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Bratchell

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[54] **CONCRETE SCREED MEANS FOR ALIGNED MOULDS**

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[51] **Int. Cl.** **B28b 13/02**

[58] **Field of Search** 425/64, 432, 447, 456, 425/62, 63; 404/101, 106, 108, 110, 102, 103, 104, 105

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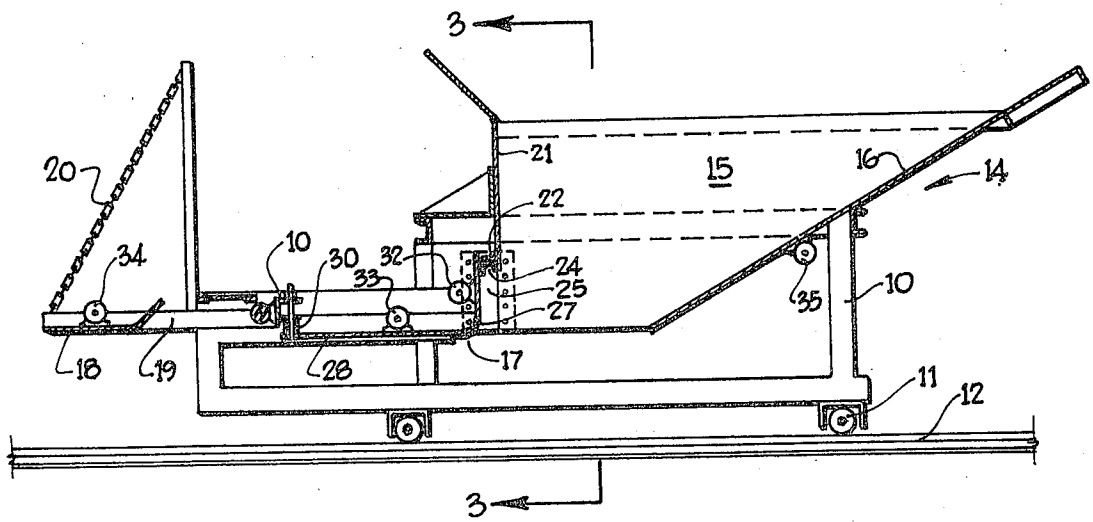
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[57] **ABSTRACT**

Concrete screed means for discharging and screeding of wet mix concrete into a series of aligned moulds for the moulding of concrete sleepers having a hopper with two side walls a front wall and a rear wall but not base, a rearwardly extending flow guide plate having a vibrator secured to it but there being no vibrator on either of the side walls, and resilient means joining the flow guide plate to the rear wall of the hopper so that vibration of the guide plate is not transmitted to the remainder of the hopper.

