No. 749,727. PATENTED JAN. 19, 1904.

G. E. FREDERICKS.

HORSE CLEANER.

APPLICATION FILED JUNE 1, 1903.

NO MODEL.

FIG. 1

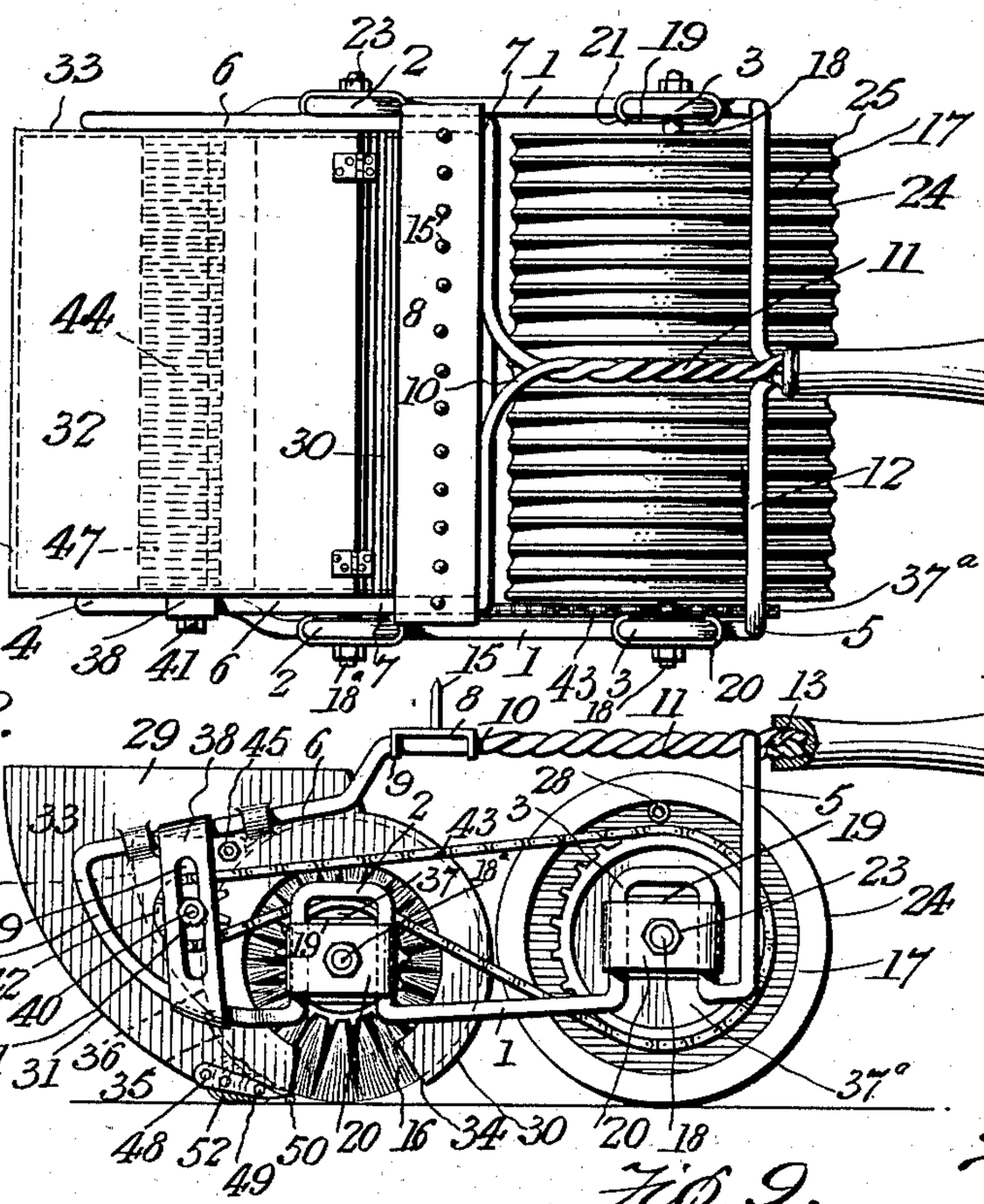


FIG. 2.

FIG. 7.

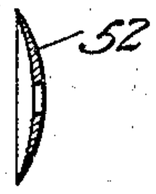


FIG. 3.

