the applied material can be adjusted during the application operation. As will be apparent from the above, in the context of this Application, the width of the shutter lies in the direction substantially perpendicular to that in which the material is laid.

Description of the Invention

In a first embodiment of the invention, the shutter is attached to a screed box. In this case, the shutter typically comprises two portions: a first portion which has a fixed position relative to the screed box, and a second shutter portion which is movable transversely across the screed box. The first shutter portion can be fixed adjacent one side of the screed box, that side being parallel to the direction in which the material is laid, so that movement of the second shutter portion across the box cre-

ates only one opening, or window, in the bottom of the box. Alternatively, the first shutter portion can be fixed intermediate that side and its opposite side, so that movement of the second shutter portion creates at least one opening in the bottom of the box, depending upon the relative sizes and positions of the two shutter portions. Preferably, each shutter portion is removable from the screed box.

In a second embodiment of the invention, the two shutter portions, described above, are mounted within a frame for attachment to the bottom of a screed box. The frame comprises two substantially parallel runners, along which the second shutter portion is movable across the box, to vary the width of applied material. The first shutter portion has a fixed position within the frame.

In a third embodiment of the invention, the shutter is not attached to the screed box, but instead both the shutter and the screed box are independently attached to a suitable processing vehicle, so as to allow, for example, the screed box to be moved transversely over the shutter. This enables verges at the side of roads to be straightened without producing an overlap that follows the contour of the verge. The result is both aesthetically pleasing and an economical usage of material.

The present invention is now further described by way of reference to the accompanying drawings, Figures 1 to 3.

Figure 1A is a plan view of a screed laying-box according to the present invention.

Figure 1B is a section through Figure 1A, along the line A-A.

Figure 2A is a top view of a road whose surface has been laid using a screed laying-box according to a first embodiment of the present invention.

Figure 2B is a top view of a road whose surface has been laid using a screed laying-box according to a third embodiment of the present invention.

With reference to Figures 1A and 1B, the screed box 1, housing paddles 2 and augers 3, has a variable-width shutter comprising portions 4 and 5, fitted thereto. Shutter portion 4 is fixed to one side of the screed box, and portion 5 is transversely movable across the screed box, acting to shield the substrate, for example a road surface, from the material being applied. By adjusting the position of shutter portion 5 a window of substrate, whose width can be varied, is exposed, allowing application of material to take place over only that defined width. Typical widths of road to be exposed range from 50 mm to 900 mm, and can be created at either side, or both sides, of the screed box. The two shutter portions can be rigid, or they can be flexible. They can be made, for example, from sheets of steel having a thickness of around 1-5 mm. Towing arrangements 6 associated with the shutter enable it to be quickly and easily fitted and removed.

Figures 2A and 2B illustrate the verge-straightening capability of the present invention. Figure 2A relates to a first embodiment of the invention in which the shutter is attached to the screed box, to lay a fixed width W of material. While this allows the application of less material

than would be possible using a conventional screed box, it results in a joint or overlap region J which follows the contour of the verge V alongside the road. Consequently, this does not embody the most economic and aesthetically pleasing use of the surfacing material.

Figure 2B relates to a third embodiment of the invention, where the shutter is attached to the processing vehicle independently of the screed box. Again, a fixed width W of material is to be applied, but straightening of the verge V is achieved by moving the shutter independently of the screed box, to produce a joint region J, also of fixed width.

With reference to Figure 3, the shutter 11 is towed by the processing machine 12 by solid parallel links 13 in a similar, known, fashion to the screed box 14. The links 13 are attached to the processing machine and the shutter via spherical bearings 15, and an hydraulic ram 16 is mounted diagonally across the links via spherical bearings 17. This arrangement allows the shutter to be aligned independently of the processing machine and the screed box. Consequently, in use, the position of the shutter and/or screed box can be varied according to the substrate to be coated, in the direction of arrows A.

Claims

1. A screed laying-box having an open bottom, a portion of that bottom being closed by a shutter that is variable in width across the box.
2. A laying-box according to claim 1, wherein the shutter comprises a first portion that has a fixed position relative to the box, and a second portion that is movable transversely across the box.
3. A laying-box according to claim 2, wherein the first portion is fixed adjacent one side of the box.
4. A laying-box according to any of claims 1 to 3, wherein the shutter is removable.
5. A laying-box according to any preceding claim, wherein the shutter is rigid.
6. A laying-box according to any of claims 1 to 4, wherein the shutter is flexible.
7. A road-surfacing vehicle comprising, as a means of applying a surfacing composition to a road, a laying-box according to any preceding claim.
8. A road-surfacing vehicle comprising, as means for applying a surfacing composition to a road, a laying-box having an open bottom, and underlying that a shutter that is movable transversely across the box.
9. A road-surfacing vehicle according to claim 8, wherein the box and the cover are independently movable.
10. A method of surfacing a substrate, which comprises the trailing application of a surfacing composition to the substrate through a screed laying-box, wherein a shutter lies across the bottom of the box, and the position of the shutter and/or the box is varied to expose different widths of the underlying substrate.
11. A method according to claim 10, wherein the substrate is a road.
12. The method according to claim 11, wherein the laying-box is caused to follow the contour of a verge at the side of the road, and the shutter is caused to follow a substantially straight line adjacent the verge, thereby straightening the verge.
13. Shutter apparatus for attachment to a screed laying-box, which comprises a first shutter portion and, extending therefrom, two substantially parallel runners, and a second shutter portion that is positioned between and slidable along the runners.
14. Shutter apparatus according to claim 13, wherein the runners are joined to form a substantially rectangular frame which encloses both shutter portions.

