

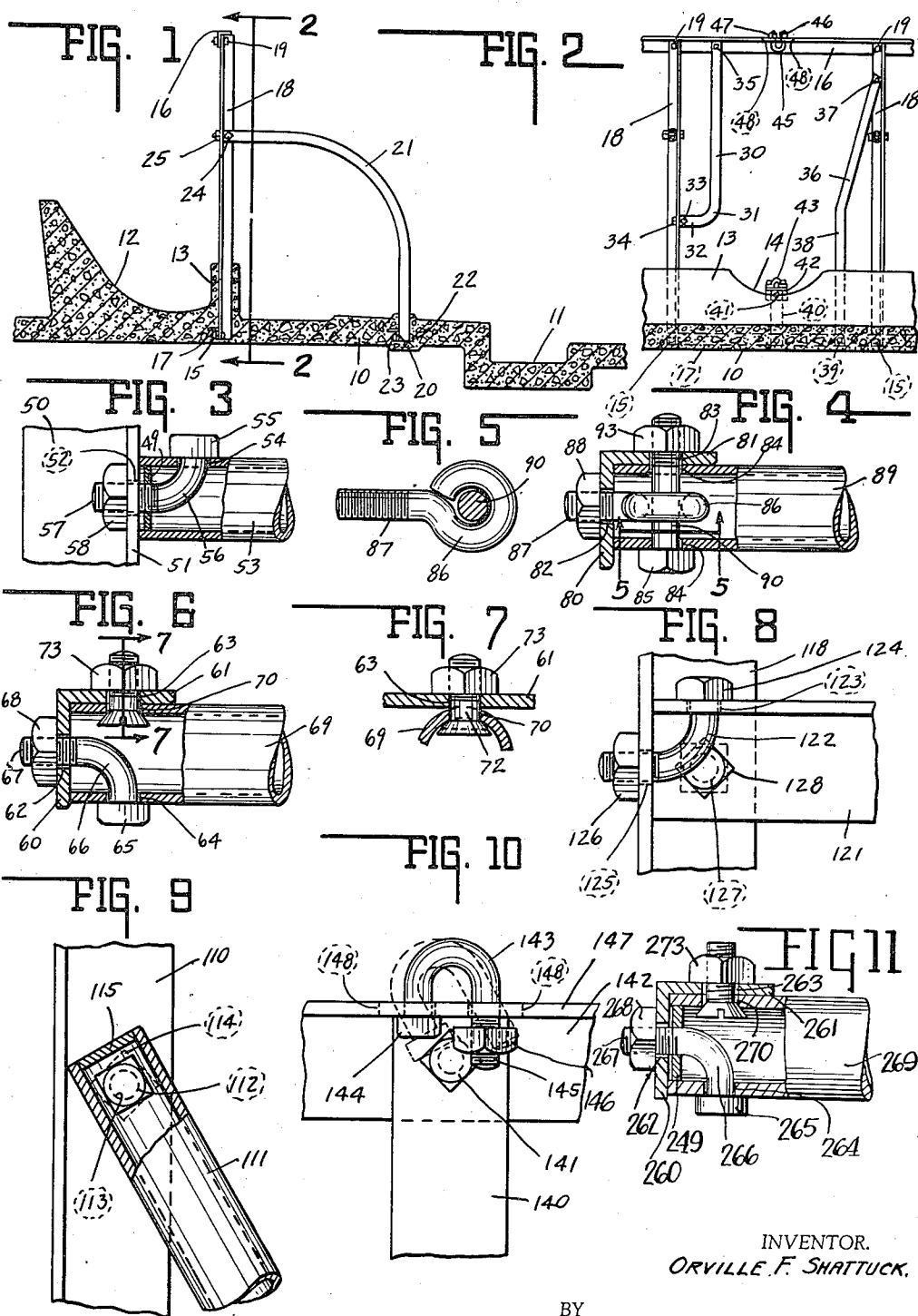
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DAIRY STALL CONSTRUCTION

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DAIRY STALL CONSTRUCTION

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This invention relates to a stall structure wherein certain standard steel and/or iron sections are employed.

One chief object of the invention is to provide a stall structure suitable for dairy barns, and the like, wherein standard section metal elements are employed.

Another chief object of the invention is to provide certain connections between standard metal sections for rigidly anchoring the members together by a relatively simple connection.

