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COTTON PICKER MECHANISM HOUSING STRUCTURE

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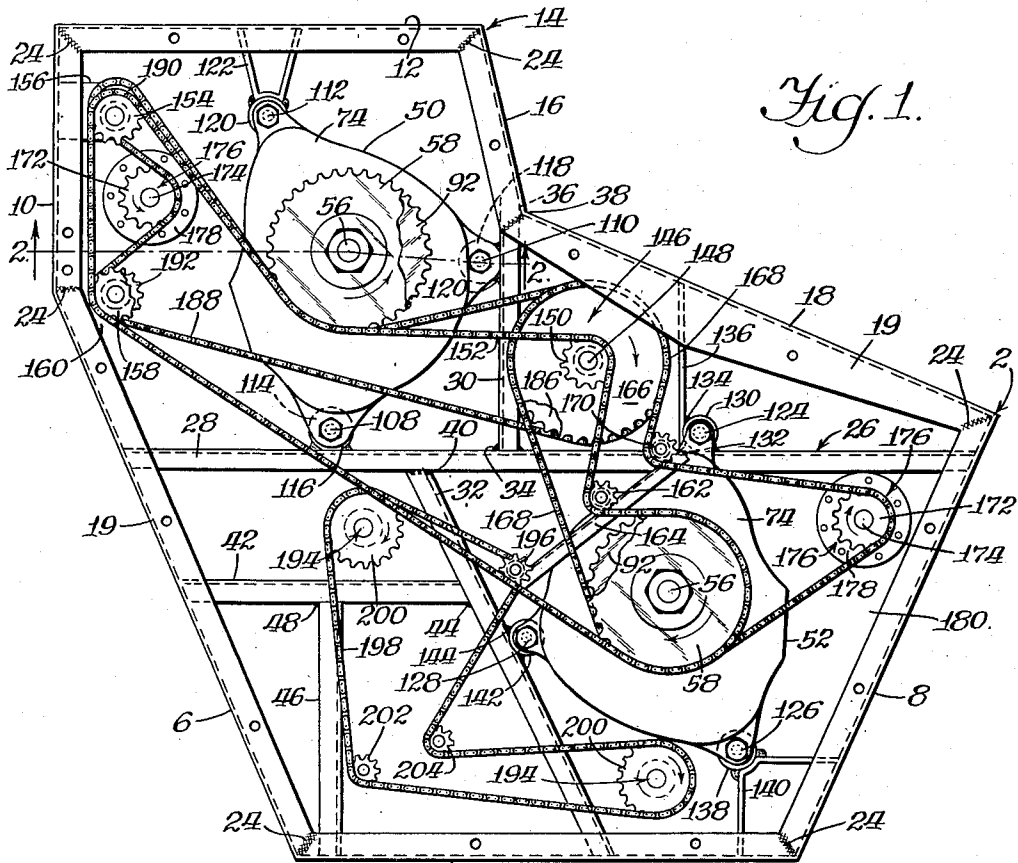


Fig. 1.

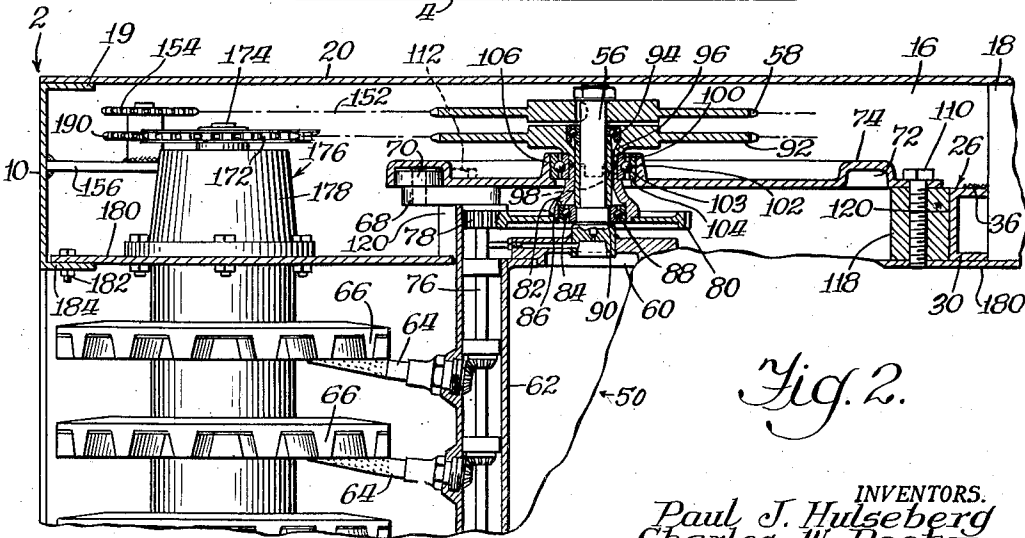


Fig. 2.

