United States Patent

[11] 3,541,931

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[54] **CEMENT FINISHING MECHANISM HAVING ADJUSTABLE ROTATING DRUM**
2 Claims, 6 Drawing Figs.

[52] **U.S. Cl.** **94/45**
[51] **Int. Cl.** **E01c 19/22**
[50] **Field of Search** 94/46, 45, 44

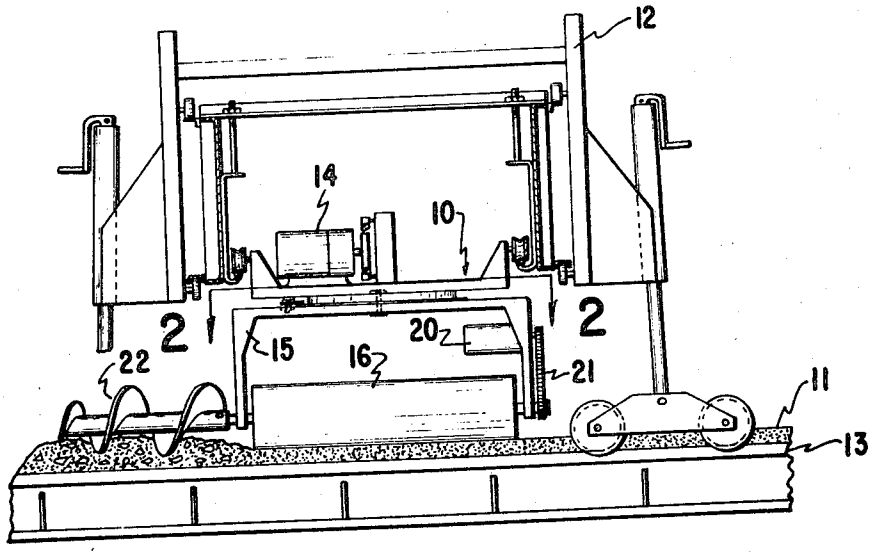
[56] **References Cited**

UNITED STATES PATENTS

1,533,464	4/1925	Robb	94/45
1,550,027	8/1925	Hug	94/45
1,665,054	4/1928	Carr	94/45
2,587,321	2/1952	Hohnke	94/45
2,957,396	10/1960	Bederman	94/45
2,962,948	12/1960	Tout	94/45
3,270,634	9/1966	Borges	94/45
3,382,784	5/1968	Loveland	94/45
3,450,011	6/1969	Godbersen	94/45

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ABSTRACT: A cement finishing mechanism for a self propelled deck finisher or the like having a rotating drum, the axis of which is canted in a direction such that the motion of the rotating drum on the side of the drum rotating upwardly moves the excess concrete out of the way and forwardly for more efficient finishing. Provision is made for changing the angle of cant, reversing the angle, or for having two rollers, one canted in each direction adaptable for alternate use dependent on the direction of motion of the carriage.



