Jan. 28, 1964 G. LADNER 3,119,374

REVOLVING SANITARY FLOOR FOR HORSE STALLS

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Fig. 1

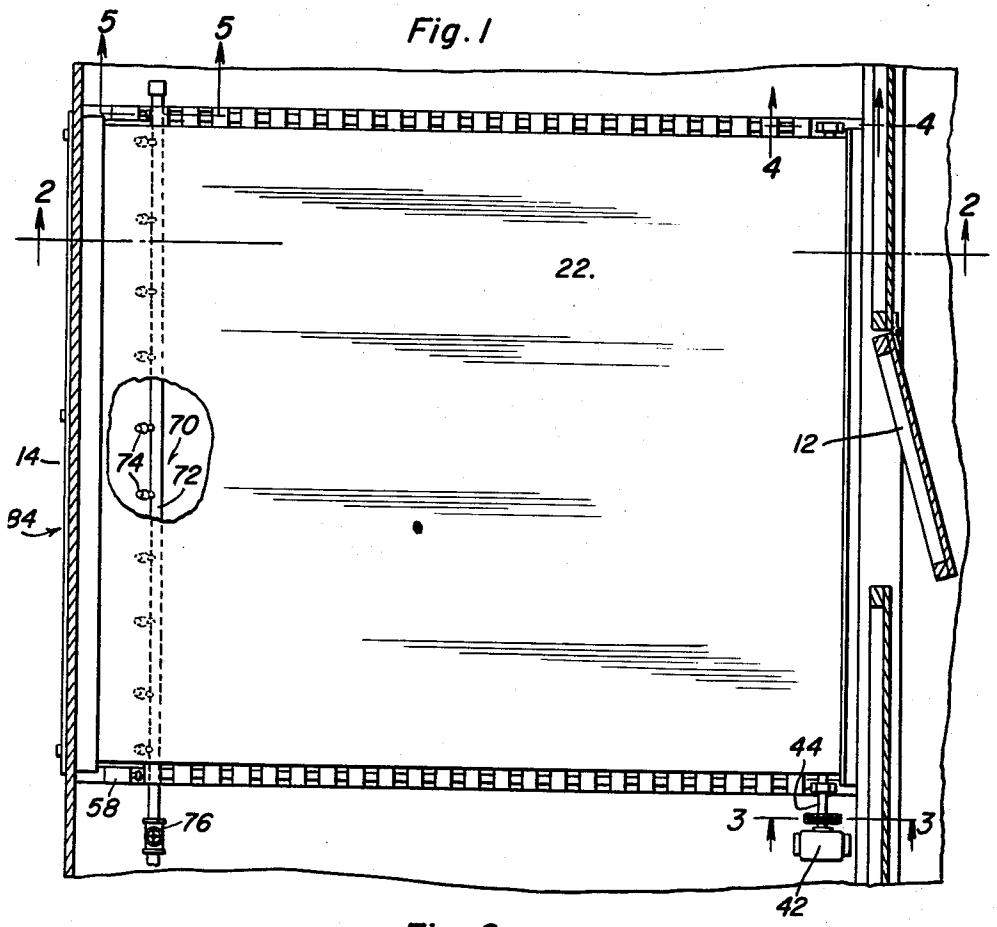
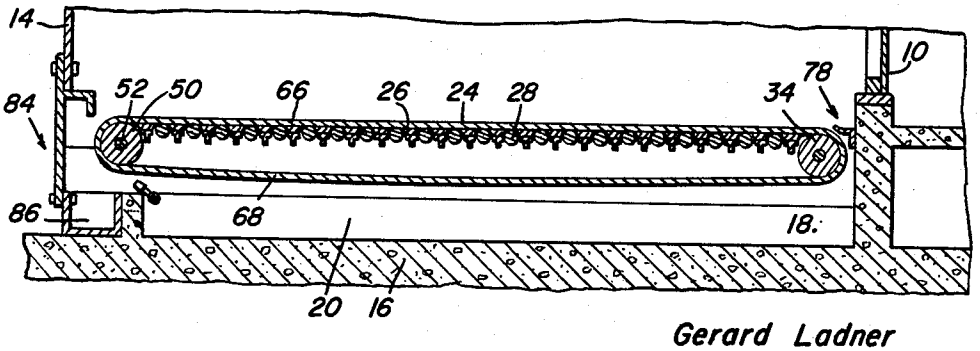


