No. 624,200. Patented May 2, 1899.

I. H. FISHER.

COMBINED CONCRETE MIXING, TRANSPORTING, AND DUMPING APPARATUS.

(Application filed Nov. 30, 1898.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

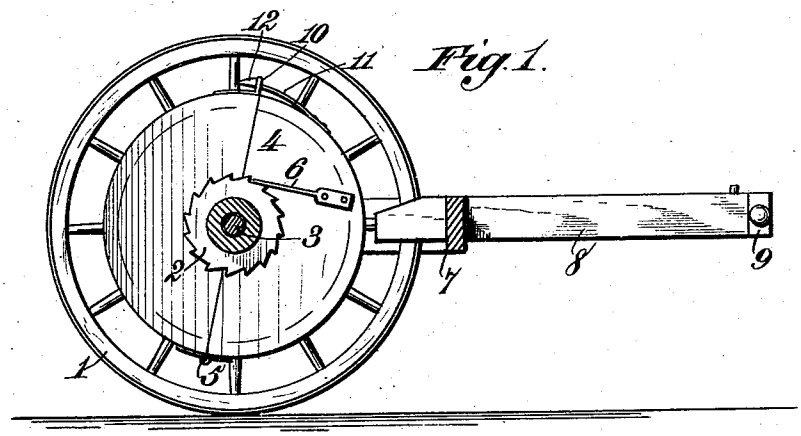


Fig. 2.

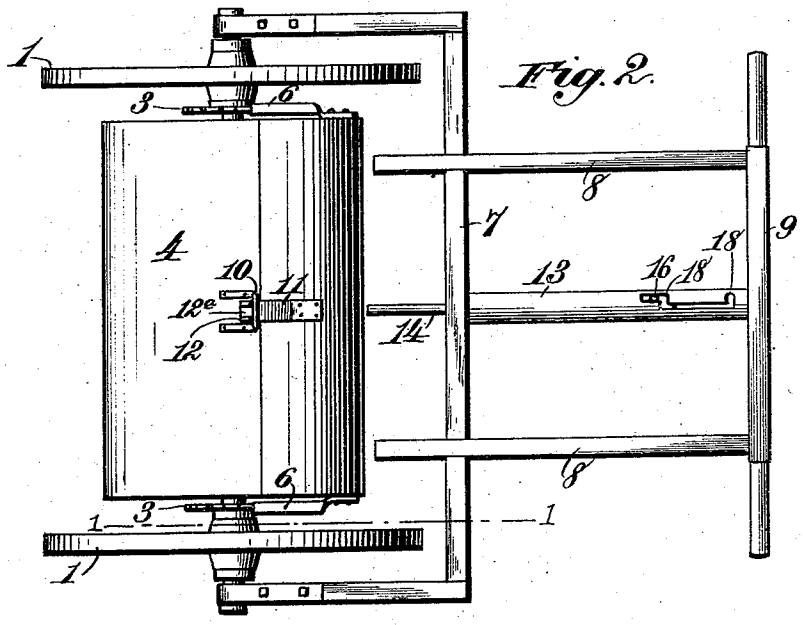
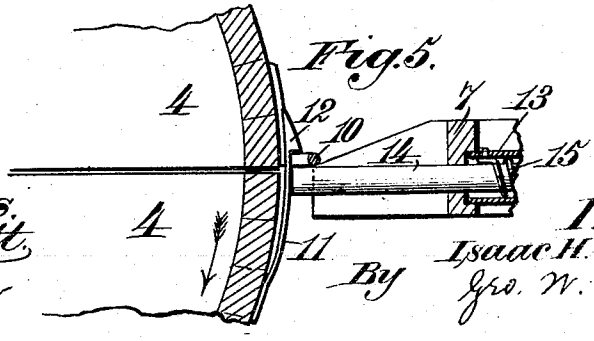


Fig. 5.



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Fig. 3.

