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Oct. 2, 1945. E. G. MELROE 2,385,829

HARVESTER PICK-UP DEVICE

Filed Dec. 11, 1943 2 Sheets-Sheet 1

Fig. 1.

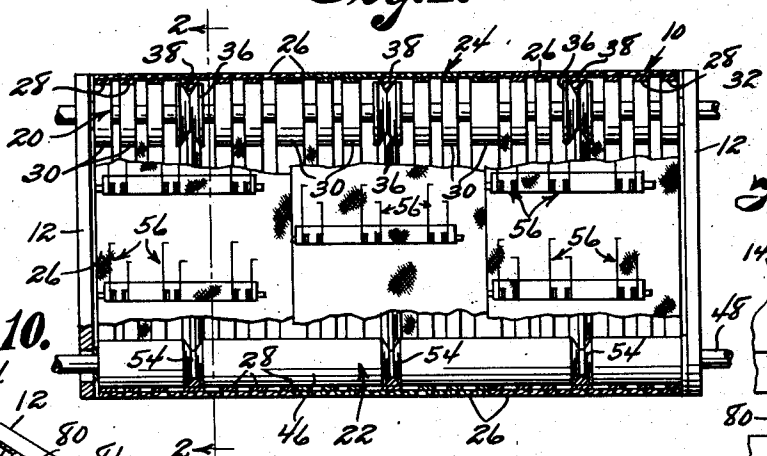


Fig. 11.

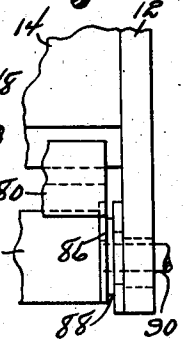


Fig. 10.

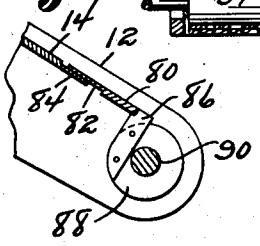


Fig. 2.

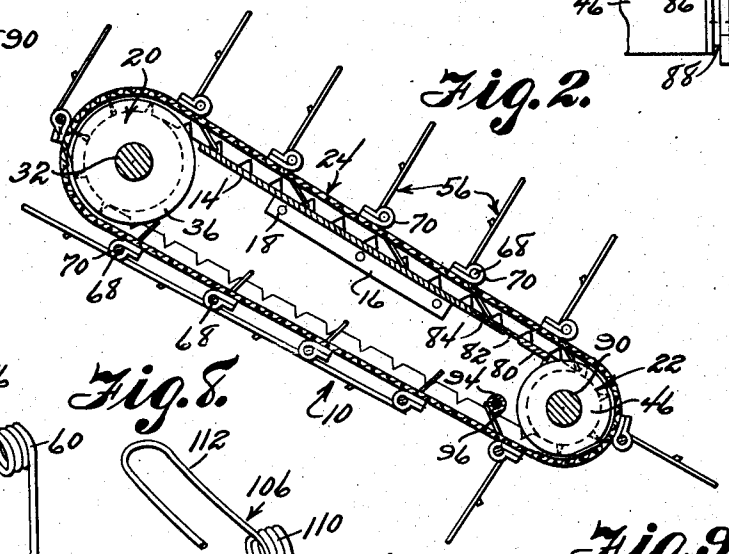


Fig. 3.

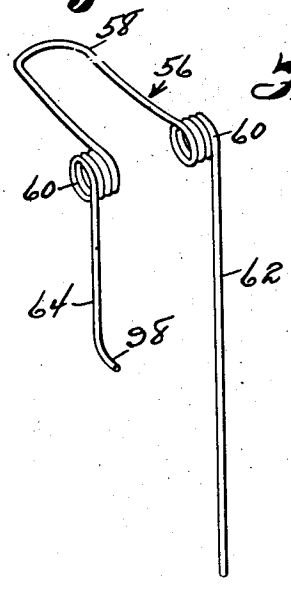


Fig. 8.

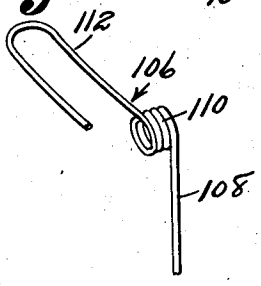
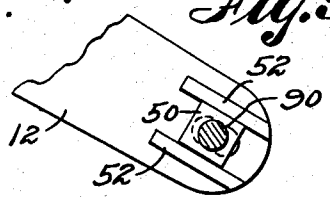


Fig. 9.



