May 25, 1926. 1,585,768

R. F. CLAYTON ET AL

ROAD SWEEPING AND REFUSE COLLECTING MACHINE

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Fig. 1.

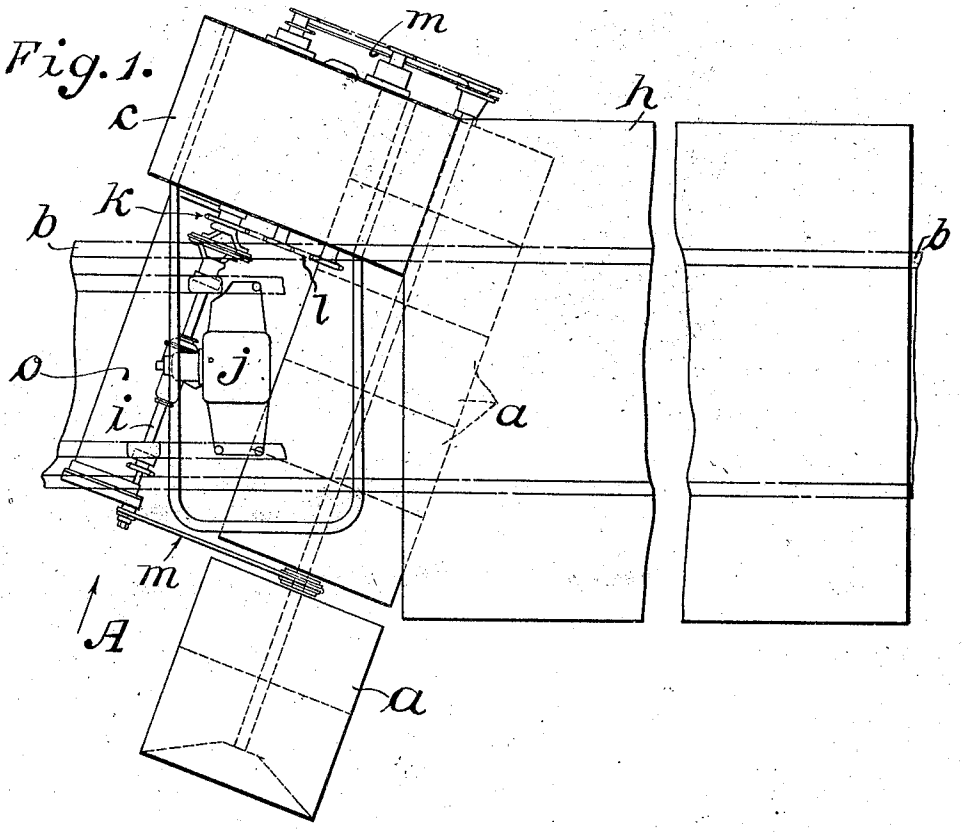
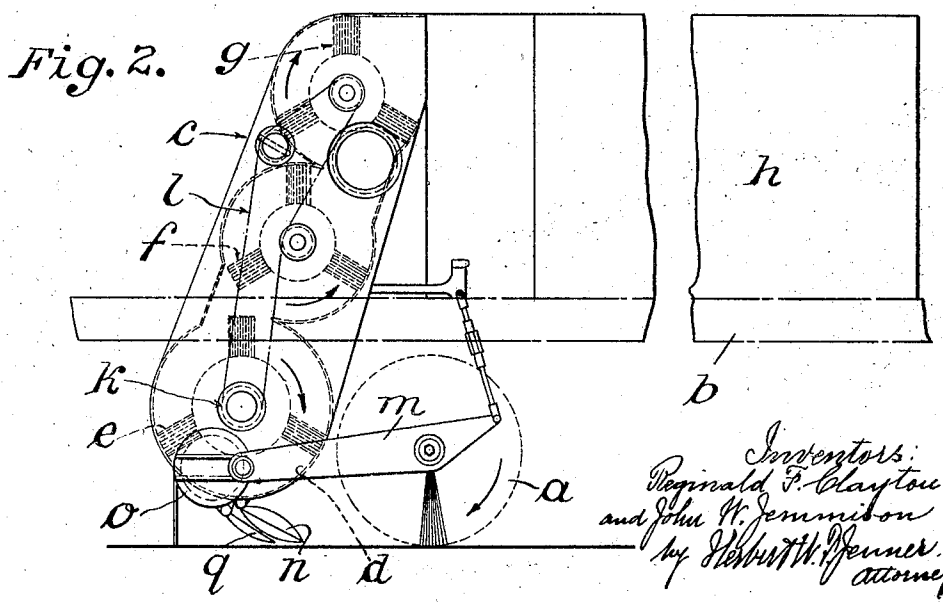


