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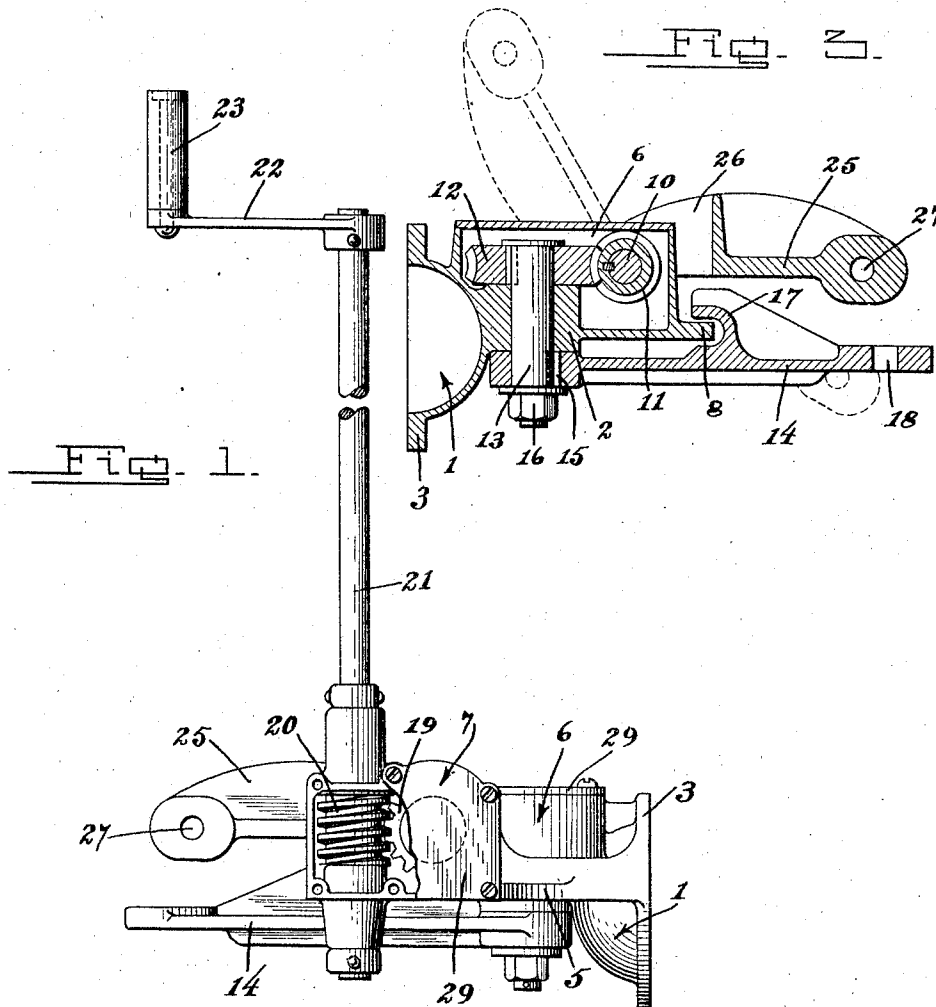
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HORIZONTAL AND VERTICAL TRACTOR HITCH