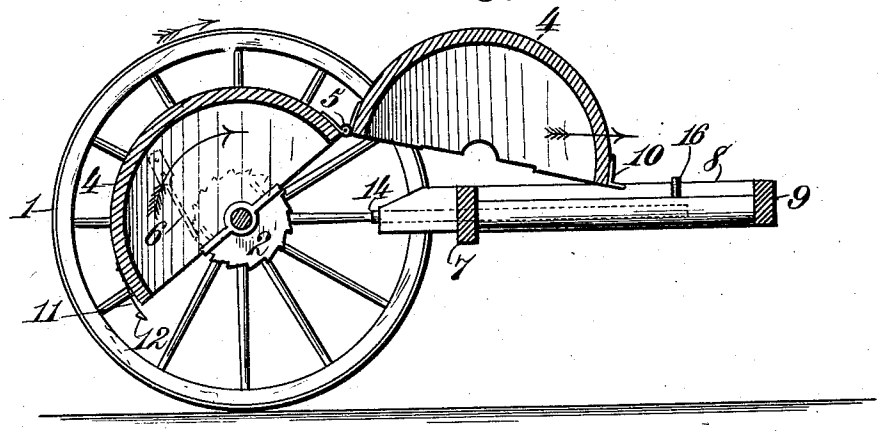


Fig. 7.

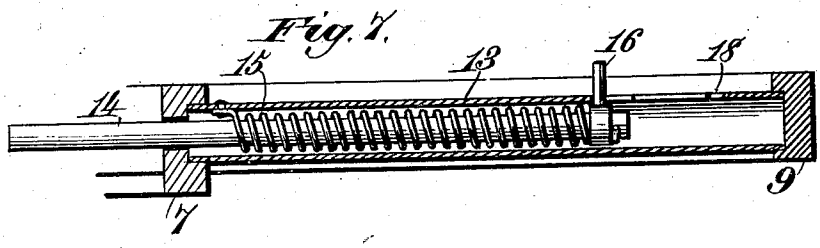


Fig. 4.

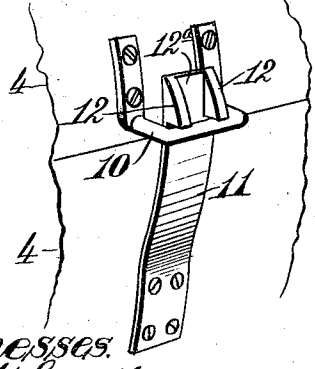
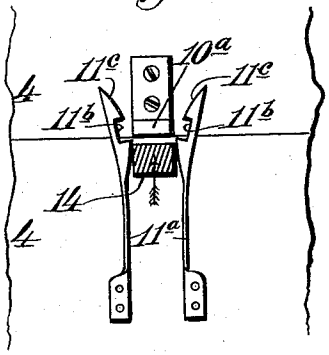


Fig. 6.



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UNITED STATES PATENT OFFICE.

ISAAC H. FISHER, OF WASHINGTON, DISTRICT OF COLUMBIA.

COMBINED CONCRETE MIXING, TRANSPORTING, AND DUMPING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 624,200, dated May 2, 1899.

Application filed November 30, 1898. Serial No. 697,878. (No model.)

To all whom it may concern:

Be it known that I, ISAAC H. FISHER, a subject of the Queen of Great Britain, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in a Combined Concrete Mixing, Transporting, and Dumping Apparatus, of which the following is a specification.

My invention relates to an improved transporting, mixing, and dumping apparatus for concrete designed chiefly for street-work. Heretofore it has been the general practice in this class of work to prepare the concrete in bulk in a box by manually mixing the proper proportions of the component sand, rock, cement, and water, after which the prepared concrete is permitted to remain in the box as a supply for use. When it is desired to employ the concrete, laborers impart the finishing admixture with shovels, load it into wheelbarrows, and wheel it to the place of use. In extensive work the number of laborers so employed is very large and much time is lost in the repeated manipulation to which the material is subjected in properly compounding and conveying to and dumping at the place of use.

