Oct. 7, 1958 W. H. WELLS ET AL 2,854,681

HIDE CLEANER

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Fig. 1

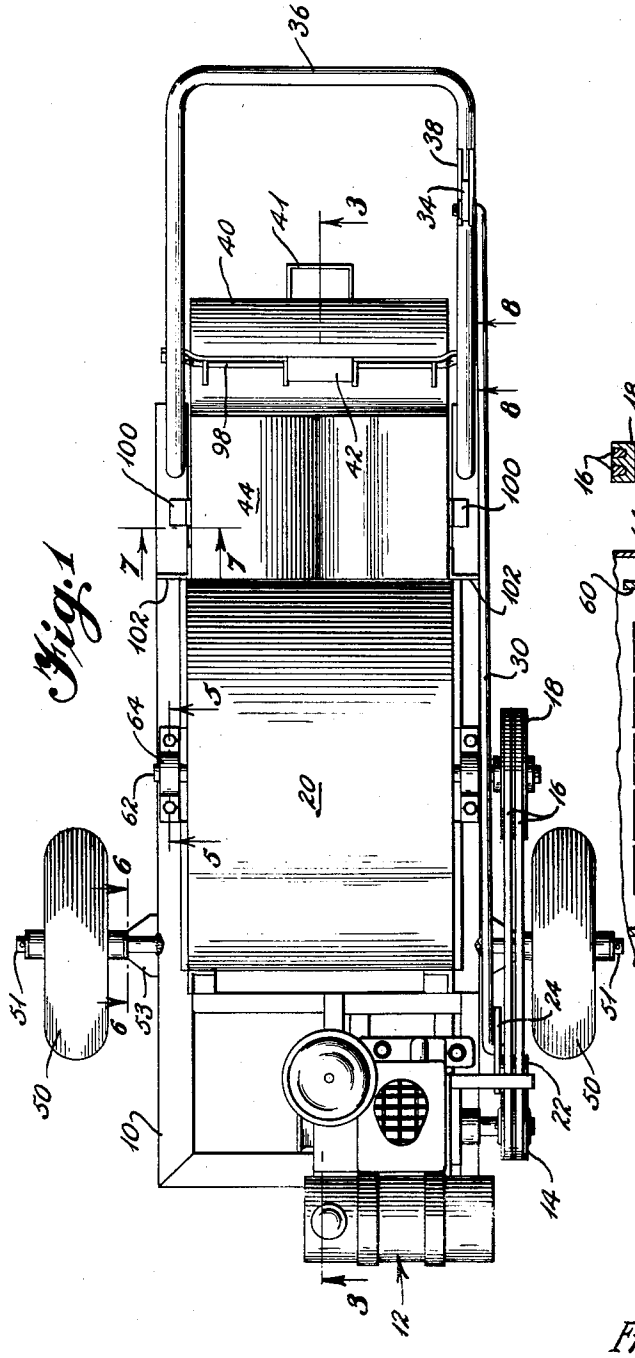
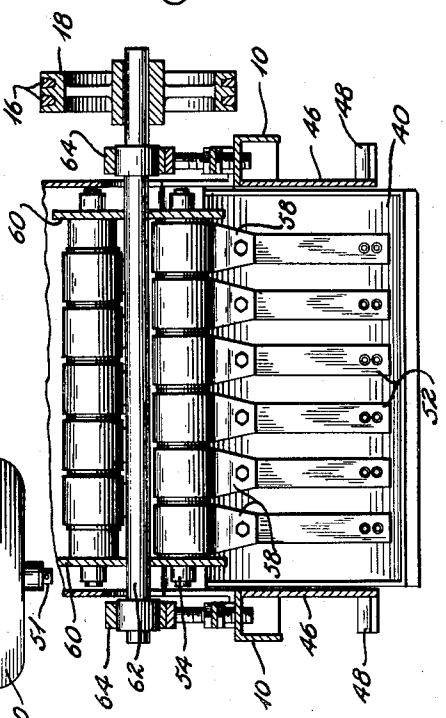


