Jan. 23, 1951 W. LIMBERG 2,539,257

VACUUM CLEANER FOR CATTLE

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Fig. 1.

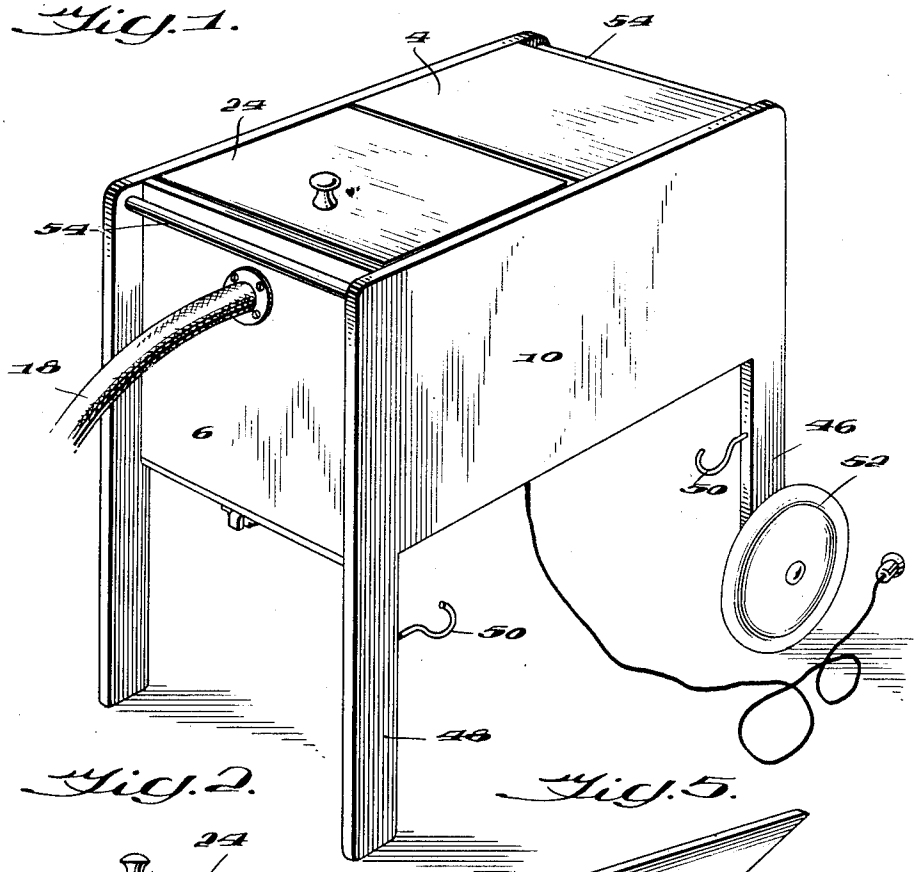

Fig. 2.

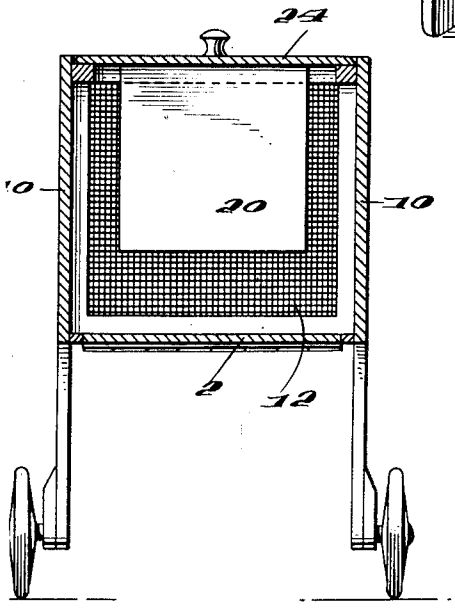

Fig. 5.

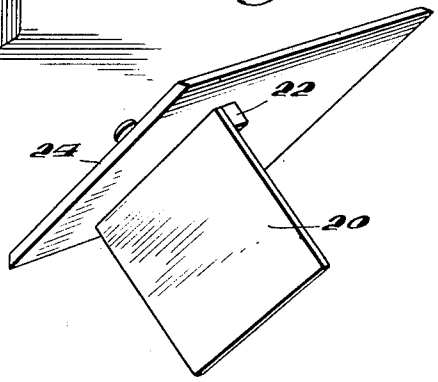

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Fig. 3.

