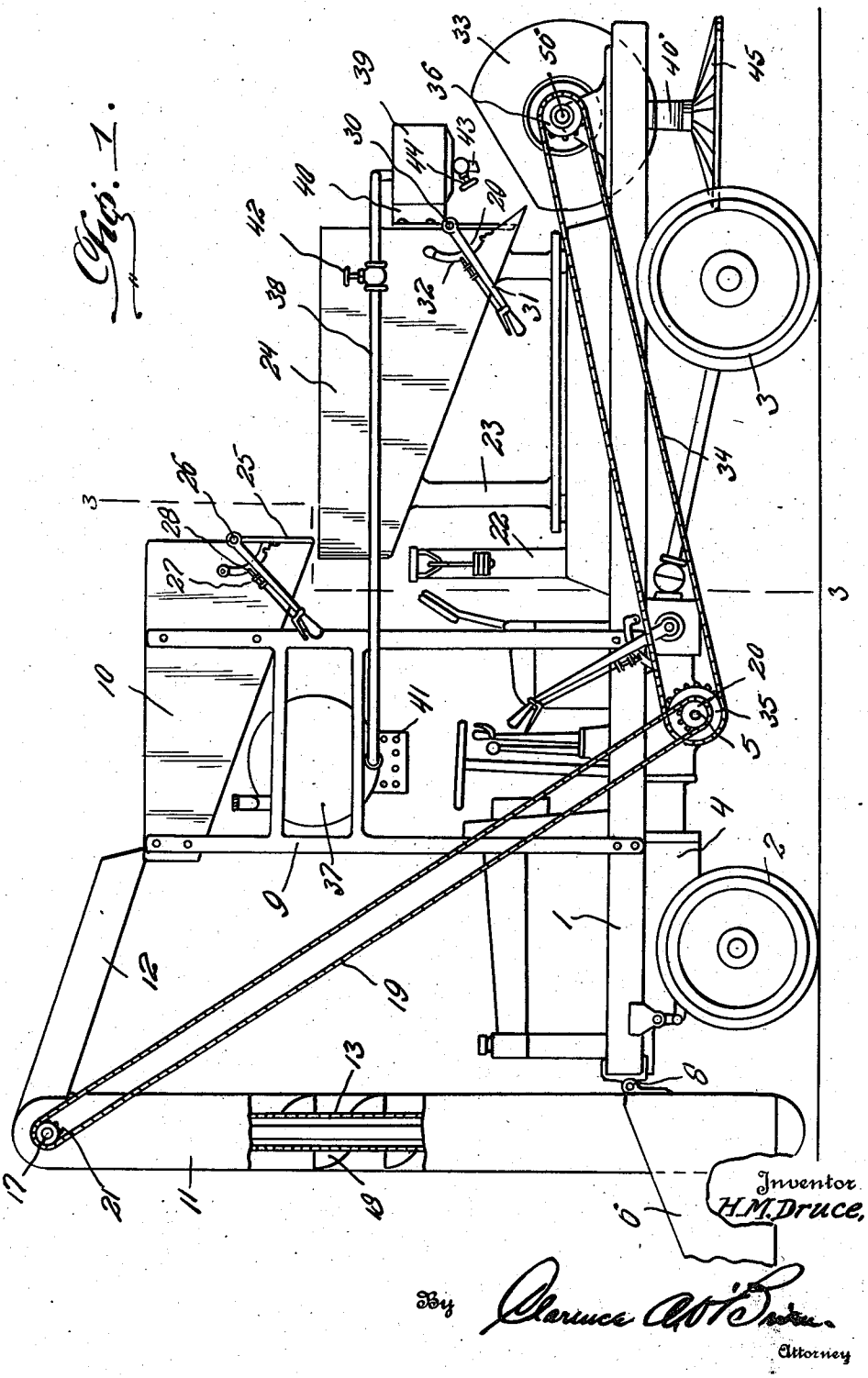
Dec. 7, 1926. 1,609,404

H. M. DRUCE

PORTABLE ROCK ASPHALT AND CONCRETE MIXING MACHINE

Filed May 3, 1924 2 Sheets-Sheet 1

Fig. 1.



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Filed May 3, 1924 2 Sheets-Sheet 2

Fig. 3.

