No. 833,761. PATENTED OCT. 23, 1906.

S. G. STEVENS.

MEANS FOR CAUSING THE MOVEMENT OF GRANULAR AND LIKE MATERIAL.

APPLICATION FILED OCT. 17, 1905.

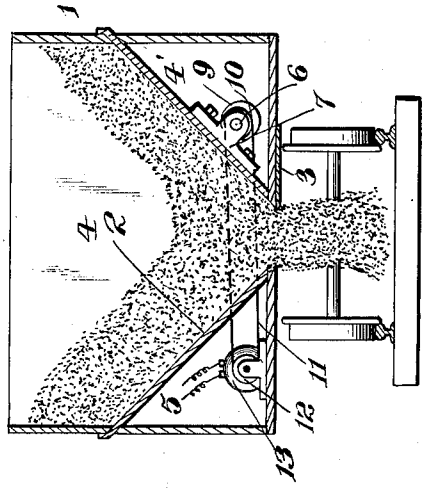


Fig. 1.

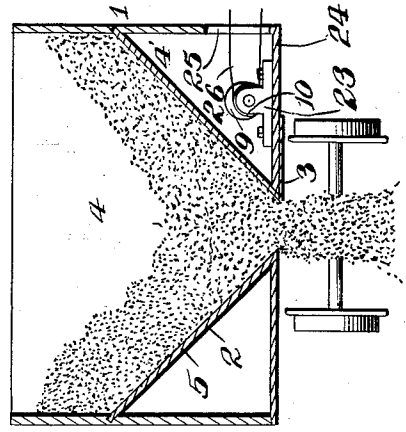


Fig. 3.