Fig. 4



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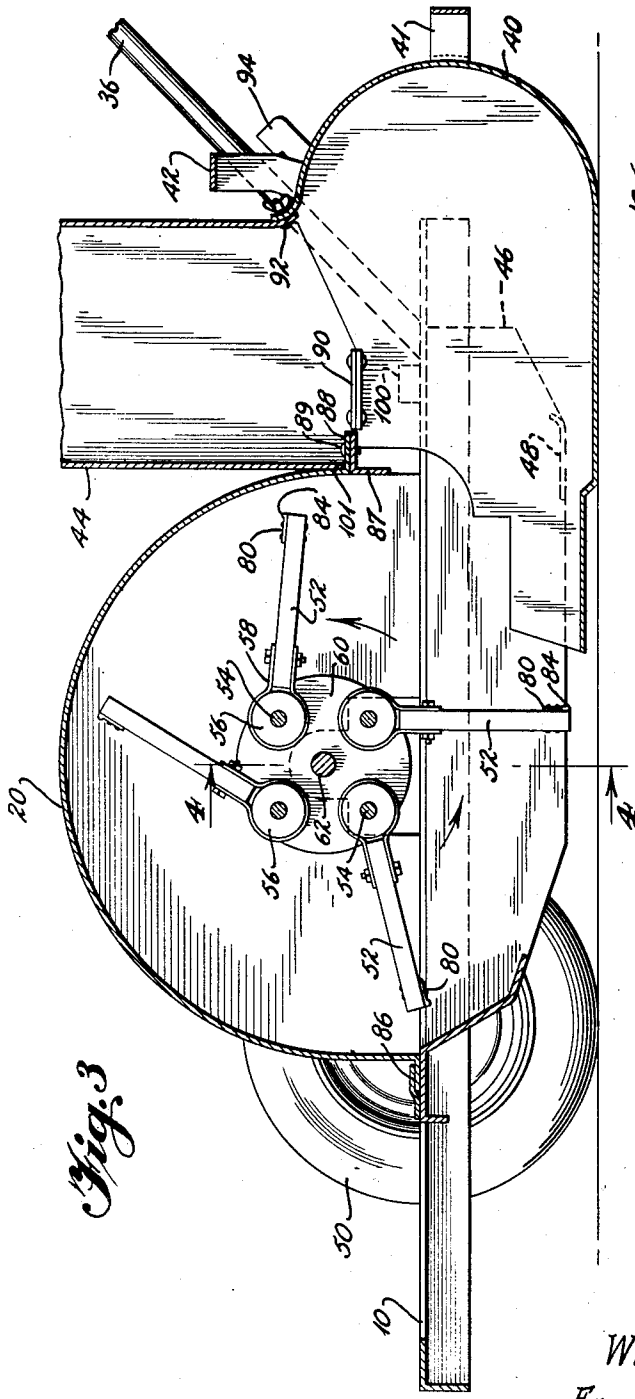


