

UNITED STATES PATENT OFFICE.

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BRUSH FOR ROAD-SWEEPING MACHINES.

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The invention relates to brushes for road-sweeping machines, and has for its object to provide an improved articulated brush which can be caused to assume a stable arcuate form, whereby the rear or trailing end of the brush, if the brush is disposed diagonally, will throw the sweepings inwardly at an angle to the line of travel of the vehicle and thus avoid the deposit on the road surface of a trail of refuse. Further objects of the invention are to construct an articulated brush which can be raised from the road surface without sagging, and in which no undue gaps are left or formed between the bristles of the various brush sections.

A brush according to the invention is characterized in that it is built up from a series of juxtaposed sections, the opposed surfaces of which form in effect ball-and-socket joints, and which are flexibly connected together in such a manner that the opposed surfaces of adjacent sections are held together by spring action to form a stable structure capable of functioning when bent into arcuate form and of retaining alignment when raised vertically by means of end supports.

In the accompanying drawing

Fig. 1 illustrates, in section, a brush embodying the invention in a constructional form in which separate springs are employed for the several segments, whilst

Fig. 2 is a similar view of the stock portion of a construction in which a single spring serves for all the sections, and serves also as a driving medium for the sections.

Referring firstly to Fig. 1, a series of cylindrical wooden blocks *a* are employed, each having at one end a spherical concavity *b* and having, or being shaped to form, at the other end a convex surface *c* of similar radius to the concavities *b*. A board *d* of rectangular section extends axially through each block and is enlarged at the convex end of the block to form a recess *e*.

Extending through the bore of each block is a short spindle *f* of similar section to the bore and having at each end a two-armed collar *g*. Between the base of the recess *e* and the boss of the collar at that end of a spindle, a spiral spring *h* is confined. The blocks are built up, as shown, with the convexity of one fitting into the concavity of the next, the two-armed collar *g* projecting from the concave end of one block extending into

the recess in the convex end of the adjacent block and being secured to the two-armed collar in said recess by a cruciform member *i* of suitable flexible material. As will be understood, adjacent collars have their arms extending at right angles to one another.

The spindle *f'* of one end block *a'* is connected to, or constitutes a driving shaft, and is supported in a bearing, not shown, arranged at a suitable angle to the line of travel of the machine. The outer face of the block *a'* is made plane, and has bearing against it a collar or nut *j* adapted to be secured in adjusted position on the spindle, as by means of a set screw or by arranging for it to work on a threaded part of the spindle. At the opposite end of the stock constituted by the built-up sections, the spindle *f''* of the end block *a''* passes through a bush *k* carried by a suitable supporting member *m*, and outside this member there is passed on to the spindle a cap block *n* which is secured in position by a nut *f'''* on the screwed end of the spindle. This cap block is provided with bristles the outer end portions *o* of which are set at such an angle that they project, as shown, beyond the end of the block and thus enable them to penetrate into the angle of a gutter.

The brush having been assembled in the manner indicated, the collar or nut *j* is caused to exert pressure against the block *a'*, thus compressing each of the springs *h* and forcing the co-operating convex and concave surfaces of adjacent sections into close contact.

The support *m* for the outer end of the brush is of such length that when secured in position the brush is bent into an arc of appropriate radius with, in the case of a diagonally set brush, the chord joining the ends of the brush forming a suitable angle to the line of travel.

As the brush is rotated, the ball-and-socket jointing of the sections permits one section to roll, as it were, upon or against another and gives an even rotation from end to end without any jerking action.

By reason of the spring action between the various segments, raising of the end supports of the brush enables it to be lifted bodily whilst retaining a horizontal alignment, thus permitting it to be raised clear of the road surface without sagging.

The construction also enables the bristles *p* at the ends of each block or section to be so

set as to present practically a solid sweeping surface from end to end, without objectionable gaps between sections.

In the arrangement shown at Fig. 2, instead of a separate spring being employed for each section as in Fig. 1, a single coiled spring r is made to serve for all the sections, and this spring is also utilized to transmit the drive.

In this instance the spring r passes loosely through bores in the several sections a , and in the recess e of each section there is provided a member s which is threaded internally to engage with the helix of the spring as a nut. The spring is connected at one end to a square spindle f' passing through a bore of similar section in the end block a' , and connected to or forming a driving shaft, and at its opposite end it is connected to a square spindle f'' passing through the end block a'' and carrying a cap block n as in Fig. 1. A collar t is provided on the spindle to bear against the inner end of the recess e in the block a'' . In assembling this construction, the block a' is first placed in position, and the blocks a are passed to the spring in succession, each with its nut member s . The blocks a'' and n are then placed and secured in position, and the spring is rotated by means of the driving shaft in a direction to draw it through the nut member s . Each of these members being thus caused to bear against the inner end of its recess the convex and concave surfaces of the several sections being thus forced into close contact. The desired extension of the spring having been effected, the collar or nut j is secured on the spindle f' to bear against the outer face of the block a' .

It will be apparent that as the driving spindle f' is rotated the tension of the spring operates to hold the sections in contact, and its action as it tends to work through the nut members s causes such member to bear against the end faces of their recesses and impart rotation to the several sections. When the

spring is actually driving, its tendency is to elongate and the pressure exerted between the blocks or sections is reduced, thus enabling the brush to adapt itself very effectively to undulations in the road surface.

This construction is, if anything, preferred to that of Fig. 1, since the length of spring between the nut member of one section and the end of the bore of the adjacent section can be made relatively short and a more stable construction be thus obtained.

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

1. An articulated rotary brush comprising a series of sections having ball and socket contact with one another, and means for holding said sections together.

2. An articulated rotary brush comprising a series of sections having ball and socket contact with one another, and flexible means extending through said sections to hold them together.

3. An articulated rotary brush comprising a series of sections having ball and socket contact with one another, and means for holding said sections together including yieldable portions contacting with said sections.

4. An articulated rotary brush comprising a series of sections having ball and socket contact with one another, and flexible means extending through said sections to hold them together and including yieldable portions contacting with said sections.

5. An articulated rotary brush comprising a series of sections having concaved and convexed portions fitted together to provide ball and socket joints between the sections, and flexible and spring means extending through said sections and contacting therewith to hold said sections together under spring influence.

In testimony whereof I affix my signature.

JOHN WILLIAM JEMMISON.