Fig. 2



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Fig. 3

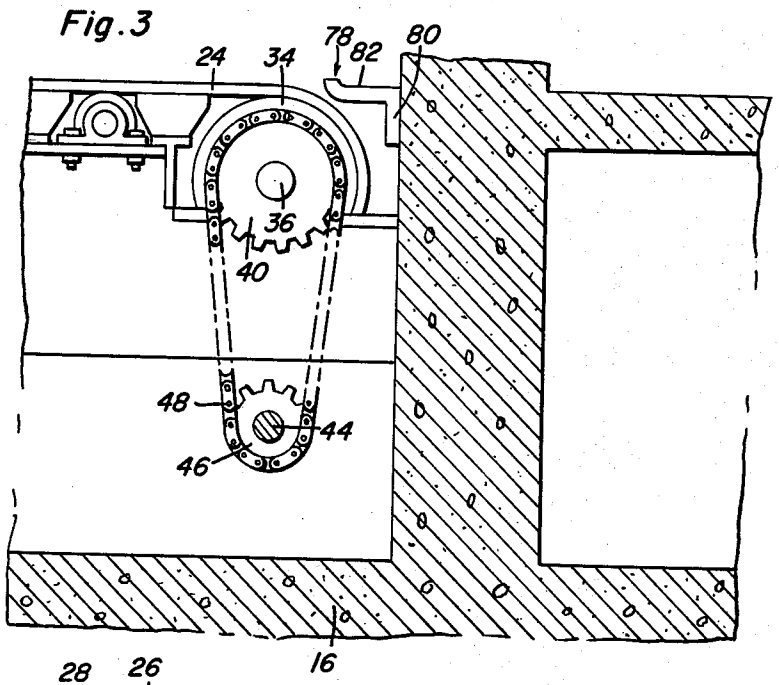


Fig. 4

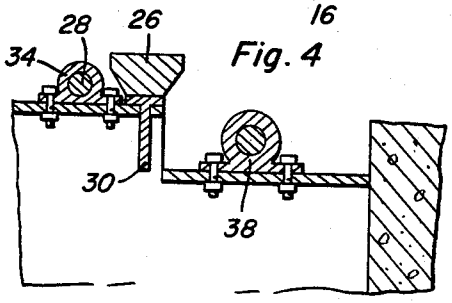


Fig. 5

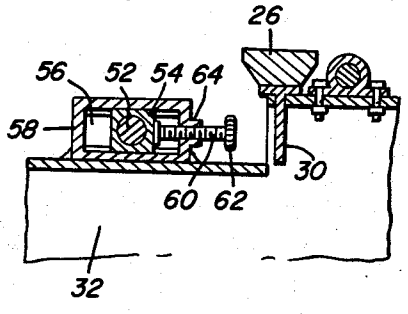
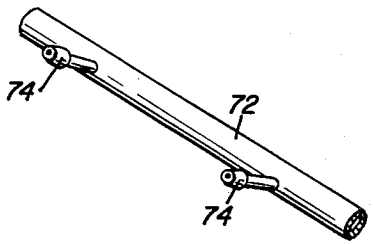


Fig. 6



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REVOLVING SANITARY FLOOR FOR HORSE STALLS

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10 Claims. (Cl. 119—29)

This invention primarily relates to a revolving stable floor having means associated therewith for automatically keeping said floor in sanitary condition.

It is the primary object of this invention to provide a revolving stable floor which may not only be used to exercise the animal housed within said stable but also comprises means associated therewith for automatically washing said floor and keeping the same in a sanitary condition.

Another object of this invention in accordance with the aforementioned object is the provision of a floor comprising a revolving flexible belt suitably disposed upon roller means transversely mounted in said stable enclosure and further rigidified by suitable planking mounted between said rollers.

A further object of this invention is to provide access means in one wall of said stall so that said belt may be readily removed therefrom, for repair purposes and the like.

