June 29, 1937. E. S. GANDRUD 2,085,308

ANIMAL STALL

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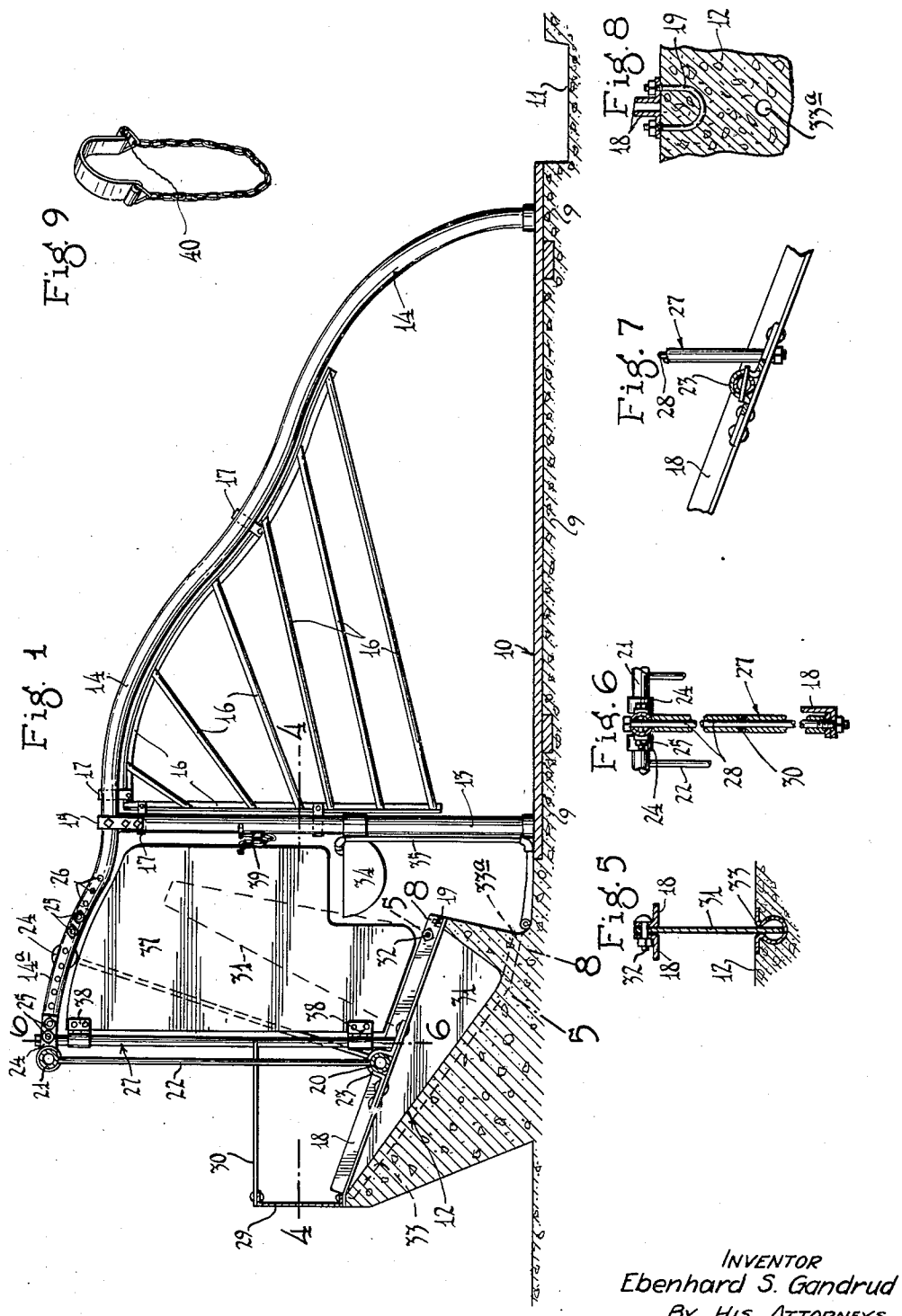