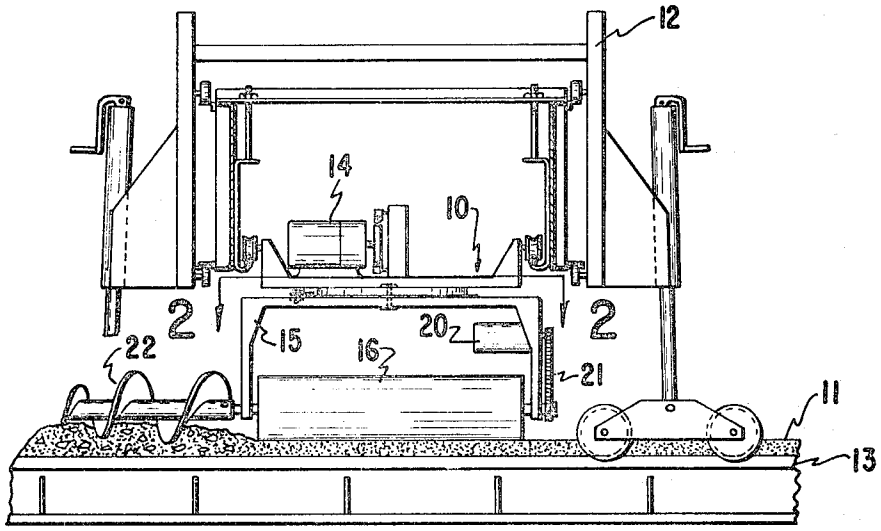


Fig. 1

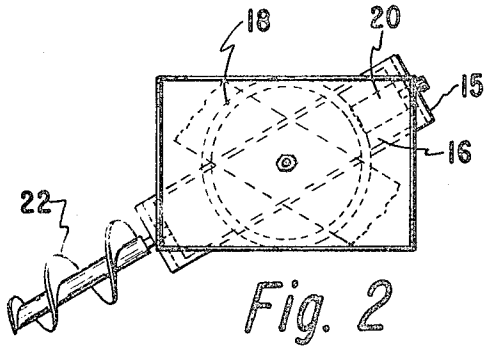


Fig. 2

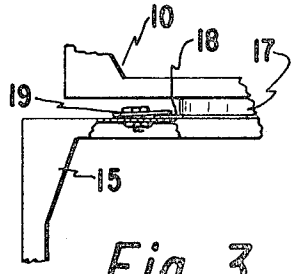


Fig. 3

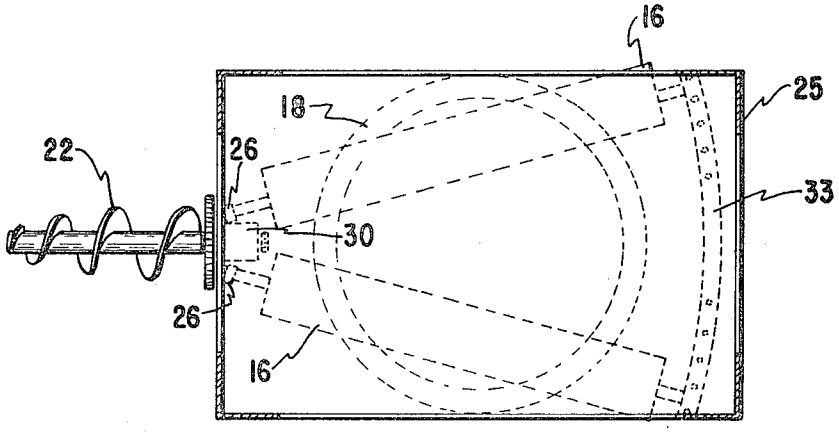


Fig. 4

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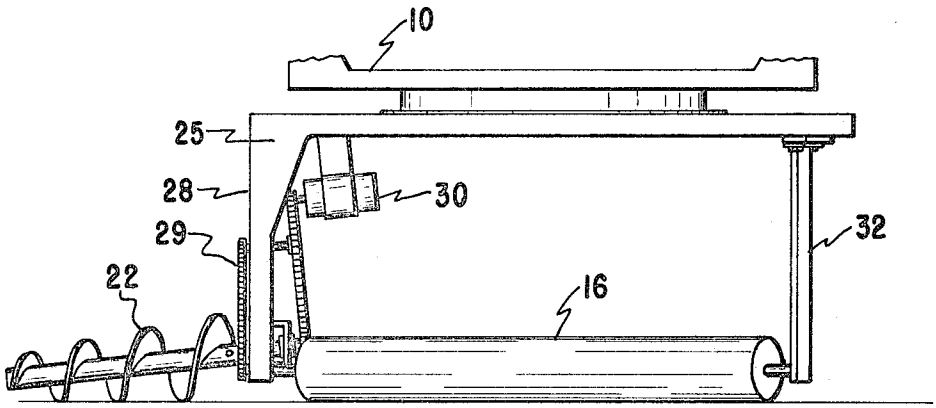