Fig. 3

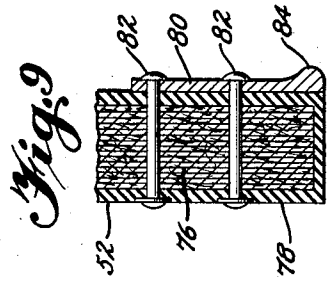


Fig. 9

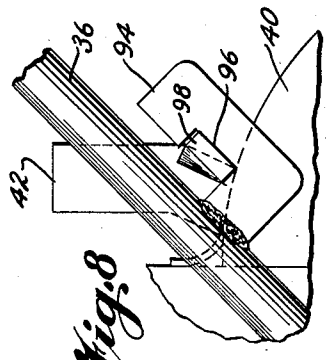


Fig. 8

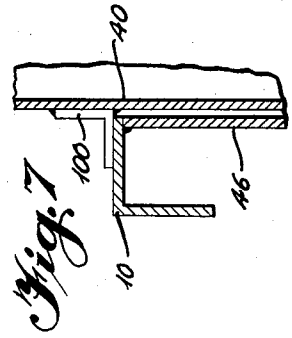


Fig. 7

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HIDE CLEANER

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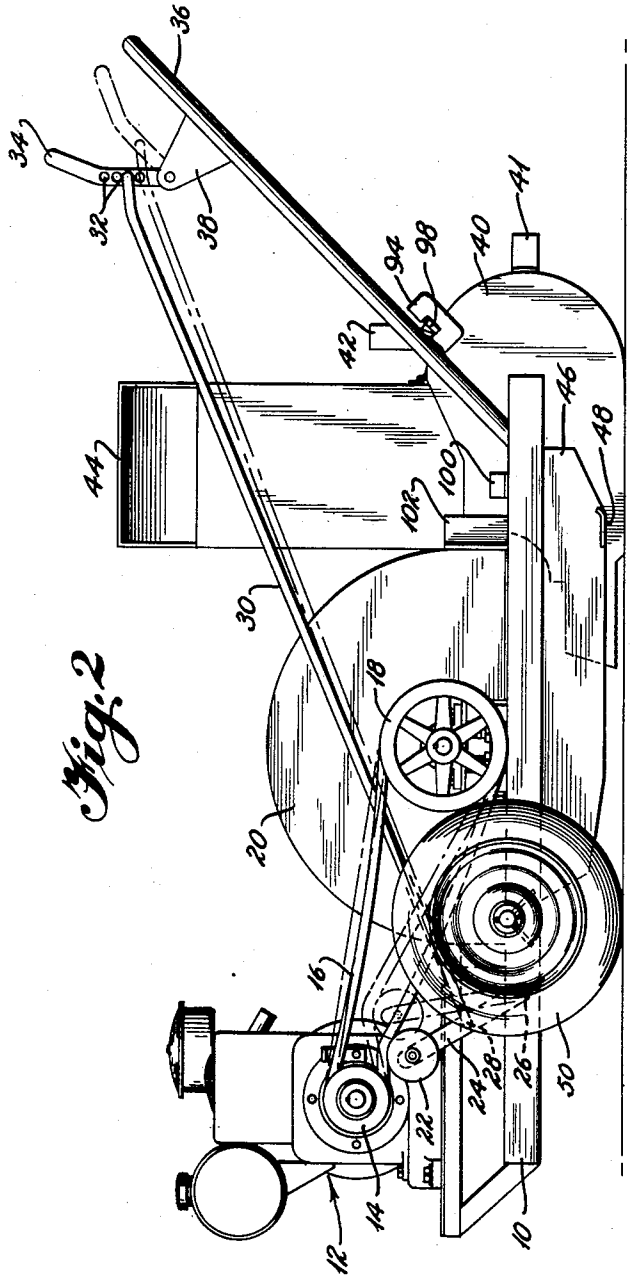


Fig. 2

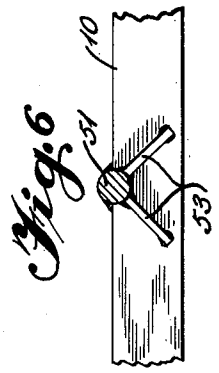


Fig. 6

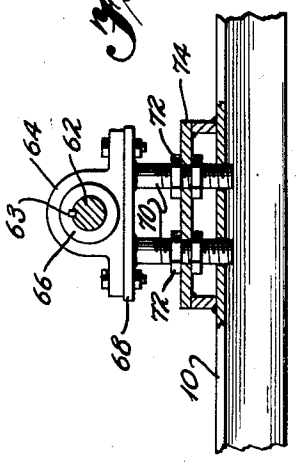


Fig. 5

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2,854,681

HIDE CLEANER

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Application October 29, 1956, Serial No. 618,811

1 Claim. (Cl. 15—92)

This invention relates to a hide cleaner and more particularly to a hide cleaner of the rotary beater type.

The problem of removing dirt and manure from green hides before tanning is a major problem of long standing in the meat packing and slaughterhouse trade as well as to hide brokers, shippers and tanners.

