

June 18, 1929.

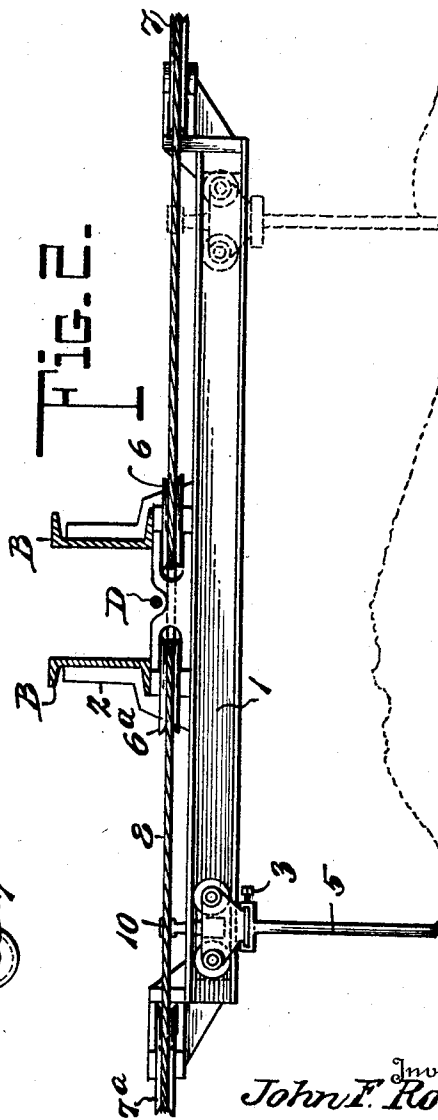
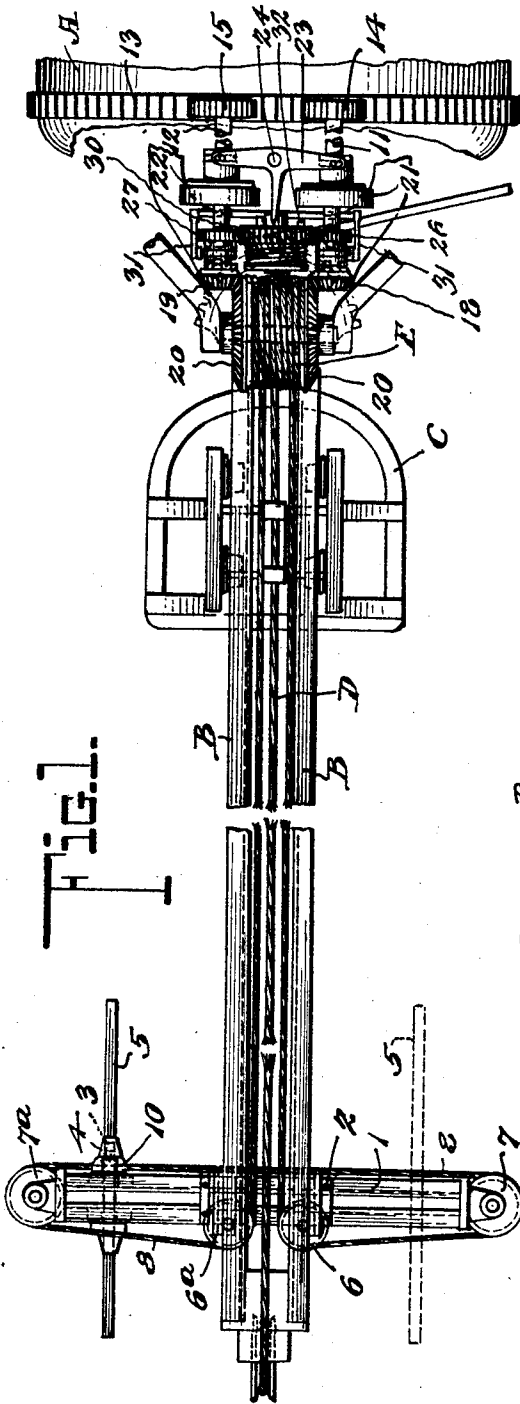
J. F. ROBB

1,717,734

SPREADING ATTACHMENT FOR CONCRETE PAVING MACHINES

Filed Dec. 22, 1927

2 Sheets-Sheet 1



Inventor
John F. Robb

Robb & Robb

Attorneys

June 18, 1929.