Yet another object of this invention is the provision of a drain disposed beneath the lower run of said flexible belt for accumulating and removing the manure of the horses or other animals housed within said stall enclosure and wherein further means are provided downstream from said aforementioned washing means and intermediate the lower and upper runs of said flexible belt for scraping off any excess manure which has adhered to the flexible belt.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a partial sectional view through adjacent horse stalls showing a top plan view of the revolving floor comprising the subject matter of the instant invention and further showing parts of the washing means for keeping said floor sanitary.

FIGURE 2 is a fragmentary sectional view taken substantially along line 2—2 of FIGURE 1 and illustrates certain orientations of the parts of the instant invention.

FIGURE 3 is a fragmentary sectional view taken substantially along line 3—3 and illustrating the driving means for the endless flexible belt of the instant invention.

FIGURE 4 is a fragmentary sectional view taken substantially along line 4—4 of FIGURE 1 and illustrating further details of the invention.

FIGURE 5 is a fragmentary sectional view taken substantially along line 5—5 of FIGURE 1 and illustrating the tensioning means for the endless flexible belt of the present invention.

FIGURE 6 is a partial perspective view of the washing means utilized in cleaning said endless flexible belt or floor.

Referring now to the drawings in more detail, the subject matter of the instant invention is contemplated to be used in a horse stall generally comprising an enclosure including a front wall 10 having a hinged door 12 and a suitable rear wall 14. It should also be appreciated that suitable side walls and a ceiling are provided to complete the enclosure, but are not shown.

A suitable concrete foundation such as 16 is laid in

a substantially rectangular shape and comprises an upstanding peripheral portion such as shown at 18. The space enclosed by said peripheral portion 18 comprises a pit 20 which will generally be used for the accumulation of manure removed from the revolving floor, which is not removed upstream therefrom as will hereinafter be described.

The revolving floor comprising the subject matter of the instant invention is generally designated by the numeral 22 and comprises an endless flexible belt 24 suitably supported upon transverse planks 26 and rotatably mounted rollers 28 mounted between adjacent planks. The transverse planks 26 are solid oak stock and are supported upon T-shaped beams 30 mounted adjacent their ends upon a pair of suitable structural members 32 which extend between the front and rear walls 12 and 14 of the enclosure. The rollers 28 are also suitably mounted in bearing blocks such as 34 which in turn are also mounted upon said structural members 32.

A driven drum 34 defining one end of the flexible belt 24 is rotatably carried by a shaft 36 rotatably mounted in bearing 38 disposed on the structural members 32 and a sprocket member 40 is keyed to said shaft adjacent one of its ends. A motor 42 having an output shaft 44 is mounted beneath and to one side of the drum 34 and is adapted to rotate the latter by means of an endless chain 48 entrained about the sprocket 40 and a sprocket 46 keyed to the motor output shaft 44. Defining the other end of the endless flexible belt is an adjustable idler drum 50 mounted on a shaft 52 rotatably mounted within slidable bearing blocks 54 disposed at both ends of the shaft 52. Each block 54 is confined within a rectangular chamber 56 defined by a hollow member 58 welded to each one of the structural members 32. A suitable threaded shank 60 having a handle 62 disposed thereon at one end is rigidly attached to the bearing block 54 and passes through a nut 64 fixed to the member 58, whereupon turning said handle 62 will cause the screw 60 to move in an axial direction thus moving the block 54 therewith. It should now be apparent that means 52—64 disposed on both sides of the shaft 52 can be utilized to vary the tension of the flexible belt 24 disposed between the drums 34 and 50 by merely turning the threaded members 60 by means of the handle 62 disposed thereon.

Belt 24 comprises an upper run 66 and a lower run 68. Suitable washing means are provided for cleaning said runs of the flexible belt 24 and are generally designated by the numeral 70. Said means comprises a conduit 72, mounting a plurality of spray heads 74 at predetermined points therealong, mounted on a portion of the concrete periphery of the foundation. It should be noted that the spray nozzles 74 communicate with the interior of the conduit 70 and are directed towards one end of the lower run 68 of the belt 24. The conduit 70 communicates at one of its ends with a suitable source of washing fluid such as water and said communication is controlled by any suitable valve means such as shown at 76.