Edward G. Melroe INVENTOR.

BY Victor J. Evans & Co.

ATTORNEYS

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Fig. 4.

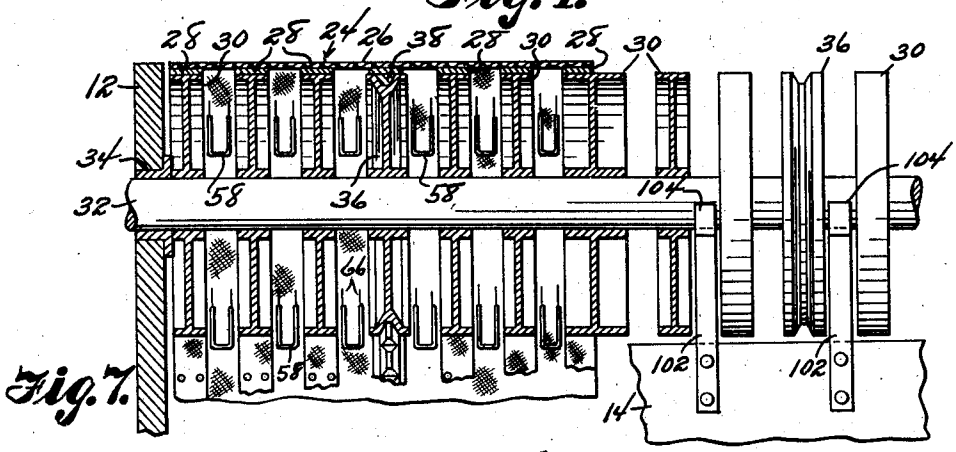


Fig. 7.

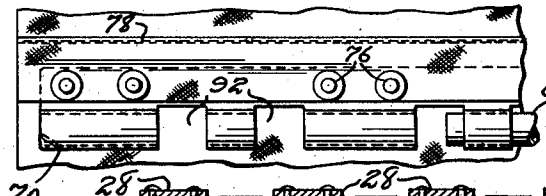


Fig. 5.

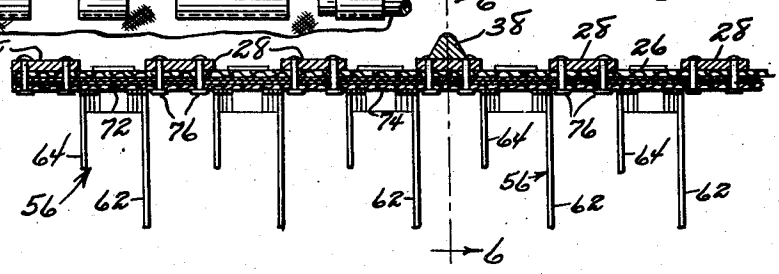
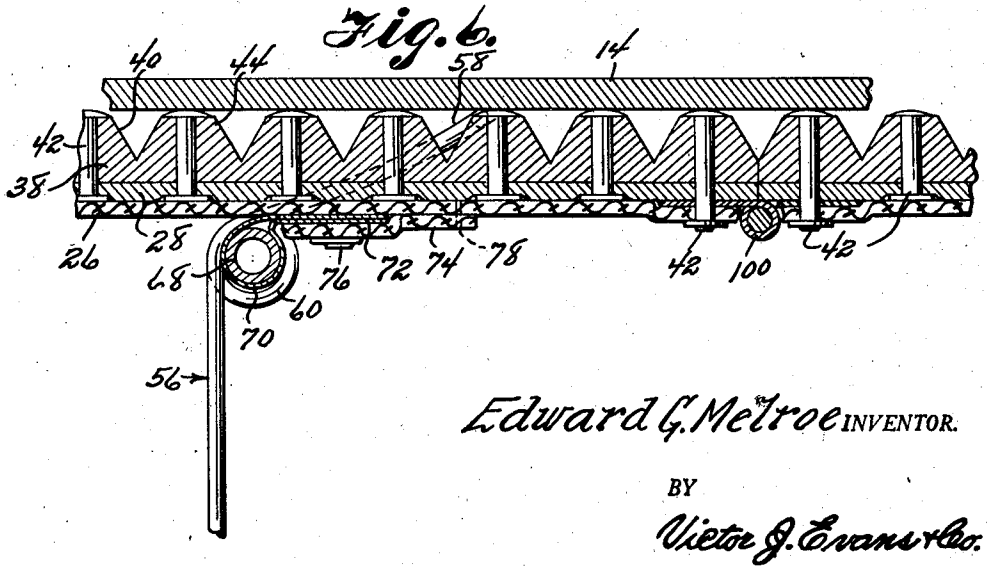


Fig. 6.