Another feature of the invention consists in the several simplified forms for connecting certain standard section metal members together.

The full nature of the invention will be understood from the accompanying drawing and the following description and claims:—

In the drawing, Fig. 1 is a transverse sectional view through a stall arrangement showing the latter in end elevation.

Fig. 2 is a combination sectional and elevational view taken at right angles thereto and substantially along the line 2-2 and in the direction of the arrows.

Fig. 3 is an enlarged elevational view, parts being broken away to show the same in section of a pipe and angle iron connection.

Fig. 4 is a similar view of a modified form of connection between a pipe and angle iron.

Fig. 5 is a sectional view taken on line 5-5 of Fig. 4.

Fig. 6 is a similar view of a modified form of connection between a pipe and angle iron.

Fig. 7 is a section taken on line 7-7 of Fig. 6.

Fig. 8 is a view similar to Fig. 3, illustrating a similar type of connection between two angle irons.

Fig. 9 is a similar view showing an inclined or angular connection between the tube and angle iron instead of the transverse plane dual connection or flat face or butt connection illustrated in Figs. 3, 4, 6, and 8.

Fig. 10 is an elevational view of a loop connection, the dotted lines indicating different positions of the U-shaped member.

Fig. 11 is a sectional view of the preferred form of connection.

In the drawing 10 indicates the concrete base of a stall structure having the gutter 11, the manger 12, and the partition wall 13 provided with the groove 14. In Figs. 1 and 2 of the drawing there is illustrated but a single stall section but the number thereof may be multiplied as desired.

The stall construction includes a top cross

member 16 in the form of an angle iron and therebeneath and imbedded in the concrete is a lower front cross member 17 and secured at opposite ends and in relatively spaced relation to the aforesaid, are the vertical uprights 18 which also are shown as angle irons, the lower cross member 17 and the lower ends of the uprights 18 being secured together by the usual single bolt and nut connection 15 and the upper ends of the vertical uprights are secured by the usual single bolt and nut construction 19.

Spaced rearwardly from the lower front cross member 17 is a similar cross member 20 in the form of an angle iron and as herein shown, the stall partition member includes a tube 21, the midportion of which is arched and the lower end of which extends into the concrete and is anchored to the lower rear cross member 20 by a bolt 22, the head of which bears on the tube and the top of which extends through the tube and through the aligned holes at the end of the tube and the projecting end of which bolt mounts a nut 23 for clamping the lower end of the tube to the cross member 17. The upper end of the tubular partition is suitably anchored as at 24 and 25, said type of connection being shown in Fig. 3, 4 or 6.

If desired, in place of the tubular partition, an angle iron partition member may be employed and such a connection is shown in Fig. 8 and reference will be had more fully hereinafter. At one, and preferably the upper left hand corner of the opening, defined by the lower front cross member, the upper cross member and the two uprights 18, there is provided a combination stiffening member and a guard. Herein the same is shown in the form of a tube or pipe 30 having a right-angle bend 31 adjacent one end and the short straight end 32 is secured to the adjacent upright as at 33 and 34, this type of connection being shown in Fig. 3. The opposite end of the pipe or tube is secured to the upper cross member 16 by a similar connection, indicated at 35. This construction stiffens the corner between the upright 18 and the upper cross member 16 and also provides a guard that prevents the animal positioning its head adjacent the upright 18 or in the upper corner between the same and the cross member 16.

Another brace member consists of a tube or pipe 36 which is secured to the adjacent upright 18 as at 37. The brace includes a portion 38 that is inclined to or angularly directed with respect to portion 36. The brace at its lower end is imbedded in the concrete and is secured to the lower

cross member 17 as at 39, said connection being similar to that indicated at 22. The connection indicated at 37 is shown clearly in Fig. 9.

This combination brace not only serves to connect the other adjacent vertical upright 18 to the lower cross member and thus form a rigid frame work with the other cross member and the other brace 30, but the inclined portion 36 also serves as a guard similar to the portion 30 and also serves as a stop for the movable member of a stanchion construction when the same is opened for the reception of the animal's head.

