Feb. 28, 1928. 1,660,334

G. T. JANCOVIUS

CARPET CLEANING MACHINE

Filed June 14, 1926. 3 Sheets-Sheet 1

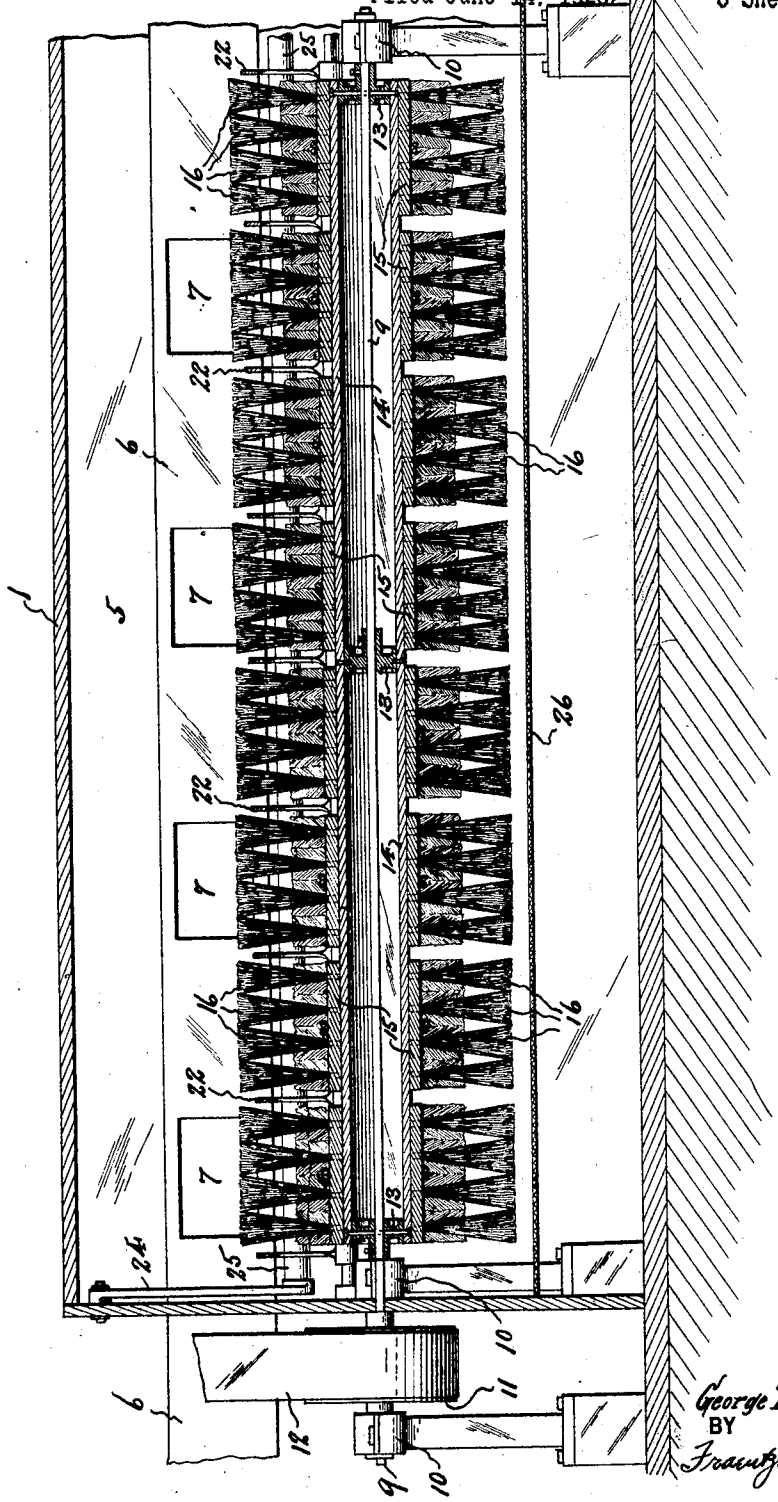


Fig. 1

INVENTOR
George T. Jancovius,
BY
Fraser, Hefner and Richards,
ATTORNEYS

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G. T. JANCOVIUS

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Filed June 14, 1926 3 Sheets-Sheet 2