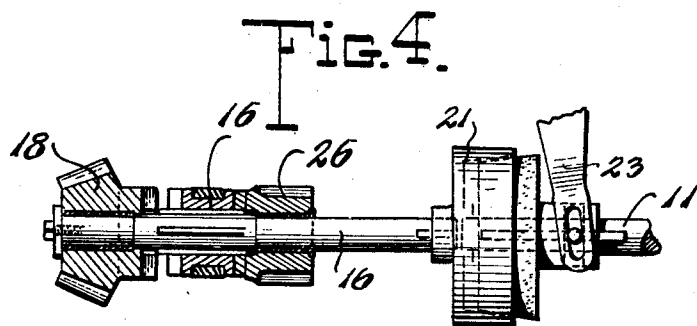
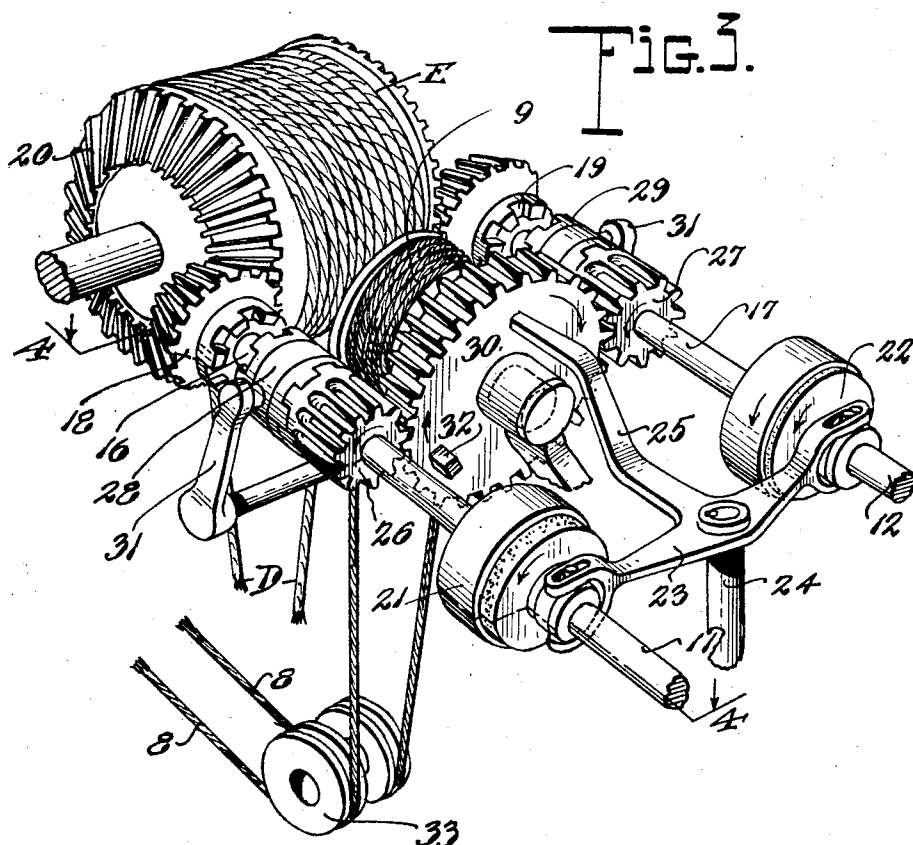
J. F. ROBB

1,717,734

SPREADING ATTACHMENT FOR CONCRETE PAVING MACHINES

Filed Dec. 22, 1927

2 Sheets-Sheet 2



Inventor
John F. Robb

334

Robb & Robb
Attorneys

UNITED STATES PATENT OFFICE.

