Nov. 4, 1924. 1,514,289

J. W. JEMMISON

STREET SWEEPING AND REFUSE COLLECTING MACHINE

Filed July 13, 1922 2 Sheets-Sheet 1

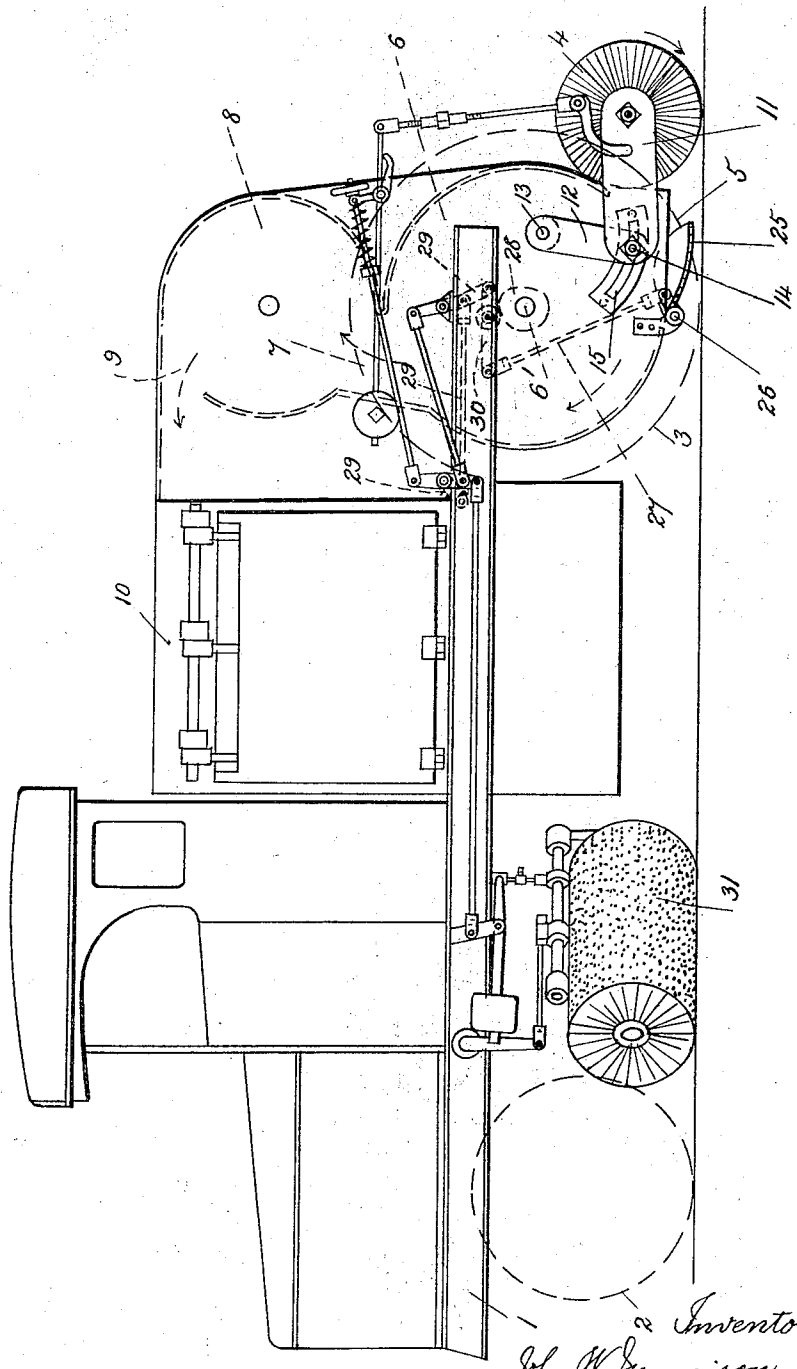


FIG. 1.