By my invention I am enabled to largely economize in time, labor, and expense; and to such end said invention consists in an apparatus for automatically and simultaneously mixing the component parts of the concrete, transporting it to the place of use, and automatically dumping or depositing it for use, all as hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure I is a sectional view on line 1 1 of Fig. II. Fig. II is a top plan view. Fig. III is a central vertical sectional view illustrating the apparatus in the operation of dumping. Fig. IV is a perspective view of the locking device for the mixing-chamber. Fig. V is a detail view, partly in section, illustrating the operation of releasing the mixing-chamber lock. Fig. VI is a detail illustrating, with a modified locking device, the operation of releasing the mixing-chamber lock. Fig. VII is a detail of the bolt for releasing the locking device.

In the said drawings, in which the preferred form of my apparatus is illustrated, the reference-numerals 1 indicate the ground or traveling wheels, to the hubs of which ratchets 2 are firmly secured. The wheels 1 are mounted upon an axle 3 of any suitable form or construction, and upon this axle, between the wheels, is mounted a normally free or loose barrel-like mixing and transporting chamber 4, composed of two parts or sections hinged together, as at 5. The diameter of the said chamber is somewhat less than that of the ground-wheels, whereby it is supported free from the ground, so that it will not become soiled in the travel of the apparatus and so that while compelled to rotate, as hereinafter described, the portability of the apparatus is much facilitated by the lessening of friction, which would be considerable if said chamber were made to rotate in contact with the ground. At the ends of the chamber and in operative relation to the ratchet 2 are secured spring arms or dogs 6, the free ends of which engage said ratchets and during the forward movement of the apparatus compel the said chamber to bodily rotate upon the axle 3 in unison with the ground-wheels.

The apparatus as thus far described is designed for the introduction into the mixing-chamber 4 of a quantity in proper proportion to form concrete of sand, rock, cement, and water without previous admixture. The materials having been so introduced the sections of the chamber are closed together and the apparatus wheeled to the place where it is desired to use the concrete. While the transportation is being accomplished the materials are thoroughly intermixed and form a proper concrete by reason of the interengagement of the spring-arms 6 and the ratchets 2, which compels the chamber to rotate bodily upon the axle in unison with the ground-wheels, shifting, tumbling, and throwing the material in the receptacle and producing a thorough intermixture of the constituents to form the concrete. I have found in practice that my apparatus in traveling the short space of thirty or thirty-five feet effects a very satisfactory admixture and forms a proper concrete.

In the drawings I have illustrated an apparatus designed particularly for manual propulsion; but it is evident that it may be employed for horse-power by merely clipping harness to the handle-bar, and other forms

of framework may be employed within the scope of my invention.

The reference-numeral 7 designates the framework, carried by the axle and extending across in front of the mixing-receptacle in yoke form and provided with forwardly-projecting arms or runners 8 in juxtaposition to the chamber 4 and connected by a handle-bar 9.

My invention contemplates also means for automatically unlocking the sections, lifting one from the other, arresting the movement of one while compelling the continued rotation of the other, and thus effecting an automatic dumping or deposit of the material at the point of use.

According to the preferred form illustrated, one section of the mixing-chamber is provided with a keeper in the form of a hasp 10 and the other with a spring-arm 11, carrying locking-heads 11^a, normally in engagement with the hasp 10. The locking-heads 12 are separated by a space 12^a for the passage of the operating-bolt hereinafter referred to. This means of locking the two sections together is released to permit dumping, as now described. Housed in a sleeve 13, supported in the framework, is a bolt 14, adapted to be projected into operative position by a spring 15. The bolt 14 is housed or withdrawn from operation by means of a suitable handle 16, arranged within reach of the operator and extending through a slot in the sleeve, as shown. Locking-seats 17 and 18 are provided at the ends of the slot, into which the handle 15 may be shifted to hold the bolt in its projected and retracted position, as will be apparent. The end of the bolt 13 which is exposed when projected engages the spring-arm 11 just below the hasp 10. When the parts are in the position described, it will be apparent that during the further rotation of the mixing-chamber the bolt will press the spring-arm toward the wall of the chamber and release the locking-heads from engagement with the hasp 10 and will then engage the under side of said hasp and arrest the rotation of that section of the chamber to which it is secured, permitting the other section to continue in its rotation and carry the contents of the chamber, said bolt passing through the space 12^a between the locking-heads 12. The arrested section will as its hinge-point moves forward ride out and rest upon the arms or runners 8, as shown in Fig. III of the drawings, and both sections will have their open mouths facing downward to dump or deposit the concrete for use. After dumping the travel of the apparatus will be stopped by contact of the rotating section with the end of the bolt 14.