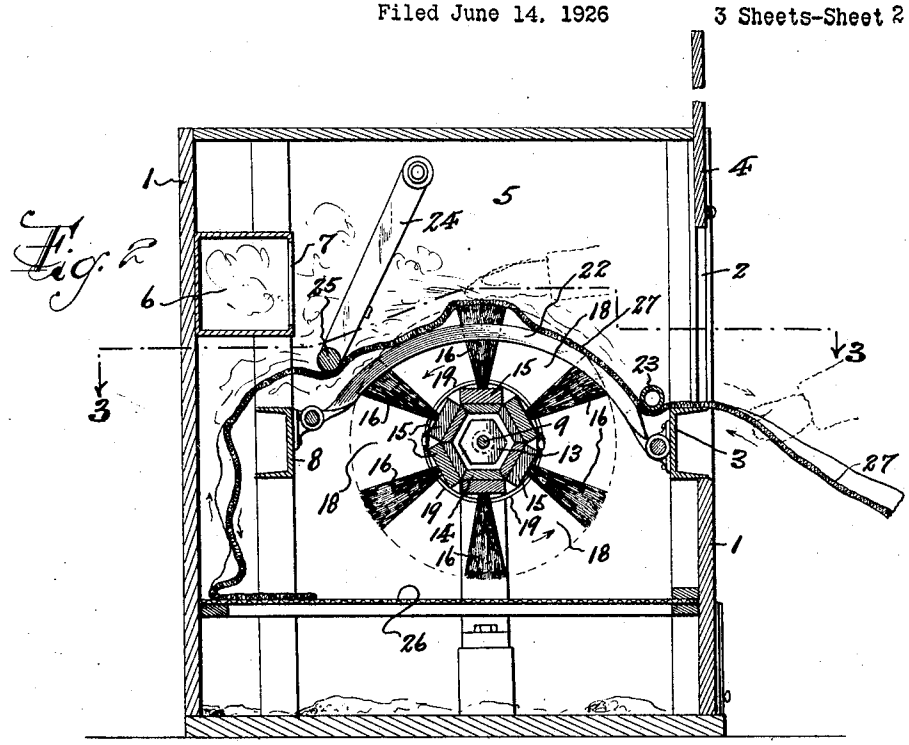


Fig. 2

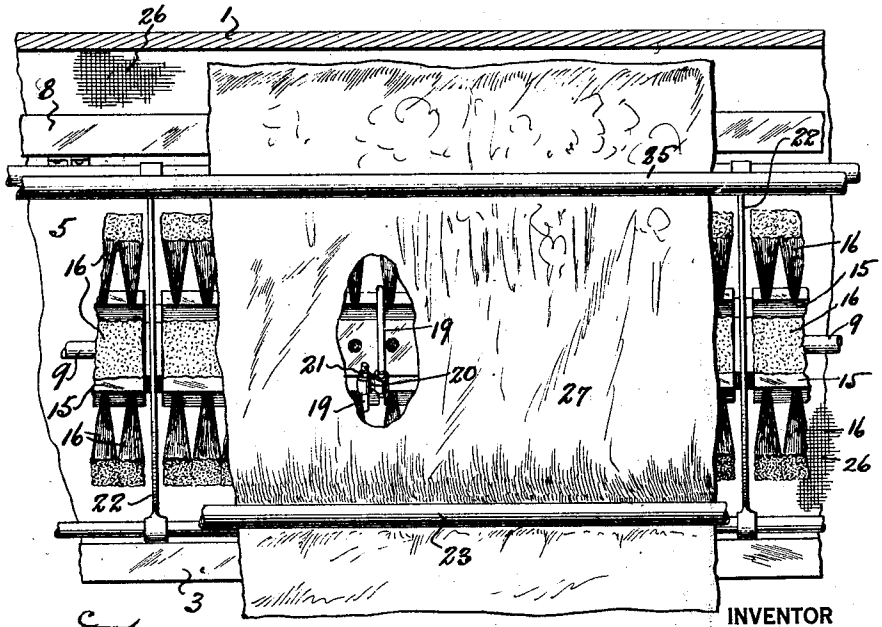


Fig. 3

INVENTOR
George T. Jancovius,
BY
Fraser Hyde & Richards,
ATTORNEYS

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G. T. JANCOVIUS

CARPET CLEANING MACHINE

Filed June 14, 1926 3 Sheets-Sheet 3

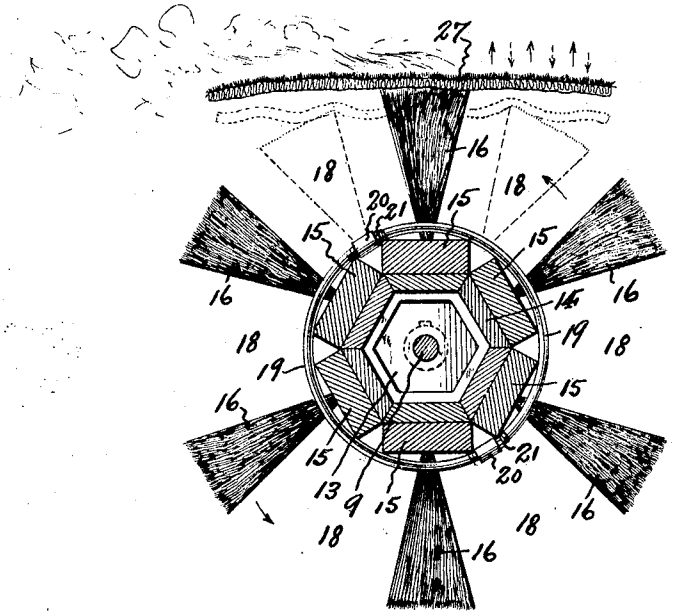


Fig. 4

Fig. 5

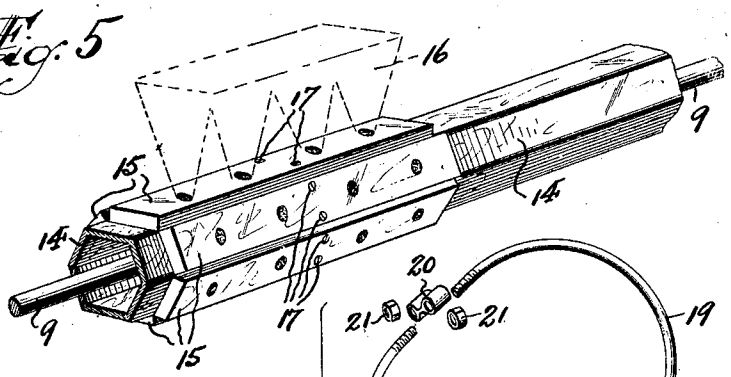
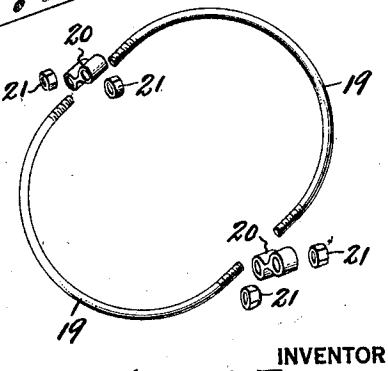


Fig. 6



INVENTOR
George T. Jancovius,
BY
Frantzel and Richards,
ATTORNEYS

Patented Feb. 28, 1928. 1,660,334

UNITED STATES PATENT OFFICE.

GEORGE T. JANCOVIUS, OF NUTLEY, NEW JERSEY.

CARPET-CLEANING MACHINE.

Application filed June 14, 1926. Serial No. 115,809.

This invention relates, generally, to improvements in carpet cleaning machines; and the invention has reference, more particularly, to a novel construction and arrangement of power driven mechanism adapted to function in connection with carpets, rugs and the like to remove dirt and dust therefrom in a thorough and efficient manner.

This invention has for its principal object to provide a compact machine comprising a cabinet or housing having means to carry off suspended dust from its interior, and within which is rotatably mounted a novel construction of combined agitating or shaking and brushing device operative to both rapidly shake, vibrate or agitate the carpet, rug or the like brought into contact therewith, as well as to brush the same.

The invention has for a further object to provide a novel construction of agitating and brushing roll, provided with a novel arrangement and construction of radiating metallic bristle elements.

Other objects of this invention, not at this time more particularly enumerated, will be clearly understood from the following detailed description of the same.