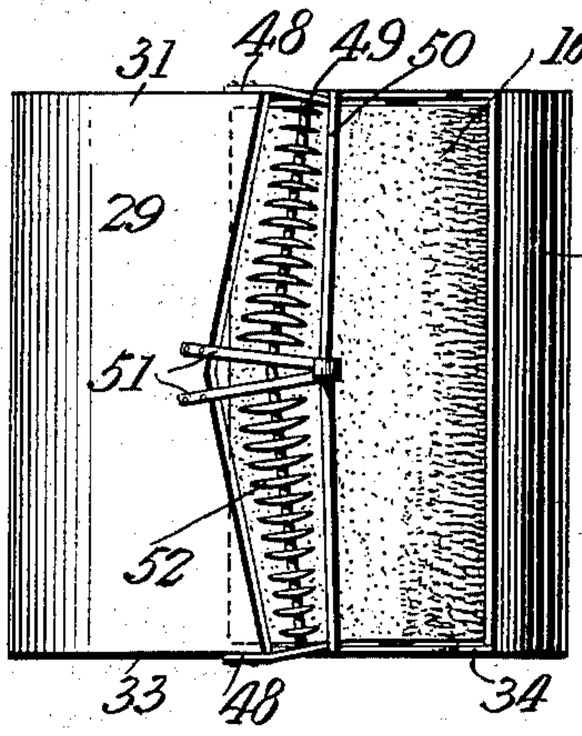


FIG. 8

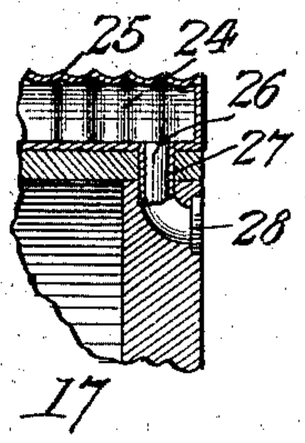


FIG. 9.

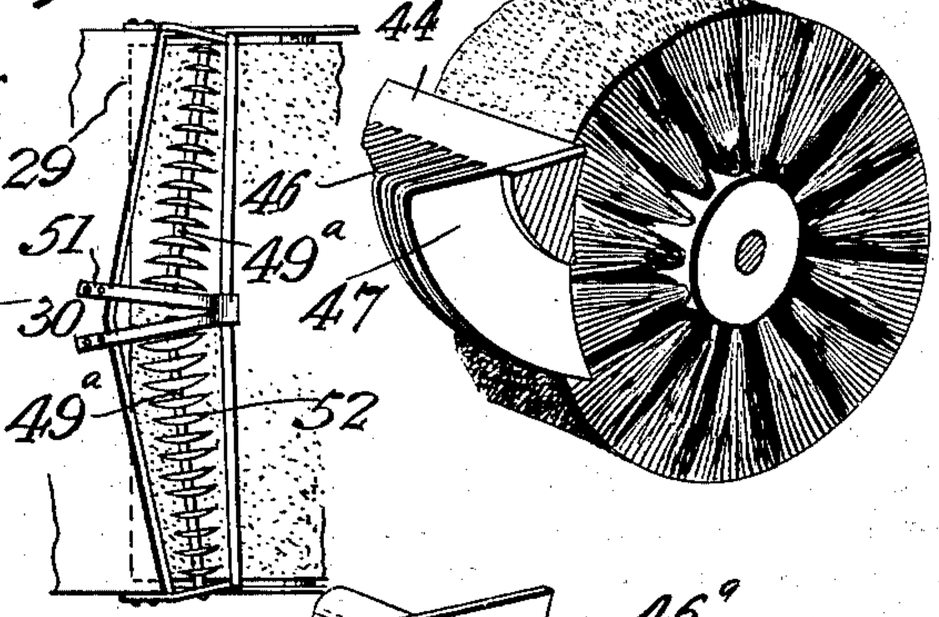


FIG. 6.

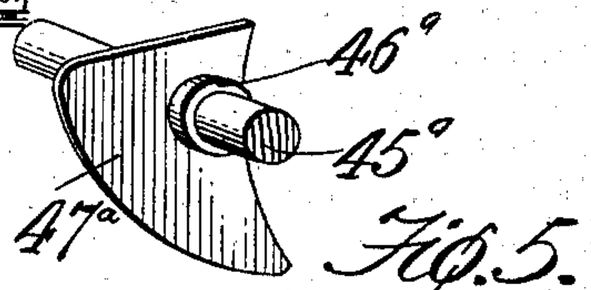
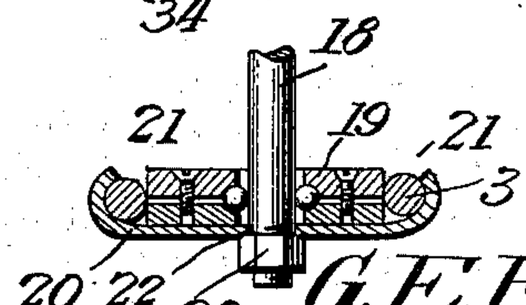


FIG. 5.