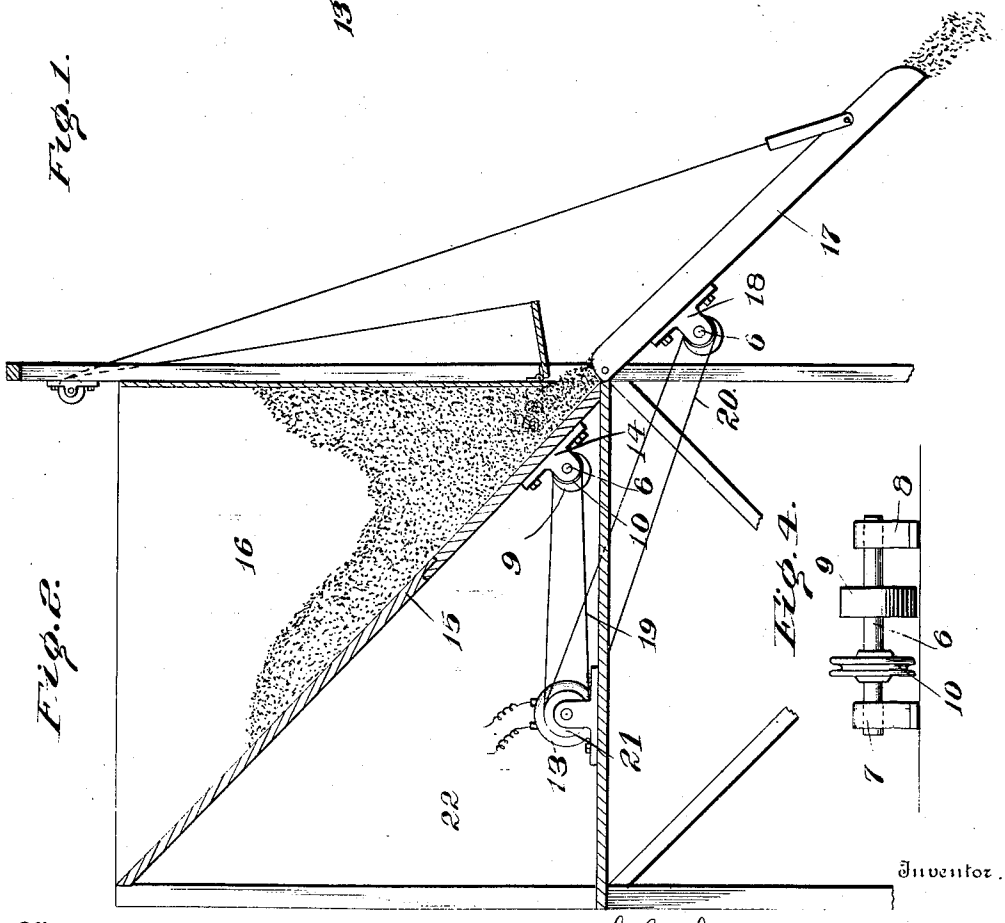


Fig. 2.

Fig. 4.

Witnesses
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MEANS FOR CAUSING THE MOVEMENT OF GRANULAR AND LIKE MATERIAL.

No. 833,761. Specification of Letters Patent. Patented Oct. 23, 1906.

Application filed October 17, 1905. Serial No. 283,177.

To all whom it may concern:

Be it known that I, SYLVESTER GEORGE STEVENS, a citizen of the United States, residing at Duluth, in the county of St. Louis and State of Minnesota, have invented certain new and useful Improvements in Means for Causing the Movement of Granular and Like Material, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to improvements in means for causing the movement of granular and like material.

The object of my invention is to provide a device of this character which is applied to a car, wagon, hopper, or chute of any character and which is adapted to cause a vibratory movement of the car, wagon, hopper, or chute, so that the contents may be caused to move downward for discharging the same in unloading different granular or like material which has a tendency to pack and which usually requires to be moved by hand.

Another object of my invention is to provide a more simple, cheap, and durable device of this character which may be readily attached to a car, wagon, hopper, or chute of any character.

In the accompanying drawings, Figure 1 is a vertical cross-sectional view of a hopper-bottom car, showing my improved device for causing a vibratory movement attached to the hopper. Fig. 2 is a vertical cross-sectional view of a hopper-bottom bin and a chute in connection therewith and showing my improved device attached to both the hopper and the chute. Fig. 3 is a vertical cross-sectional view of a hopper-bottom car, showing the device for causing the vibratory movement directly on the car and not on the hopper-bottom. Fig. 4 is an enlarged top plan view of my device for causing the vibratory movement detached.

Referring now to the drawings, 1 represents a car or wagon which, as shown, is of a box-like form and provided with a hopper-bottom 2, provided with gates 3, by means of which the contents 4 of the car may be emptied in such cars as are used for dumping granular or like material to prevent handling of the same. In materials of this character they usually become packed, and the opening of the gates will only cause a small amount of the material to pass from the car, and it is necessary to shovel or poke the same in order to keep a continuous flow of the material from the car. The bodies of cars and wagons of this character are universally mounted upon springs in order to make the same run more smoothly, and thus admits of a movement to the body of the car, which aids me in more efficiently carrying out my invention. The hopper-bottom of the car, as shown in Fig. 1, leaves a space 4′ and 5 at the bottom of the car, and mounted on the lower face of the hopper, within the space 4′, is a shaft 6. The said shaft is mounted within journals 7 and 8, carried by the lower face of the hopper, and is adapted to rotate therein, but held against longitudinal movement. The shaft, as shown, is supported a distance from the hopper by means of the bearing and has rigidly connected thereto intermediate the bearings a heavy eccentrically-arranged wheel or cam 9. It will be seen that the wheel being arranged eccentrically on the shaft the rapid rotation of the shaft will cause a vibratory motion of the whole car, and thus cause the granular material to be shaken from the car through the opening covered by the gates. The said shaft 6 is also provided with a pulley-wheel 10, around which a belt 11 passes, by means of which the shaft is rotated, the said belt being driven by a pulley 12, carried by a motor 13 within the space 5, and said motor is preferably of the electric type and may be readily connected to a supply of electricity for operating the same.

