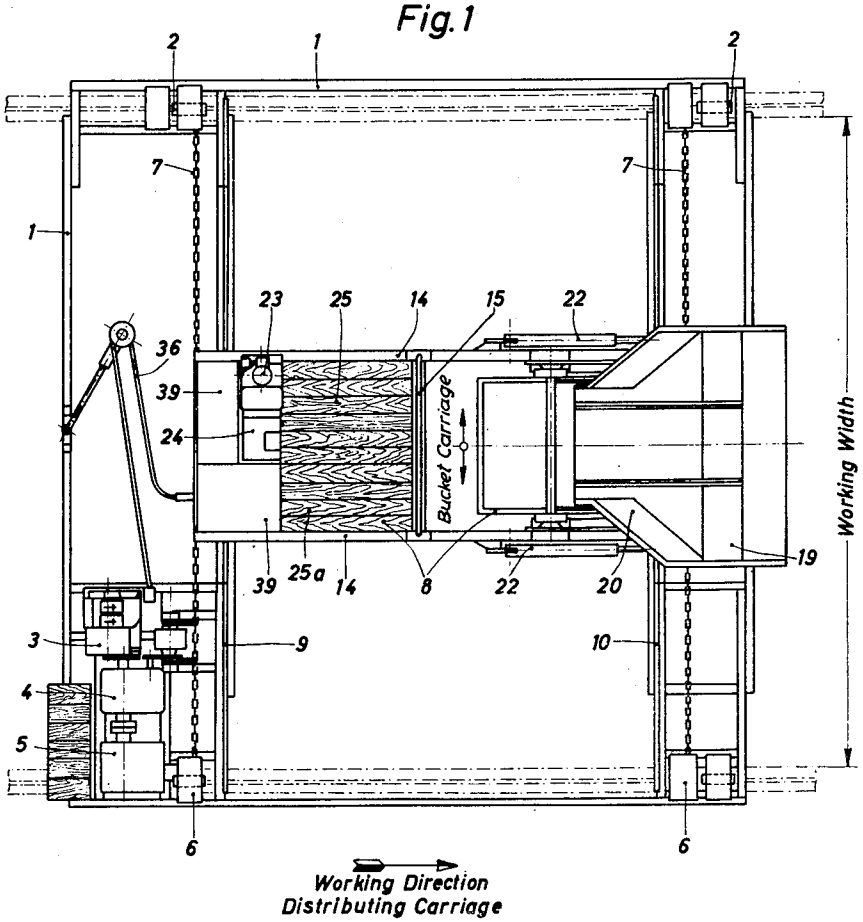
June 30, 1964 H. KÄMMERLIN 3,139,202

DISTRIBUTING MACHINE FOR ROAD CONSTRUCTING MACHINERY

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Fig. 1



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DISTRIBUTING MACHINE FOR ROAD CONSTRUCTING MACHINERY

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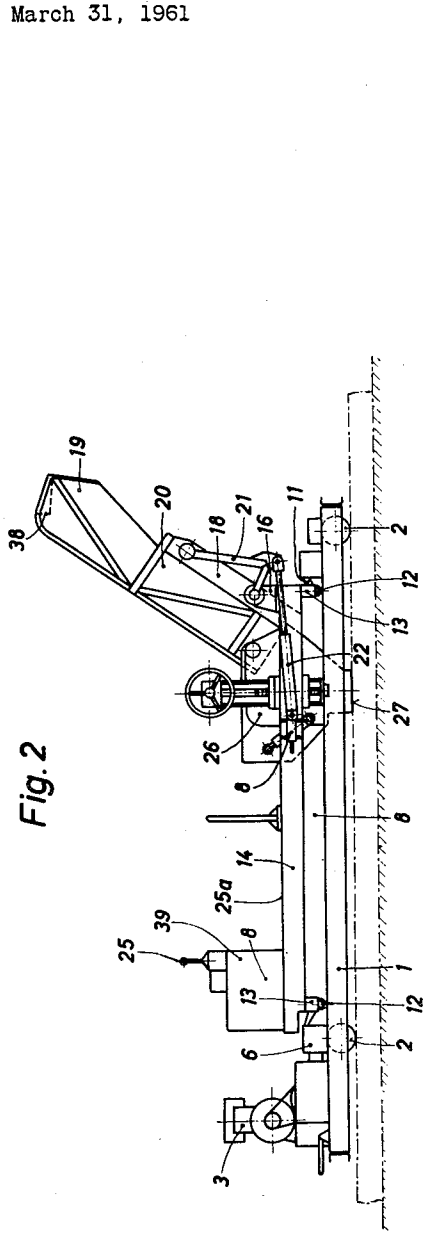