Edward G. Melroe INVENTOR.

BY

Victor J. Evans & Co.

ATTORNEYS

Patented Oct. 2, 1945 2,385,829

UNITED STATES PATENT OFFICE

2,385,829

HARVESTER PICKUP DEVICE

Edward G. Melroe, Gwinner, N. Dak.

Application December 11, 1943, Serial No. 513,923

11 Claims. (Cl. 198—198)

My invention relates to grain, straw handling devices and the like, and has among its objects and advantages the provision of an improved pickup embodying a novel belt or conveyor structure in association with an arrangement of short and long pickup fingers designed to operate efficiently under all kinds of operating conditions.

In the accompanying drawings:

Figure 1 is a partial sectional plan view of the invention.

Figure 2 is an enlarged sectional view along the line 2—2 of Figure 1.

Figure 3 is a perspective view of a finger unit having one long finger and one short finger.

Figure 4 is an enlarged sectional view taken axially of a belt or conveyor drive.

Figure 5 is a cross sectional view of one of the belt or conveyor sections.

Figure 6 is an enlarged sectional view illustrating a finger positioning means and the manner in which the fingers are mounted.

Figure 7 is a detail view of a coupling hinge.

Figure 8 is a perspective view of a different type of finger.

Figure 9 is a face view of an adjustable bearing.

Figure 10 is a detail view of a finger positioning means coacting with the structure of Figure 6, and

Figure 11 is a view illustrating the manner in which the structure of Figure 10 is mounted.

In the embodiment of the invention selected for illustration, the pickup unit 10 of Figures 1 and 2 comprises two parallel boards or frame members 12. These boards are fixedly connected together by a plate 14 provided with flanges 16 which are bolted or riveted at 18 to the boards. A drive means 20 is located at one end of the boards 12 in parallelism with a rotary idler means 22 at the other end of the boards, the two means supporting a conveyor or endless belt 24.

The conveyor 24 comprises belt sections 26 arranged side by side and functioning as an endless carrier extending from one board 12 to the other. Each belt section 26 is provided with three narrow belts 28 adjacent its inner face and extending longitudinally of the belt section. These belts are spaced for face engagement with drive pulleys 30 fixed to a drive shaft 32 rotatably supported in bearings 34 in the boards 12. The pulleys 30 at the meeting edges of the belt sections 26 are of double width so that one belt 28 of each adjacent belt section can rest thereon. A grooved pulley 36 is provided for each belt section 26. The pulleys 36 are keyed to the drive shaft 32 and drive V-belts 38 attached to the respective belt sections 26. The V-belts are located centrally and longitudinally of the respective belt sections 26 and constitute the principal driving means for the belt sections.

Figure 6 illustrates one of the V-belts 38 cut longitudinally. The belt is notched transversely at 40 to facilitate bending about small diameters, and the belt is fixedly attached to the belt section 26 by rivets 42 extending through the full thickness bodies 44 of the V-belt. All the V-belts are of identical construction.

The idler driving means 22 comprises a roller 46 attached to a shaft 48 rotatably supported in bearings 50 adjustably mounted in guides 52, see Figure 9, for adjustment longitudinally of the board sections 12. Grooves 54 are provided in the roller 46 for accommodating the V-belts 38, and the belts 28 ride on the ungrooved faces of the roller.

Figure 3 illustrates a finger unit 56 comprising resilient wire bent to provide a loop 58, coaxial convolutions 60 and one long pickup finger 62 and a short pickup finger 64 respectively extending from the groups of convolutions 60.