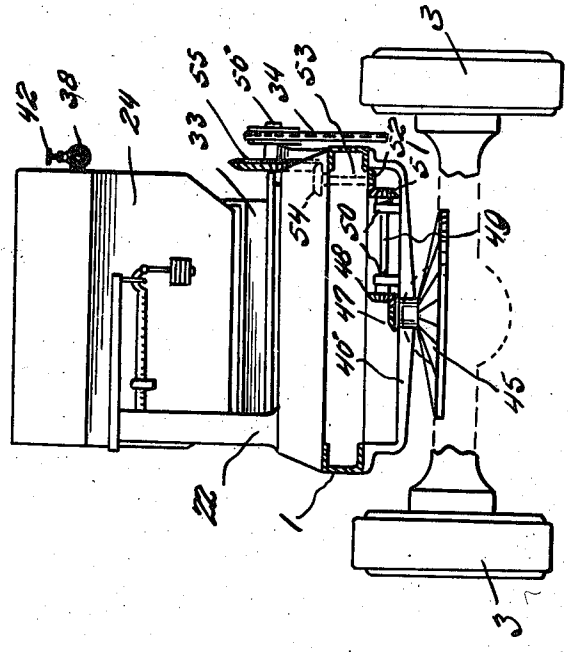
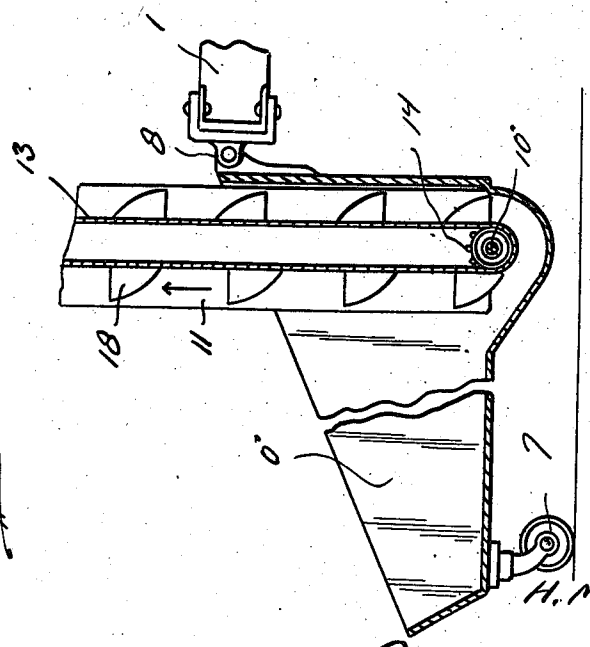


Fig. 2.



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UNITED STATES PATENT OFFICE.

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PORTABLE ROCK-ASPHALT AND CONCRETE MIXING MACHINE.

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This invention relates to new and useful improvements in rock asphalt and concrete mixing machines and has for its principal object to provide a portable device wherein means is provided for weighing and measuring the material prior to discharging the same into the mixing hopper, a spreader being also associated with the mixing hopper.

A further object of the invention is to provide a portable mixing machine of the above mentioned character, wherein a receptacle adapted to contain the asphalt or the like is mounted on the forward end of the machine, conveying means being associated with the receptacle and one of the hoppers for delivering the material from the receptacle to the hopper, and an additional hopper with which is associated a scale for regulating the amount of material delivered from the first mentioned hopper to the last mentioned hopper previous to the discharging of the material into a mixing receptacle.

A still further object of the invention is to provide a portable mixing machine of the above mentioned character, wherein certain of the parts of the machine are adapted to be actuated simultaneously by a suitable power plant mounted on the machine.

A still further object of the invention is to provide a portable mixing machine of the above mentioned character, which is simple in construction, inexpensive, strong and durable and furthermore adapted for the purposes for which it is designated.

Other objects and advantages of this invention will become apparent during the course of the following description.

In the accompanying drawings forming a part of this specification and in which like numerals designate like parts throughout the same:

Figure 1 is a side elevation of my improved mixing machine with parts broken away.

Figure 2 is a fragmentary sectional view of the receptacle mounted on the forward end of the machine and showing the conveying means associated therewith, and

Figure 3 is a sectional view taken approximately on line 3—3 of Figure 1.

In the drawings wherein for the purpose of illustration is shown the preferred embodiment of my invention, the numeral 1 designates generally a frame which is provided with the front and rear traction wheels 2 and 3 respectively, whereby the device is rendered portable. Mounted on the forward end of the frame 1 is the usual power plant 4 and as the same is of the well known construction, a further detailed description of the same is not thought necessary. The drive shaft of the power plant 4 is illustrated at 5 in the drawings and the purpose thereof will hereinafter be more fully described.

Pivotally supported on the forward end of the frame 1 and extending outwardly therefrom is the receptacle 6 which has its top open and is provided with a traction wheel 7 on the forward end thereof whereby the same is held off of the ground and to further facilitate in the transportation of the machine. A pivotal connection of the receptacle to the forward end of the frame is shown at 8 in the drawings. The receptacle 6 is adapted to receive and contain a truck load of the material to be deposited on the ground and may consist of either crushed rock asphalt or the usual mixture of sand and cement in the manner well known in the art.