Imbedded in the partition 13 is an anchoring member 40 which has suitably secured thereto, as by the usual single bolt and nut construction 41, an angular plate 42, the latter supporting a loop 43. The details of this construction are shown in Fig. 10 and the dotted lines in said figure illustrate the position that the U-shaped bolt assumes to permit reception of the lower anchorage of the stanchion.

The upper cross member 16 includes an upper stanchion support in the form of a U-shaped bolt 45, the head of which is indicated by the numeral 46, and the threaded return bend end mounts a nut 47. The cross member 16 is provided with a pair of elongated aligned slots 48 and the operation of this support is substantially similar to that illustrated in Fig. 10.

In Fig. 3 of the drawing, there is illustrated one form of tube or pipe to a plane surface connection and in said figure 50 indicates an angle iron having one web 51 apertured at 52. The tube or pipe is indicated by the numeral 53 and includes a single opening 54 in its side. An angle bolt having the head 55 and the arcuate shank 56 terminates in a threaded end 57, the axis of which is at right angles to the axis of the head 55. A nut 58 securely anchors in butt joint relation the tube or pipe 53 to the angle iron web 51 or a plate surface. A washer or threaded bushing 49 is mounted on the bolt 56 and is positioned wholly within the tube 53 and serves to center the angle bolt.

In Figs. 4 and 5 there is illustrated a multiple type of connection between an angle iron and a tube or pipe. In said figures 80 indicates one web of an angle iron having an opening 82 therein, the other web being indicated by the numeral 81 and having the opening 83 therein. The tube 89 is provided with a pair of aligned openings 84, the axis of which coincides with the axis of the opening 83 when a pipe 89 abuts the web 80. An eye bolt having the eye portion 86 has its shank 87 extending through opening 82 and mounts a nut 88 thereon. A bolt having the head 85 and the shank 90 extends through aligned openings 84 and 83 and extends through the opening of the eye portion 86 of the eye bolt and mounts a nut 93. With this type of construction the tube is primarily anchored in two transverse directions and has its end sealed by the web.

In Figs. 6 and 7 a modified and preferred multiple form of anchorage is illustrated. In said figures 60 indicates one web of an angle iron and 61 the other web. The web 60 includes an opening 62 and the web 61 includes an opening 63. An angle bolt having the head 65, the curved shank 66 and the threaded end 67 mounts a nut 68, the bolt being mounted in an opening 64 in the pipe or tube 69. The pipe or tube 69 includes another opening 70 and mounted therein is a taper headed screw bolt, the body portion 72 of which extends through registering openings 70 and 62

and mounts a nut 73 thereon. The resulting construction is such that similar to the connection shown in Fig. 3, the open end of the tube is closed but differing therefrom a multiple and transverse anchorage is obtained between the angle iron and the tube.

In Fig. 8 there is illustrated a modified form of connection and in said figure 118 indicates a vertical upright and 121 an angle iron type stall partition member. When a single connection is desired, an angle bolt having the curved shank portion 122 is mounted in the opening 123 and the head 124 bears on the side of the angle iron. The free end of the angle bolt extends through an opening 125 in the angle iron and mounts a nut 126. If an additional support is desired, the two angle irons may have registering apertures 127 provided in adjacent faces and the bolt and nut construction 128 may rigidly clamp the same together.

Whenever a dual anchorage is desired and a single bolt and nut construction is to be employed, the angle bolt shown in Fig. 8 is passed through the opening 127 and in the angle iron 118 and then through the registering opening 127 in the angle iron 121 and then the angular end of the angle bolt extends through opening 125 and mounts the nut 126. With this type of construction a double and transverse anchorage is provided. However, with this type of construction the primary purpose is rigidity between the end of the angle iron partition and the upright and the lateral clamping in a direction transverse to the length of the angle iron partition member is not obtained and the aforesaid lack of rigidity is also present in the modification previously suggested with respect to the multiple anchorage of the tube to the angle iron through the instrumentality of a single angle bolt. Wherefore, the dual anchorage is preferred and for that reason is specifically illustrated for both tube and angle iron mounting.

In Fig. 9 there is illustrated an inclined or angular type of connection between a tube and the angle iron. This connection is used where it is exposed to water, such as rain, snow or the like, or where there is material passing in the air, such as in the manger or dairy barn, and it is essential that the end of the tube be closed to subsequently prevent the admission of any material or liquid therein. As shown in Fig. 9, 110 indicates the web of an angle iron, 111 a tube extending angularly thereon and not transversely, and the end of the tube is provided with a pair of aligned openings 112 and the member 110 is provided with a registering opening. A bolt having the shank 113 extends through the three registering openings and its head portion bears on the tube. The threaded end of said bolt mounts a nut 114.