Fig. 1

Fig. 9

Fig. 8

Fig. 7

Fig. 6

Fig. 5

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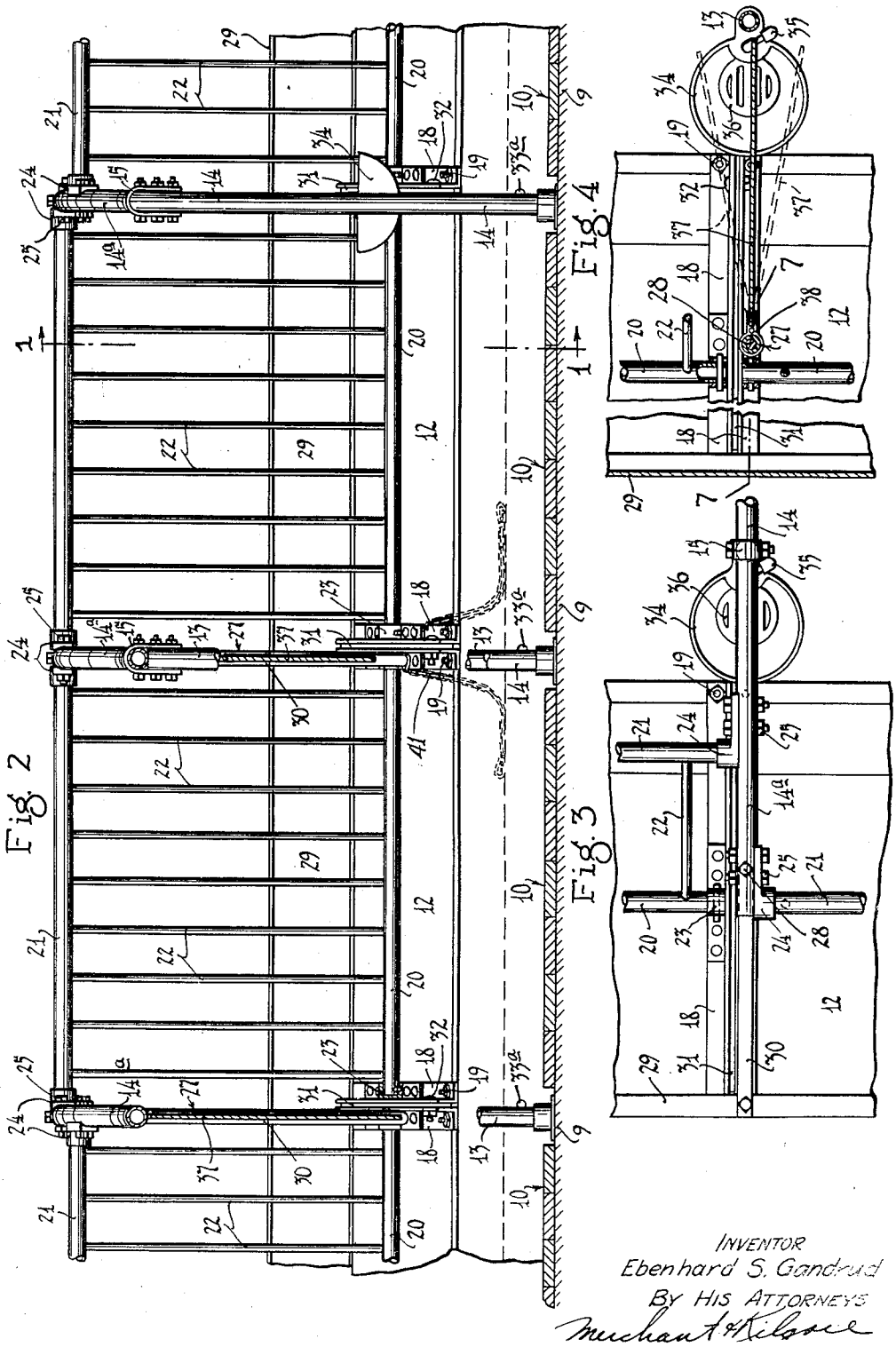


Fig. 2

Fig. 4

Fig. 3

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ANIMAL STALL

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11 Claims. (Cl. 119—27)

My invention relates to that type of animal stall usually designated as a cow stall and, generally stated, consists of the novel devices, combinations of devices and arrangement of parts hereinafter described and defined in the claims.

Briefly stated, the objects of the invention are to provide a thoroughly mechanical, easily installed, and rigid structure incorporating the features of convenient feeding, proper separation of the cows, a reasonable amount of freedom of movement of the confined animals, and cleanliness in the use of the equipment.