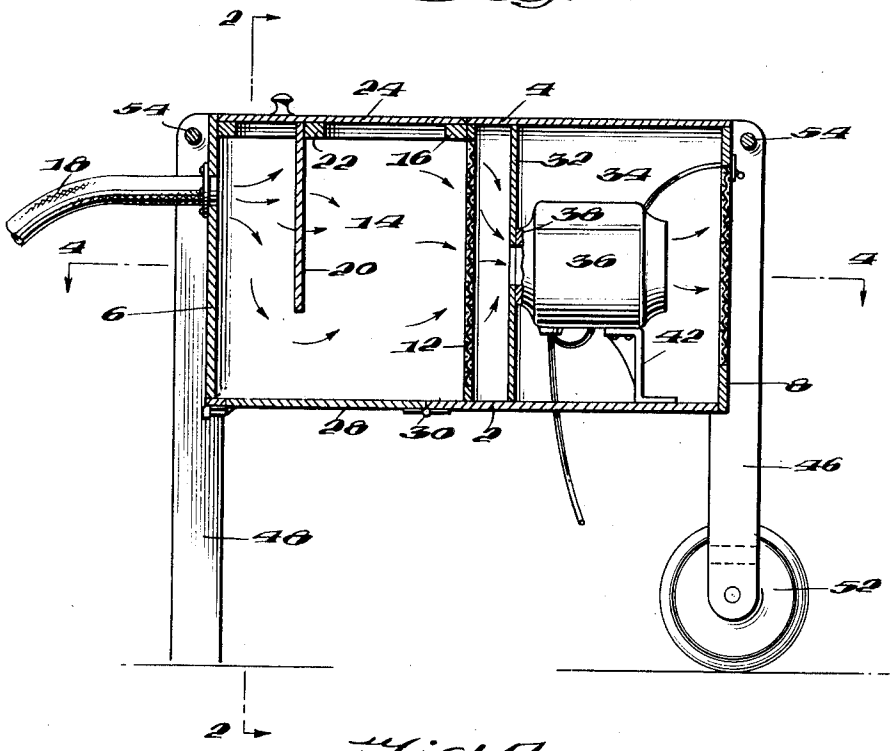
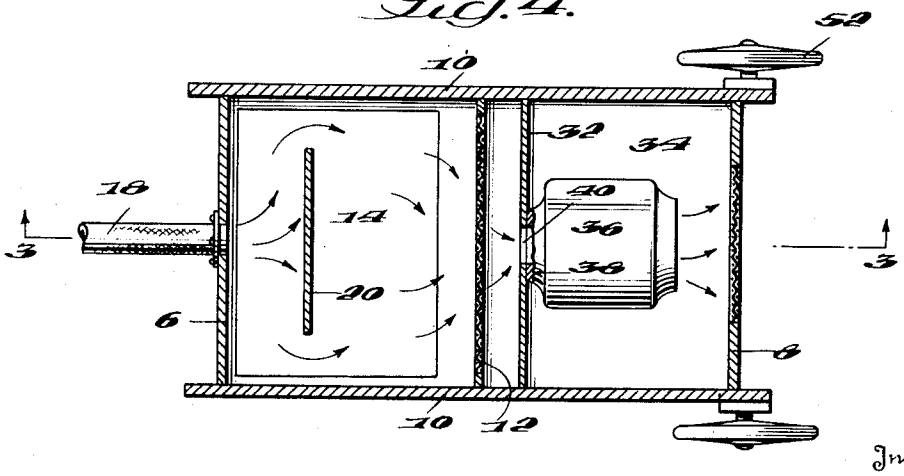


Fig. 4.



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VACUUM CLEANER FOR CATTLE

Wayne Limberg, Plymouth, Wis.

Application February 24, 1948, Serial No. 10,217

3 Claims. (Cl. 183—34)

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This invention is a vacuum cleaner for a special use, namely for cleaning dairy cattle.

The cleaning of dairy cattle presents a special problem, because the dirt removed from the animals is heavy, greasy, wet or damp, usually containing clay and soil, and of such a character generally that it would very soon completely clog up any air pervious filter or screen used in the usual vacuum cleaner.