Figures 1, 2, 4 and 5 illustrate the conveyor 24 as being provided with a plurality of finger units 56. Figure 2 illustrates an operating position of the pickup unit 10, at which time the fingers 62 and 64 on the upper straight reach of the conveyor 24 lie at right angles thereto and project upwardly from the conveyor. All the fingers are arranged on the outer sides of the conveyor 24, while the loops 58 lie inside the conveyor.

Slots 66 are cut in the belt sections 26 through which the fingers 62 and 64 and the convolutions 60 may be inserted when assembling the finger units with the belt sections. Figure 1 illustrates the finger units 56 as being arranged in groups of three and the groups spaced longitudinally of the respective belt sections 26. The finger units in each group are appropriately spaced and all the finger units are mounted for pivotal movement. Figures 6 and 7 illustrate a rod 68 which is of sufficient length to pass through the convolution 60 of one group of finger units 56. This rod is inserted in a tube 70 bent from sheet metal, with the edge margins of the sheet bent to provide overlapping wings 72 lying between the belt section 26 and a strip 74 of belt material riveted and stitched to the belt section 26 at 76 and 78, respectively.

The rivets 76 also extend through the belts 28 to fixedly connect the latter with their respec-

tive belt sections 26. The V-belt 38 for each belt section 26 is attached to one of the belts 28 of that belt section.

In Figure 2 a plate section 80 is arranged adjacent the roller 46 and has a thin portion 82 slidably overlapping a similar portion 84 on the plate 14. The plate 80 is attached to brackets 86, see Figures 10 and 11, attached to washers 88 mounted on the shaft 90 and lying between the ends of the roller and the boards 12.

All the finger units 56 pivot freely on their respective rods 68, the tubes 70 being recessed at 92 to provide accommodation for the convolutions 60.

A transverse rod 94 is attached to the boards 12 and is provided with a sleeve roller 96 arranged in the path of the loops 58 on the lower straight stretch of the conveyor 24. This sleeve roller parallels the roller 46, is located closely thereto, and a short distance above the lower straight stretch of the conveyor.

In operation, the finger units 56 are pivoted to positions at right angles to their respective belt sections 26 as the finger units approach the roller 46. This brings the finger units into grain pickup positions as they pass about the roller 46, and the finger units are maintained in this position by reason of engagement between the loops 58 and the plates 80 and 14 up to a point approaching the drive means 20. The loops 58 are located between the belts 28, and discharging pressure on the finger units 56 at the discharge end of the pickup unit tends to pivot the finger units in directions bringing the fingers 62 and 64 parallel to the lower straight stretch of the conveyor. All the pulleys 30 are so spaced as to provide clearance for the loop 58, so that the loops may operate freely without interference from or engagement with the pulleys. The belts 28 space the belt sections 26 from the roller 46 in such manner as to provide ample clearance for the loops 58 as the latter pass about the roller 46. This construction relieves the loops 58 from distortion incident to passing about rollers. In my invention, the loops 58 pass easily and without impairment about both roller means. While the convolutions 60 pivot freely on the rods 68, the loops 58 are restrained from free movement by reason of their engagement with the belt sections 26 at the slots 66. However, this resistance is slight and does not offer any harmful resistance to the finger units when the latter are pivoted to different positions.

In providing each finger unit 56 with one long finger 62 and one short finger 64, I provide a pickup finger construction which operates efficiently in picking up grain, straw and the like in different conditions. The long fingers 62 may extend down to the ground, and the short fingers 64 are provided with hooks 98 which catch the grain or straw to restrain the material from sliding forwardly and off the fingers. In cases where the long fingers might be flexed backwardly through engagement with the ground, the short fingers will lift the straw and carry it onto the conveyor.

Another important feature of the long and short pickup finger construction resides in the fact that there is less likelihood of stones becoming caught in the straw. While the flexed long fingers might throw stones from the ground, the short fingers hold the straw off the ground so that the stones are less likely to be thrown into the straw. Rocks have been the cause of frequent trouble in connection with grain and straw pickup devices.

In Figure 6 the ends of the belt section 26 are connected by a hinge 100. All the belt sections are connected in the same way. To restrain the shaft 32 from lateral deflection two bearing arms 102 are fixed to the plate 14 and have ends 104 supportingly engaging the shaft.

The belts 28 increase the wearing life of the belt sections 26, in addition to providing clearance for the loops 58 as they pass around the roller 46. The wearing life of the belt is also increased by reason of the fact that the V-belts 38 carry the burden of driving the belt sections, which relieves the belt sections of any direct driving connection with either roller means.