Filed Sept. 17, 1923

2 Sheets-Sheet 1



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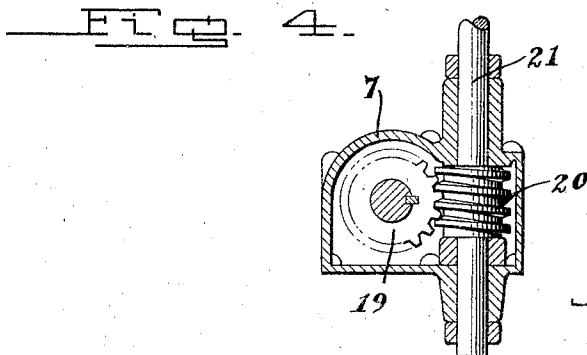
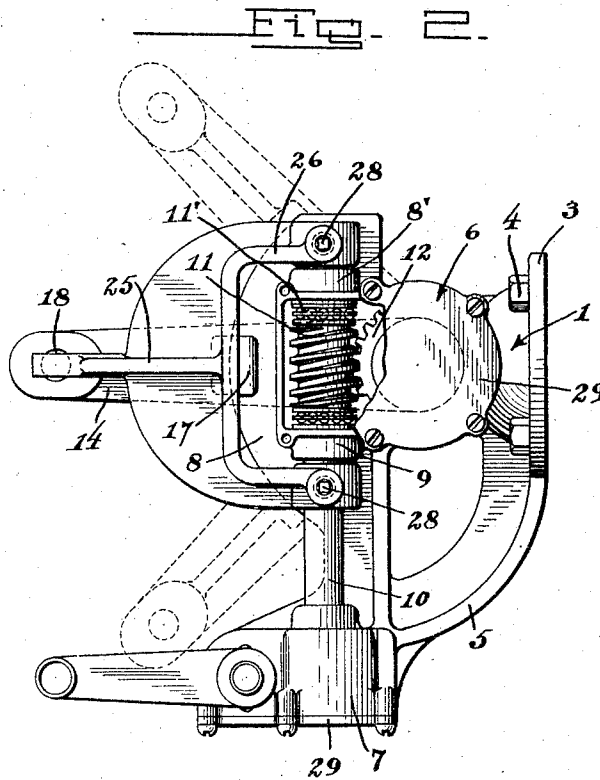
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE.

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HORIZONTAL AND VERTICAL TRACTOR HITCH.

Application filed September 17, 1923. Serial No. 663,230.

To all whom it may concern:

Be it known that JOSEPH M. HIGHDUCHECK, a citizen of the United States, residing at Greensburg, in the county of Westmoreland and State of Pennsylvania, has invented certain new and useful Improvements in Horizontal and Vertical Tractor Hitches, of which the following is a specification.

This invention comprehends generally improvements in draft appliances and more particularly relates to an improved horizontal and vertical tractor hitch.

The invention as its primary aim and object contemplates the provision of a device of the above mentioned character designed for connection to a tractor, preferably of the Fordson type and embodies manually actuated operating means for varying the line of draft, for instance, when plowing on hillsides.

As an equally important object the invention embodies in conjunction with the same operating means, a vertically swingable draft arm or tongue for use in conjunction with mowing and other machines and in addition includes the provision of means for releasably clamping the vertical draft arm on the main shaft so as to insure of the vertical draft arm being arranged in the proper position of adjustment upon the actuation of the manually actuatable shaft which is geared in the main shaft.

More particularly, the present invention consists in the provision of a hitch of the above mentioned character wherein the main support is in the form of a casting of novel formation and is shaped to support and guide the laterally swingable draft arm during operation, the casting also being formed with houses for receiving the intermeshing gears and shafts constituting the manually actuatable operating means.

Among the other aims and objects of the invention may be recited the provision of a device of the above mentioned character with a view to compactness, and wherein the number of parts are comparatively few, the construction simple, the cost of production low and the efficiency high.

Further objects, as well as the nature, characteristics, features and scope of the invention will be more readily understood from the following description taken in connection with the accompanying drawings,

and pointed out in the claims, forming a part of this specification.

The invention is clearly illustrated in the accompanying drawings, in which:—

Figure 1 is a side elevational view of the improved hitch, with parts broken away.

Figure 2 is a top plan view thereof with the cover of the inner gear housing removed and showing the arrangement of the gears therein.

Figure 3 is a vertical longitudinal section through the device showing particularly the construction and arrangement of the laterally and vertically swinging arms and inner gear housing, and

Figure 4 is an end elevation in all the details of the outer gear housing with the cover removed to show the arrangement of the gears therein.

