

B. NATHAN & G. HEUSER.
SWEEPING MACHINE.
APPLICATION FILED APR. 19, 1909.

942,970.

Patented Dec. 14, 1909.

3 SHEETS—SHEET 1.

Fig. 1.

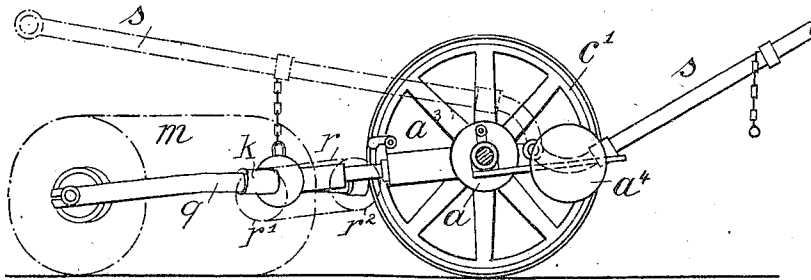
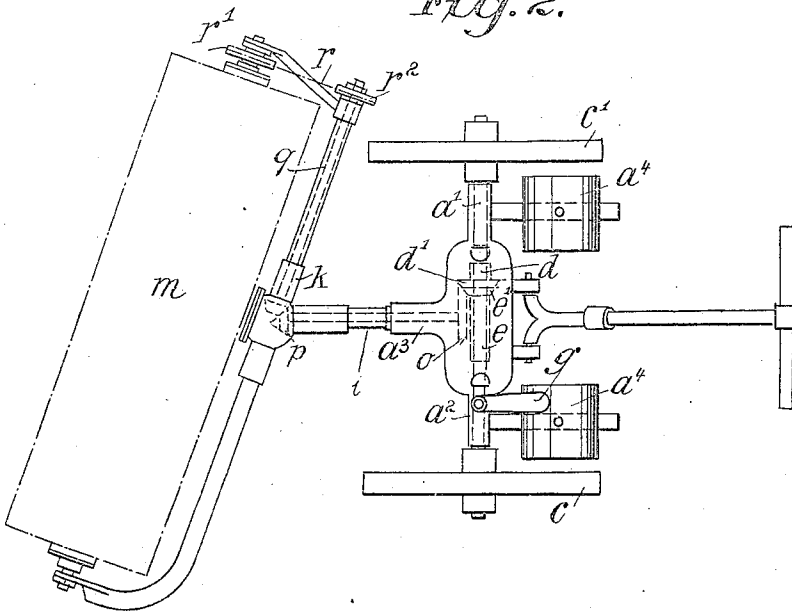


Fig. 2.



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3 SHEETS—SHEET 2.

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3 SHEETS—SHEET 3.

Fig. 5.

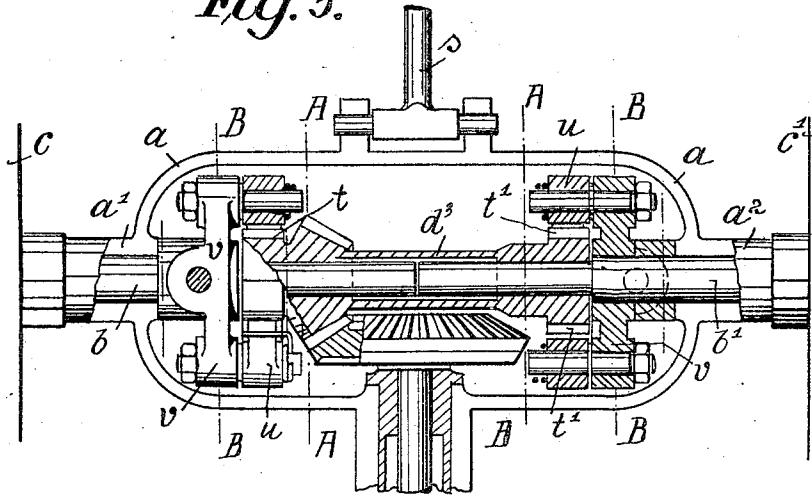


Fig. 6.

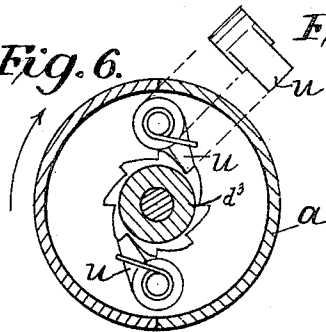


Fig. 8.