A preferred embodiment of the invention is illustrated in the accompanying drawings, wherein like characters indicate like parts throughout the several views.

Referring to the drawings:

Fig. 1 is a vertical section taken from front to rear on the line 1—1 of Fig. 2;

Fig. 2 is a view of the structure shown in Fig. 1 looking from the right of Fig. 1, parts being broken away;

Fig. 3 is a fragmentary plan view of a portion of the device;

Fig. 4 is a fragmentary horizontal section taken on the line 4—4 of Fig. 1;

Fig. 5 is a detail in section taken on the line 5—5 of Fig. 1;

Fig. 6 is a vertical section taken on the line 6—6 of Fig. 1;

Fig. 7 is a fragmentary section taken on the line 7—7 of Fig. 4;

Fig. 8 is a fragmentary section taken on the line 8—8 of Fig. 1; and

Fig. 9 is a perspective view showing the neck yoke that may be used in connection with the device.

The floor structure 9, which is illustrated as concrete, is shown as provided over the stall area proper with a plank flooring 10 and at the rear end thereof with a gutter 11. In front of the floor structure 10 the concrete floor structure is a long feed trough 12, preferably and as shown, formed as a monolithic portion of the concrete floor structure 9. This trough 10 extends in front of a plurality of stalls. The stalls are divided off or separated by partition structures formed chiefly by vertical posts 13 and top rails 14, both of which are preferably tubular pipe structures. The posts 13 are anchored to the floor structure in any suitable way either by being set into the concrete flooring or by being otherwise rigidly anchored thereto, and the same is true of the lower rear ends of the top rails 14. The upper ends of the posts 13 are rigidly connected to the rails 14 by coupling straps or brackets 15 or any other suitable means. Preferably, the stalls are further completed by open grids 16 suitably secured to the posts and rails by straps or brackets 17.

The trough structures 12 are well in front of the posts 13 and are spanned by bridge bars located substantially in the planes of the respective partitions. These bridge bars as shown, are each made up of a pair of slightly spaced angle bars 18 anchored at their ends to the upper and lower edges of the trough structure, preferably by means of nut-equipped U-bolts 19, see Fig. 8, set into the concrete of the upper and lower edges of the trough.

Located in front of each stall and extended over the intermediate portions of the bridge bars 18 are closely barred racks or panels, as shown made up each of lower horizontal pipe sections 20, upper pipe sections 21 and connecting rods 22. The ends of the lower pipes 20 are in substantially abutting arrangement and are pivotally mounted in keeper brackets 23 secured on the flanges of the bridge bars 18.

It should now be noted that the upper rails 14 in front of the posts 13 are extended rearwardly on the arc of a circle struck from the common axis of the lower pipes 20 and that the ends of the upper pipe sections 21 are mounted in brackets 24 that are adjustably secured to the arcuate portion 14a of said top rails by means of nut-equipped bolts 25 that are insertable through said brackets and through any one of a plurality of perforations 26 formed in said portion 14a. In Figs. 1 and 2, some of the panels are shown in vertical positions while others are shown as rearwardly adjusted into positions at considerable angle to a perpendicular. The purpose of this will later appear.

Supplemental posts 27 are extended immediately below the front ends of the arcuate rail sections 14a, and at their lower ends are anchored to the bridge bars 18. Preferably these posts 27 are pipe sections that are anchored in position by long nut-equipped rods 28, see particularly Fig. 6, passed therethrough and through the pipe sections 14a and through flanges of the bridge bars 18. A long or continuous hay manger is formed in front of each stall and extended over the front portion of the continuous or long trough 12. These mangers, as shown, are formed in part by front plates 29 and tie bars 30. Plates 29, at their lower edges, are anchored to the front portion of the trough 12 while the rear ends of the straps 30 are anchored to the posts 27, as shown, being interposed between sections of the latter

and with the rods 23 passed through the ends thereof, as also shown in Figs. 1 and 6.

The continuous trough 12 is arranged to be divided into sections for the respective stalls, by partition plates 31, shown as pivoted at 32 so that when the trough is to be cleaned, said partition plates may be turned up into positions indicated by dotted lines in Fig. 1. As best shown in Fig. 5, these partition plates 31 at their lower edges normally drop into channels formed by flanged channels 33 set into the concrete of the trough. The channels afforded by these channel straps afford inclined drainage channels which are extended at 33a through the rear portion of the trough, and also act to anchor the said partition plates against lateral movements (preventing bending) when an animal exerts pressure thereon.