Similar characters of reference are employed in all of the above described views, to indicate corresponding parts.

Referring now more particularly to the accompanying drawings there is provided a support generally indicated by the numeral 1 which is designed to be attached to the rear portion of a tractor, not shown. This support is in the form of a casting and includes a laterally disposed body portion 2 with respect to the attaching portion 3, the latter being desirably in the form of a dome-shaped cap, suitable fastening means 4 being employed to fasten the attaching portion in the same position as the customary jaw cap on a tractor of the Fordson type (not shown) subsequent, of course, to the removal thereof. The body portion 2 is formed with a lateral extension 5 that is further formed with an inner gear housing 6, while the extension 5 is in turn formed with an outer gear housing 7, the latter housing being arranged in a vertical position while the inner housing is cast horizontally of the main body portion 2. Further, the body portion is formed with an exteriorly curved segmental portion 8 acting as a guide in a manner that will hereinafter become apparent.

The outer side portions of the inner housing 6 are widened or thickened and constitute bearings 8' and 9 for a main shaft 10 which is arranged horizontally and slightly above the main portion 2 and the extension 5, being also journaled in the outer housing 7. A worm 11 is mounted on the shaft 10 and arranged within the inner housing 6,

and meshes with a worm wheel 12 keyed in turn to a secondary and vertically arranged shaft 13. Thrust bearings 11' are disposed between the ends of the worm 11 and the inner faces of the bearings 8' and 9 for permitting the free rotary movement of shaft 10 in the housing 6. This secondary shaft is journaled to the bottom of the housing and body portion which latter is thickened at this point to provide a sufficient bearing surface, the lower end of the said secondary shaft projecting from the undersurface of the support so as to receive the inner end of an arm or tongue 14. This tongue is rigidly connected to the shaft 13 as by a key 15 and is held against displacement by a nut and washer arrangement 16. An upstanding and inwardly curved lip 17 is formed integral with the upper surface of the arm and embraces the outer edge and upper surface of the curved segmental extension 8, this arrangement facilitating the supporting and guiding of the laterally extending arm 14 during its lateral swinging motion which is effected, of course, upon the rotation of the main shaft and transmission of this movement to the shaft 13 by reason of the intermeshing worm and worm wheel. The outer extremity of the arm or tongue 14 is apertured as at 18 and adapted to receive the hook on the forward end of a plow (not shown).

In order that the arm may be adjusted for instance by the operator of the tractor without necessitating the latter leaving the tractor, suitable laterally extending operating means are employed and in reducing this feature of the invention to practice a worm wheel 19 is keyed to the outer end of the main shaft 10 and arranged within the outer housing 7 while meshing with said worm wheel 19 is a worm 20 also arranged in the housing and keyed to a vertical and manually operable shaft 21. The lower end of this shaft is journaled in bearings formed integral with the outer housing so as to be supported in an upright position. An operating handle in the form of a crank 22 is associated with the upper end of the shaft 21, the handle portion proper indicated by the numeral 23 being of a revolving nature. It is preferred that this operating handle be positioned in proximity to the seat of the tractor, or at least be within easy reach of the driver so that upon the rotation of the shaft corresponding rotary motion will be transmitted to the shaft 10 and thence to the shaft 13 as apparent so as to subsequently swing the arm or tongue 14 in a horizontal plane permitting of the varying of the line of draft, for instance, when plowing on hillsides.