Fig. 2.



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Fig. 5.

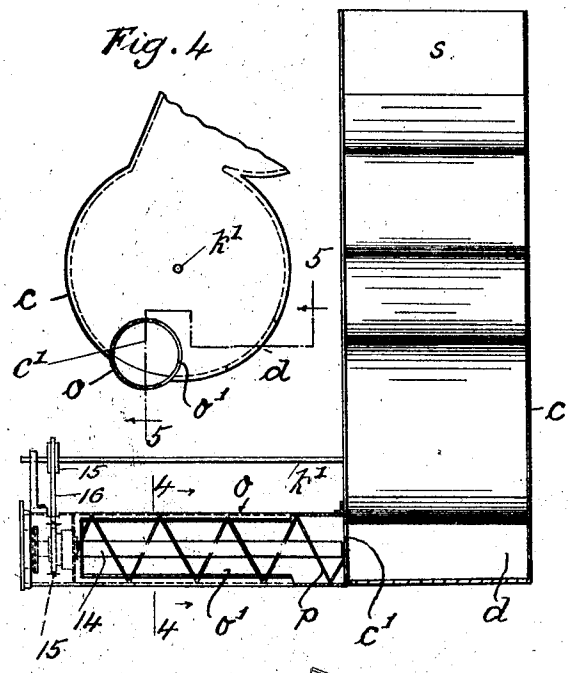


Fig. 6.

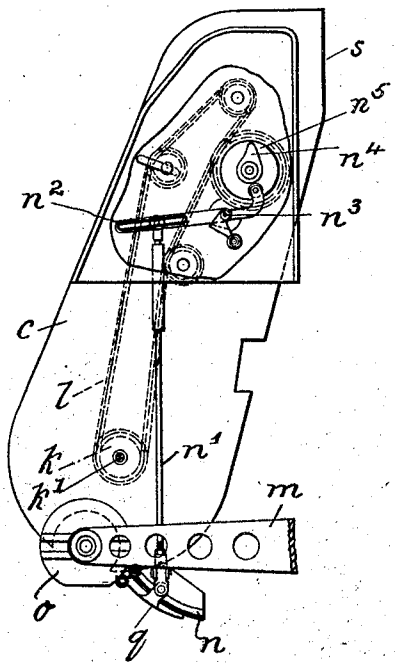


Fig. 4

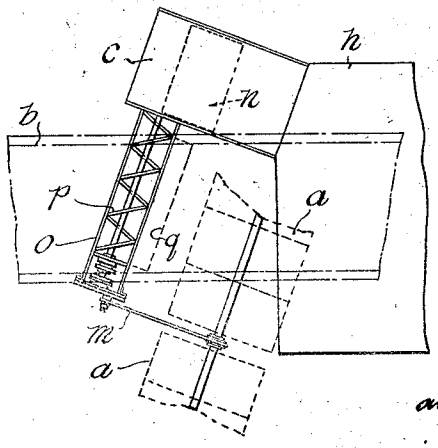


Fig. 3

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UNITED STATES PATENT OFFICE.

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ROAD-SWEEPING AND REFUSE-COLLECTING MACHINE.