The invention is clearly illustrated in the accompanying drawings, in which:—

Figure 1 is a longitudinal vertical section through the carpet cleaning machine; Figure 2 is a transverse vertical section through the same; Figure 3 is a fragmentary horizontal section through the same, taken on line 3—3 in Figure 2; Figure 4 is a transverse section through the novel agitating and brushing roll in operative relation to a carpet to be cleaned, with the mode of operation indicated by dotted lines; Figure 5 is a fragmentary perspective to illustrate, in part, the manner of assembling the bristle elements of the agitating and brushing roll; and Figure 6 is a perspective view of a disassembled means used to fasten the bristle elements to the roll.

Similar characters of reference are employed in all of the hereinabove described views, to indicate corresponding parts.

Referring now to said drawings, the reference character 1 indicates a suitably constructed cabinet or housing, which is provided in the upper portion of its front wall with an opening 2 coextensive with the length of the cabinet or housing. The lower side of said opening 2 is preferably bounded by a sill 3, and said opening 2 may be further provided with a vertically slidable door 4.

Arranged within the upper rear portion of the cabinet or housing interior 5 is a longitudinally extending conduit 6 provided with suitably disposed openings 7 communicating with said interior 5 of the cabinet or housing. Suitable means (not shown) is provided in connection with said conduit 6 for creating within the same an air suction draft adapted to draw into and carry away through said conduit, the dust liberated from carpets, rugs, etc. undergoing cleaning operations within said housing or cabinet.

Arranged within the cabinet or housing interior 5 in rearwardly spaced and parallel relation to the sill 3 is a longitudinal girder 8.

Extending longitudinally through the cabinet or housing interior 5 intermediate the sill 3 and girder 8 is a driven shaft 9 journaled in bearing pedestals 10. One end of said shaft projects exteriorly from the cabinet or housing, and is provided with a drive pulley 11, over which runs a driving belt 12 actuated from any suitable power transmission means. Secured upon said shaft 9 by longitudinally spaced spider members 13 is a drum sleeve 14. Said drum sleeve 14 is of a suitable polygonal shape in cross section, for example, of hexagonal cross sectional shape as shown in the drawings, thus providing a plurality of symmetrically disposed angular faces. The novel agitating and brushing roll of which said shaft 9 and drum sleeve 14 form a part, is further made up by mounting on the angular faces of said drum sleeve 14 a plurality of radially disposed metallic bristle elements. These latter elements are produced in sectional form, each section comprising a suitable back or block 15 having secured therein for outward projection therefrom a row of bristle bunches 16. The bristles forming said bristle bunches are made of tempered steel wires or filaments, which while being resilient or springy, are nevertheless adapted in use to retain their radially projecting arrangement without easily bending out of shape, breaking or becoming otherwise displaced, while at the same time being neither too soft for effective manipulation of a carpet moved into contact therewith during the cleaning operations, nor so harsh as to be likely to in any way injure the carpet fabric. The bris-

tle carrying blocks 15, thus provided, are arranged in end to end relation and longitudinally spaced slightly apart along each face of the drum sleeve 14, being held in position by fastening screws 17 extending through each block 15 into the body of said drum sleeve 14. As thus disposed the bristle blocks are arranged in longitudnal rows, the bristles of each row projecting radially from the drum sleeve 14 in angular divergent relation to the bristles of adjacent rows, thus providing substantial intervening spaces 18 between the rows thereof. In order to securely retain the bristle blocks against displacement when the agitating and brushing roll is rotated at comparatively high speed, each annular group of bristle blocks is encircled by a binding hoop or tie rod means. Each binding hoop or tie rod means comprises a pair of substantially semi-circular tie-rods 19, the free ends of which are threaded. These semi-circular tie-rods 19 are respectively passed around opposite sides of each group of bristle blocks with their threaded ends engaged through twin coupling sleeves 20, being retained in such connection by nuts 21 which are secured upon the portions of said threaded ends which project beyond said twin coupling sleeves 20. It will be clearly apparent that when the nuts are screwed home, the tie-rods 19 will be very tightly drawn down in secure holding and embracing relation to each annular group of bristle blocks, thus firmly securing the same against loose play or accidental displacement when the roll is operated.

Secured to and extending transversely between the sill 3 and rear girder 8, so that the same lie intermediate the annular groups of bristle blocks 15 of the roll, are upwardly arched supporting bars 22, which thus extend above the roll, but spaced beneath the circumference thereof as determined by the free ends of the bristles 16. Spaced above the outer ends of said supporting bars 22 is a longitudinally extending fixed keeper bar 23. Pivotally supported by swinging arms 24 mounted on the end walls of the cabinet or housing, so as to extend longitudinally above the rearward ends of said supporting bars 22 is a movable keeper bar 25.