5 Claims, 3 Drawing Figures



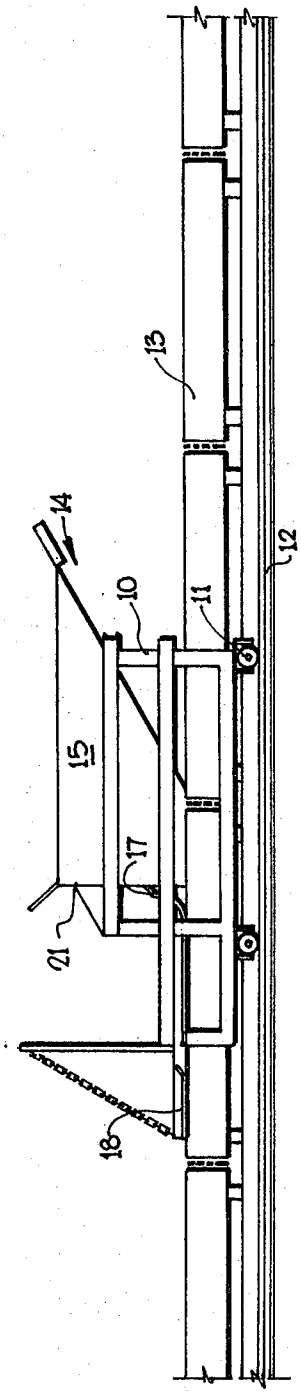


Fig. 1

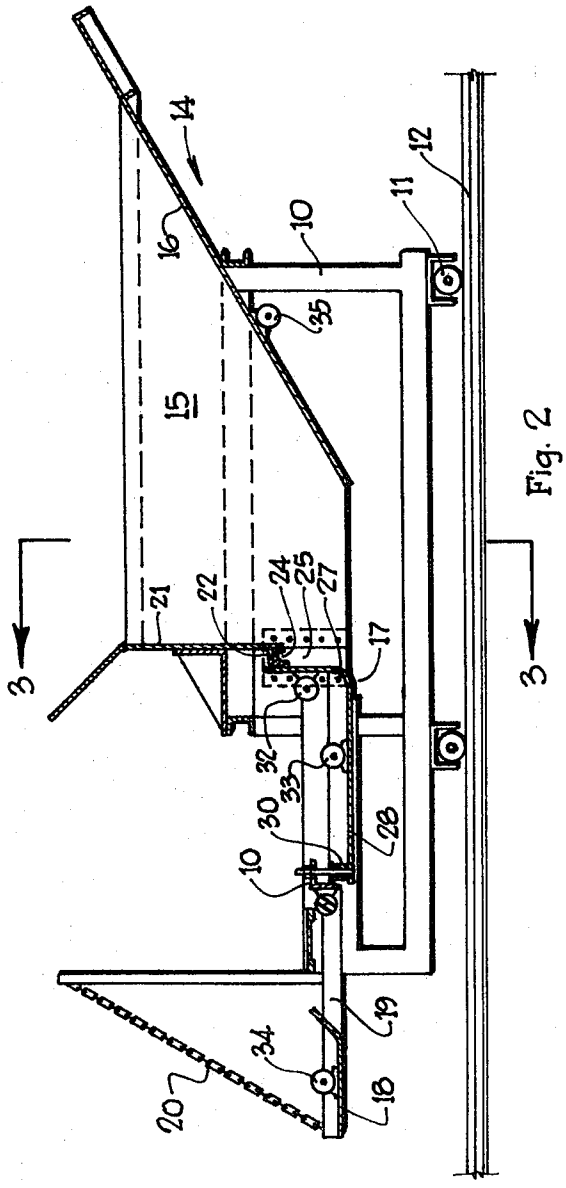


Fig. 2

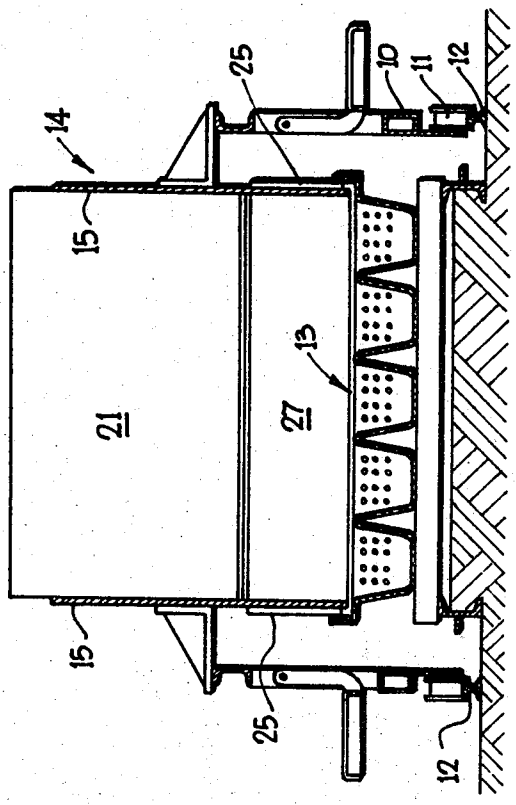


Fig. 3

CONCRETE SCREED MEANS FOR ALIGNED MOULDS

This invention relates to screed means for the screeding of concrete as it is discharged as a wet mix into a series of moulds for the moulding of concrete railway sleepers.

In the manufacture of concrete slabs, beams, sleepers and the like, it is common practice for concrete to be poured into moulds, and according to one known technique, the pouring is effected by means of a travelling hopper which contains no base, and which passes over the tops of the moulds.

When the travelling hopper technique is employed, means are required to ensure a smooth and even flow of concrete from the hopper into the moulds. Attempts have been made to utilise vibrators mounted on the vertical walls of a hopper to vibrate the concrete so that it will not adhere to the vertical walls, but vibration makes the concrete more dense at the locality of the vibrator, and when the concrete becomes more dense it becomes less flowable, so that vibrators have been discarded in favour of other devices. Other devices have included helical flights, paddles and other mechanical agitators, but these are subject to severe wear and in many instances do not provide the optimum compression strength in the moulded article.

One of the objects of this invention is to provide improvements whereby the advantages of vibration can be obtained, but whereby most of the difficulties encountered through the reduction of flow ability of the concrete are avoided.

In one of its forms the invention consists of concrete screed means for the discharging and screeding of wet mix concrete into a series of aligned moulds each of shape for the moulding of concrete sleepers, comprising:

a frame,

a hopper carried by the frame, having a front wall, two side walls and a rear wall but no base, and a rearwardly extending flow guide plate, there being at least one vibrator which is positioned on the flow guide plate but there being no vibrator on either one of said side walls,

resilient means interconnecting the flow guide plate and the rear wall of the hopper, and wheels supporting the frame, the wheels being arranged to engage a pair of guide rails extending along respective sides of the series of moulds so as to guide the hopper for movement over the moulds There will, of course, be some vibration transmitted to the front and side hopper walls through the resilient mounting, and transmitted to the hopper walls through the concrete within the hopper when it is vibrated, but the vibration of the front and side hopper walls, although being of similar frequency, will not be of corresponding amplitude. It is necessary in this invention to ensure that the vibration of the front and side hopper walls is as little as possible. This then assists the flow of the concrete from within the hopper and the vibrating concrete which passes beneath the flow screeding slipper becomes dense and non-flowable only as it passes out of the hopper.