In the modified form of locking means shown in Fig. VI of the drawings one section of the mixing-chamber is provided with a keeper in the form of a lug 10^a and the other with two separated spring locking-arms 11^a, provided in their opposing faces with pockets 11^b to engage said lug. Immediately below said pockets the locking-arms are formed with inclined faces 11^c, whereby they may be spread apart and disengaged from the lug by the bolt 14, before described, and as will be apparent from an examination of said Fig. VI of the drawings. The operation is substantially like that described with reference to the form of locking device shown in the other figures of the drawings. When the concrete is dumped, the two sections of the chamber are closed together again by pushing that section the rotation of which was arrested from the pieces 8, the slipping of the dogs 6 over the teeth of the ratchets 5 permitting this to be easily accomplished. The arrangement of the ratchets and dogs is of further great advantage in that should it be necessary for any reason to back the apparatus it may be done with decreased effort, since in that case the mixing-chamber does not rotate, and the necessary jolting occasioned by the tumbling and shifting of the material is avoided. Furthermore, when returning for a fresh supply of material to be mixed the machine may be moved so that the wheels rotate in a direction the reverse of that when the material is to be mixed, allowing the chamber to stand non-rotary.

When the operator moves the handle out of the locking-seat 17, the spring 15 projects the bolt 14, and it remains in that position until it has performed its office. The operator may when the bolt is projected shift the handle into the locking-seat 18, and thus relieve the spring of the pressure it would otherwise be required to sustain in the operation. As shown in Fig. II, the slot through which the handle 16 projects extends slightly forward of the locking-seat 17 for the purpose of permitting the spring 15 to throw the bolt 13 farther forward after it has released the locking mechanism and arrested the one section to stand in the path of movement of the dumping-section and block its further rotation after it has dumped its contents. When the chamber has been dumped, the operator need only shift the handle out of the locking-seat 18 and move it into the rear locking-seat 17, when the bolt will be housed and held in that position until again released to cause another dumping operation.

When the two sections of the chamber are closed together after dumping, as described, they are locked automatically by the locking-heads engaging the hasp 10 or lug 10^a, this being permitted by the inclines on the said locking-heads, which permit the passage of the hasp or lug until the proper moment for the heads to engage said hasp or lug.

By my invention I am enabled to economize in the cost of labor by lessening the number of workmen, to economize in time, since the mixing of the material is automatic and accomplished in the act of transportation, and also by rendering the dumping automatic, as described.

Having thus described my invention, what I claim is—

1. In a combined concrete mixing and transporting apparatus the combination with ground-wheels, of a mixing and transporting chamber carried by the axle of said wheels, consisting of two parts hinged together, and normally rotating with said wheels, substantially as described.

2. In a combined concrete mixing and transporting apparatus, the combination of an axle provided with ground-wheels, a mixing and transporting chamber carried by said axle, and an automatic connection between said chamber and said wheels whereby the latter is bodily rotated in one direction of movement of the apparatus and so remains stationary in the other, substantially as described.

3. In a combined concrete mixing and transporting apparatus, the combination with an axle provided with ground-wheels, of a mixing-chamber loosely mounted on said axle, and connections between said wheels and chamber, whereby the latter is compelled to rotate bodily in unison with said wheels in one direction of movement of the ground-wheels and remain non-rotary in the reverse direction of movement of said wheels, substantially as described.

4. In a combined concrete mixing and transporting apparatus, the combination with ground-wheels, provided with ratchets, of a mixing and transporting chamber provided with spring-dogs engaging said ratchets, whereby said chamber is compelled to bodily rotate in unison with the wheels in one direction of movement and remain non-rotary in the other, substantially as described.

5. In a combined concrete mixing and transporting apparatus, the combination with an axle provided with ground-wheels and a bodily-rotatable mixing and transporting chamber, mounted on said axle between said wheels and composed of two parts hinged together, of means for locking said sections, and an element adapted to be projected into the path of said locking means and separate said sections, substantially as described.