Figure 8 illustrates a pickup finger 106 wherein one finger element 108 only is provided. This finger connects with one convoluted part 110, the latter being connected with a loop 112 corresponding to the loop 58.

Without further elaboration, the foregoing will so fully explain my invention, that others may, by applying current knowledge, readily adapt the same for use under various conditions of service.

I claim:

1. In a grain pickup device of the type described, the combination of a supporting means, first and second rotative means mounted on said supporting means, an endless conveyor extending between and trained around said first and second rotative means and consisting of a plurality of sections in side by side relation to each other, one of said rotative means comprising a drive for said conveyor and having a plurality of V-pulleys, and V-belts extending along inner faces of the conveyor sections and secured thereto and drivingly engaging the V-pulleys for driving the conveyor means, strips mounted across outer faces of the conveyor sections with the strips of adjoining sections in staggered relation to each other, fingers pivotally carried by said strips and having handles passing through openings in the conveyor sections, and members extending between said rotative means for engaging the handles of the fingers and holding the fingers in an operative position.

2. In a grain pick-up device of the character described, a frame, first and second rotative means carried by said frame, an endless conveyor means in said frame extending between and trained about said rotative means said first rotative means comprising the drive for said conveyor means and including a plurality of spaced pulleys, belts attached to said conveyor means and passing around said pulleys, said belts passing around said second rotative means to space the conveyor means from the second rotative means, and pickup finger means pivotally mounted on said conveyor means and having portions arranged to pass between said pulleys and through the space between the conveyor means and said second rotative means, and means on said frame coacting with said pickup finger means for positioning the latter in material pickup and carrying positions.

3. In a grain pickup device of the character described, a frame, first and second rotative means carried by said frame, and endless conveyor means in said frame extending between and trained about said rotative means, said first rotative means comprising the drive for said conveyor means and including a plurality of spaced pulleys, belts attached to said conveyor means and passing around said pulleys, said belts pass-

ing around said second rotative means to space the conveyor means from the second rotative means, and pickup finger means pivotally mounted on said conveyor means and having portions arranged to pass between said pulleys and through the space between the conveyor means and said second rotative means, and means on said frame coacting with said pickup finger means for positioning the latter in material pickup and carrying positions, said pickup finger means each including a long finger and a short finger.

4. In a grain pickup device of the type described, the combination of a frame, first and second rotative means mounted on said frame, an endless conveyor passing around said first and second rotative means, said first rotative means comprising a drive for the conveyor and comprising a plurality of first pulleys and second V-pulleys, said second rotative means including a roller having grooves lying in the planes of said V-pulleys, belts attached to said conveyor and passing around said first pulleys and said roller, and V-belts attached to said conveyor and passing around said V-pulleys and lying in said grooves.

5. The invention described in claim 4 wherein said conveyor comprises a plurality of belt sections each provided with one V-belt.

6. The invention described in claim 4 wherein material pickup fingers are pivotally mounted on said conveyor, said fingers having elements extending to positions inside the conveyor, and means on said frame acting on said elements to pivot the fingers to material pickup and carrying positions, all said pulleys being spaced to freely pass said elements therebetween and said first mentioned belts spacing the conveyor from said roller to provide clearance for said elements.

7. The invention described in claim 4 wherein said conveyor comprises a plurality of belt sections each provided with one V-belt, fingers pivotally mounted on said belt sections, and means on said frame coacting with said fingers to pivot the fingers to and maintain the same in material pickup and carrying positions, respectively.

8. The invention described in claim 4 in which pickup finger units are mounted on said conveyor, said finger units each including one long finger and one short finger, the short finger being bent to provide a straw holding formation.

9. The invention described in claim 4 wherein said conveyor comprises a plurality of belt sections, said belt sections having slots, pickup fingers pivotally mounted on said belt sections and having elements extending through said slots, and relatively fixed means coacting with said elements to pivot the fingers to and maintain the same in material pickup and carrying positions, respectively.

10. The invention described in claim 4 wherein said conveyor includes a plurality of belt sections each having a plurality of belt members attached thereto.

11. The invention described in claim 4 wherein said conveyor comprises a plurality of endless belt sections arranged side by side and independently driven but in unison.

EDWARD G. MELROE.