The principal object of the invention is to provide a vacuum cleaner in which the heavy, wet and greasy dirt collected from the dairy cattle is separated from the dirt laden air and is collected in a suitable compartment, while the air that may contain lighter dirt and dust continues through the machine, being filtered or screened by an air pervious screen.

The term "screen" as used in the specification and claims is intended to cover any suitable air pervious material made of cloth or wire as may be desired.

More particularly, the vacuum cleaner of this application which is in successful daily use in Wisconsin, Michigan, Illinois and other states, comprises a casing, conveniently of rectangular cross section, which is provided with a transversely extending air pervious screen, defining an inlet or dirt collecting compartment at the intake end of the apparatus. This compartment is fairly large, so that the air travels slowly. The dirt laden air comes in through a pipe at the upper part of this compartment against a large baffle plate which is directly in the path of such incoming dirt laden air, deflecting the heavy, wet, greasy dirt in all directions to all sides of the compartment, where it clings, while a small part of the greasy dirt may actually stick to the baffle plate. The slowing down of the air aids the precipitation and collection of the heavy dirt.

Loose cow hair and light and dry dust passes along with the air current, going around and under the baffle plate and then passes to a screen which removes such residual dirt and dust.

Positioned on the other side of the screen is a transversely extending, vertically positioned partition, provided with a central aperture and this partition serves as a mounting plate for a fan-motor-power unit, which creates a suction for drawing air through the apparatus in the usual way.

The main features of the invention having thus been outlined, reference is now made to the accompanying drawings illustrating the preferred embodiment of the invention.

In these drawings:

Fig. 1 is a perspective view of the vacuum cleaner of this invention;

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Fig. 2 is a vertical section on the line 2—2 of Fig. 3;

Fig. 3 is a longitudinal section on the line 3—3 of Fig. 4;

Fig. 4 is a horizontal section on the line 4—4 of Fig. 3; and

Fig. 5 is a perspective view of the removable top and baffle plate.

Referring now to these drawings, the vacuum cleaner of this invention comprises a generally rectangular casing, formed by a bottom 2, a top 4, ends 6 and 8 and sides 10. An air pervious screen or filter 12 is positioned vertically and transversely across the interior of the casing, and defines a relatively large dirt collecting compartment 14. The screen 12 may be conveniently mounted on block strips 16 suitably secured to the walls of the apparatus.

Dirt laden air comes into compartment 14 through the inlet pipe 18 positioned near the top of the compartment. Positioned directly in the path of this incoming dirt laden air is a large, vertically extending baffle plate 20 secured to strip 22 carried by the underside of a liftable top 24, which may be hinged if desired, and which forms the top of compartment 14. Baffle plate 20 is of substantial size, although preferably it does not extend all the way to the side walls 10. The slowing down of the air due to the large compartment 14 aids the precipitation of the heavy dirt.

The dirt collecting compartment is air tight and of substantial size; the incoming heavy, wet, oily and sticky dirt hits the baffle plate 20 and splatters in all directions—up, down and sideways—most of the dirt is deflected downwardly, falling downwardly in the compartment; some dirt will cling to the underside of the top, some will cling to the vertical side walls 10, some will cling to the baffle plate itself. Such collected dirt is cleaned out from time to time by scraping it from off the compartment walls, top, and bottom and from the baffle plate. Top 24, together with the baffle 20 is preferably completely removable for this clean out operation.

The lighter dust, dirt, cow hair, and the like, passes to the right and left of baffle 20, and under it, and thence is screened out by filter 12.

The bottom of compartment 14 may, if desired, be provided with a clean out door 28, hinged at 30. The use of this door, however, is optional, and the compartment may be readily cleaned out from the top, as described.

The casing is also provided with a vertically extending transverse partition 32 defining a power unit compartment 34. The power unit 36, of any desired design, includes the usual motor and fan and may be mounted by brackets and blocks

38 in line with the central aperture 40 of partition 32. One or more standards 42 may also be provided as desired for supporting the unit 36.

The casing may be provided with legs 46 and 48, provided with a number of hooks 50 for convenient storage of the long electric cable leads used for plugging in the power unit to the usual electrical outlets. The legs at one end of the apparatus may be provided with wheels 52 and the upper ends of the apparatus may be provided with hand rails 54 for pushing the apparatus about. The usual suction nozzle and connecting pipe are connected to the intake pipe 18. The efficiency of the suction nozzle is increased by providing it with transverse notches or serrations.