Figure 1A

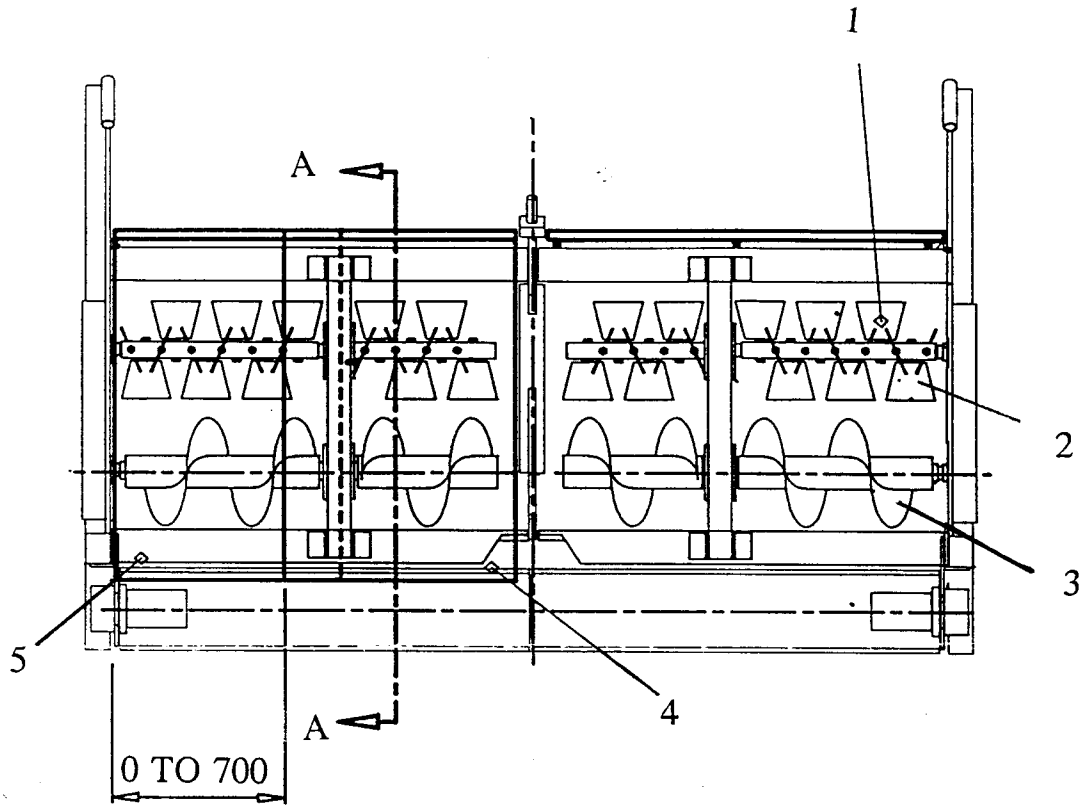


Figure 1B

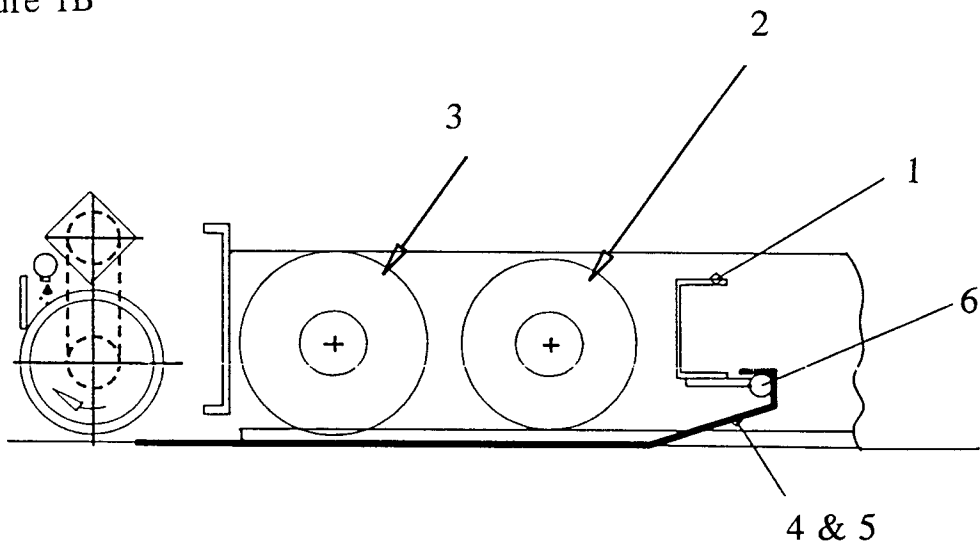