For each two adjacent stalls, there is shown as provided a water basin or receptacle 34 shown as supported on the adjacent post by a suitable bracket. Water will be supplied to these water receptacles or basins 34 by small supply pipes 35 and preferably, also through animal operated valve mechanisms 36 of well known construction.

To prevent the animal in one stall from eating out of the compartment for the adjacent stall while permitting the animals from two adjacent stalls to drink out of the same basin or receptacle 34, I provide guard plates 37 that nearly fill the space between the posts 13 and 27 and the bridge bars 18 and rail sections 14a. These guard plates 37 by means of hinge brackets 38 are pivotally mounted on the adjacent posts 27 and their free edges are connected by chains 39 or the like to the adjacent posts 13. The chains or connections 39 permit enough oscillatory movements of the guard plates 37 to permit the animals from two adjacent stalls to drink out of the same basin, but do not permit sufficient movement to permit the one animal to eat out of the trough section for the adjacent stall.

The spacing of the rods 22 of the barred panels is such that the cows cannot pass their heads between the same, but can reach with their noses far enough between said rods to take hay in the hay rack in front of said barred panels.

When loose feed such as corn, fodder, ensilage, bran and fluid mixtures are poured or delivered through the hay rack, they will drop between the bridge bars 18 and under the lower pipe sections or bars 20 to the bottom of the respective trough sections. Hay or the like, however, will be retarded by the lower bars or pipe sections 20 of the panels and retained in the hay racks where they can be reached by the animals only through the spaces between the bars of the panels.

The cows will preferably be secured in the respective stalls with freedom for considerable head movement and sidewise body movement and this, of course, may be accomplished in any suitable way. For that purpose I have, in Fig. 9, shown a neck yoke or band 40 which may, for example, be placed around the cow's neck. A flexible anchorage device 41, anchored in structure 27 or bars 18, or other suitable portion of stall, and having a snap or similar readily manipulated device at the other or free end to permit handy attachment or detachment to yoke or similar device around the animal's neck, is provided to keep the animal secured in the stall.

Again, by reference particularly to Fig. 1, it will be noted that the barred panel made up of elements 21—22—20, is located over the intermediate portion of the rearwardly inclined bottom of the feed trough 12, so that with this arrangement, loose feed including such cut materials as silage, will be in the bottom of the trough at the rear of the panel and within easy reach of the cow, while hay will be held in the rack in front of the panel and over the forward or outer portion of the trough. The hay in the rack, however, can be reached by the cow whose nose will pass through the bars of the panel into engagement with the hay.

The structure defined herein, among others, has the following advantages: The animal will be given very great freedom in action and may move about the stall much as if in a box stall. Ensilage, feed, hay and other feeds may be fed at the same feeding time. The animal's head is not in the way during the feeding operation and there will be no stretching of the animal into the feed alleys. "Winged shoulder", which is common among dairy cattle where stanchions are employed, is practically prevented. The animals may keep themselves and the stall clean and will lie down in the stall ahead of the gutter. The stalls may be quickly made of any desired length and the whole installation may be produced at very reasonable cost. The cattle cannot throw hay out of the manger or feed trough during the course of eating. "Left-over" hay or similar roughage is kept in a place where it may be readily removed. The feed trough may be readily cleaned from time to time by flushing or otherwise when the trough partitions 31 are raised. By adjustments of the panel, the length of the stall may be varied to animals of different size and length so that the animal will always stand in proper relation to the gutter.

From the foregoing, it will be evident that the invention above described is capable of various modifications as to details of construction and arrangement of parts within the scope of the invention herein disclosed and claimed.

It is highly important to note that in the improved stall described and herein claimed the feed trough has a rearwardly inclined bottom and that the barred rack is supported with its lower portion above the intermediate portion of the inclined bottom of said trough. Also, it is important that the hay manger is located outward or forward of the barred rack so that hay can be delivered into the same from the outer side of the stall. Also, with this arrangement, any loose feed delivered to the trough through the hay manger will be dropped onto the inclined bottom of the trough and will, under the action of gravity, run rearward to the lower portion of the trough and to a point at the rear of the rack so that such loose feed may be reached by the animal.