In operation, the heavy, oily, greasy dirt which would clog up the usual vacuum cleaner, is deflected and splattered in all directions by plate 20 and sticks to the side, top and bottom of the compartment; some will usually stick to the baffle; this collected dirt is scraped out from time to time, by removing top 24 and the baffle, giving ready access to the interior of the dirt collecting compartment 14. Lighter dust, dirt, animal hair and the like passes around the sides of and under the baffle plate and is removed by the filter 12. The clean air then passes through the power unit 36 and thence out through the other end of the apparatus. As stated, the apparatus of this invention is in actual daily use in removing dirt, clay, dust and oily and greasy material from dairy animals and it works efficiently and satisfactorily.

While the preferred construction of the cleaner has been described in some detail, it should be understood that the apparatus is not to be limited to the exact construction shown, but may be carried out in other ways.

I claim as my invention:

1. A vacuum cleaner particularly for collecting the moist, heavy, sticky dirt from dairy cattle, comprising a generally rectangular casing, a vertically positioned, dust collecting screen extending transversely across the casing and defining a collecting compartment for heavy dirt, an inlet pipe for dirt laden air opening into the upper part of said dirt collecting compartment, a removable door for the top of said heavy dirt collecting compartment, a vertically positioned, transversely extending baffle plate secured to the underside of said door so as to be readily removable therewith for cleaning and replacement, and normally positioned directly in the path of the dirt laden air coming in through said inlet pipe, said baffle plate having its bottom and side edges spaced upwardly and inwardly from the bottom and side walls of the compartment, said baffle plate serving to collect some of said sticky dirt by adhesion, and to deflect the remainder in all directions, whereby it adheres to the side and top walls of the compartment and is deflected to the bottom thereof, while the lighter dirt, hair and dust passes around the side edges of, and below said baffle plate, to said dust collecting screen, a removable door for said heavy dirt collecting compartment, affording access to the interior of said compartment, so that dirt adhering to the walls thereof and to the inside of the door may be scraped off, upon removal of said door, and a vertically positioned, centrally apertured partition, also extending transversely across the casing and defining a power unit compartment, and a power driven suction-fan-motor unit carried by said partition and positioned in said power unit compartment, for drawing air through the dirt collecting compartment, through the dust collecting screen and through the central aperture of said partition.

2. A vacuum cleaner particularly for collecting the moist, heavy, sticky dirt from dairy cattle, comprising a casing of substantially uniform cross-section, an inlet at one end of said casing and an outlet at the other end of said casing to define a substantially straight air flow path through the casing, a vertically positioned, dust collecting screen extending transversely across the casing at the outlet end and defining a collecting compartment for heavy, sticky dirt, said inlet including a pipe for dirt-laden air and opening into the upper part of said dirt collecting compartment, a baffle plate in the upper part of said dirt collecting compartment, positioned directly in the path of the dirt-laden air coming in through said inlet pipe, said baffle plate having its bottom and side edges spaced upwardly and inwardly from the bottom and side walls of the compartment, said baffle plate serving to deflect the heavy, moist, sticky dirt in all directions whereby some of said dirt adheres to said baffle plate and the remainder adheres to the side and top walls of the compartment and is deflected to the bottom thereof, while the lighter dirt, hair and dust passes around the side edges of, and below said baffle plate, to said dust collecting screen.

3. A vacuum cleaner particularly for collecting the moist, heavy, sticky dirt from dairy cattle, comprising a generally rectangular casing, a vertically positioned, dust collecting screen extending transversely across the casing and defining a collecting compartment for the heavy moist dirt, an inlet pipe for dirt laden air opening into the upper part of said dirt collecting compartment, a removable door for the top of said heavy dirt collecting compartment, a vertically positioned and a transversely extending baffle plate secured to the underside of said door so as to be readily movable therewith for cleaning and replacement, and normally positioned directly in the path of the dirt-laden air coming in through said inlet pipe, said baffle plate serving to deflect the heavy, sticky dirt in all directions, whereby it collects by adhesion on the baffle plate and on the side and top walls of the compartment and is deflected to the bottom of the compartment while the lighter dirt and dust passes around the baffle plate and are removed by said dust collecting screen, said removable door for said heavy dirt collecting compartment affording access to the interior of said compartment, so that the dirt adhering to the walls thereof and to the inside of the door may be scraped off upon removal of the door.

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