

Jan. 31, 1967

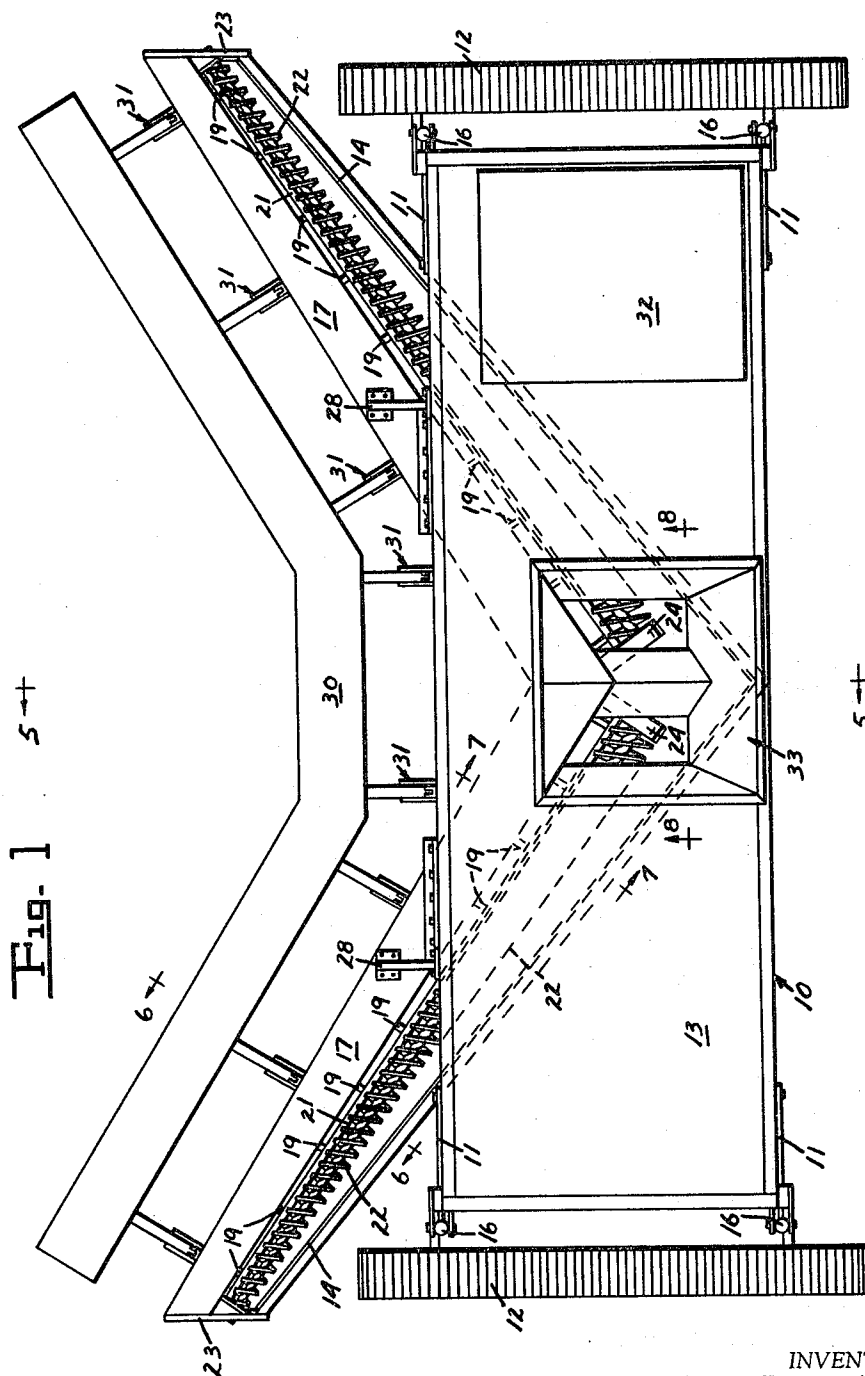
R. A. HANSON ET AL

3,301,151

CONCRETE DISTRIBUTOR

Filed Dec. 28, 1964

3 Sheets-Sheet 1



INVENTORS
RAYMOND A. HANSON
ROBERT L. ROLLER
BY

BY

BY *Wells & L. John*

ATTYS.