Witnesses
E. F. Stewart
Wm. Bagger

G. E. Fredericks, Inventor.
by Cachow & Co.
Attorneys

No. 749,727. Patented January 19, 1904.

UNITED STATES PATENT OFFICE.

GEORGE E. FREDERICKS, OF HAMLER, OHIO.

HORSE-CLEANER.

SPECIFICATION forming part of Letters Patent No. 749,727, dated January 19, 1904.

Application filed June 1, 1903. Serial No. 159,662. (No model.)

To all whom it may concern:

Be it known that I, GEORGE E. FREDERICKS, a citizen of the United States, residing at Hamler, in the county of Henry and State of Ohio, have invented a new and useful Horse-Cleaner, of which the following is a specification.

This invention relates to horse-cleaning devices of that class which comprise in their construction a rotary brush and a roller adapted to bear against the body of the horse, motion being transmitted from said roller to the said rotary brush and an example of which may be seen in the device for which application for Letters Patent of the United States, Serial No. 132,589, was filed by myself on November 24, 1902.

My present invention has for its object to provide a device of this class which shall possess superior advantages in point of simplicity, durability, and general efficiency; and with these ends in view it may be said to consist in certain structural features which will be hereinafter fully described, and particularly pointed out in the claims, and among which may be named an improved construction of the roller-frame, the method of connecting the comb with the frame, an improved brush-cleaning device, an improved dust box or receptacle comprising also a shield for the rotary brush, improved means for mounting the brush and the roller, an improved construction of a roller for transmitting motion to the brush, said roller being provided with an inflatable tire, and an improved cleaning device comprising a series of rotary disks adapted to coöperate with the rotary brush for the purpose of loosening the dirt and conveying the same, as well as loose hairs and the like, into the dust box or receptacle. These and othea features, which will appear as the invention is more perfectly understood, are illustrated in the accompanying drawings, in which—

Figure 1 is a top plan view of a device constructed in accordance with the principles of my invention. Fig. 2 is a side elevation of the same. Fig. 3 is a bottom plan view showing the brush, the dust-box, and the currying device. Fig. 4 is a perspective view showing one end of the brush and the brush-cleaner. Fig. 5 is a perspective detail view illustrating a modified construction of the brush-cleaner. Fig. 6 is a horizontal sectional detail view taken through one end of the roller-shaft and the bearing for the same. Fig. 7 is a sectional detail view of one of the currying-disks detached. Fig. 8 is a detail sectional view through portion of one end of the traction-roller. Fig. 9 is a detail view illustrating a modification.

Corresponding parts in the several figures are indicated by similar numerals of reference.

In carrying out my invention I provide a frame bent from wire of suitable gage and comprising two sides 1, each provided with a pair of inverted-U-shaped loops 2 3 and having upwardly-extending front and rear ends 4 and 5, the former of which are curved and provided with rearward extensions 6, having straight terminals 7, which are about on a level with the upper ends of the upturned portions 5. A comb 8 is provided which consists of a piece of sheet metal, steel preferred, having downturned flanges 9, which are provided near their ends with perforations through which the terminals 7 are extended, the ends of the wire in front of said terminals being brought together, as shown at 10, and twisted, as shown at 11. From the upper ends of the upward extensions 5 at the rear end of the frame the wire ends are extended horizontally in an inward direction, as shown at 12, and intertwisted with the twisted wires 11, as shown at 13, the intertwisted portion being inserted into a handle 14. It will be seen that by this method of construction not only a stout and durable frame is provided which will weigh considerably less than a cast-metal frame of equal strength, but that at the same time the comb 8 is permanently connected with said frame and serves as a brace to connect and to space apart the sides of said frame. The part which I have described as a comb and as consisting of a plate of sheet metal is obviously provided with teeth, as 15, which in the present instance are shown as extending upwardly from such sheet-metal plate, with which they may be connected in any suitable and convenient manner.