Fig. 2

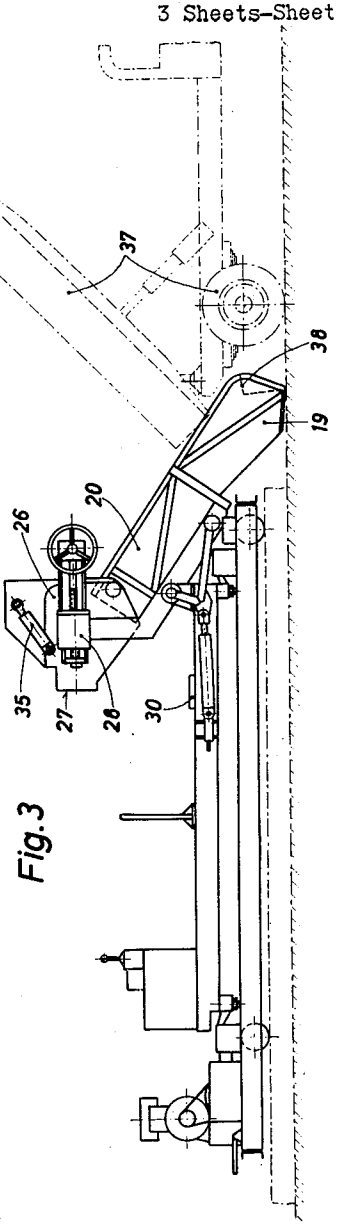


Fig. 3

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DISTRIBUTING MACHINE FOR ROAD CONSTRUCTING MACHINERY

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Fig. 5

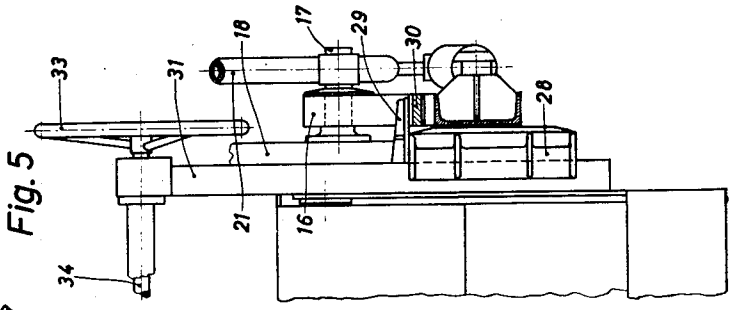
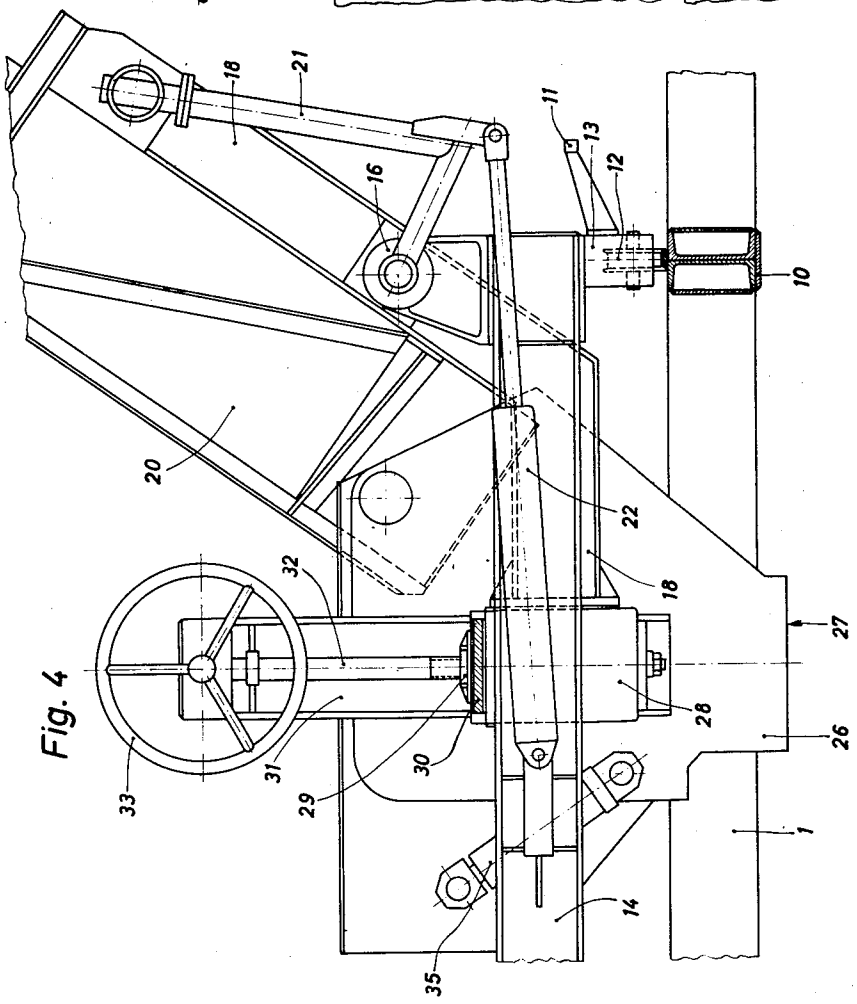