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COTTON PICKER MECHANISM HOUSING
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2 Claims. (Cl. 56—41)

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This invention relates to a cotton picker of the type shown in E. A. Johnston U. S. Patent 2,140,631 issued December 20, 1938, and more particularly to a novel arrangement and improved support of the mechanism contained in the picker housing.

A general object of the invention is to provide a housing head or support of such apparatus of a design which may be easily and economically fabricated preferably from sheet steel components, and to further provide a novel arrangement of the apparatus with connections to the support which add to the strength thereof.

A further object is to devise a durable support of skeletal construction which combines light-weight with an effective distribution of the material to achieve a rigid, strong and compact structure.

Another object is to support the main bearing assemblies of the picker drum mechanism on the internal bracing of the housing head.

A still further object is to provide a structural unit having a peripheral framework with an interlacing of braces therein consisting of straight interconnected beams arranged to clear various parts of the mechanism and at the same time afford an adequate support and mounting therefor.

A more specific object is to devise an arrangement requiring few cross braces which are disposed in an effective relationship to withstand the loads imposed thereagainst.

The invention contemplates an arrangement wherein the components of the casing head and the mechanism therein are connected to each other in mutually cooperating relationship. Furthermore, the invention comprehends mounting each picker drum from a cam member which is arranged to form a connection between several members of the bracing structure.

These and other objects of the invention will become more apparent from the specification and the drawings, wherein:

Fig. 1 is a top plan view with parts broken away of a picker assembly with the cover plate removed, and

Fig. 2 is a fragmentary transverse vertical sectional view taken substantially along the line 2—2 of Fig. 1.

Describing the invention in detail, the cotton picker comprises a housing or polygonal shell 2, the shape of which may best be seen in Figure 1, and is formed of interconnected flat generally vertical sections consisting of a front panel or paneling 4 and rearwardly diverging side panels

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or paneling 6 and 8 extending from opposite vertical edges of panel 4. Panel 6 has a rear section 10 which extends substantially perpendicular to forward panel 4 and merges at its rear edge with an adjacent lateral edge of a rear panel segment 12 extending generally parallel to front panel 10. Segment 12 is part of a rear panel or paneling structure generally indicated 14, which additionally comprises an outwardly angled panel segment 16 extending forwardly from the opposite lateral edge of segment 12 and merging with the rear edge of a more sharply outwardly angled panel 18 which connects at its forward edge with the rear edge of panel 8. The contour of the shell is determined by the mechanism contained therein and is designed to enclose the mechanism with the least amount of material while maintaining flat sections. The forwardly offset rear side at the right of Figure 1 is designed to accommodate a wheel of an associated tractor upon which the picker is mounted as shown in A. W. Scarratt, et al., U. S. Patent 2,352,291 issued June 27, 1944 for Cotton Harvester.

Each panel is inwardly flanged at its upper end as at 19 to provide a mounting and securement for a stop cover 20. The flange of each panel is preferably connected to the adjacent flanges as by welding at 24, 24.

A skeletal support frame structure, generally designated 26, is provided within the shell and spaced beneath the cover 20. The structure comprises a U-section main brace, strut or beam 28 which extends generally horizontally across the width of the shell and defines a trapezoidal construction with the panels 4, 6 and 8 and at opposite ends is connected, preferably as by welding, to the panels 6 and 8. Oppositely directed generally horizontal auxiliary or branch struts or beams 30 and 32 are located at opposite sides of the main beam 28 and form with the beam 28 quadrants within the shell.

Strut 30 extends rearwardly from beam 28 and is connected at its forward end as by welding at 34 to the rear side of beam 28 in an area substantially medially between the ends thereof. The other outer or rear end of strut 30 is connected as by welding at 36 to segment 16 of panel structure 14 adjacent the forwardly directed corner construction at 38 formed by the juncture of segment 16 with panel 18 which provides a relatively rigid area. Strut 30 is substantially perpendicular to beam 28 which is approximately parallel to panel 4.

Strut 32 extends generally parallel to panel 6

between panel 4 and the forward side of beam 28 and is connected at its rear end by welding as at 40 to the main beam 28 in an area intermediate the middle of beam 28 and the end thereof connected to panel 6. The outer or forward end of strut 32 is connected as by welding to the panel 4 intermediate the ends thereof slightly to the right of center as seen in Fig. 1. The arrangement of strut 32 provides rigidity and resistance to the rearward thrust of the plants entering the front of the unit. The strut 32 is strengthened by an auxiliary brace or strut 42 extending between panel 6 and strut 32 generally parallel to beam 28. The outer end of member 42 is connected as by welding to panel 6 in an area intermediate its connection with beam 28 and said panel 4. The inner end of strut 42 is welded at 44 to strut 32 intermediate the ends thereof. The forward corner formed by the panels 4 and 6 is strengthened by a secondary or an auxiliary strut or beam 46 extending substantially perpendicular to strut 42. The inner end of strut 46 is welded as at 48 to strut 42 intermediate the ends thereof and the outer or forward end of strut 46 is weld connected to panel 4 adjacent the corner formed thereby with panel 6.