16 designates the cylindrical brush, and 17 the cylindrical roller. The body or core of the latter may be described as consisting of a headed hollow cylinder having an axial rod or shaft 18, provided at each end with a box 19, containing antifriction-balls that form the bearings of the shaft. The brush 16 likewise has an axial shaft 18ª fitted with antifriction bearing-boxes 19. These boxes are fitted in the loops 2 and 3 of the frame and are secured by means of flat steel clips 20, comprising plates provided at their ends with suitably-curved flanges 21, which are strung upon the wires forming the loops 2 and 3. Said plates 20 are provided with openings 22 for the passage of shafts which are threaded to receive nuts 23, whereby the bearing-boxes and shafts are secured upon the loops 2 and 3 in such a manner as to be capable of being vertically adjusted independent of each other.

The brush 16 may be of any suitable construction comprising, essentially, a core having radially-extending bristles. The roller 17 likewise consists of a core cylindrical in shape and provided with a tubular tire of rubber or other suitable material 24, which may be cemented or otherwise suitably secured upon the core or drum, being of a width equal to the latter. This tubular tire, which is of a width equal to the length of the core, is exteriorly corrugated, as shown at 25, the corrugations in this case preferably encircling the drum. An inflating-tube 26 connects the interior of the tubular tire 24 with an opening 27 in the head at one end of the drum or core, where a plug or valve 28 is provided to enable the tire to be inflated by means of an ordinary bicycle-pump or by an air-pump of special construction provided for the purpose. The detailed construction of the inflating device is not claimed by me and is shown only conventionally in the drawings.

29 designates a dust box or receptacle which is suitably and permanently connected with the frame of the device between the sides of said frame, which are connected and spaced by said dust-box, as well as by the comb and by the brush and roller herein described. The said dust-box is curved at its rear end to correspond with the periphery of the cylindrical brush, which is accommodated and shielded in said curved wall of the dust-box, which is indicated at 30. The front wall of said dust-box (designated 31) is likewise curved, so as to present a smooth surface that will easily and conveniently ride over the body of the animal, said curved front wall being extended downward in alinement with or, if preferred, slightly below the lower edge of the brush. The sides of the dust-box connect the front and rear walls thereof, and the top of said box is provided with a hinged cover 32, which may be raised when necessary for the purpose of emptying the contents of said box. The sides 33 of said dust-box are extended, as shown at 34, to form flanges or shields that engage the ends of the brush, and thus not only protect the said brush from injury, but at the same time serve to form guards that prevent dust from escaping. The rear wall of the box is likewise extended, as shown at 35, and connected with the flanges 34, so as to form a casing for the brush, open at its lower end only, so as to permit said brush to be detached when necessary for repairs or renewal. The rear wall of the dust-box is obviously to be provided with an opening or slot, as 36, to permit dust and offensive material to be carried into said box by the action of the rotary brush. By this method of construction a dust-tight and efficient receptacle is provided for the impurities dislodged by the action of the brush and related parts, which are to be presently described.

The shafts 18 of the brush and the roller are provided with sprocket-wheels 37 37ª, of suitable relative size, that upon the shaft of the brush being preferably smaller than that upon the shaft of the roller in order that the brush may be rotated at a comparatively high rate of speed. One side of the frame is provided with a brace 38, having an inclined slot 39, in which is adjustably mounted a short shaft or stub 40, adjustable by means of a nut 41, carrying a sprocket-wheel idler 42. A sprocket-chain 43 passes over the idler 42 and the sprocket-wheel 37ª upon the shaft of the roller, the lower lead of said sprocket-chain being passed over the sprocket 37 upon the shaft of the brush, thereby causing the latter to be rotated in a reverse direction to that of the roller. The sprocket-idler may obviously be adjusted with relation to the inclined slide of the brace 38, so as to keep the chain taut for operation.