What I claim is:

1. An animal stall comprising partition structures combined with a feed trough at the front portion thereof, and a barred panel extended transversely and upwardly above the intermediate portion of said trough, said parts being arranged to form a plurality of adjacent stalls in front of which said trough is extended, water receptacles located adjacent certain of said partition structures, and upright guard plates substantially aligned with the partition structures and located over the rear portions of said trough, said guard plates being mounted for limited lateral movements, and stop means for limiting the lateral movements of said guard plates so that said plates can be moved to permit either of two animals in adjacent stalls to drink from the

same water receptacle, but will prevent the adjacent animals from drinking at the same time, said guard plates serving further to prevent adjacent animals from eating out of the same trough section.

2. An animal stall comprising partitions including posts and top rails, the latter being extended forward of said posts, a feed trough located in front of said posts, bridge bars extended from the front to the rear portions of said trough and spanning the latter, and a barred panel mounted on said bridge bars and connected to the forwardly extended portions of said top rails, in combination with a hay manger located over said bridge bars in front of said barred panel, the bottom of said trough being inclined rearwardly so that the deepest portion thereof is rearward of said barred panel, said barred panel having a transverse lower bar located above the intermediate portion of the inclined bottom of said trough so that ensilage and like feed material will run under the same to a position in the bottom of the trough rearward of said panel.

3. In an animal stall structure, a concrete trough having an inclined bottom, trough partitioning plates mounted for vertical movements and which, when lowered, divide the trough into laterally spaced compartments, and tubular metallic channel strips set into the inclined bottom of said trough and into which the lower edges of said trough partitions are seated when lowered, said tubular channel strips being extended from the upper to the lower portion of the inclined bottom of said trough and being open at their lower ends for drainage.

4. In an animal stall, laterally spaced partitions comprising front posts and top rails, the latter projecting forward of said posts, a trough extended transversely of the stall and in front of said posts and having a rearwardly inclined bottom, bridge bars applied to the front and rear portions of said trough in substantial alignment with said partitions, a barred panel pivotally mounted on the intermediate portions of said bridge bars forward of the lowermost portion of said trough, the upper edge of said barred panel being secured to the forwardly projecting ends of said top rails, and a stationary hay manger located in front of said barred panel and above the forward ends of said bridge bars.

5. The structure defined in claim 4 in combination with guard plates substantially aligned with the partition structures, located over the rear portions of said trough and below the forwardly projecting ends of said top rails, said barred panel being located and capable of adjustments between said guard plates.

6. The combination with an animal stall, of a feed trough extended in front thereof and having a rearwardly inclined bottom extending from a relatively high front portion to a relatively low back portion, bridge bars extending from the high front to the low rear portion of said trough, a barred panel extended transversely above said trough with its lower portion anchored to the intermediate portions of said bridge bars, and thereby held above the intermediate portion of the inclined bottom of said trough, and a hay manger located forward of said barred panel and above the high front portion of the inclined bottom of said trough.

7. The structure defined in claim 6 in which said barred rack is pivotally mounted on said bridge bars and is forwardly and rearwardly adjustable at its upper portion.

8. In an animal stall, laterally spaced partitions comprising front posts and top rails, the latter projecting forward of said posts, a trough extended transversely of the stall in front of said posts, bridge bars applied to the front portions of said trough and extended rearwardly therefrom substantially in line with said partitions, a barred panel pivotally mounted on said bridge bars and extended above the intermediate portion of said trough, means adjustably connecting the upper portion of said barred panel to the forwardly projecting portions of said top rails, and a hay manger located in front of said barred panel and above the outer front portion of said trough.

9. The structure defined in claim 8 in combination with means for adjustably securing the upper portion of said barred panel to the projecting ends of said top rails.

10. The structure defined in claim 8 in which said trough has a rearwardly inclined bottom, the lower portion of which is rearward of said panel.

11. In an animal stall, laterally spaced partitions including front post elements and top rails, the latter projecting forwardly of said post elements, a trough having a rearwardly inclined bottom extended transversely of the stall from a point forward to a point rearward of said post elements, a barred panel extended transversely of said trough with its upper portion adjustably secured to the forwardly projecting portions of said top rails, a support pivotally mounting the lower portion of said panel above the bottom of said trough on a line between the front and rear portions thereof, and a hay manger located in front of said barred panel and above the relatively high front portion of said trough.

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