During the wet and freezing winter months cattle hides are often covered by thirty or forty pounds of dirt and manure. The excess weight increases the cost of shipping and at the same time reduces the price per pound of the hides because of their soiled condition. A rapid and efficient hide cleaner is needed for removing the excess dirt and manure from the hides prior to shipping to reduce shipping costs and increase the price-per-pound of the hides. Thus, the margin of profit from the sale of hides would be substantially increased.

The present available equipment for the subject purpose ranges from simple and inexpensive apparatus, such as garden rakes, to complex and costly hide cleaners. The cheaper apparatus is very slow and causes considerable damage to the hides during a cleaning process. The more expensive equipment is either too slow for good operating efficiency or, as in the case of the aforementioned garden rake type of equipment causes damage to the hides.

The present invention provides a machine which is inexpensive, efficient in operation and readily transportable to the desired site of the hide cleaning operation. No damage to the hides is incurred in the use of the subject machine, its utility being further augmented by the fact that only one attendant is necessary for the proper operation of same. In addition, the machine is entirely self contained with respect to all necessary apparatus for mobility and operation and therefore requires no installation expense.

It is therefor, an object of my invention to provide an efficient and inexpensive hide cleaner.

Another object of my invention is to provide a hide cleaner incorporating a rotary beater as the cleaning means thereof.

Another object of my invention is to provide a hide cleaner which will not damage the hides being cleaned.

Still another object of my invention is to provide a hide cleaner which is completely mobile and self contained.

These and other objects of my invention will become apparent from the following specification and drawings. It is to be understood that the invention is not limited by the specific embodiment shown in that many modifications could be made within the scope of this invention.

In the drawings:

Fig. 1 is a top elevation of the invention;

Fig. 2 is a side elevation of the invention as shown in Fig. 1;

Fig. 3 is a cross section of the invention taken along line 3—3 of Fig. 1;

Fig. 4 is a detailed cross section of the rotary beater structure taken along line 4—4 of Fig. 3;

Fig. 5 is a detailed cross section of the rotary beater mounting bracket taken along line 5—5 of Fig. 1;

Fig. 6 is a detailed cross section of the wheel axles and the bracing structure therefor taken along line 6—6 of Fig. 1;

Fig. 7 is a detailed cross section taken along line 7—7 of Fig. 1;

Fig. 8 is a detailed side elevation taken along line 8—8 of Fig. 1 and

Fig. 9 is a detailed partial cross section of one of the flails incorporated in the rotary beater mechanism.

Referring in detail to Figures 1 and 2 of the drawings, the numeral **10** generally indicates the chassis of the subject machine. Mounted on the front of the chassis **10** is a motor generally indicated at **12** having a double drive pulley **14** to which is attached a double drive belt **16**. The belt **16** is attached in driving relationship to the pulley **18** to impart rotation to the rotary beater mechanism (not shown in Figures 1 and 2) housed within the dust hood **20**. The rotary beater mechanism will be described at a later point in the specification.

The drive belt **16** is effectively engaged and disengaged from the pulley **18** by means of a clutch wheel **22** which is mounted on one end of a pivoted lever **24**, the lever **24** being pivotally connected at its other end to the chassis **10** at the point **26**. At a point **28**, midway between the ends of the lever **24**, one end of a link **30** is pivotally connected. The other end of the link **30** is adjustably and pivotally connected to a clutch operating lever **34** at one of the points **32**. The operating lever **34** is pivotally mounted on the hide cleaner propelling handle **36** by means of a bracket **38**. The plurality of points **32** on the operating lever **34** are provided to adjust the clutch linkage **22—24—30—34** in order to compensate for varying degrees of slack in the drive belt **16**.

Removably mounted on the propelling handle **36** and the chassis **10** is a dust catcher pan **40** having handles **41** and **42** for facilitating the removal of same. An air duct **44** is provided between the catcher pan **40** and the dust hood **20** to prevent the blowing of dust into the face of an operator positioned behind the hide cleaner propelling handle **36**.