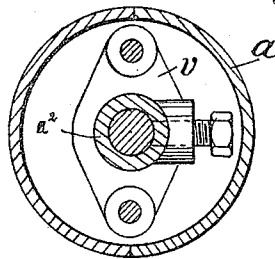


Fig. 7.

Fig. 9.

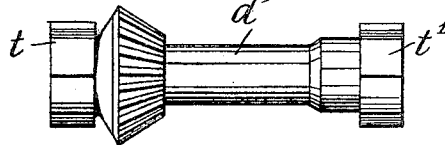
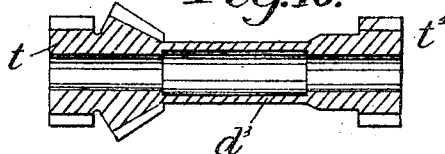


Fig. 10.



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UNITED STATES PATENT OFFICE.

BERNHARD NATHAN AND GUSTAV HEUSER, OF FRANKFORT-ON-THE-MAIN, GERMANY.

SWEEPING-MACHINE.

942,970.

Specification of Letters Patent.

Patented Dec. 14, 1909.

Application filed April 19, 1909. Serial No. 490,900.

To all whom it may concern:

Be it known that we, BERNHARD NATHAN and GUSTAV HEUSER, residents of Frankfort-on-the-Main, Germany, subjects of the German Emperor, have invented certain new and useful Improvements in Sweeping-Machines, of which the following is a specification.

The present invention relates to sweeping machines of the character employing a rotary brush, and the primary object of the invention is to provide a construction by which the brush is adapted to rock about an axis extending longitudinally of the machine or carriage, as well as about an axis parallel with an axle of such carriage, to permit the brush to adapt itself to inequalities in the surface over which it is moved.

A further object of the invention is to provide a construction in which the brush actuating or rotating means may be easily connected with or disconnected from the supporting wheels of the machine, and in which most of the gearing employed for actuating the brush is inclosed and protected from dust etc.

In the accompanying drawings: Figure 1 is a side elevation illustrating a sweeping machine constructed in accordance with the present invention; Fig. 2 is a plan; Fig. 3 is a plan, partially in section, on an enlarged scale, of portions of the machine; Fig. 4 is a view of some of the parts shown in Fig. 3, the brush rotating means being disconnected from the driving axle; Fig. 5 is a horizontal sectional view through the driving axle and parts adjacent thereto, illustrating a slightly modified form of connection between such axle and the main brush driving shaft from that shown in Figs. 3 and 4; Figs. 6 and 7 are respectively sectional views on the lines A—A and B—B of Fig. 5; Fig. 8 is a face view of one of the pawls shown in Figs. 5 and 6; Figs. 9 and 10 illustrate in elevation and longitudinal section the sleeve surrounding the sections of the driving axle in the form of the invention shown in Fig. 5.

Referring to the drawings, it will be seen that the machine comprises a pair of ground or supporting wheels *c, c'*, which, as shown in Figs. 1 to 4, are respectively connected to sections *b, b'* of a divided axle. The axle sections *b, b'* extend through sleeves *a', a''* projecting from a casing *a*, and on said axle sections within the casing are mounted

sleeves *d, e*, which are respectively connected with the axle section *b, b'* by suitable splines or feathers, so that the sleeves will rotate with the axle while being capable of adjustment longitudinally thereof.

A sectional bevel gear, the members *d', e'* of which are respectively connected with the sleeves *d, e*, meshes with a driving gear *o* secured to one end of a shaft *n*, which extends longitudinally of the machine and may be termed the main brush driving shaft. This shaft *n* is mounted in suitable bearings formed within the member *i* of the brush supporting frame, said member *i* extending into the tubular projection *a''* of the casing and being adapted to rock or turn therein about the axis of the shaft *n*.

The brush *m* is mounted in bearings carried by a frame comprising the aforesaid tubular member *i* and lateral arms *k, l*. The arms *k, l* are preferably made tubular, and within one of them is mounted a shaft *q* having at one end a pinion engaging a similar pinion *p* on the main driving shaft *n*. The other end of the shaft *q* extends beyond the brush supporting frame and is provided with a suitable sprocket *r''*, which is connected by means of a chain *r* with a similar sprocket *r'* on the supporting shaft of the brush.