Application filed February 1, 1924. Serial No. 689,974.

Machines for sweeping road surfaces are known in which a revolving brush is placed diagonally to the direction of travel of the machine, so that the sweepings are deposited in a line behind the rear or trailing end of the brush. Machines of this type have also had means combined therewith whereby the sweepings, instead of being deposited or allowed to remain in a line on the road surface, are delivered at or by the rear end of the diagonal brush into a conveyor or bucket elevator by which they are transferred to a receiving receptacle carried on the machine. Machines of this type have also had means combined therewith for receiving the sweepings raised by the road brush and conveying them laterally to an elevator or like device by which they are transferred to a receiving receptacle.

Another type of machine is known in which a transverse road brush delivers the sweepings into a casing containing a transverse brush which carries them upwardly and delivers them into the path of a second transverse brush by which in turn they are carried upwardly and delivered to a receiving receptacle. Machines of this type have also had combined with them diagonally disposed road brushes adapted to deliver sweepings towards the centre of the road track to be dealt with by the transverse road brush referred to.

Machines of the latter type, whilst being very efficient, are relatively costly and call for a special construction of vehicle.

According to the invention, a diagonally disposed road brush is suspended beneath the chassis between the front and rear road wheels. To the outer side of the chassis in front of the rear or trailing end of the brush a casing of suitable dimensions is attached having in its lower part an opening through which the sweepings are thrown as they are raised by the rear end of the diagonal brush.

Beneath the inlet opening to the casing there is preferably provided a pivoted pan to receive such sweepings as fail to be caught by the bottom transfer brush and would, consequently, fall back on to the road surface, such pan being intermittently raised, to lift its contents into the path of the bottom transfer brush.

We also preferably provide, a short distance in front of and parallel to the diagonal road brush, an open fronted longitudinal casing containing a conveyor in the form say of a revolving worm or helix, by which such sweepings as are thrown by the road brush into the trough or casing are carried along same and delivered, through an opening in the side of the transfer brush casing, into the path of the bottom transfer brush. An intermittently operated pivoted pan may be provided in connection with the conveyor trough or casing to deal with such sweepings as may fail to be thrown directly into the trough by the road brush.

In the accompanying drawing—

Fig. 1 illustrates diagrammatically, in plan, a road-sweeping and refuse-collecting machine according to the invention;

Fig. 2 is a part elevation looking in the direction of the arrow A, Fig. 1;

Fig. 3 is another plan view with some of the parts shown in the other figures omitted for the purpose of showing clearly the conveyor trough by which a portion of the sweepings are caught and conveyed to the transfer brush casing. Fig. 4 is a detail view of a portion of the casing *c* showing the trough in section on the line 4—4 in Fig. 5. Fig. 5 is a rear view of the casing *c*, showing the trough *o* partially in section on the line 5—5 in Fig. 4. Fig. 6 is a side view of portions of the casing *c*, showing the pivoted pan *q* and means for operating it, and showing the drive chain *l* and wheel *k* in dotted lines.

Referring to the drawing, *a* represents a road brush suspended in a diagonal position beneath the chassis *b* of the vehicle, between the front and rear road wheels.

To the outer side of the chassis on the "off" side of the vehicle, and in front of the rear or trailing end of the brush *a*, as shown in Figs. 1 and 3, we attach a casing *c* of suitable dimensions having in the lower part of its rear side an opening *d* Fig. 3 through which the sweepings are thrown as they are raised by the rear end of the brush *a*. Inside the casing *c* is a revolving brush *e* which receives the sweepings and conveys them upwardly into the path of a second revolving brush *f* by which they are transferred to a third revolving brush *g*, which delivers them, through an opening *s* in the upper rear part of the casing *c*, into a receiving receptacle *h* formed as a body carried by the chassis *b*.