JOHN F. ROBB, OF CLEVELAND HEIGHTS, OHIO, ASSIGNOR TO KOEHRING COMPANY,
OF MILWAUKEE, WISCONSIN, A CORPORATION.

SPREADING ATTACHMENT FOR CONCRETE-PAVING MACHINES.

Application filed December 22, 1927. Serial No. 241,978.

The invention has to do with the building of concrete roads and involves primarily a leveling or spreading means to act upon concrete deposited upon a subgrade and ready to be distributed over the area. The concrete, in properly mixed condition, may be deposited by a boom and bucket paving machine, so-called, with which my invention is especially adapted to be used, or it is possible to employ the general means of the invention with chute or other kinds of distributing machines.

As applied to an ordinary paver, I mount upon the boom traversed by the distributing bucket a special support that carries a spreading blade or screed operating at an angle to the path of the bucket traverse. This spreading blade or screed is operated to move back and forth and act upon the concrete discharged from the bucket upon the subgrade, the operation being effected by the same means that operates the distributing bucket itself.

A more particular feature of the invention is the mechanism included in the driving connection which automatically reverses the movement of the leveling screed. Such mechanism materially cuts down the amount of attention required from a person operating the mixer.

Certain other more detailed objects and advantages will in part become apparent and in part be stated as the description of the invention proceeds. For a complete understanding thereof reference may be had to the following description and accompanying drawings, in which:

Figure 1 is a plan view of a boom having mounted thereon a leveling screed in accordance with this invention.

Figure 2 is an end view showing the boom in section and the blade or screed mounting in elevation.

Figure 3 is an enlarged, detailed view illustrating the driving connection in perspective.

Figure 4 is a detail showing of certain clutching instrumentalities.

The leveling instrumentalities provided by this invention are intended for association with a concrete mixer of any suitable type, such as disclosed in the Lichtenberg Patent No. 1,141,470, issued June 1, 1915. Generally speaking, such a mixer comprises a mixing drum, fragmentarily shown at A, a boom B, of channel bar construction, which is pivoted

at its inner end near the mixer or drum A, and usually swings horizontally, as well as upwardly, and a bucket C mounted on a carriage structure which operates along the channel bar of boom B for the purpose of running therealong. A cable D is wound around drum E and is fastened to the carriage structure for causing reciprocation of the bucket C upon rotation of the drum E. The concrete is properly mixed by the drum A and distributed to a subgrade, or like surface, by the bucket C.

Mounted on the under side of the boom B, and preferably adjacent to its outer end at which mixed concrete may be deposited upon the subgrade by the bucket C, is a transverse support or channel bar 1 which is rigidly carried by an appropriate bracket 2. A trolley 3 has suitable rollers entering the channels on the opposite sides of and is adapted to operate along the channel bar 1. Suspended from the trolley 3 is a blade or screed 5 adjustably and detachably held in place by a screw 4. It is apparent that as the trolley reciprocates along the channel bar 1 the screed 5 will be moved therealong, thereby performing levelling operations on any material placed in its path of travel. Due to the fact that the bucket C in its outward travel may, if desired, distribute the concrete in a layer of predetermined thickness in the direction of the boom, the blade 5 has preferably been mounted for movement transversely with respect thereto. However, it is intended to be well within the scope of the invention to mount the channel bar 1 at any desired angle relative to the boom B.

At points on the channel bar 1, adjacent to the boom B, are mounted sheaves 6, while at each end the channel bar 1 also carries sheaves 7. A cable 8 is reversely wound around a drum 9, located near the inner end of the boom B, and extends out along boom B at the under side thereof. One reach of the cable passes around a sheave 6, near the outer end of the boom, to a sheave 7, carried by one end of the channel support 1. From the sheave 7 the cable 8 passes along the channel or support 1 from end to end, and thence around the sheave 7^a at the end of the support 1 opposite that carrying the sheave 7. Intermediate the sheaves 7 and 7^a the cable 8 is connected to the trolley 3 by an arm 10. The cable continues from the sheave 7^a around the sheave 6^a and then back along the under side of the boom B

to the drum 9. A rotation of the drum 9 in one direction causes the blade 5 to move transversely, while a reversal of the rotation of the drum 9 will result in a corresponding reversal of the direction of the movement of the blade 5.