To seal the end of the tube and also to prevent crushing or collapsing of the tube in tightening it to the member 110, a closure in the form of a metal disc 115 is provided that is driven into the end of the tube and this closure or disc, being of metal, prevents collapse of the tube from the original formation and permits the tube to be drawn up tight to the angle iron and rigidly secured thereto. This would not be the case if the insert were omitted, because the tightening bolt would gradually deform or flatten the tube.

In Fig. 10 there is illustrated a stanchion support construction and in said figure 140 indicates a permanently positioned member that secures by a bolt and nut construction 141, an angle plate 142. A U-bolt construction having the return

bend portion 143 mounts at one end a head 144 and its opposite end is threaded as at 145 and supports a nut 146. The web 147 of the angle plate 142 is provided with a pair of aligned and elongated apertures 148. As shown by the dotted line positions, when the nut 146 is removed from the end 145, the bolt may be tilted in the openings to expose the end 146 to permit an eye member or link to encircle the midportion 143 and then the end can be reinserted in the opening 148 and the nut mounted thereon, and thus the member mounted on the U-bolt is permanently anchored to the support structure.

The upper stanchion support illustrated in Fig. 2, and indicated by the numerals 45 to 48 inclusive, is substantially similar to that illustrated in Fig. 10 but in Fig. 2 the cross member 16 is the equivalent of the angle plate 142 shown in Fig. 10. This type of construction permits the positioning of the mounting 140 in the concrete when it is poured and the remainder of the mechanism may be attached to the support. This permits the repeated attachment or detachment of the member mounted upon the U-shaped member, because should the threads become worn or damaged, the U-shaped member alone may be discarded and readily replaced by another member at a relatively small cost.

In Fig. 11 is illustrated a connection similar to Fig. 6 and like parts bear similar numerals of the two hundred series. However, in this form, there is included, the retainer centering and tube closing member 249, similar to member 49 of Fig. 3.

The foregoing description, while in considerable detail, is intended to be descriptive and not restrictive in character, since many modifications will readily suggest themselves to those skilled in the art to which this invention applies and such modifications as well as those hereinbefore mentioned are all considered to be within the broad scope of this invention, reference being had to the appended claims.

The invention claimed is:—

1. A joint connection between an angle and a tube including means anchored to one side of the tube adjacent the end thereof and extending through the end of the tube and one face of the angle, and another means extending through a side of the tube against the other face of the angle and said last mentioned face.

2. A joint connection between two metal members one of which is an angle including means an-

chored to one side of the other member and projecting beyond the end thereof through one face of the angle, and another means anchored to said other member and extending through the adjacent side of said other member and the other face of the angle member.

3. A joint connection between an angle and a tube including an angle bolt extending through one side of the tube and having its tube enclosed portion projecting longitudinally along and within the tube and beyond the end thereof, the bolt projecting longitudinal end extending through one face of the angle against which the tube end operatively bears.

4. A joint connection between an angle and a tube including an angle bolt extending through one side of the tube and having its tube enclosed portion projecting longitudinally along and within the tube and projecting beyond the end thereof and through one face of the angle against which the tube end directly bears, and an apertured spacing member completely seatable in the tube end and through the aperture of which the angle bolt projects.

5. A joint connection between an angle and a tube including means extending transversely through but one side of the tube adjacent the end thereof and longitudinally of the tube and through one face of the angle, and means mounted in the tube end through which the first mentioned means extends preventing collapse of the tube in mounting and closing the tube end.

6. A joint connection between an angle and a tube including means extending from within the tube and projecting beyond the end thereof and through one face of the angle, and other means extending through one side of the tube and the other face of angle, said first mentioned means being operatively anchored to the side of the tube adjacent the end thereof.

7. A device as defined by claim 1, characterized by the addition of an apertured centering and closure member nested in the tube end and through which aperture the first mentioned anchoring means extends.

8. A device as defined by claim 6, characterized by the addition of an apertured centering and closure member nested in the tube end and through which aperture the first mentioned means extends.

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