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R. A. HANSON ET AL

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Fig- 2

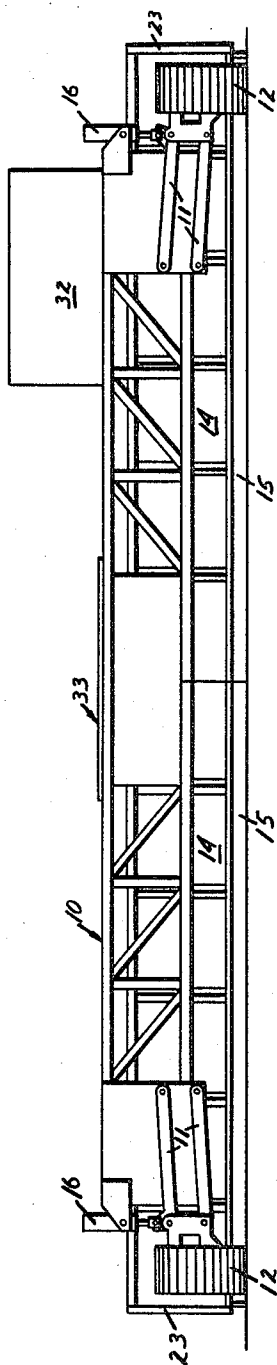
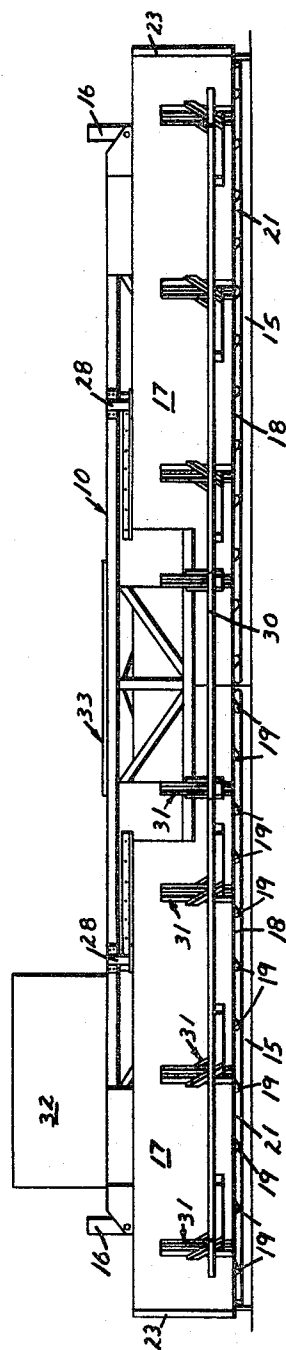


Fig- 3



INVENTORS
RAYMOND A. HANSON
ROBERT L. ROLLER
BY
Wells & John
ATTYS.

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Fig. 4

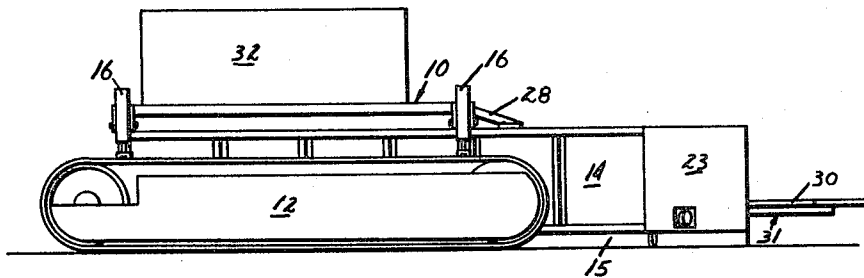


Fig. 5

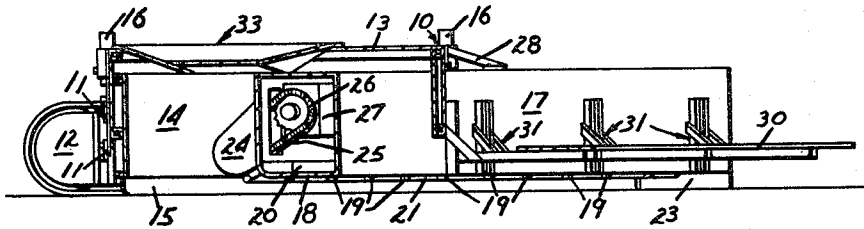


Fig. 6

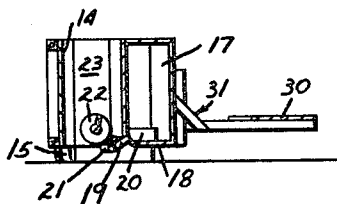


Fig. 7

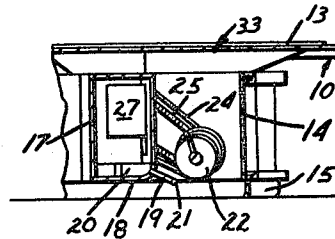
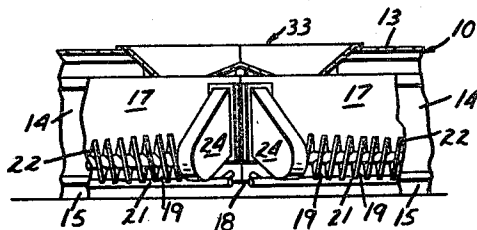


Fig. 8



INVENTORS
 RAYMOND A. HANSON
 ROBERT L. ROLLER
 BY *Wells & John*
 ATTYS.