Duplicate picker units 50 and 52 such as shown in the before mentioned Johnston patent are located at opposite sides of the casing 2, the unit 50 being located to the rear of the beam 28 adjacent to the one end thereof and the unit 52 being disposed forwardly of member 28 adjacent to the opposite end thereof. Each unit 50 and 52 comprises a main shaft 56 with a sprocket 58 keyed thereto adjacent the upper end thereof. The shaft 56 has its lower end connected to a drum carrier 60 for rotating the same together with spindle carrying hollow tubes 62 which are arranged to oscillate in predetermined manner as specified in the before mentioned Johnston patent in order to properly enter and withdraw the spindles 64, 64 carried thereby with respect to a cotton plant and to position the spindles in proper doffing relationship with doffers 66 for efficiently stripping the cotton from the spindles. The oscillatory movements of each spindle carrier 62 are controlled by a crank arm 68 thereof having a roller 70 guided within a cam track 72 in a bearing carrier or reaction element 74. The shape of the track is as shown in the Johnston patent. Each set of spindles 64 are rotated by a driving shaft and gearing assembly 76. Each assembly 76 has a gear 78 at its upper end in toothed engagement with a gear 80 carried by the lower end of a sleeve 82 which is supported on a bearing assembly 84 through shouldered engagement at 86 with an outer race 88 of the bearing 84, the inner race seating on a shoulder 90 on shaft 56. Sleeve 82 surrounds shaft 56 and at its upper end extends through the associated element 74 and is connected to a sprocket 92 which is rotatably mounted about shaft 56 by a bearing assembly 94, the sprocket 92 having a sleeve 96 which has a splined connection 98 at its lower end with the upper end of sleeve 82. The adjacent ends of sleeves 86 and 92 fit into an inner race 100 of main bearing 102 and have shouldered engagement therewith. The outer race 103 of the bearing 102 is supported as on a shoulder 104 at the bottom of a cup 106 formed at approximately the center of the associated element 74. As best seen in Fig. 2, it is evident that all thrust on the shaft 56 and the parts carried thereby is transmitted to the element 74,

and that the shaft 56 rotates independently of the sprocket 92 and the gear 80 rotated thereby.

The reaction element 74 of the picker unit 50 is mounted at three points 108, 110 and 112, the connection at 108 comprising a bolt threaded into a tube 114 which is welded as at 116 to the rear side of main beam 28 at a point intermediate its connection with strut 30 and the end thereof connected to panel 6. The point 110 comprises a bolt threaded into a tube 118 welded as at 120 to strut 30 in an area adjacent its connection with the panel segment 16. It will be thus seen that the member 74 of the assembly 50 forms a diagonal extending between or across the corner formed by the members 28 and 30 thus rigidifying the structure. The point 112 is located in triangular relationship with the points 108 and 110 and is in the form of a bolt threaded into a tube 120 which is welded to and forms part of a stand-off mounting 122 connected as by welding to the rear panel section 12 intermediate the ends thereof. Thus, it will be seen that the member 74 of the unit 50 also strengthens the rear side of the shell formed by the panel segment 10.

The member 74 of the unit 52 also has a three point mounting at 124, 126, and 128. The mounting at 124 comprises a bolt threaded into a sleeve 130 which is secured as by welding at 132 to the main beam 28 at a point intermediate the end thereof connected to panel 8 and its connection with the strut 30. The sleeve 124 is also weld connected as at 134 to a rib 136 which is connected to beam 28 and to panel 18 intermediate the ends of the latter. Point 126 comprises a bolt threaded into a sleeve 138 welded to form part of a stand-off mounting 140 at the apex of divergent legs thereof which open to a corner formed between panels 4 and 8, one of these legs being connected to panel 4 and the other to panel 8. Point 128 also comprises a bolt threaded into a sleeve 142 which is welded as at 144 to the strut 32 intermediate the ends thereof and more specifically between its areas of connection to panel 4 and the member 42 adjacent to the latter. It will be seen that the points 124, 126 and 128 are arranged in triangular relationship and that between points 124 and 128 the member 74 of unit 52 extends across the corner formed between the beam members 28 and 32. All the bolts 108, 110, 112, 124, 126 and 128 go through plate 180.