Fig. 4



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DISTRIBUTING MACHINE FOR ROAD CONSTRUCTING MACHINERY

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2 Claims. (Cl. 214—146.5)

This invention relates to a bucket distributor, more particularly for the construction of bituminous roads.

It is known from engineering experience that the best method of constructing a concrete road whose surface is to be uniform and sufficiently even to satisfy the exacting requirements of modern traffic conditions, is to apply and distribute the concrete over the whole width of the road with the aid of a bucket distributor travelling on rails. Two main types of such distributors are known and they differ greatly in design and construction according to their different purposes. One is used in conjunction with a gantry mixing plant, and the other one as a distributor for the conveyance of concrete by a motor vehicle used in conjunction with a stationary concrete mixing plant. Because in the manufacture of concrete the latter method is by far the most commonly used, only the construction and operation of the bucket distributor supplied by motor vehicle will be described hereafter.

The distributor which is also referred to as a "distributor carriage," comprises a rectangular framework spanning the width of the road, provided with wheels at each corner, and used as a support for the driving motor, the driving gear mechanisms for the carriage and the bucket and for the bucket itself. Within this framework there are two transoms arranged transverse to the concrete roadway to be constructed or repaired, supporting travelling rails along which the distributor bucket can travel. The latter is furnished with an aperture in the bottom which can be closed, and is to a large extent designed so as to facilitate refilling by so-called side tipper lorries. Thus the bucket is rectangular in shape with its longer sides lying in the direction of the road to be constructed or repaired so that a side tipper lorry can discharge into it, the length of these sides being in accordance with the charging vehicle. The shorter sides of the bucket are greater in height than the other sides since the travelling gear, adjustments for height and propulsion units of the bucket are attached to them and consequently charging of the bucket is not possible at these faces. The main reason for using side tipper lorries to charge the bucket is that it is not permissible for a vehicle to travel on a surface which has been prepared for concreting and therefore it has to travel alongside the prepared surface and a side tipper lorry occupies less room than an end tipper lorry during discharge of its load into the bucket and this is important since available space beside a roadway is usually limited. However, it has been found from experience on the site that it may be possible to maintain such supply traffic outside, that is, on either side of, the roadway in the case of newly constructed roads, but only rarely in the case of road repairs.