In Fig. 2 I have shown the shaft 6 as journaled in the bearing 14, carried by the lower face of the hopper-bottom 15 of a bin 16, and the chute 17 is also provided with a shaft 6, journaled in bearings 18 and having belts 19 and 20 passing over the pulley-wheel 10 and around the pulley-wheels 21, carried by the shaft of the motor 13, which in this case rests directly upon the bottom of the bin in the space 22 formed by the hopper-bottom. From the foregoing description it will be seen that both the hopper-bottom and the chute will be vibrated and cause the steady feed of the material from the bin.

In the form shown in Fig. 3 instead of placing the shaft 6 on the lower face of the hopper-bottom I place the same in journals 23, carried by the bottom 24 of the car, and the sides of the car are provided with cut-away portions 25, which allow the chain 26 to pass through the car, and the same is adapted to be driven by a motor or other means on the outside of the car and inde-

pendent thereof. It will be seen that by thus mounting the shaft causes the entire car to have a vibratory movement and causes the material to flow continually from the car.

In each and all of the figures showing the different ways in which my device may be applied for accomplishing the same result it will be seen that by the rapid rotation of the shaft the eccentric causes a vibratory movement to the car, wagon, or hopper and will cause the packed material therein to be dislodged and caused to freely and continuously pass therefrom until the car, wagon, or hopper has been entirely emptied.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a device of the character described, the combination with a receptacle, of a shaft rotatably carried thereby, an eccentric rigidly carried by the shaft, and means for rotating said shaft.

2. In a device of the character described, the combination with a receptacle, of a shaft rotatably carried thereby, an eccentric rigidly carried by the shaft, and a pulley carried by the shaft whereby the same is rotated.

3. In a device of the character described, the combination with a receptacle, of a shaft rotatably carried thereby, an eccentric rigidly carried by the shaft, and a pulley carried by the shaft intermediate its ends, and a belt passing around said pulley, and means for driving said belt.

4. In a device of the character described, the combination with a receptacle, of bearings carried thereby, a shaft rotatably mounted in said bearings a distance from the receptacle, an eccentric rigidly carried by the shaft intermediate the bearings, a pulley rigidly carried by the shaft adjacent the eccentric, and a belt passing around the pulley for rotating the shaft.

5. In a device of the character described, the combination with a vehicle having a hopper-bottom, of a shaft rotatably mounted on the lower face of said hopper-bottom, a heavy eccentric rigidly carried by said shaft, and means for rotating said shaft.

6. In a device of the character described, the combination with a box-like vehicle having a hopper-bottom therein, of a shaft rotatably mounted on the lower face of said hopper-bottom, a heavy eccentric rigidly carried by said shaft, a pulley carried by the shaft, and a motor carried by the bottom of said box-like vehicle and means for driving the pulley carried by said shaft.

7. In a device of the character described, the combination with a vehicle having a hopper-bottom, of a shaft mounted upon said vehicle, a heavy eccentric carried by said shaft, and means for rotating said shaft.

8. In a device of the character described, the combination with a box-like vehicle having a hopper-bottom therein, of a shaft rotatably mounted thereon, a heavy eccentric rigidly carried by said shaft, a pulley carried by said shaft, and a motor carried by said box-like vehicle and having a chain driven thereby and said chain driving the pulley on the shaft.

9. The combination with a hopper, of a self-contained vibratory means securely mounted thereon to assist in discharging the contents of said hopper.

10. A device for feeding granular material, comprising an inclined feeding-surface and a rotatable eccentrically-arranged self-contained vibrator mounted thereon to cause it to vibrate and the material to move therealong.

11. In a device of the character described, the combination with a box-like vehicle having a hopper-bottom therein, of a shaft rotatably mounted on said box-like vehicle below the hopper, an eccentric rigidly carried by said shaft, and means for rotating said shaft.

12. In a device of the character described, the combination with a car for carrying granular material, of a self-contained vibratory means carried by said car.

In testimony whereof I affix my signature in presence of two witnesses.

SYLVESTER GEORGE STEVENS.

Witnesses:
DONALD MCLENNAN,
ALEXANDER MCDOUGALL.