The drive arrangement for the units 50 and 52 is arranged to obtain an advantageous stress condition in the bracing structure and enclosing shell. The driving assembly generally indicated 146 includes a shaft 148 carrying at its upper end a sprocket 150 which is arranged to drive the spindle carrying drums of the picker units 50 and 52. The assembly 146 rotates in a clockwise direction Fig. 1 and the gear 150 has a chain 152 trained on the rear side thereof facing away from member 28. The chain 152 is trained on the forward side of sprocket 58 of unit 50 adjacent to beam 28 and then extends around the rear of an idler sprocket 154 mounted on a stand-off mounting 156 connected to panel segment 10 adjacent to the corner formed thereby with the panel 12. The chain 152 then passes around the outboard side of an idler 158 mounted on a stand-off mounting 160 connected to panel 6 adjacent its juncture with panel segment 10. The chain then extends diagonally forwardly and is trained around the forward, outboard and rear sides of sprocket 58 of forward picker unit 52 rotating the drum 60 thereof in a counter-clockwise direction.

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The chain 152 then passes around a forward and lateral side of an idler sprocket 162 rotatably mounted to a beam 164 connected as by welding to the top of member 74 of picker unit 52. Chain 152 continues to its initial starting point around sprocket 150.

The drive assembly 146 also comprises adjacent to the upper end thereof a sprocket 166 connected to shaft 148 and driving a chain 168 trained around the rear and lateral sides thereof. The chain 168 passes around lateral and forward sides of an idler sprocket 170 rotatably mounted to beam member 164. The chain 168 continues laterally around the rear and outboard side of a sprocket 172 mounted on the upper end of the shaft 174 of the doffer mechanism of unit 52 and generally indicated 176 and comprising bearing means including a bearing housing 178 mounted on a plate 180 disposed below the bracing means and connected as by bolts 182 to intumed flanges 184 of the panels of the housing. Each doffer mechanism 176 includes the doffers 66 heretofore mentioned. The chain 168 continues around the forward side of sprocket 92 of unit 52 and returns to sprocket 166 of the driving mechanism.

Driving assembly 146 also comprises a sprocket 186 connected to shaft 148 which drives a chain 188 trained around the front and rear and lateral side of sprocket 186. Chain 188 is trained around the forward side of sprocket 92 of the unit 50 and continues rearwardly around the rear side of an idler sprocket 190 mounted on the before-mentioned stand-off mounting 156, said chain 188 passing around the outboard side of sprocket 190 and then around the inboard side of sprocket 172 of doffer 176 of picker unit 50 and which is identical with the doffer 176 of unit 52 as heretofore described. It will be seen that the drum of unit 50 and the doffer assembly 176 thereof are driven in a counterclockwise direction and that the drum of unit 52 and the doffer mechanism thereof 176 are driven in a clockwise direction. The chain 188 then continues around the outboard side of an idler sprocket 192 rotatably mounted on the before-mentioned stand-off mounting 160 and the chain 188 continues to its initial starting point around sprocket 186. The moistener means 194 of the respective units 50 and 52 are both driven in a clockwise direction by means of the chain 152 which meshes with a transmission gear assembly 196 rotatably mounted on the beam 164 and driving a chain 198 which passes around sprockets 200, 200 of the moistener assemblies 194 and suitably

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arranged idler sprockets 202 and 204. The moistener assemblies and the idler sprockets 202 and 204 are suitably mounted through sleeves on the plate 180, the sleeves being bolted to the plate. The moistener assemblies may be of the type shown in the before-mentioned Johnston patent.

What is claimed is:

1. A cotton picker framework comprising a polygonal shell lying in a single plane, a frame disposed within the shell comprising a main beam member connected at opposite ends to opposite sides of said shell, a pair of oppositely extending struts at opposite sides of said main beam member projecting angularly therefrom and connected at one end thereto in an area intermediate its ends and at the opposite end to an opposed portion of the shell thus forming quadrants in said shell, reaction elements disposed in diagonally opposed quadrants between said main beam member and an adjacent strut and the shell and connected therewith, each element having an opening therethrough, an upright cotton picker mechanism beneath each element, each mechanism comprising an upright shaft projected through said opening in the associated element, bearing means about each shaft intermediate its ends and carried on the related element within the opening therein in a region substantially in the horizontal plane of said frame, each shaft having an upper end projecting above said frame, sprocket means connected to the upper end of the shaft, drive transmitting means operably associated with said sprocket means, each shaft having a lower end terminated immediately below the frame, and picker drum carriers connected to the lower ends of respective shafts.

2. The combination according to claim 1 and said shell having interconnected, upright, front and rear and side paneling and said main beam member extending lengthwise between said side paneling, and one of said struts extending longitudinally between said front paneling and the main beam member and the other strut extending longitudinally between said main beam member and said rear paneling.

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