The position is very similar in the case of the construction of bituminous roads, the only difference being that it is possible without difficulty to drive along the underlayer of a bituminous road surface before and during the application of the surface layer. In such cases road building engineers have, inter alia, also used distributor buckets for concrete in an emergency; not only in order to be able to build the full width of the road surface but also in order to use a distributor travelling on rails so that the great accuracy obtainable thereby can be utilized.

However, as has been stated above, this expedient use of concrete distributor buckets is practicable only in cases in which local conditions permit the use of side filling of the buckets.

It is an object of the present invention to design a bucket distributor which is preferably suited for use in conjunction with distributor carriages travelling on wheels as normally used in the construction of concrete road surfaces; in other words, which is intended in particular for the manufacture of bituminous road surfaces where it can be used as a distributor in place of the distributors forming part of concrete road surfacing equipment which are charged from the side of the roadway.

According to the present invention a distributor bucket comprises a unit which can be tilted as a whole; the actual distributor bucket being located between the two road surface transoms of the distributor carriage, and attached to it are a chute and a feed receptacle, the so-called feed hopper, which takes up such a position after the unit has been tilted—that is, a loading position—that an end tipper lorry standing at the front end of the distributor carriage can charge it. Using such an arrangement it is possible to transfer the material to be applied to the road surface first from the supply lorry to the feed hopper, and then to tilt the apparatus so that the material passes through the chute to the actual distributor bucket. The latter is located normally inside the road surface transoms; relative to the bending deflection of the latter this is a correspondingly favourable position, for in order to make the surface of the top layer of the road even it is very important that the bucket should deflect as little as possible.

It is true that during the actual tilting operation, the road surface transom is highly strained and stressed; but as soon as the road surfacing material is inside the actual distributor bucket, that is, in the space between the two road surface transoms, this state of loading is reduced to a magnitude which the components can take.

Since the distributor bucket is required to distribute the material with which it is filled and to discharge it in a uniform layer, it is provided with a bottom flap in the usual manner which may be actuated hydraulically. The bucket is made adjustable for height so that it can deliver any required thickness of surfacing layer. Whilst the mechanism is in the process of being tilted, this adjustment for height is limited by suitable resilient stops attached to the bucket carriage. The latter also reduce the shock with which the whole tilting bucket unit strikes other components in the distributor position.

Further details of the invention will now be explained in greater detail by reference to an embodiment illustrated in the accompanying drawing, in which:

FIGURE 1 is a plan view of the distributor carriage and the bucket tilting mechanism shown approximately in its mid-position;

FIGURE 2 is a side elevation of the distributor carriage and the bucket tilting mechanism shown in the position which it takes up when distributing the road surfacing material;

FIGURE 3 is a view similar to that shown in FIGURE 2, but with the tilting bucket in the charging position;

FIGURE 4 is a detail taken from FIGURE 2 and shown on an enlarged scale; and

FIGURE 5 is a side view of FIGURE 4.

Referring to the drawings, a distributor carriage **1** is provided with running wheels **2**, a driving motor **3**, a distributor carriage gearbox **4** and a bucket carriage gearbox **5**, a capstan block **6** and tension chains **7** by means of which a bucket carriage **8** can be pulled across the roadway on road surface transoms or beams **9** and **10**. The tension chains **7** are attached to arms **11** of the

bucket carriage 8, the latter being furnished with four transport rollers 12 accommodated inside roller housings 13, by means of which it can travel along the road surface transoms 9 and 10. Other components of the bucket carriage are two longitudinal stringers or cross members 14 which, together with the roller housings 13 and another cross transom 15 form the actual framework of the bucket carriage.