44 designates a brush-cleaning device which is mounted in the dust-box and the purpose of which is to disengage from the rotary brush the dirt, hair, and other impurities and cause such material to be thrown into the box or receptacle. This brush-cleaning device may consist of a bar of any suitable material, approximately triangular in cross-section, which is between the sides of the dust-box, where it may be secured by means of a bolt 45, the front and rear sides of said bar being, however, slightly curved, the former convexly and the latter concavely, the rear edge of said bar being thus somewhat in conformity with the periphery of the brush. This bar is of suitable dimensions, so that its rear edge will engage and protrude slightly through the opening 36 in the rear wall of the dust-box. The bar 44 is provided with a plurality of deep kerfs or notches 46, forming a plurality of comparatively thin spaced blades 47, which will engage the bristles of the brush and dis-

engage therefrom all the impurities wherewith it has become charged in such a manner that the loose hairs, &c., will be positively prevented from being wrapped upon or entangled with the working parts of the device. Material temporarily lodging between the blades 47 will be gradually worked out in an upward direction from between said blades, as will be readily understood. The construction of this device may be modified by composing it of a plurality of thin blades 47ª, spaced by interposed washers 46ª and strung upon the connecting-bolt 45ª, whereby the device is mounted in the dust-box. The operation of this modification is identical with that already described, and I desire to state that I do not limit myself to any precise construction of this part of my invention, but reserve the right to any suitable construction within the scope of the invention.

The dust-box is provided at its lower rear corners in front of the brush with brackets, as 48, forming means of attachment for a shaft, which is slightly bent or V-shaped, said shaft being shown at 49. The brackets 48 are connected by a cross-bar 50 in rear of the shaft 49, said cross-bar being connected, by means of a brace 51, with the bottom of the dust-box. The bar 50 acts as a scraper, running in front of the brush and serving to dislodge from the hide of the animal the impurities which are intended to be removed by means of the brush. This scraping-bar, however, is only an auxiliary to a plurality of dished disks 52, which are strung upon the V-shaped shaft 49 and which are revoluble upon the latter. It will be noticed that, owing to the V shape of the shaft 49, these dished disks are disposed at an angle to the path of travel of the device and will thus be rotated by contact with the hide of the animal, thereby thoroughly currying the skin, dislodging all impurities, dandruff and the like, and raising the same between the sound hairs, so as to be readily conveyed to and acted upon by the brush, whereby it is carried into the dust-receptacle, as shown. This rotary currying device is extremely simple in construction and effective in operation, and it cannot under any circumstances act injuriously upon the hide of the animal which is being operated upon.

Regarding the distribution of the dished disks upon the shaft 49 it may be stated that I prefer that said disks should be of varying size, the smaller disks being disposed at the outer ends of the shaft and the larger ones near the center of the same, the dished or concave sides of said disks being faced inwardly, as will be readily seen, in order that the impurities dislodged thereby may be carried toward the center of the device and not outwardly from the same. The disks may be spaced apart in any suitable manner, and I desire it to be distinctly understood that I do not limit myself to any precise construction, arrangement, and disposition of said disks in a device of this class, but reserve the right to all such modifications as may be made within the scope of the invention.

In Fig. 9 of the drawings I have illustrated a modification of my invention, which consists in substituting for the angular shaft 49 two separate shafts 49ª 49ª, each having bearings in brackets 48 and in the brace 51, thereby making the said shafts independently revoluble. In this case the dirt-loosening disks 52 are to be secured upon the said shafts, whereby they are caused to revolve with the latter. This construction may sometimes be preferred, owing to the fact that the disks will thereby be caused to rotate simultaneously and all together.

The operation of this invention will be readily understood from the foregoing description, taken in conneetion with the drawings hereto annexed. The device is grasped by the handle 14 and is moved in a forward direction over the body of the animal. The inflated tire of the roller 17 permits rough and bony places to be operated upon in an extremely perfect manner, the said tire being not inflated to an extent which will prevent it from yielding to such bony protuberances as it may come in contact with. The brush being provided with flexible bristles will also operate to perfection in such places. Especially upon the legs of the animal will this feature of my device cause it to operate in a very thorough and perfect manner. The comb 8 may by reversing the device be used for combing the mane and tail of the animal. The rotary dirt-loosening element which I have substituted for the ordinary currycomb will be found far superior for the purpose of loosening and disengaging dirt and loose hairs from the hide, and by the use of this device all injury to the skin, such as scratching thereof, will be positively prevented.

It is obvious that this device may be subjected to numerous modifications in the minor details of construction thereof. Thus, for instance, I would desire to state that it is immaterial whether the chain means for transmitting motion from the traction-roller to the revoluble brush is disposed on either or on both sides of the device. In the drawings it has been shown on one side only. Other modifications in the structural details may be made within the scope of my invention.

Having thus described my invention, I claim—

1. In a horse-cleaning device, a bent-wire frame, the sides of which are provided with loops for the mounting of a rotary brush and a traction-roller, straight portions spaced by a flanged plate, and intertwisted ends, in combination with a handle engaging said intertwisted ends.