As intimated, this invention contemplates the provision of a vertical sweep and in accomplishing this purpose another arm or

tongue 25 is employed being preferably formed with a forked inner end portion 26, the forked portions of which are provided with suitable openings for the loose engagement of the same with the main shaft 10 desirably on opposite sides of the bearings 8' and 9. The outer portion of the arm 25 is formed with an opening 27 for receiving the attaching portion of a mowing machine or the like. In order that this arm or tongue 25 may be adjusted so that the line of draft will be varied, suitable clamping means such as set screws 28 are employed for passing through the forked portion 26 and engaging the shaft 10 thereby effecting rigid connection of the arm or tongue 25 with the main shaft 10. It is, of course, apparent that it is only necessary to operate the crank handle to effect a vertical swinging of the arm or tongue 25. It is likewise apparent that when the laterally swinging arm or tongue is being used that the clamping bolts are loosened so that the arm 25 will lie in a position of rest. This loosening of the bolts is, of course, not absolutely necessary.

In order that access be had to the housings 6 and 7 removable covers 29 are provided therefor.

It is believed in view of the foregoing description that a further detailed description of the operation of the invention is entirely unnecessary. Likewise it is believed that the advantages of the invention will be readily apparent.

From the foregoing description of the construction of my improved apparatus, it will be seen that I have provided a simple, inexpensive and efficient means for carrying out the objects of the invention, and while I have particularly described the elements best adapted to perform the functions set forth, it is obvious that various changes in form, proportion, and in the minor details of construction may be resorted to, without departing from the spirit or sacrificing any of the principles of the invention.

Having thus described the invention what is claimed as new and desired to be secured by Letters Patent is:—

1. A horizontal and vertical sweep hitch for tractors including a support adapted to be attached to the rear portion of the tractor, said support comprising a main body portion and an attaching portion, inner and outer housings formed on the body portion and provided with bearing openings, all of said parts being cast in a single piece, a main shaft journaled horizontally of the support, a secondary vertically arranged shaft journaled in the support and operably connected to the main shaft, an arm adapted for lateral swinging movement connected to the lower end of the secondary shaft and arranged beneath and projecting beyond the support, a manually actuated shaft ar-

5 ranged in a vertical position and having its lower portion journaled in the outer portion of the support and operably connected with the main shaft, another arm mounted
10 loosely about the main shaft, and means for releasably clamping the last mentioned arm to the main shaft so that it will swing vertically upon the operation of the manually operable shaft when desired, substantially
15 as and for the purposes set forth.

2. A horizontal and a vertical sweep hitch for tractors including a support adapted to be attached to the rear portion of the tractor, said support being formed with a segmental
20 extension having a curved outer surface, a main shaft journaled horizontally of the support, a secondary vertically arranged shaft journaled in the support and operably connected to the main shaft, an arm adapted
25 for lateral swinging movement connected to the lower end of the secondary shaft and arranged beneath and projecting beyond the support, a lip carried on the laterally swinging arm and embracing the aforesaid segmental extension to facilitate the supporting
30 of said arm, a manually actuated shaft arranged in a vertical position and having its lower portion journaled in the outer portion of the support and operably connected with the main shaft, another arm mounted loosely about the main shaft, and means for releasably clamping the last mentioned

arm to the main shaft so that it will swing vertically upon the operation of the manually operable shaft when desired.

3. A horizontal and vertical sweep hitch for tractors including a support formed with inner and outer housings and with a segmental extension in proximity to the inner housing, a main shaft journaled in both
35 housings and arranged horizontally of the support, a secondary vertically arranged shaft journaled through the inner housing and operably connected with the main shaft, an arm carried by said secondary shaft and adapted for lateral swinging movement, a
40 lip on the arm for embracing the extension to facilitate the guiding and supporting of the arm during rotation of the shaft, a manually operable vertically arranged shaft journaled in the outer housing and operably connected with the main shaft, another arm mounted loosely about the main shaft, and means for releasably clamping the last mentioned arm to the main shaft, substantially
45 as and for the purposes set forth.

4. An arrangement as claimed in claim 4 wherein the means for operably connecting the several shafts together consists of intermeshing worms and worm wheels arranged
50 respectively in the housings and keyed to the end of the adjacent shafts.

In testimony whereof I affix my signature.
JOSEPH M. HIGHDUCHECK.