6. In a combined concrete mixing and transporting apparatus, the combination with a sectional bodily-rotatable mixing and transporting chamber mounted on said axle and composed of two parts hinged together, of means for arresting the rotation of one of said sections while the other continues its rotation and is automatically dumped, substantially as described.

7. In a combined concrete mixing and transporting apparatus, the combination with an axle provided with ground-wheels and a mixing and transporting chamber mounted on said axle and composed of two parts hinged together, of means for locking the sections together, means adapted to be projected into the path of said locking means to unlock the sections and arrest the rotation of one of them, whereby the other is automatically dumped, substantially as described.

8. In a combined concrete mixing and transporting apparatus, the combination with an axle provided with ground-wheels and a bodily-rotatable mixing and transporting chamber mounted on said axle and composed of two parts hinged together, of means for locking the sections together, and a bolt adapted to be projected into the path of and engage said locking means to unlock the sections and arrest the rotation of one of them, whereby the other is automatically dumped, substantially as described.

9. In a combined concrete mixing and transporting apparatus, the combination with an axle provided with ground-wheels and a bodily-rotatable mixing and transporting chamber mounted on said axle and composed of two parts hinged together, of means for locking the sections together, and a spring-actuated bolt adapted to be projected into the path of and engage said locking means to unlock the sections and arrest the rotation of one of them, whereby the other is automatically dumped, substantially as described.

10. In a combined concrete mixing and transporting apparatus, the combination with a sectional bodily-rotatable mixing and transporting chamber, one of the sections thereof provided with a spring locking-arm and the other with a hasp to engage therewith, of a bolt adapted to engage said locking-arm and release it from the hasp and to engage said hasp and arrest the movement of the section which carries the latter, whereby the other section is automatically dumped, substantially as described.

11. In a combined concrete mixing and transporting apparatus, the combination with a sectional bodily-rotatable mixing and transporting chamber, one of the sections thereof provided with a spring locking-arm and the other with a keeper to engage therewith, of a bolt adapted to engage said locking-arm and release it from the keeper and to engage said keeper and arrest the movement of the section which carries the latter, whereby the other section is automatically dumped, and a runner to support the arrested section, substantially as described.

12. In a combined concrete mixing and transporting apparatus, the combination with a sectional bodily-rotatable mixing and transporting chamber, one of the sections thereof provided with a spring-arm having locking-heads separated by a space and the other section with a hasp to engage said locking-heads, of a bolt adapted to engage said locking-arm and release it from the hasp and to pass through the space between said locking-heads, engage said hasp and arrest the movement of the section which carries the latter, whereby the other section is automatically dumped, substantially as described.

13. In a combined concrete mixing, transporting and dumping apparatus, the combination with a bodily-rotatable mixing and transporting chamber composed of two sections hinged together, and means arranged in

juxtaposition to said chamber for arresting the rotation of one of said sections and receiving and supporting the arrested section, while the other section continues its rotation and is automatically dumped substantially as described.

14. In a combined concrete mixing, transporting and dumping apparatus, the combination with a bodily-rotatable sectional mixing and transporting chamber, of means adapted to engage and arrest the movement of one of the sections, and a runner in juxtaposition to said chamber to receive and support the arrested section, while the other section continues its rotation and is automatically dumped substantially as described.

15. In a combined concrete mixing, transporting and dumping apparatus, the combination with a bodily-rotatable sectional mixing and transporting chamber, of means for locking the sections thereof together, a device adapted to engage and release the locking means and arrest the rotation of one of the sections, and a runner in juxtaposition to said chamber to receive and support the arrested section, substantially as described.

16. In a combined concrete mixing, transporting and dumping apparatus, the combination with an axle provided with groundwheels, of a sectional mixing and transporting chamber, carried by said axle between said wheels, means for locking said sections together, a device adapted to be projected into the path of said locking means, to unlock the sections and arrest the rotation of one of them, and a runner in juxtaposition to said chamber to receive and support the arrested section, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ISAAC H. FISHER.

Witnesses:
GEO. W. REA,
M. V. COOPER.