From the foregoing description it will be seen that when the pinion *d', e'* is in engagement with the driving gear *o* the rotary movement of the wheels *c, c'* will be transmitted to the shaft *n*, and that the entire brush supporting frame is adapted to rock or move vertically about the transverse axis of the axle sections *b, b'* and also that the brush and the frame *k, l, i* can rock about the axis of the shaft *n* which extends longitudinally of the machine. Thus the brush is adapted to adjust itself to any inequalities in the surface over which it is moved independent of the position of the wheels *c, c'*.

Means are provided whereby the axle sections *b, b'* can be disconnected from the brush rotating means so that the brush will not be turned as the machine is moved. As shown the sleeves *d, e* are connected with arms attached to a sliding rod *f* mounted in casing *a*, and to one end of said rod is attached an operating lever *g*. A spring *h* acts to force the compound pinion *d', e'* away from the driving gear *o* or into the position shown in Fig. 4. By turning the

lever *g* into the position shown in Fig. 3, however, the sleeves *d*, *e* will be moved longitudinally of the axle into the position shown in Fig. 3 where the pinions *d'*, *e'* mesh with the driving gear *o*. The operating lever *g* is provided with a flat face so that when turned into the position shown in Fig. 3 it is locked therein.

Weights *a*⁴ are adjustably mounted on arms projecting from the sleeves *a'* *a*² of the casing *a* to counterbalance the weight of the brush and its supporting frame. A handle *s* connected with the casing *a* may be employed for moving the machine, and if it is desired to lift the brush from contact with the ground said handle *s* may be turned into the position shown at the left in Fig. 1 and a chain thereon engaged with a suitable eye on the brush supporting frame.

In the modification of the invention illustrated in Figs. 5 to 10 a single sleeve *d*³ surrounds the inner ends of the axle sections *b*, *b'*, and in addition to having thereon a pinion meshing with the pinion at the end of the brush driving shaft within the casing *a*, said sleeve is provided at its ends with ratchets *t*, *t'*, with which engage spring-pressed pawls *u* carried by holders *v* having collars or sleeves secured to the axle sections *b*, *b'*. By this construction it will be seen that when the wheels *c*, *c'* are moving in one direction the movement thereof will be transmitted to the brush rotating means through the pawls *u* and ratchets *t*. If the machine is moved in the opposite direction the pawls will slip idly over the ratchets and no rotary movement be imparted to the brush.

It will be noted that all of the gearing between the driving axles and the brush is inclosed and protected from dust, and also the present invention makes it possible to vary easily the pressure which is exerted by the brush on the surface over which it is moved. That is, the weight of the carriage is not transmitted to the brush; but the latter is so supported and arranged with relation to the carriage and the counterweights that it can bear upon a surface to be cleaned with a relatively light pressure.

Having thus described the invention what

is claimed and desired to be secured by Letters Patent is:

1. In a sweeping machine, the combination of a pair of wheels, a sectional axle having two members connected respectively with said wheels, a rotary brush, a shaft geared to the brush and connected with a suitable driving gear, and two pinions each connected to turn with one of said sections of the axle and engaging said bevel gear.

2. In a sweeping machine, the combination of a pair of wheels, a sectional axle having two members connected respectively with said wheels, a rotary brush, a shaft geared to the brush and connected with a suitable driving gear, two pinions adapted to engage said gear and connected respectively to the sections of the axle, and means for simultaneously moving the pinions to and from engagement with the gear.

3. In a sweeping machine, the combination of a pair of wheels, a sectional axle having two members connected respectively with said wheels, a rotary brush, a shaft geared to the brush and connected with a suitable driving gear, two pinions connected respectively to the two members of the axle and arranged side by side and both adapted to engage said driving gear, and means for moving both pinions to and from engagement with the gear.

4. In a sweeping machine, the combination of a pair of wheels, a sectional axle having two members connected respectively with said wheels, a sleeve slidably mounted on each section of the axle and connected thereto to turn therewith, a pinion carried by each sleeve, a gear adapted to engage the pinions, a rotary brush connected with the gear, and means for moving the pinion supporting sleeves longitudinally of the axle to and from engagement with said gear.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

BERNHARD NATHAN.
GUSTAV HEUSER.

Witnesses:

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MICHAEL POLK.