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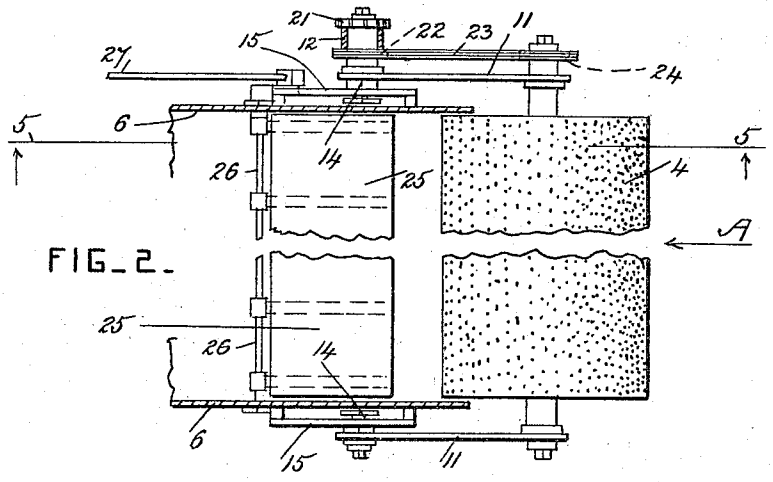


FIG_2_

FIG_4_

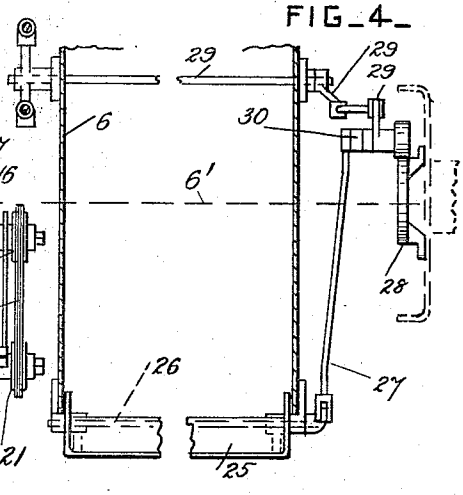


FIG_3_

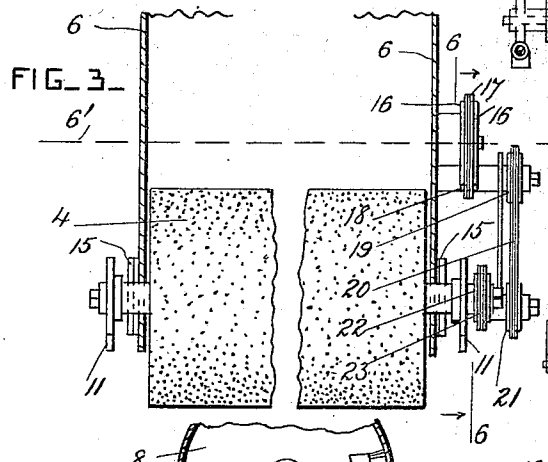


FIG_5_

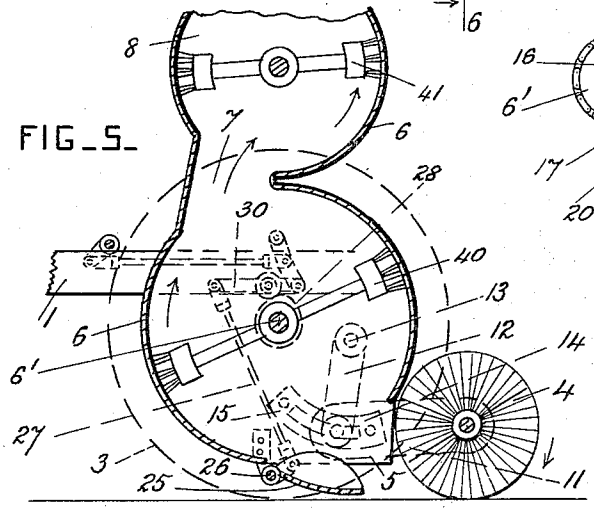
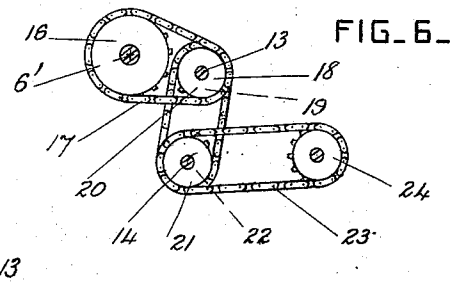


FIG_6_



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Patented Nov. 4, 1924. 1,514,289

UNITED STATES PATENT OFFICE.

JOHN WILLIAM JEMMISON, OF HUDDERSFIELD, ENGLAND.

STREET-SWEEPING AND REFUSE-COLLECTING MACHINE.

Application filed July 13, 1922. Serial No. 574,711.

To all whom it may concern:

Be it known that I, JOHN WILLIAM JEMMISON, a subject of King George V of Great Britain, residing at Huddersfield, in the county of York, England, have invented a new and useful Improvement in Street-Sweeping and Refuse-Collecting Machines, of which the following is a specification.