2. In a horse-cleaning device, a frame having U-shaped loops, in combination with a revoluble member having a shaft, boxings upon the ends of said shaft, and means for connecting said boxings with said U-shaped loops.

3. In a horse-cleaning device, a frame having U-shaped loops, a revoluble member having a shaft, boxings upon the ends of said shaft engaging said U-shaped loops, and flanged plates exteriorly engaging said U-shaped loops and having porforations for the passage of the ends of the shafts.

4. In a horse-cleaning device, a frame having U-shaped loops, a revoluble member having a shaft, boxes upon the ends of said shaft containing antifriction-balls and engaging said U-shaped loops, flanged clip-plates exteriorly engaging said loops and having openings through which the ends of the shaft extend, and shaft-retaining means engaging the outer sides of said clips.

5. In a horse-cleaning device, a traction-roller having an inflatable tire adapted to yield by contact with the body of the animal.

6. In a horse-cleaning device, an inflatable traction-roller.

7. In a horse-cleaning device, a traction-roller having an inflatable peripheral covering.

8. In a horse-cleaning device, a traction-roller having a flat inflatable tubular tire.

9. In a horse-cleaning device, an inflatable traction-roller, a revoluble brush, and means for transmitting motion to the latter from the former.

10. In a horse-cleaning device, the combination of a frame, a revoluble brush member and a dust-receptacle having flanged ends forming guards for the ends of the revoluble brush, and a curved rear wall extending partially around and forming a shield for said brush member, said wall extension being connected with the flanges of the end pieces to form a brush-casing.

11. In a horse-cleaning device having a revoluble brush member and a dust-box provided with a slot for the ingress of dust, &c., a brush-cleaning device composed of a plurality of blades spaced apart and extending through the slot of the dust-receptacle into engagement with the bristles of the revoluble brush member.

12. In a horse-cleaning device of the class described, a brush-cleaner consisting of an approximately triangular bar having a convex side engaging the brush and provided with incisions forming a plurality of spaced blades.

13. In a horse-cleaning device having a revoluble brush member, a brush-cleaner comprising in its construction a plurality of approximately triangular blades suitably connected and spaced.

14. In a horse-cleaning device having a revoluble brush member, a brush-cleaning device comprising a plurality of approximately triangular blades, suitably spaced and connected and having curved sides engaging the bristles of the brush member throughout the greater portion of their lengths.

15. In a horse-cleaning device, a dirt-loosening device comprising a plurality of revoluble disks.

16. In a horse-cleaning device, a plurality of dirt-loosening disks revolubly mounted upon a shaft.

17. In a horse-cleaning device, a plurality of dirt-loosening disks mounted revolubly upon a shaft at an angle to the path of progress of the device.

18. In a horse-cleaning device, a revoluble brush member, a plurality of dirt-loosening disks mounted revolubly upon a shaft at an angle to the axis of the revoluble brush member.

19. In a horse-cleaning device having a revoluble brush member, a plurality of dirt-loosening disks mounted upon a shaft, said shaft being at an angle to the axis of the revoluble brush member.

20. In a horse-cleaning device having a revoluble brush member, an angular shaft and a plurality of dirt-loosening disks mounted revolubly upon said angular shaft.

21. In a horse-cleaning device having a revoluble brush member, an angular shaft and a plurality of dirt-loosening disks mounted revolubly upon said angular shaft, said disks increasing in diameter from the outer ends of said shaft toward the central portion of the same.

22. In a horse-cleaning device, a plurality of revolube dished dirt-loosening disks.

23. In a horse-cleaning device, a plurality of revoluble dished dirt-loosening disks arranged in two series upon the ends of an angular shaft, the convex sides of said disks facing the ends of the shaft.

24. In a horse-cleaning device having a revoluble brush member and means for rotating the same, a dirt receptacle having a curved wall engaging said revoluble brush member, brackets at the lower corner of said dirt-receptacle, a shaft mounted in said brackets, and dirt-loosening disks mounted revolubly upon said shaft.

25. In a horse-cleaning device, a revoluble brush member, means for operating the same, a dirt-receptacle, brackets supported by the latter, a shaft supported by said brackets, revoluble dirt-loosening disks mounted upon said shaft, and a scraper-bar disposed between said dirt-loosening disks and the rotary brush member.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

GEORGE E. FREDERICKS.

Witnesses:

HENRY V. BERN,

J. P. FREDERICKS.