Extending through the lower portion of the cabinet or housing interior 5 beneath the agitating and brushing roll is a partition screen 26, which subdivides the cabinet or housing interior 5 so as to provide a dirt repository in its lower portion beneath said screen.

In operation, the agitating and brushing roll is rapidly rotated at comparatively high speed. The carpet, rug or the like 27, which is to be cleaned, is inserted through the front opening 2, and passed beneath the keeper bar 23, and then pushed inwardly over the supporting bars 22 so as to be positioned above the rapidly rotating agitating and brushing roll. The rotation of the roll causes the rows of bristle bunches to successively sweep upwardly against the carpet 27, the engaged portion of which is thus raised as each bristle row moves to and passes the top of its sweep (as shown by the full lines in Figure 4), and lowered toward an intervening space 18 as one bristle row recedes and the following bristle row approaches the top of its sweep (as shown by the dotted lines in said Figure 4). It will thus be apparent that the rapid rotative passage of the rows of bristle bunches into and out of contact with the carpet 27 will produce a very rapid up and down vibratory shaking movement or agitation thereof, which tends to quickly and easily dislodge the dirt and dust from the interstices of the carpet fabric. At the same time the sweeping action of the bristle bunches 16 exercise a brushing effect upon the carpet fabric. The novel arrangement of radially projecting annularly spaced rows of bristle bunches, the bristles of which are formed by tempered steel filaments, are more or less yieldable so that they efficiently exercise their agitating and brushing effects without undue harshness, and therefore do not give rise to any risk of injury to the carpet fabric. The carpet is slowly fed inwardly and outwardly across the agitating and brushing roll so that each part thereof is operatively carried into contact with the roll, these operations being continued until the contained dust and dirt is removed. When treating a light weight rug or carpet, the inwardly moving end of the same is passed beneath the movable keeper bar 25, so that the latter in conjunction with the fixed keeper bar 23 serves to hold the body thereof down and effectively presented to the action of the roll. When treating a heavy weight carpet or rug it is not necessary to pass the same beneath either the fixed keeper bar 23 or the movable keeper bar 25, since the weight of the carpet, as fed forward by the hands of the operators, will be sufficient to keep the same in operative contact with the roll; in such case therefore, the movable keeper bar may be swung upwardly and out of the way.

As already above indicated the floating dust ejected from the carpet will be sucked away through the suction conduit 6. The heavier dirt will settle within the housing interior, and will fall through the screen 26 into the bottom of said interior, from whence accumulations thereof may be from time to time removed.

In addition to the novel mode of operation effective by reason of the novel structural character of the agitating and brushing roll as above described, other advantages inherent in the structural arrangement thereof are obtained. Among such advantages may

be pointed out, the ease with which individdual bristle blocks 15 may be removed and replaced in connection with the drum sleeve 14, as occasion may require; the firm and secure means provided for retaining each annular group of bristle blocks against accidental displacement, loosening or similar disarrangement; and the durable character of the bristle bunches 16 composed of metallic bristles or filaments.

I am aware that some changes may be made in the general arrangements and combinations of the various devices and parts, as well as in the details of the construction of the same, without departing from the scope of this invention as described in the foregoing specification, and as defined in the appended claim. Hence, I do not limit my invention to the exact arrangements and combinations of the devices and parts as set forth in the foregoing specification, nor do I confine myself to the exact details of the construction of said parts as illustrated in the accompanying drawings.

I claim:—

In a carpet cleaning machine, an agitating and brushing roll comprising a driving shaft, a drum sleeve of polygonal cross sectional shape to provide a plurality of symmetrically disposed longitudinally extending angular faces, means for securing said drum sleeve to said shaft, a plurality of bristle blocks each having a row of outstanding bristle bunches composed of resilient metallic filaments, said bristle blocks being arranged in end to end spaced relation along each drum sleeve face and in annular groups around said drum sleeve to provide longitudinal radial rows of bristle bunches, each radial row of bristle bunches being in angularly divergent relation to adjacent rows to provide substantial spaces intermediate said rows, and means to secure said bristle blocks to said drum sleeve.

In testimony, that I claim the invention set forth above I have hereunto set my hand this 10th day of June, 1926.

GEORGE T. JANCOVIUS.