Extending upwardly from the sides of the frame 1 adjacent the forward end thereof are the vertical standards such as are shown at 9. Adapted to be supported by the upper ends of the standards is the hopper 10 which is provided with an inclined bottom and is larger at its rear end in the manner clearly shown in Figure 1 of the drawings. The purpose of this hopper will hereinafter be more fully described. Extending vertically from the rear portion of the receptacle 6 is the casing 11, the upper end of which communicates with the forward end of the hopper 10 by means of the inclined trough 12.

Arranged in the vertically extending casing 11 is the conveyor belt 13 and the same travels over suitable sprocket chains 14 and 15 arranged in the lower and upper ends of the casing on suitable shafts 16 and 17 respectively. The endless conveyor 13 has arranged thereon the buckets 18 which are arranged in spaced relation and as the same

are well known in the art, a further detailed description of the buckets is not thought necessary. The endless conveyor 13 is adapted to be actuated by means of the sprocket chain 19 which extends over a suitable sprocket wheel 20 mounted on the outer end of the drive shaft 5 of the power plant 4 and a sprocket wheel 21 mounted on the outer end of the shaft 17 supported in the upper portion of the casing 11 in the manner clearly illustrated in Figure 1 of the drawings.

This construction affords a means whereby the material contained in the receptacle 6 may be conveyed by means of the bucket 18 upwardly in the casing 11 and discharged onto the trough 12 by gravity, the material is emptied into the storage hopper 10.

Mounted on the rear end of the frame 1 is a platform scale 22 which is of any well known construction and adapted to be supported thereon by means of the supporting member 23 is the hopper 24 which is also provided with an inclined bottom and is furthermore so supported on the frame as to have its forward smaller end disposed directly below the rear or discharge end of the storage hopper 10. The discharge end of the storage hopper 10 is provided with a closure 25, the same being pivoted at 26 and a lever 27 is associated therewith whereby the closure may be actuated to open or close the discharge end of the storage hopper in the manner to be presently described. The provision of the swinging closure 25 is to provide a means for regulating the feeding of the material within the storage hopper 10 to the hopper 24. A locking means such as is shown at 28 may be provided for holding the closure 25 in locked position with respect to the discharge opening of the storage hopper so as to prevent the accidental opening of the same by the material contained within the storage hopper. The rear end of the second hopper 24 is also provided with a swinging closure 29 similar to the closure 25 and the same is pivoted at 30. A handle 31 is associated therewith for actuating the closure and a locking means 32 is also provided for the same purposes as the locking means 28 heretofore described. The purpose of the provision of the second hopper is to provide a means for weighing the material delivered thereto previous to the discharging of the material into the mixing receptacle 33 which is mounted on the rear end of the frame in the manner clearly shown in Figure 1 of the drawings.

The mixing receptacle 33 may be of any conventional construction and I do not wish to limit myself to the particular kind of mixer to be used for the purposes of carrying out the objects of the present invention. The mixer 33 normally has its open portion or mouth in communication with the discharge end of the second hopper 24 and the agitating means contained within the mixer is adapted to be actuated by means of the sprocket chain 34 which extends over the sprocket wheel 35 mounted on the drive shaft 5 and a similar sprocket wheel 36 carried by the outer end of the agitator shaft which extends longitudinally through the mixer.

Cooperating with the mixer is a fluid feeding means and the same comprises a supply tank 37 which is supported between the standards 9 and extending rearwardly from the supply tank is the pipe 38. The pipe 38 communicates with a measuring vessel 39 supported in any suitable manner such as is shown at 40 on the rear end of the frame above the mouth of the mixer 33 and the oil in the tank 37 which is heated by any suitable heating means such as is shown at 41 is fed through the pipe 38 into the measuring vessel 39. A valve such as is shown at 42 is provided in the pipe 38 for regulating the supply of the oil from the tank to the measuring vessel 39. The measuring vessel 39 is provided with an outlet pipe 43 which extends downwardly into communication with the mouth of the mixer 33 and a suitable valve 44 is arranged therein for controlling the delivery of the oil from the measuring vessel 39 into the mixer 33. The oil is used when rock asphalt is fed from the hopper to the mixer and when asphalt such as cement and sand are used, water is substituted for the oil. The provision of the measuring vessel 39 provides a means whereby a predetermined quantity of the liquid used may be delivered to the mixing receptacle together with the proper amount of the material contained in the hopper 24.

Adapted to be associated with the mixing receptacle 33 and simultaneously operating therewith is the spreader 45. The spreader is journaled in a suitable bracket 46 extending transversely across the side beams of the frame in the manner clearly shown in Figure 3 of the drawings and on the upper end of the shaft which carries the spreader 45 is a beveled gear 47 which meshes with a similar beveled gear 48 the latter being mounted on one end of a longitudinally extending shaft 49 which is journaled in suitable brackets 50 supported on the aforementioned bracket 46. The opposite end of the shaft 49 carries thereon a beveled gear 51 which meshes with a beveled gear 52 arranged on the lower end of the vertically extending shaft 53 and the upper end of the shaft 53 carries a beveled gear 54 which meshes with the beveled gear 55, the latter is mounted on the agitator shaft 56 which extends through the mixing receptacle 33 and is adapted to be driven by the sprocket chain 34 heretofore more fully described.