This invention relates to street sweeping and refuse collecting machines of the type in which a brush, revolving in contact with the road surface, is arranged to throw the sweepings in a forward direction through an aperture into a casing containing a second brush, which acts to transfer the sweepings either directly into a receiving receptacle, or into the path of a third brush by means of which they are transferred to the receiving receptacle.

The invention has for its object to improve upon the method of carrying or mounting the road brush and to provide means to co-operate with said brush, whereby the sweeping action of the brush is improved and the sweepings removed from the road surface are more effectively dealt with.

According to the invention, the road brush is carried by arms which extend forwardly in a substantially horizontal direction and have their forward ends adjustably secured in suitably curved guides secured to the side walls of the transfer brush casing or alternatively are slotted and adjustably secured to fixed bolts carried by the casing. As the diameter of the brush decreases through wear, its axis can be adjusted forwardly and the point to which the sweepings are thrown by the rotation of the brush thus be kept constant without it being necessary to speed up the machine as the road brush wears as has been the case hitherto, the arrangement also serving to keep the brush more closely in contact with the road surface. The method by which rotary motion is conveyed to the brush is described later.

Also according to the invention the sweepings, instead of being thrown by the road brush on to a fixed plate inclining upwardly to the lower edge of the aperture leading into the transfer casing, are thrown on to a pivoted plate which is actuated intermittently to raise the sweepings collected thereon into the path of the transfer brush.

By thus dealing with the sweepings, it becomes permissible to run the road brush at a slower speed than formerly, but inasmuch as a slower brush speed results in the sweepings not being thrown forward sufficiently far as the brush decreases in diameter through wear, this permissible slower speed only becomes practicable as a result of the adjustable method of mounting the road brush previously referred to.

In the accompanying drawings,

Fig. 1 is a side elevation of the relevant parts of a street sweeping and refuse collecting machine, of the type to which the invention refers and having the present improvements applied;

Fig. 2 is a plan view of the rear part of the machine, the centre portion being broken away;

Fig. 3 is a rear view, that is to say in the direction of the arrow A, Fig. 2, showing the parts constituting the improved brush mounting;

Fig. 4 is a rear view of the pivoted plate by which the sweepings thrown forward by the rear road brush are raised into the path of the transfer brush, and of the means for operating said pivoted plate;

Fig. 5 is a longitudinal section through the chambers 6 and 8, taken on the line 5—5 in Fig. 2. Fig. 6 is a detail view of the drive chains and sprocket wheels taken in section through the shafts on the line 6—6 in Fig. 3.

Referring to the drawings, 1 represents the frame of the vehicle, supported by the front and rear road wheels 2 and 3 respectively. The rear road brush is shown at 4 and it is arranged as usual to throw sweepings, raised from the road surface, through an aperture 5 into the lower part of a chamber 6 containing a revolving transfer brush or paddle wheel 40. This paddle wheel or transfer brush carries the sweepings round and delivers them by centrifugal action through an opening 7 in the upper part of the chamber 6. The opening 7 leads into the lower part of a second chamber 8 containing a second revolving brush 41 which carries the sweepings round and delivers them by centrifugal action forwardly through an opening 9 in the upper part of the chamber 8 into a receiving receptacle 10 located between the front and rear road wheels of the vehicle.

The above parts are of known construction and operation and form no part of the present invention, which relates to the method of mounting or carrying the rear

road brush 4 and to means for more effectively delivering the sweepings, thrown forward by such brush, into the path of the transfer brush in the chamber 6.

According to the invention the rear road brush 4 is carried by a pair of arms 11, 11 one at each end thereof. These arms extend forwardly in a substantially horizontal direction and at its forward end one of the arms is pivotally connected to the lower end of a link 12. This link in the instance shown, has its upper end pivotally mounted at 13 on a fixed pivot stud secured to the side wall of the casing constituting the chambers 6 and 8.

To maintain the brush 4 in its correct position, the forward ends of the arms 11, 11 are adjustably secured by means of bolts 14, in curved guides 15, 15 secured to the outer sides of the casing. Obviously, the arms 11, 11 might be slotted and the bolts 14 be secured to the casing to attain the same end.