Referring more particularly to Figure 3, the power transmission between mixing drum A and the drums E and 9 will now be described: The driving shafts 11 and 12 take power from a ring gear 13 through the medium of pinions 14 and 15. Driven shafts 16 and 17 are mounted to the framework of the mixer in any suitable manner. At one end these shafts 16 and 17 have the bevel gears 18 and 19 which mesh with the complementary bevel gears 20 on opposite ends of the drum E and drive the drum to move the cable D oppositely to carry the bucket back and forth along the boom B. Between the driving shafts 11 and 12 and the driven shafts 16 and 17 are interposed disc clutch mechanisms 21 and 22. A bell crank 23 is operated through a pivotal arm 24 for the purpose of clutching either the shaft 11 to shaft 16 or shaft 12 to shaft 17. The bell crank 23 also has an operating arm 25 for a purpose to be later described. Gears 26 and 27 are mounted on the shafts 16 and 17 so that they idle thereon, as do the bevel gears 18 and 19. Between the gears 26 and 18, 27 and 19 the shafts 16 and 17 carry clutch members 28 and 29, which are keyed thereto. The clutch member 28 has a face which is adapted for engagement with the idler gear 26 and also another face for causing a driving connection with the bevel gear 18. Clutch 29 is of similar construction for causing said operative connection between either one of the gears 27 or 19 and the shaft 17. The drum 9 carries a gear 30, of appropriate size, which is in engagement with both of the gears 26 and 27.

It might be well to here mention that the drum 9 is preferably of such a diameter that one revolution thereof will cause the blade 5 to move from one extremity of the channel bar to the other.

The clutch members 28 and 29 are provided with suitable operating members 31, for the purpose of moving them along the shafts 16 and 17, so that they may selectively engage gears 26 and 27 or gears 18 and 19. One face of the gear 30 is provided with a reversing lug 32, which is adapted to abut the arm 25 of bell crank 23 for the purpose of operating said bell crank. Reaches of the cable 8 extend inwardly from the boom, extend around sheaves 33 and pass on to drum 9, whereon the cable is reversely wound.

Having described the construction of the power transmission, the description will now go on to the operation of this driving connection, together with the mixer. If it is desired to cause the bucket C to run out along

the boom, clutch member 28 is put into engagement with the bevel gear 18, whereby bevel gear 18 is non-rotatably mounted on shaft 16. The bell crank 23 may then be operated through the pivotal arm 24 to cause the clutch mechanism 21 to set up a driving connection between the shafts 11 and 16; in this way power is derived from mixing drum A, which is constantly rotating, to turn the drum 20, which causes the desired movement of the bucket along the boom. In a similar manner clutch member 29 may be properly operated in connection with a corresponding operation of the bell crank 23 to cause the drum 20 to rotate in an opposite direction to move the bucket C along the boom in a reverse direction. If the occasion arises for reciprocating the screed 5 across the boom, this can be done by putting the clutch members 28 and 29 into engagement with the gears 26 and 27 and then operating the bell crank 23 so that there is a driving connection set up between the shafts 11 and 16, or 12 and 17. The drum 30 is thereby rotated until the reversing lug 32 engages the arm 25 or shifts the bell crank to cause a cessation of the driving connection on one side and a setting up of a like connection on the other side. The blade 5 will be moved backward and forward until the bell crank 23 is again put in a neutral position. The concrete is distributed and spread by the proper operation of the bucket and blade, as hereinbefore set forth.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is:—

1. The combination, with a concrete mixer including a boom and bucket, of instrumentalities movable transversely with respect to the boom for levelling or spreading the concrete after the concrete has been distributed by the bucket.

2. The combination, with a mixer including a boom and bucket, of instrumentalities associated with the boom and movable thereacross for spreading the material distributed by the bucket.