A pair of side guards **46** are suspended from the chassis **10** and have mounted thereon metal shoes **48** which have a broad lower surface and ride on the surface of the hide to reduce the effort needed to propel the machine and keep the rotary beater mechanism in predetermined relationship to the surface of the hide. The complete mobility of the hide cleaner is made possible by the pair of wheels **50** mounted on the chassis **10** by means of axles **51**.

The mounting of the wheel axles **51** on the chassis **10** is shown in detail in Fig. 6. Firm support is provided for the axles **51** by plates **53** welded to the chassis **10** and the axles **51** to form an inverted V-shaped support. The axles are also welded to the chassis **10**.

Referring to Figures 3 and 4, the rotary beater mechanism is shown to consist of a plurality of flexible flails **52** pivotally mounted on a series of mutually parallel shafts **54** by means of bushings **56** and metal clamping straps **58**. The shafts **54** are all mounted in a pair of circular end plates **60** which in turn are rigidly attached to a main rotary drive shaft **62** on which is mounted the drive pulley **18**. The drive shaft **62** is supported by a pair of brackets **64** attached to the chassis **10**. As the rotary beater mechanism is rotated the flail supporting shafts **54** form a cylindrical surface of revolution about the drive shaft **62**.

One of the pair of brackets **64** which support the rotary beater mechanism is shown in detail in Fig. 5. The drive shaft **62**, shown with a key **63** for engaging a mating slot in the drive pulley **18** is mounted in bracket **64** by means of a bushing **66**. The bracket **64** is securely bolted to a bracket supporting plate **68**. A pair of adjustable bolts **70** are welded to the supporting plate **68** for the purpose of raising or lowering the drive shaft **62** to the desired height. Position locking nuts **72** are provided in conjunction with a bolt securing plate **74** on the chassis **10** to retain the bolts **70** and therefore the drive shaft **62**, in the desired position.

Referring to Fig. 9 the hide cleaning end structure of the flexible flail members **52** is shown in detail. The flail member **52** consists of central core **76** of laminated canvas or other suitable fabric covered by an outer shell **78** of rubber. Mounted on the tip of the flail **52** is a hide contacting plate **80**, securely fastened to the flail by a pair of rivets **82**. The outermost tip of the hide contacting plate is purposely made with a blunt projecting lip **84** thereon which will firmly contact and clean the hides but will not cut or tear them.

The way in which the dust hood **20**, air duct **44** and catcher pan **40** are mounted on the chassis **10** is extremely essential to the proper operation of the subject machine.

Referring to Figs. 3, 7 and 8, the dust hood **20** is held to the chassis **10** at the front end thereof by a tongue and slot connection **86**. The opposite end of the dust hood is rigidly attached to an angle bracket **87** on the chassis **10** by a flange **88**, integral with the dust hood **20** and a bolt **89**.

The air duct **44** is rigidly mounted on the catcher pan **40** by riveted mating flange connections **90** and **92** at the sides and back of the catcher pan, respectively. The catcher pan **40**, in turn, is movably mounted with respect to the chassis **10** by a pair of reverse-J-shaped supporting brackets **94** on the hide cleaner propelling handle **36** having slots **96** in the bend of the J which cooperate with a laterally disposed catcher pan supporting bar **98** extending across and attached to the upper surface of the catcher pan. On each side of the catcher pan **40** there is an integral L-shaped bracket **100** which rides on the surface of the chassis **10** to limit the downward movement of the catcher pan with respect to the chassis.

The leading edge **101** of the air duct **44** is free to move in an upward direction and limited in downward movement by the integral flange **88** on the dust hood **20** which also helps to support the air duct-catcher pan combination. A pair of vertical guide channels **102**, affixed to the chassis **10**, confines the movement of the air duct **44** and hence the air duct-catcher pan arrangement to a vertical plane and substantially eliminates lateral displacement thereof.