Motion is conveyed to the road brush, as shown in Figs. 3 and 6, by a chain wheel 16 fast on the transfer brush axis 6' and connected by a chain 17 to a wheel 18 mounted on the pivot stud 13 of link 12. A second wheel 19 (see Fig. 3) fast with the wheel 18 conveys motion by a chain 20 to a wheel 21 loosely mounted on the bolt 14 connecting the lower end of the link 12 to the end of its brush arm 11, and another wheel 22 fast with the wheel 21 conveys motion by a chain 23 to a wheel 24 fast on the axis of the rear road brush.

In addition to more effectively maintaining the road brush in contact with the road surface, the method of mounting the road brush above described enables me to readily compensate for wear of the brush. Hitherto, as the road brush has decreased in diameter owing to wear, it has been necessary to speed up the machine in order to compensate for the increased distance the brush had to throw the sweepings to properly deliver them to the transfer casing. By appropriate adjustment of the bolts 14 in the curved guides 15, 15 the brush axis can be carried towards the casing, and the brush be maintained effective, without any speeding up of the machine, until the fibres are worn almost completely away. The advantage of this and the saving in brush renewals will be obvious. In order to maintain the correct driving length of the chain 20, the centre from which the curve of the guides 15—15 is struck is that of the pivot stud 13 of the link 12.

A further advantage presented by the mounting described is that adjustment of the road brush to suit different cambers of roads is rendered possible. At present if a road is heavily cambered there is a tendency for the brush, extending as it does at right angles to the direction of travel, to throw the sweepings towards one side and deposit or leave a trail of sweepings behind one end of the brush. By means of the improved mounting, either end of the brush can be adjusted independently to be the requisite amount in advance of the opposite end to compensate for the effect of the camber.

As before stated, the method of mounting the road brush obviates the necessity for speeding up the machine to get a quicker peripheral speed of the brush as it becomes worn.

Actually the invention provides for a slower peripheral speed of the road brush by arranging that the sweepings instead of being thrown by the brush either directly through the aperture 5 or on to a fixed plate inclining upwardly to the lower edge of such aperture, are thrown on to a plate 25 pivoted at 26 to the brush casing and moved intermittently about its pivot by a rod 27 actuated in this instance by a cam 28 mounted on the axle of the rear road wheel 3. Other means may be employed to give intermittent movements to the rod 27.

By suitably proportioning the cam or otherwise arranging that the rod 27 is raised once during each determined distance of travel of the machine, any sweepings which may have failed to enter the chamber 6 through the aperture 5 under the impetus given to them by the road brush, and have consequently accumulated on the plate 25, will be raised into the path of the transfer brush in chamber 6 and be carried forward by such brush.

To avoid the dropping back on to the road surface, of any sweepings which may have accumulated on plate 25, in the event of the road brush being arbitrarily raised from the road surface for any reason connecting devices 29 are provided between the usual hand-operated brush raising gear and the lever 30 by means of which the cam 28 operates the rod 27, so that when the brush raising gear is operated to raise the rear road brush 3 and the usual front pilot brushes, one of which is shewn at 31, the rod 27 and consequently the plate 25 will also be raised.

It will be recognized that the slow running of the rear road brush, made permissible by the use of the intermittently moving plate 25, is made practically possible by the method of mounting the brush according to which the decreasing throw given to the sweepings as the brush decreases in diameter, can be compensated for.

The details of construction and arrangement of the parts employed to carry the invention into practice may vary.

Having thus described my invention, what I claim as new and desire to secure by Letter Patent is:—

1. In a street sweeping machine, the com-

bination, with a casing having an inlet for dust at its lower part, of a stud projecting laterally from one side of the casing, a pair of horizontally arranged arms, a road brush journalled in the rear end portions of the said arms, curved guides and connecting bolts between the front ends of the said arms and the said casing, the said guides being curved concentric with the axis of the said stud and arranged below it and adapted to permit the said brush to be adjusted horizontally with respect to the said inlet, a radius link pivoted to the said stud and to one of the said connecting bolts, a driving wheel journaled on the said stud, means to rotate the said driving wheel, and driving mechanism operatively connecting the said driving wheel with the road brush.

2. In a road sweeping machine, the combination, with a casing having an inlet for dust at its lower part, and a road brush supported from the said casing and delivering into the said inlet and provided with means for revolving it and having also means for adjusting it horizontally with respect to the said inlet; of a receiving plate for dust pivoted to the said casing and forming the lower part of its said inlet, and means for oscillating the said plate intermittently as the machine is moved along without affecting the adjustment of the road brush.

In testimony whereof I affix my signature.

JOHN WILLIAM JEMMISON.