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CONCRETE DISTRIBUTOR

Raymond A. Hanson and Robert L. Roller, Palouse, Wash., assignors to R. A. Hanson Co., Inc., Palouse, Wash.

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2 Claims. (Cl. 94-46)

This invention relates to a novel concrete distributor for placing concrete directly on a prepared soil surface, the distributor being of the type that might be used in the lining of the bottom of a canal or on a highway project.

The present device provides a self propelled concrete distributor for paving flat prepared surfaces without the use of external forms, the distributor being designed to pave beyond the width of the tracks that support it on the ground surface. It can therefore lay continuous slabs of concrete side by side without leaving any gaps for the self supporting track assemblies that carry it relative to the ground surface.

It is a first object of this invention to provide such a concrete distributor that is quite simple in construction and which can effectively spread concrete across a wide surface extending beyond the width of the supporting crawler track mechanism.

Another object of this invention is to provide such a concrete distributor that insures maximum uniformity of concrete across the entire width of the distributor.

Another object of this invention is to utilize a concrete distributor that angularly spreads concrete so that the shape of the distributor itself assists to a degree in spreading the concrete across its width.

These and further objects will be evident from a study of the following disclosures, taken together with the accompanying drawings. It is to be understood that the drawings illustrate only one preferred form of the invention and are not intended to limit or restrict the scope of the invention as defined in the following claims.

In the drawings:

FIGURE 1 is a top view of a machine constructed according to the present invention;

FIGURE 2 is a front view of the apparatus shown in FIGURE 1;

FIGURE 3 is a rear view of the apparatus as shown in FIGURE 1;

FIGURE 4 is a side elevation view of the apparatus shown in FIGURE 1 as seen from the right;

FIGURE 5 is a sectional view taken along line 5-5 in FIGURE 1;

FIGURE 6 is a fragmentary sectional view taken along line 6-6 in FIGURE 1;

FIGURE 7 is a fragmentary sectional view taken along line 7-7 in FIGURE 1; and

FIGURE 8 is a fragmentary sectional view taken along line 8-8 in FIGURE 1.

As shown in the drawings, the machine contemplated by this invention was designed primarily for the paving of the bottom surface of a large canal project. In this project, the bottom surface is paved by two passes along the length of the canal, half of the canal being paved during each pass of the slipform. In order to prevent the formation of a gap between the adjacent slabs as formed, the machine was designed to pave beyond its own width so as to cover the area spanned by the crawler tracks that support the machine on the ground surface.

The basic machine comprises a rigid supporting framework 10 that is rectangular in design and which includes top plates 13, which might be made of either solid or screen material. The plates 13 provide the necessary supporting surface for men working on the machinery so

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that they can walk across the machine for access and inspection purposes.

The framework 10 is mounted on two track assemblies 12 at each side of the framework 10, the track assemblies 12 being carried by vertically spaced parallelogram arms 11 at both the front and rear ends of the framework 10 and at each side thereof. Relative movement between the framework 10 and the track assemblies 12 is effected by means of cylinder assemblies 16 pivotally connected to both the framework 10 and the parallelogram arms 11 (FIGURE 2). The track assembly 12 can be of any conventional design and might preferably be hydraulically powered by individual driving motors included at each side in the respective track assemblies 12.

The slipform itself is carried rigidly beneath the framework 10. It includes a vertical front retaining wall 14 that is transversely braced for rigidity and which serves to prevent concrete that is fed into the machine from escaping in the forward direction. The forward direction of the machine is toward the bottom of FIGURE 1 or to the left in FIGURE 4. The front retaining wall 14 terminates along its lower edge in a lower section 15 that can be either of rigid material or can be made of heavy flexible material, such as rubber belting. The lower edge of the section 15 conforms to the surface of the soil on which the concrete is being placed and therefore seals the concrete from escape in a forward direction.

Spaced rearwardly from the front retaining wall 14 is a screed or troweling pan 17. This box-like structure, which is fully enclosed, includes a lower surface 18 that actually smooths the finished surface of the concrete as the slipform passes over it. The elevation of the lower surface 18 is above that of the lower edge of the section 15 of wall 14 and is complementary to the desired concrete surface.