Figure 2A

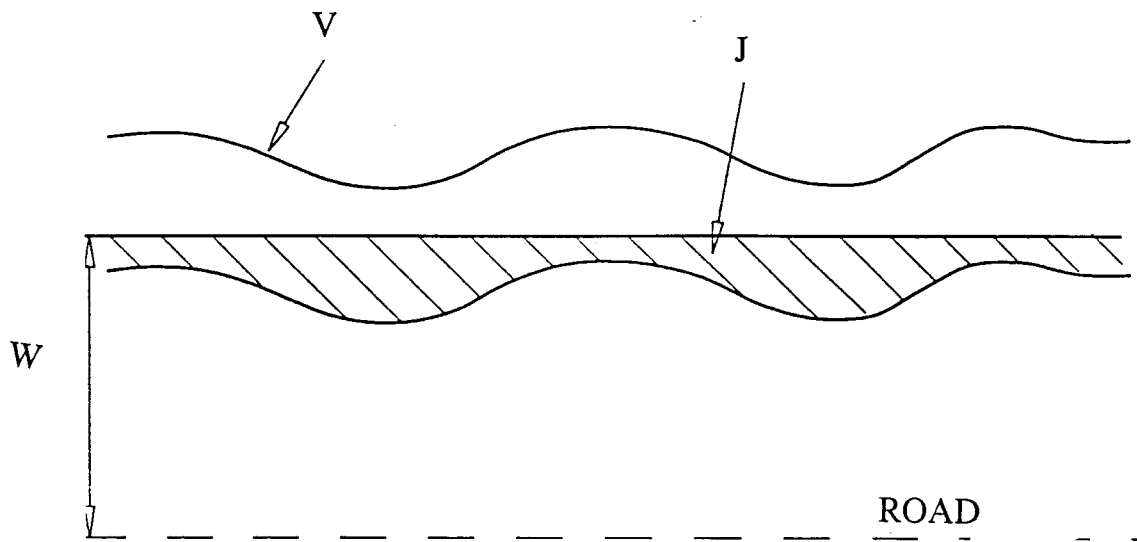


Figure 2B

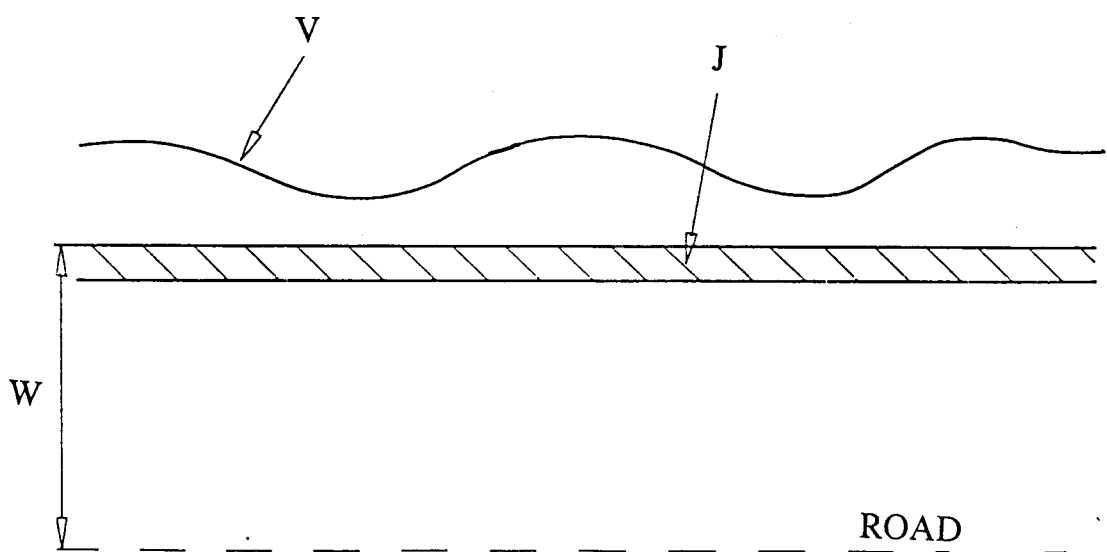


FIGURE 3