Two bearing blocks 16 are attached to that end of the distributor carriage which is in front, when viewed in the working direction of the distributor carriage; these bearing blocks forming journal bearings for two trunnions 17 of the bucket tilting mechanism. On both sides these trunnions 17 are attached to a frame 18 which supports a feed hopper 19 and its attached chute 20, and which supports also the distributor bucket and withstands the forces which arise due to the tilting process. A hydraulic linkage 21 is attached both to the frame 18 and to both sides of the trunnions 17; the linkage is actuated by hydraulic jacks 22 and tilts the bucket mechanism into the distributor charging position and back to the distribution position. These hydraulic jacks are supplied with oil under pressure from a hydraulic mechanism of conventional design, consisting of a diesel engine 23 driving the oil pump which is immersed inside an oil reservoir 24 and a control member 25 (FIG. 2). All these units are mounted upon the bucket carriage and can be controlled from a platform 25*a*. The control mechanism itself is so designed that accurate control of the tilting operation is possible.

The distributor bucket 26 is adjustable for height, such that in the distribution position it is possible to adjust the outlet aperture 27 of the distributor bucket, which also skims the distributor material, parallel to the road surface in accordance with the required thickness of the top layer.

In order to make it possible to carry out this adjustment, the frame 18 is provided with guide sleeves 28 whose stops 29 rest upon flexible pads 30 on the longitudinal stringers 14, thus providing a fixed height position for the frame relative to the bucket carriage and to the distributor carriage itself. The flexible pads 30, which take the form of resilient rubber pads, are provided in order to damp the shock which occurs when the stops 29 make contact with them on the return of the bucket to the distribution position. At the same time the guide sleeves 28 enclose the guide rails 31 attached to the bucket, thereby providing the necessary guides for the distributor bucket to the frame 18. Adjustment nuts for the height adjustment are also attached to the guide sleeves. The adjustment spindles supported in the guide rails 31 pass through these nuts and are actuated by hand wheels 33, so that the adjustment is carried out when the hand wheels are actuated.

The hand wheels 33 are connected with the adjustment spindles by suitable transmission means just above the guide rails 31, FIG. 5, and with each other by a shaft 34; as a result, the bucket 26 is raised or lowered uniformly on both sides when it is being adjusted.

The distributor bucket 26 is provided with a bottom flap in the known manner. This is actuated by two hydraulic jacks 35 (FIG. 3) which are supplied with oil under pressure through a supply pipe 36 (FIG. 1) from a hydraulic installation provided on the distributor carriage and which are controlled from the distributor carriage.

With regard to the feed hopper 19 and the chute 20 connected therewith its design depends of course on the dimensions of the end tipper lorry 37 from which it is supplied. Thus, the front wall 38 of the hopper must be low, and the width of the bucket must be adequate to ensure that the body of the lorry has sufficient room economically to discharge its load. Since it is advantageous, for reasons of distribution, to restrict the width of the distributor bucket 26 relative to the feed hopper the chute 20 is formed with a funnel-like constriction in the direction of the distributor bucket, as will be seen from FIG. 1. It is also advantageous, for reasons of stability, if the end of the bucket carriage opposite to the hopper 19 is weighed down by ballast 39 during the tilting operation.

It will be seen that the present invention improves substantially the possibility of employing the usual type of distributor carriage and hence to render the equipment more economical in operation. The invention also helps to satisfy a long-felt want in the building trade for such a piece of equipment and to do so in a particularly simple manner and with comparatively simple practical means.

What I claim is:

1. A distributing machine for road construction materials as black top adapted to run on a pair of side tracks comprising a frame, a bucket carriage mounted on the frame adapted to run on wheels on the side tracks and having a pair of cross members mounted on the frame, a distributor bucket pivotally mounted on said cross members, a feed hopper secured and connected to the distributor bucket and having a chute portion secured thereto communicating therewith and the distributor bucket, said feed hopper and chute being pivotally mounted on the same pivot as the distributor bucket, and hydraulic means connected to the cross members and the distributor bucket and the feed hopper with its chute to adjust the bucket and the feed hopper with its chute as a unit around the pivotal mounting to adjust the feed hopper in a lower position to receive the construction material with the distributor bucket in elevated position and in another position with the feed hopper in an elevated position with the distributor bucket in a lowered position due to its own weight to distribute the construction material by the distributor bucket on a road under construction.

2. A distributing machine according to claim 1, in which means are provided to adjust the unit as to height on the frame to enable the edge of the bucket to skim the surface of the distributed material and to control the thickness of surface layer to be laid.

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