Fig. 5

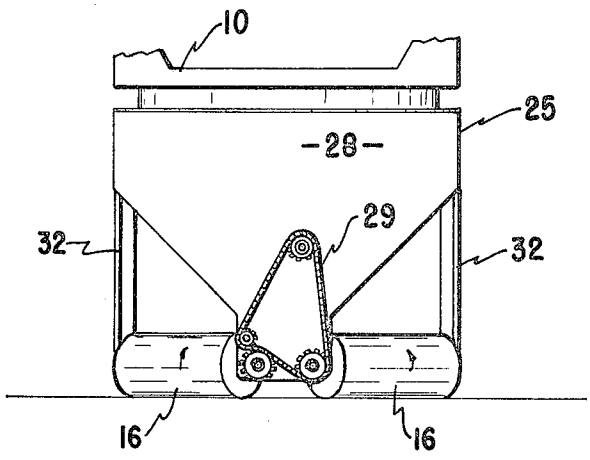


Fig. 6

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CEMENT FINISHING MECHANISM HAVING ADJUSTABLE ROTATING DRUM

This invention pertains to concrete finishing machines of the type disclosed in my U.S. Pat. No. 3,450,011, issued June 17, 1969, and more particularly to the rotating finishing member usable on the carriage of such a machine.

Previous rotating finishing members on the moving carriage of a cement finishing machine have generally not been completely satisfactory, in large part because of the movement of excess cement to a point where it was deposited on the finished slab either at one edge of the slab or behind the machine on the part of the slab already passed over by the member. Several devices have been proposed in an attempt to overcome this problem. Among the devices is the use of an auger such as proposed in my copending application and the use of a frustoconical drum member.

Both of these are partially satisfactory, but somewhat expensive. The auger, in particular works well for larger amounts of concrete, and is still useful even with my new device. However, I have discovered that by placing the roller at an angle such that the concrete is pushed not only sideway, but slightly forward, much of the problem is solved, since the concrete is then in a place forward of the roller to be picked up in the next pass over the slab and deposited in voids which might otherwise be left.

A more complete understanding of my invention in its embodiment may be had from a study of the following specification and the FIGS. in which:

FIG. 1 is a side elevational view of the carriage of a finishing machine showing my roller in place,

FIG. 2 is a plan view from line 2–2 of FIG. 1,

FIG. 3 is a detailed view to an enlarged scale of the locking device or the turntable device of the carriage.

FIG. 4 is an enlarged plan view similar to FIG. 2 of an alternative form of my invention.

FIG. 5 is a side elevational view of the device of FIG. 4, and

FIG. 6 is a front elevational view of the device of FIG. 4.

Briefly my invention comprises a cement slab finishing machine in which the finishing rollers are set at an angle to the direction of travel of the machine such that excess cement will be moved forwardly and out of the way to be picked up on the next pass. The axis of the roller may be movable or fixed, and double rollers may be used to provide the same effect.

More specifically and referring to the drawings, my device is adapted to be used on a carriage **10** similar to that described and shown in my aforementioned copending application. The carriage moves laterally of a concrete slab by riding on a bridgework **12** carried by rails **13** alongside the slab. Thus, in FIG. 1, the bridgework would be carried to the left in steps as each swath was finished. The carriage would be moved on the bridgework toward or away from the viewer, and therefore laterally across the slab. A motor **14** either hydraulic or electric may be mounted on the carriage **10** to provide for the lateral motion, or the motor may be mounted on the bridgework and pull the carriage by means of cables or the like across the bridgework.

My invention in its simplest form comprises a carrier **15** for the drum type finishing member **16** which carrier is mounted on the carriage **10** to pivot relative thereto on a vertical axis. A ring **17** is mounted on the underside of the carriage **10** adjacent to the carrier **15**. This ring includes a circumferential flange **18** (FIG. 3) which helps to provide a relatively sturdy and stable support to prevent undue tilting of the carrier **15**. Clamping means **19** adapted to be clamped down onto the flange **18** are provided to hold the carrier in any desired adjusted position.