The operation of my portable mixing ma-

chine may be briefly stated as follows: With the material contained in the receptacle 6, the power plant is actuated so that the conveyor 13 will cause the buckets 18 carried thereby to elevate the material from the receptacle upwardly in the casing 11 and discharge the same onto the trough 12 from which the same is emptied into the storage hopper 10. The closure 25 is then opened and releasing the locking means 28 and actuating the handle 27 and the material from the storage hopper 10 is then delivered into the hopper 24 by gravity. After the proper weight or amount of the material within the hopper 24 has been maintained, the closure 25 is closed preventing the further supply of the material from the storage hopper to the second hopper 24 and the closure 29 is then opened so as to cause the contents in the second hopper to be discharged into the mouth of the mixer 33. A quantity of liquid is delivered to the measuring receptacle 39 and to the desired proportion and thereupon the valve 42 is closed and the valve 44 is open whereby the liquid in the measuring receptacle or vessel will be discharged into the mixing receptacle. After the material has been properly agitated and mixed in the mixer, the spreader 45 will cause the same to be spread on the road over which the machine travels.

The machine is adapted to be transported by the usual means associated with the power plant and it is to be further understood that when the clutch is in gear, whereby the machine may move along the road the same will not discontinue the operation of the endless conveyor and agitator shaft. It is also to be understood that the storage hopper is so arranged on the frame as not to interfere with the operation of the steering mechanism for the machine.

It will thus be seen from the foregoing description, that a portable asphalt and concrete mixing machine has been provided which is simple in construction, strong and durable and the parts further so arranged as to enable the same to be readily accessible whenever necessary. Furthermore the provision of a weighing and measuring means for the material will assure the spreading of a proper mixture on the road.

While I have shown the preferred embodiment of my invention, it is to be understood that various changes in the size, shape and arrangement of parts may be resorted to without departing from the spirit of the invention and the scope of the appended claims.

Having thus described my invention, what I claim is:—

1. In a portable rock asphalt and concrete mixing machine, a wheeled frame, a receptacle on the forward end thereof, a storage hopper supported on the frame at a higher level than the receptacle, a conveyor between said receptacle and said storage hopper, a second hopper supported on the frame to the rear of, at a lower level than, and communicating with the storage hopper and adapted to hold a predetermined quantity of material, a liquid feeding means on the frame to the rear of, and on approximately the same level with the second hopper, a mixing receptacle on the rear end of said frame to the rear of and below the second hopper and below said liquid feeding means, a power plant on the frame operable to propel the machine, and means connected with the power plant for operating said conveyor and said mixing means whereby material from the receptacle may be delivered to the storage hopper so that said material may flow by gravity from the storage hopper to the second hopper, and thence to the mixing receptacle.

2. In combination, a wheel frame, a receptacle on the forward end thereof, a storage hopper supported on the frame at a higher level than the receptacle and having a downwardly and rearwardly sloping bottom, a conveyor between said receptacle and said storage hopper, a valve controlled outlet means at the rear end of the storage hopper, a second hopper supported on the frame to the rear of, at a lower level than, and communicating with the storage hopper and provided with a downwardly and rearwardly sloping bottom, weighing means associated with the second hopper, a valve controlled outlet means associated with the rear end of the second hopper, a liquid feeding means on the frame to the rear of and on approximately the same level with the second hopper, a mixing receptacle on the rear end of said frame to the rear of and below the second hopper and below said liquid feeding means, a power plant on the frame operable to propel the machine and means connected with the power plant for operating said conveyor and said mixing means.

3. In combination, a wheeled frame, a receptacle on the forward end thereof, a storage hopper supported on the frame at a higher level than the receptacle and having a downwardly and rearwardly sloping bottom, a conveyor between said receptacle and said storage hopper, a valve controlled outlet means at the rear end of the storage hopper, a second hopper supported on the frame to the rear of, at a lower level than, and communicating with the storage hopper, and provided with a downwardly and rearwardly sloping bottom, weighing means associated with the second hopper, a valve controlled outlet means associated with the rear end of the second hopper, a liquid feeding means on the frame to the rear of and

on approximately the same level with the second hopper, a mixing receptacle on the rear end of said frame to the rear of and below the second hopper and below said liquid feeding means, a power plant on the frame operable to propel the machine, a spreading mechanism disposed immediately below the mixing receptacle, and means connected with the power plant for operating said conveyor, said mixing means, and said spreader mechanism.

In testimony whereof I affix my signature.

HAROLD M. DRUCE.