The operation of the hide cleaner is as follows:

The hide to be cleaned is spread out on a flat surface, such as level ground with the soiled side up. The hide cleaner is wheeled to a position adjacent one end of the hide from which it can be wheeled across same. At this point the motor **12** is started rotating the double drive pulley **14**. In order to actuate the rotary beater mechanism, the clutch operating lever **34** is pulled back to the dotted line position shown in Fig. 2. The clutch operating lever **34** transmits its motion to the clutch wheel **22** through the link **30** and pivoted lever **24** to bring the wheel **22** into engagement with the double drive belt **16** to take up the slack therein between the drive pulley **14** and the rotary beater drive pulley **18** to actuate the rotary beater mechanism.

The hide cleaner is now pushed across the surface of the hide whereby the flexible flails **52** of the rotary beater mechanism whip the dirt and foreign material from the hide surface.

As the hide cleaner proceeds cross the hide, the reason

for the mounting arrangement of the dust hood **20**, air duct **44** and catcher pan **40** becomes apparent. The force exerted on the hide cleaner propelling handle **36** by the operator of the machine in combination with the weight of the machine causes the air duct-catcher pan arrangement **44—40** to rock about the axis provided by the catcher pan supporting bar **98** in the bracket slots **96**. This rocking motion is limited in one direction by the leading edge **101** of the air duct **44** acting in conjunction with the integral flange **88** on the dust hood **20** and also by the L-shaped brackets **100** on the catcher pan **40** which contact the upper surface of the chassis **10**. Since the axis about which the air duct-catcher pan arrangement **44—40** rocks is back of center, the weight of the air duct-catcher pan arrangement biases the rocking motion thereof in a counterclockwise direction as shown. As the chassis **10** drops toward the hide, the metal shoes **48** on the side guards **46** contact the surface of the hide and provide a bearing surface to distribute the weight of the hide cleaner on the surface of the hide and prevent damage thereto. The inertia of the air duct-catcher pan arrangement about its off-center rocking axis causes the air duct-catcher pan arrangement to act in shock absorbing relationship with the rotary beater mechanism.

The depth of the side guards **46**, at the position of the metal shoes **48**, is such that the tips of the flexible flails **52** just strike the surface of the hide with sufficient force to remove the foreign material therefrom without damaging the hide.

The speed of the flails **52** and the hardness of the flail tips **80** are such that the removal of foreign material is thorough and efficient. The flexibility of the flails, the pivoted mountings thereof with the bushings **56** on the shafts **54** and the smooth lip **84** on the flail tips **82** acting in conjunction with the shock-absorbing action of the air duct-catcher pan arrangement, which also prevents the full weight of the machine from resting on the metal shoes **48**, serve to further prevent any damage to the surface of the hides.

The operator of the hide cleaner is protected from dust and flying particles by the dust hood-air duct-catcher pan arrangement. The air duct vents off dust laden air from the dust hood away from the operator and all heavier particles of matter are thrown into the catcher pan by the action of the rotary beater mechanism.

From the above description it is seen that my invention provides a hide cleaner that is economical in operation, simple in structure, completely mobile in operation, highly efficient and causes no damage to the hides being cleaned.

I claim:

A hide cleaner of the rotary beater type comprising a mobile wheeled chassis, rotary beater means mounted on said chassis, driving means for said rotary beater means, a dust hood for said rotary beater means, a propelling handle for said hide cleaner mounted on said chassis and an air duct-catcher pan arrangement rockably mounted on said chassis wherein said air duct-catcher pan arrangement comprises a catcher pan having a laterally disposed supporting bar attached to the upper surface thereof and a pair of integral supporting brackets located one on either side of said catcher pan in operative relationship with the upper surface of said chassis and an air duct attached to said catcher pan at the sides thereof and at a position adjacent said supporting bar and having a free edge in operative relationship with an integral flange on said dust hood, said supporting bar being in operative relationship with a pair of brackets on the hide cleaner propelling handle to provide an off-center rocking axis for said air duct-catcher pan arrangement, said free edge of said air duct and said integral supporting brackets on said catcher pan acting in cooperation with said integral flange on said dust hood and said upper surface of said chassis, respectively, to limit the rocking motion

of said air duct-catcher pan arrangement in the biased direction about said rocking axis.

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