A drive motor **20** is mounted on the carrier **15**. This motor drives the drum **16** through a chain drive **21**. My preferred embodiment would also include an auger **22** for moving the larger amounts of excess material from in front of my device. The operation of this auger is completely described in my previously mentioned application.

The operation of this device is relatively simple. I have discovered that by canting the axis of rotation of the drum **16** at an angle to the longitudinal axis of the slab **11** such that the upwardly rotating side of the drum is slightly turned toward the unfinished part of the slab, the operation is much more satisfactory. In this position, excess concrete engaged by the upward moving side of the drum is moved not only laterally of the slab **11** but also longitudinally slightly toward the unfinished part thereof. Thus, the excess concrete slides off the part of the drum which is adjacent to the unfinished part of the slab. This excess then simply piles up and is again in position to be smoothed by the roller **16** when it comes back for the next pass.

It will be apparent that the carrier **15** may be turned to an opposite angle at the end of each pass. I have illustrated a manually operated device in which a clamp is applied to hold the device. It will be obvious that power mechanisms could be used to accomplish the same turning. A reversible drive may be necessary to reverse the rotation of the roller also.

An alternative device is shown in FIGS. 4, 5 and 6. This device utilizes a pair of rotating drums **16'**. These drums are mounted on a carrier **25** which may be pivotally attached to the carriage **10** or may be fixed thereto. In the preferred arrangement, as shown, there is no need of a pivotal mounting since I provide for a movable mounting for each roller.

The rollers **16'** are journalled in bearings on the carrier at a location relatively close together on the front end. Universal joints **26** are provided so that the shaft may be perpendicular to the front face **28** of the carrier although the rollers are at a different angle thereto. A belt and pulley drive **29** or gear and chain drive is adapted to transmit power and motion from a motor **30** to the rollers as well as to the auger device **22** extending in front of the carrier. It will be noted that the drive **29** (FIG. 6) is arranged so that the drums **16** are driven in a direction such that the outer surfaces of each drum move upwardly. This is in accord with the operation of my device as explained above.

At the rear, the rollers **16'** have shafts journalled in bearings on movable mounts **32** which may be bolted or otherwise removably fastened to a sector **33** (FIG. 4) on the carrier. Thus the angle of each roller may be changed within limits by moving the mounts **32** to a different location on the sector, thereby changing the angle at which the roller **16'** will meet the concrete during lateral movement of the carriage.

With this latter device, the carriage can be moved alternately back and forth across the slab making a finishing pass each time, and each time having a roller in position properly to finish the slab. Thus it would be possible to avoid having to change the angle of the carrier on each pass and still to utilize the movement of the carriage in either direction.

Having thus described my invention in its embodiment, I am aware that numerous and extensive departures may be made therefrom without departing from the spirit and scope of the invention as limited only by the following claims.

I claim:

1. Concrete slab finishing means comprising bridge work adapted to be placed over a slab of concrete, a carriage movably mounted on said bridge work for motion across said slab, carrier means on said carriage, drum means rotatively mounted on said carrier means in a position to engage said slab, drive means in driving engagement with said drum means to drive said drum means rotatively, said drum means being positioned relative to said carriage such that the side of said drum means first engaging the unfinished concrete is moving upwardly, said carriage having a front end facing the unfinished slab of concrete, said drum means having an axis of rotation lying at an angle with the line of motion of said carriage which is other than a right angle, the upward moving side of said drum means having a surface facing partially toward said front end, auger means in driven relationship with said drum means and extending beyond said front end of said carriage in a position to engage said unfinished concrete.

2. The device of claim 1 in which said carrier means is pivotally mounted on said carriage, and in which said drive means comprises a motor mounted on said carrier in driven

relationship with said drum means, said drum means being mounted on an axle journaled in said carrier and auger means mounted on said axle extending in front of said front end and driven by said axle whereby excess concrete in said slab is moved away from said front end.