Both the front retaining wall 14 and screed 17 are preferably formed in a V-shaped configuration as shown in FIGURE 1. Each extends beyond the width of the track assemblies 12 a slight distance to insure that concrete will be spread across the entire width of the machine. The retaining wall 14 and screed 17 extend both rearwardly and outwardly from the longitudinal center line of the framework 10 and their outer ends terminate rearwardly beyond the track assemblies 12. They terminate at an upright vertical side wall 23 at each side of the apparatus, the side wall 23 preferably extending downwardly to the soil surface to provide a vertical moving form for the concrete being placed thereon. The slight space that must exist between adjacent slabs due to the thickness of the walls 23 is effectively filled with an expansion material to provide the necessary expansion joint between the slabs. However, if an expansion joint is unnecessary, the lower portion of the wall 23 adjacent to a finished slab can be eliminated and the slab itself used as the side form in that particular instance.

It is also to be noted that the separation that exists between the wall 14 and the screed 17 diminishes progressively in a direction outward from the longitudinal center line of the framework 10. Thus, a greater volume of concrete can be maintained at the center of the machine than along its outer side sections where less concrete must pass in order to provide a uniform lining thickness.

Mounted on the screed 17 are a number of vibrators 20 that vibrate a longitudinal rod 21 at each side of the machine through short connecting rods 19. The vibrators 20 are conventional in design and the rod 21 is located just slightly below the lower surface 18 of the screed 17.

In order to provide accurate distribution and mixing of concrete between the retaining wall 14 and screed 17, a pair of longitudinal augers 22 are rotatably mounted on the front walls of the screed 17. Each auger 22 is carried

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by bearings located in the inside walls 23 and in inboard brackets 24. The brackets 24 also house the drive connections to rotate the respective augers 22, which are turned by means of chains 25 driven by sprockets 26. The sprockets 26 are in turn powered by hydraulic motors 27 (FIGURE 5). The augers 22 can be turned in either direction and are preferably provided with a speed control so that the distribution of concrete along the entire width of the machine can be accurately controlled. The V-shaped configuration of the screed 17, with its vertical front surface, will in itself spread concrete to the sides of the machine. The elevation of the lower surfaces of augers 22 is substantially equal to the lower surface 18 of the screed 17 (FIGURE 6). The auger 22 at each side of the machine also diminishes in diameter outward from the center line of the framework 10 as can be seen in FIGURE 1.

The screed 17 protrudes rearwardly and outwardly from the framework 10 and is rigidly attached to the framework 10, being braced rearwardly by upright braces 28 (FIGURES 1 and 5). The rear end of the screed 17 supports a horizontal platform 30 by means of brackets 31. The platform 30 is provided for the support of men required for any finishing operations on the surface of the freshly laid concrete.

The entire machine is completely self sufficient, being propelled on the track assemblies 12 without the necessity of laying external tracks or other supporting devices on the surface being paved. It paves beyond its own width and therefore requires no finishing in the area over which the track assemblies 12 pass. Mounted on the plates 13 is an area denoted as 32 where the necessary engines, pumps and control devices can be located. At the center of the framework 10 is a double hopper 33 designed to direct concrete to the area above the inner ends of the two augers 22. The hopper 32 is provided with sloping sides for the direction of the concrete and preferably would be fed from the conveyor that would alternately deliver concrete to the two sides of the hopper.

The present apparatus can be controlled by manual controls or by automatic controls such as those disclosed in my prior application, Ser. No. 401,755, now Patent No. 3,247,771, entitled "Directional Control Apparatus." The specific controls and power mechanisms for the vari-

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ous devices shown are not critical to the operation of the slipform configuration as herein disclosed.

Having thus described our invention, we claim:

1. A concrete distributor comprising:

a mobile framework;

a distributing hopper supported by said framework having portions thereof extending outwardly and rearwardly from the center of said framework forming a V-shaped configuration in plan, said hopper portions each having an open bottom section defined by a front wall and a rear wall with the spacing between said front and rear walls decreasing from forward to rearward ends of the hopper;

a feed hopper communicating with the forward ends of said distributing hopper portions;

a distributing screw in each distributing hopper portion tapering from front to rear to conform to the decreased width of said distributor hopper portions;

a screed carried by the rear wall of each distributor hopper portion;

ground engaging supports at each side of said framework;

and means to raise and lower each side of said frame relative to said ground engaging supports to position the distributing hopper and screed at the desired elevation relative to the supporting ground surface.

2. A concrete distributor as defined in claim 1 wherein the outer ends of the distributing hopper portions extend outward beyond the respective ground engaging supports at each side of said frame.

References Cited by the Examiner

UNITED STATES PATENTS

1,750,896	3/1930	Lichtenberg	94-46
1,907,668	5/1933	Robb	94-44
2,303,486	12/1942	McConaughay	94-44
2,393,954	2/1946	Baker	94-46
2,888,864	6/1959	Plas	94-46
3,058,404	10/1962	Widelo	94-46
3,220,323	11/1965	Lewis	94-46

OTHER REFERENCES

Roads and Streets, May 1960, pages 78 and 80.

JACOB L. NACKENOFF, *Primary Examiner*.