Disposed downstream from the washing means 70 and intermediate the lower and upper runs of the belt 24 is a scraping means generally designated by the numeral 78. Said scraper means 78 comprises an angle member having a vertical leg 80 secured to the concrete foundation 16 and a horizontal member 82 which overlies the juncture of the upper and lower runs of the belt 24. Said scraper means 78 is adapted to extend the transverse width of the floor. Hence, any manure which has been retained on the lower run 68 of the belt 24 will be prevented from returning with the upper run of the belt by means of the scraper 78 which will dislocate any retained manure from the lower run 68 of the belt causing it to drop into the pit 20.

To remove the belt **24** for repair or other purposes a removable closure member **84** has been provided which forms part of the rear wall **14** but as shown in FIGURE 2 is adapted to be removed therefrom. When said closure member **84** has been removed from the rear wall **14** the tension on the belt may be slackened and the belt which is usually fastened to form one continuous endless structure by some sort of fastening means may be unfastened and removed from said opening.

A trough **86** comprising a U-shaped channel member forms the lowermost portion of the rear wall **14** and is adapted to form a drain for manure accumulated therein from the upper run of the endless belt and water from the washing process. It should also be apparent that the pit **20** may have associated therewith suitable drainage means for draining or conveying away the manure accumulated therein.

The operation of the revolving sanitary floor should now be apparent. Merely by actuation of the motor **42** the endless flexible belt **24** comprising the revolving floor and which extends substantially the full width of the enclosure or horse stall will be actuated to revolve. Any manure accumulated upon the upper run **66** of the belt **24** will be conveyed either to the drainage means **86** or the pit **20**. The upper run of the belt when it begins its travel as the lower run will be cleaned by the washing fluid emanating from the nozzle **74**. Any manure which has been retained on the lower run by adhering thereto will subsequently be scraped off by the scraping means **78**. Thus a revolving floor for a horse stall has been provided which is self-cleaning in effect. It should also be noted that the revolving floor is also to be used as an exercising means for the horse enclosed therein. Due to the revolving belt the animal or horse will be forced to walk in the stall as the belt runs thus tending to cool him out gradually, and prevent stiffness in the animal. Also, suitable convenient means are provided for removing the belt from the endless drums through an access means formed in the rear wall of the enclosure.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. In a horse stall of the type comprising a plurality of walls and a door forming an enclosure, a revolving floor for exercising a horse and conveying away accumulated manure comprising a plurality of stationary transverse planks spanning the width of said enclosure, roller means rotatably supported between adjacent planks, a flexible endless belt having an upper and lower run substantially filling said enclosure and supported upon said roller means and planks, means for driving said belt in a direction normal to said planks and roller means and means disposed beneath the lower run of said belt for washing said belt.

2. The structure of claim 1 wherein removable access means are disposed in one of said enclosing walls for providing access to said enclosure for withdrawing said belt therefrom.

3. The structure of claim 2 wherein means are provided for tensioning said belt.

4. The structure of claim 3 wherein manure and water drainage means are disposed adjacent said washing means.

5. The structure of claim 1 wherein said washing means includes a conduit extending the width of said enclosure, spray nozzles spaced along the axial length of said conduit at predetermined points and a source of washing fluid connected to said conduit.

6. The structure of claim 1 wherein scraper means are located intermediate the upper and lower runs of said belt and downstream from said washing means for removing any excess manure adhered to said belt.

7. The structure of claim 4 wherein a pit is provided beneath the lower run of said belt for accumulating excess manure for removal from said stall.

8. For use in a horse stall, a revolving floor for exercising a horse and conveying away accumulated manure comprising a plurality of stationary transverse planks, roller means rotatably supported between adjacent planks, a flexible endless belt having an upper and lower run supported upon said roller means and planks, means for driving said belt in a direction normal to said planks and roller means, means disposed beneath the lower run of said belt for washing said belt, and manure and water drainage means disposed adjacent said washing means.

9. The structure of claim 8 wherein scraper means are located intermediate the upper and lower runs of said belt and downstream from said washing means for removing any excess manure adhered to said belt.

10. The structure of claim 1 wherein manure and water drainage means is disposed adjacent said washing means.

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