3. The combination with a mixer including a boom and bucket, of instrumentalities for screeding the material delivered by the bucket, and a common means for independently operating the bucket and screeding instrumentalities.

4. The combination, of a mixer comprising a boom and bucket and a mixing drum, of instrumentalities for levelling and screeding the material distributed by the bucket, the bucket and the levelling instrumentalities being operable separately by power taken from the mixing drum.

5. Concrete distributing and spreading mechanism of the class described, comprising, in combination, a boom, a bucket adapted for travelling along the boom for the purpose of

distributing material, and instrumentalities associated with the boom at one end thereof for performing spreading operations on the material after the same has been distributed by the bucket, said spreading operation being effective across the path of distribution of the bucket.

6. Spreading and distributing mechanism of the class described, comprising, in combination, a boom and bucket adapted to travel along the boom, and a blade mounted at the outer end of the boom for travel transversely with respect thereto for the purpose of spreading material distributed by the bucket.

7. The combination with a mixer including a boom, of means associated with the boom for distributing concrete, and instrumentalities movable transversely with respect to the boom for spreading said concrete after it has been distributed.

8. The combination with a mixer of means for distributing material mixed thereby, and instrumentalities movable across the path of movement of the last named means for spreading said material after it has been distributed.

9. Spreading and distributing mechanism of the class described, comprising, in combination, a support, a blade adapted to travel along said support to perform leveling operations on material deposited on a road bed, instrumentalities for causing movement of said blade, and means associated with the said instrumentalities for reversing the direction of movement of the blade.

10. Spreading mechanism of the class described, comprising, in combination, a boom, a bucket mounted for travel along the boom, a blade mounted for travel transversely with respect to the boom, and a common means for causing movement of the said blade and bucket.

11. Levelling and spreading mechanism of the class described, comprising, in combination, a mixing drum, means for distributing the material mixed by the drum to a desired place, instrumentalities associated with the last named means for spreading said concrete after distribution, and a power transmission deriving power from the drum for selectively operating either the distributing means or the spreading instrumentalities.

12. Spreading mechanism of the class described, comprising, in combination, a means for distributing concrete, instrumentalities for spreading the said concrete after distribution, a power source, and a power transmission for selectively operating either the distributing means or the spreading means.

13. Spreading mechanism of the class described, comprising, in combination, a means for distributing concrete, instrumentalities for spreading the said concrete after distribution, a power source, and a power transmission for selectively operating either the distributing means or the spreading means, said power transmission including mechanism for automatically reversing the direction of movement of the spreading instrumentalities.

14. Spreading mechanism of the class described, comprising in combination, a distributing member, a cable for causing movement of said member, a spreading member, a cable fastened to said spreading member for causing movement thereof, winding drums for said cable, and a power source for rotating said winding drums whereby motion is imparted to said distributing and spreading members.

15. Spreading mechanism of the class described, comprising, in combination, a distributing member, a cable affixed thereto for moving said member, a spreading member also having a cable affixed thereto for operating the same, winding drums for said cables, and means for driving either of said winding drums from a common power source, whereby either the distributing or spreading member may be operated as desired.

16. Spreading mechanism of the class described, comprising, in combination, distributing means, spreading instrumentalities, a common power source for both said means and instrumentalities, and a power transmission including clutch members for causing movement of said means and instrumentalities in reverse directions, said power transmission including means for automatically reversing the direction of movement of the spreading instrumentalities.

17. Power transmission for spreading mechanism of the class described, comprising, in combination, winding drums, a shaft for driving the drums in one direction, a shaft for driving the drums in a reverse direction, a power source, and clutch mechanisms for operatively connecting one of the shafts to the power source.

18. Concrete spreading mechanism of the class described, comprising, in combination, means movable in one direction for initially distributing concrete to a surface in a partially spread condition, and instrumentalities movable across the path of movement of the first named means for performing further finishing operations on the concrete.

In testimony whereof I affix my signature.
JOHN F. ROBB.