In another form of the invention the front wall of the hopper slopes downwardly and rearwardly, and in this instance a vibrator is mounted on the front wall only of the hopper. Contrary to expectation, it is found that a vibrator, if mounted on the front wall only, will expedite the flow of concrete down the sloping wall, especially when the hopper becomes nearly empty.

An embodiment of the invention is described hereunder in some detail with reference to and is illustrated in the accompanying drawings, in which:

FIG. 1 is a diagrammatic elevation of concrete screed means discharging a wet mix of concrete into a series of moulds,

FIG. 2 is a central elevational section through said means, and

FIG. 3 is a cross-section taken on line 3—3 of FIG. 2.

In this embodiment a frame **10** is supported on wheels **11** guided for travelling along guide rails **12** which are positioned one on each side of a set of moulds **13**, and the frame has secured to it a hopper **14** which has two vertical side walls **15**, a front wall **16** which slopes downwardly towards the rear of the hopper, a flow guide plate **17**, and a screeding slipper **18** carried on arms **19** hinged to the frame **10**, the screeding slipper **18** being suspended by a chain **20**, also from the frame **10**.

The lower edge of the rear vertical wall **21** terminates in a horizontal flange which extends outwardly and rearwardly. The flow guide plate **17** is secured to the flange **22** through a length of angle section rubber **24**. The side walls beneath the angle section member have a series of apertures, and rubber strips **25** are bolted to respective side walls, the two rubber strips also being bolted to respective vertical side edges of a flow guide plate **17**. The plate **17** is of curved form. The flow guide plate has a front vertical portion **27** and a trailing portion **28**, the trailing section sloping downwardly and rearwardly away from the rear end of the hopper, and the two portions are interconnected by a curved further portion to give streamlined flow for concrete flowing outwardly from within the hopper **14**. A rubber pad **30** suspends the rear end of the trailing portion **28** of the guide plate **17**. The rubber mountings constitute excellent resilient mounting means for the flow guide plate relative to the hopper, and the amplitude of vibration of the flow guide plate is substantially reduced when conducted to the hopper side and front walls through the rubber mountings. The flow guide plate **17** has a vibrator **32** of known type attached to its front vertical portion **27** and a further vibrator **33** to its trailing portion **28**, and the effect of the vibrators is to vibrate only that concrete in its immediate vicinity, that is, the concrete which passes downwardly and outwardly beneath the trailing portion of the plate. The screeding slipper **18** is provided with a further vibrator **34**. By this means at least the upper portion of any concrete which is deposited by the hopper is vibrated.

The rearwardly and downwardly sloping front wall **16** of the hopper **14** is in contact with the concrete which is deposited as the lower layer of concrete in the moulds, and this is also provided with a vibrator designated **35** which densifies the lower portion of the concrete and therefore results in a product most of the concrete of which has been vibrated as it has been deposited.

It has been found in practice that the hopper constructed according to this invention is capable of providing substantially free flowing concrete without the concrete "solidifying" within the hopper, and that the vibrator **35** assists the discharge of concrete flowing down the front wall **16**.

What I claim is:

1. Concrete screed means for the discharging and screeding of wet mix concrete into a series of aligned moulds each of shape for the moulding of concrete sleepers and each positioned between the rails of a pair of guide rails extending along respective sides of the series of moulds,

said screed means comprising:

a frame,

support wheels supporting the frame,

a hopper on the frame having a front wall which slopes downwardly and rearwardly, two side walls and a rear wall but no base,

a rearwardly extending flow guide plate, and resilient means interconnecting the flow guide plate and the hopper rear wall,

at least one vibrator mounted directly on said front wall for the vibration thereof and at least one vibrator on said flow guide plate for the vibration thereof,

so constructed and arranged that when the wheels engage the guide rails they are guided thereby to guide the hopper for movement over the moulds so that when the hopper is thus moved concrete is discharged therefrom into the moulds; when the vibrators are operated they are so operated as to vibrate only that concrete in their immediate respective vicinities, so that the lower portion of the concrete discharged from the locality of the front wall is densified by vibration thereof and the upper portion of the concrete is densified by vibration of the flow guide plate,

said flow guide plate having a front vertical portion, a rearwardly curved portion and a trailing portion, there being two said vibrators, one on each of the front vertical and trailing portions, the front portion of said flow guide plate being solely supported on said hopper.

2. Concrete screed means according to claim 1 further comprising a resilient mounting between a trailing portion and the frame.

3. Concrete screed means according to claim 1 further comprising a screeding slipper coupled to the frame and trailing the hopper.

4. Concrete screed means according to claim 3 comprising a further vibrator on the screeding slipper.

5. Concrete screed means according to claim 1, wherein said flow guide plate has two vibrators, one said vibrator located on said front vertical portion and the second vibrator located on said rearwardly curved portion.

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