Motion may be imparted to the various brushes in any suitable manner from the

motor mechanism of the vehicle. In the instance shown, a diagonal shaft i driven by any approved gearing from the gear box j of the vehicle is rotatively connected to a chain wheel k which, by a chain l transmits motion to the brushes f and g and revolves them in the direction of the arrows, Fig. 2. The bottom transfer brush e may be driven direct by a chain drive from the axis of the top brush g, since these two brushes revolve in the same direction.

Preferably, the road brush a is carried by links such as m. A pivoted pan n, placed beneath the inlet opening to the casing c and operated intermittently by suitable means, not shown, is preferably provided to catch such sweepings as are not thrown directly into the casing and, when raised, to deliver its contents through the opening d into the path of the bottom transfer brush.

The axes of the transfer brushes are parallel to that of the diagonal road brush a, and the sweepings are thus delivered by the top transfer brush towards the centre line of the vehicle, so that the receiving receptacle forming the vehicle body need not be unduly wide.

For many purposes the arrangement above described will deal adequately with and collect all refuse on a road surface. Where, however, large quantities of refuse have to be dealt with, it may not be possible for the road brush to deliver them all cleanly into the transfer casing and a trail of sweepings may be left behind the rear end of the road brush. To obviate such a possibility we preferably provide in front of and parallel with the brush a a trough or casing o having a longitudinal opening o^1 in its rear side and containing a spiral conveyor p.

In Fig. 5, the shaft k^1 of the brush e is shown connected with the shaft 14 of the conveyor by sprocket wheels 15 and a drive chain 16.

The trough or casing need not extend the full length of the brush a but may have a relative proportion such as indicated in Fig. 1.

The conveyor trough or casing receives all or part of the sweepings raised by the front end of the road brush and the collected sweepings are conveyed along the trough and delivered through an opening c^1 in the inner side wall of the transfer casing into the path of the bottom transfer brush. The road brush is thus relieved of the necessity of traversing the whole of the sweepings across to the transfer casing, and such sweepings as it has left to present to the transfer casing are more effectively dealt with. An intermittently operated pivoted pan q, similar to the pan n, is preferably provided in connection with the conveyor trough to collect and periodically deliver into same such sweepings as may fail to enter the trough and drop on to it, instead of leaving them to drop back on to the road surface to be raised again by the road brush. The pivoted pans q and n are operated by similar mechanisms as shown in Fig. 6 in connection with the pan q. A wheel n^5 is revolved by the drive chain l, and revolves a cam n^4 mounted on the casing c. This cam operates a lever n^2 pivoted by a pin n^3 to the casing, and the pan q is moved up and down periodically from the said lever by a connecting-rod n^1.

Ordinarily the vehicle will be traversed in such a direction that the front or rear end of the road brush operates in the gutter or side of the road and passes the sweepings towards the centre of the road. If, however, the road surface be very wet, the pans q and n may be held in raised position and the vehicle be run with the forward end of the road brush towards the crown of the road. In this case the water and mud will be delivered off the rear end of the road brush into the gutter, from whence the solid refuse may be removed by ordinary operation of the machine when a sufficiency of water has drained away.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is:—

1. In a road sweeping machine, a diagonally extending rotary road brush, a casing arranged in front of the rear end portion of the brush and having an opening in its rear side for receiving a portion of the road sweepings from the road brush directly, revoluble brushes for elevating all the sweepings in the casing and discharging them therefrom, a trough arranged in front of the main portion of the brush and having an inlet opening in its rear side for receiving other portions of the sweepings from said brush, said trough having a discharge opening at one end which communicates with the lower part of the said casing, and a rotary conveyer mounted in the trough and operating to transfer the sweepings from the trough into the casing.

2. In combination with a road sweeping machine as set forth in claim 1, a pan having its front edge pivoted to the said trough below its side opening, and means for moving the rear edge of the said pan up and down intermittently to catch the sweepings and deliver them into the trough.

In testimony whereof we affix our signatures.

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JOHN WILLIAM JEMMISON.