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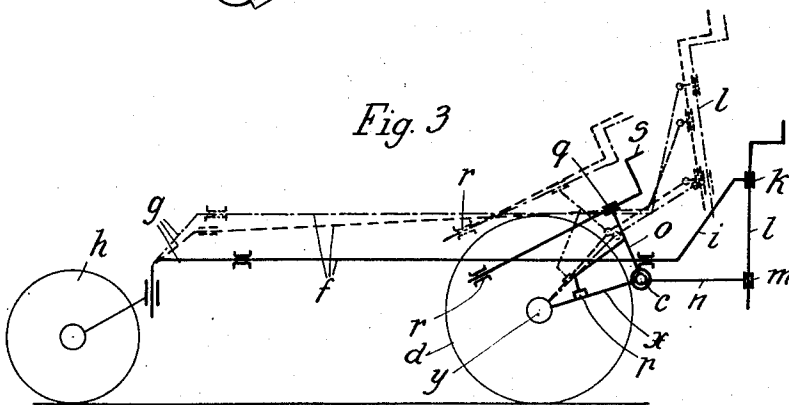
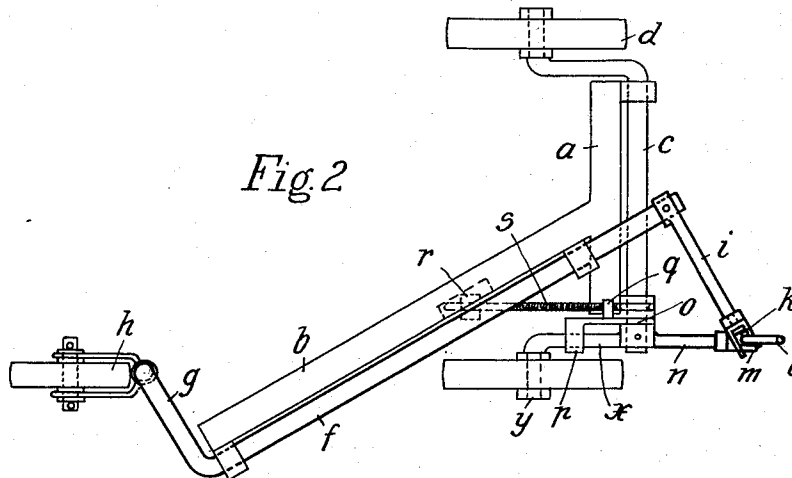
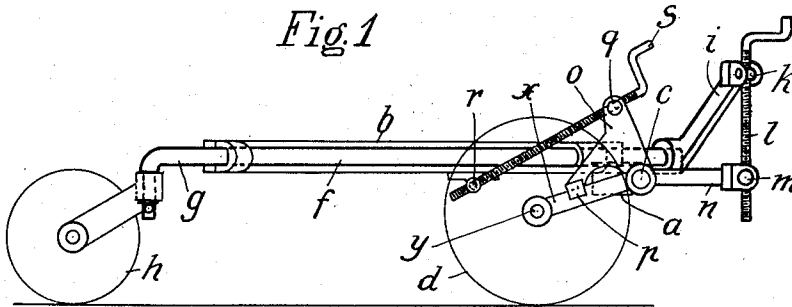
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OPERATING POSITION ADJUSTMENT FOR HARVESTING MACHINES

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OPERATING POSITION ADJUSTMENT FOR
HARVESTING MACHINESHeinrich Kamplade, Mannheim, Germany, as-
signor to Heinrich Lanz, Aktiengesellschaft,
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The present invention relates to a lifting up device or operating depth adjusting means for farming machines such as machines for harvesting potatoes, beets, turnips etc., more particularly to machines of the type set forth in which the frame is lifted or lowered by means of revolving the cranked axles which carry the running wheels and the support wheel respectively in order to produce the required operating depth of the machine.

An object of the present invention resides in the provision of a lifting up mechanism, particularly for machines of the type set forth, whereby the operating mechanism of the cranked axle of the support wheel is simplified and can easily be supervised and whereby the vertical motions of the machine frame are definitely controlled.

It is an object of the present invention to provide a lifting up or operating depth adjusting means in machines of the type set forth, whereby the cranked axle of the support wheel extends to and is connected with the cranked axle of the running wheels and is provided at its free end with a crank arm which is operated by an adjusting spindle which is movably guided by means of an arm which is rigidly connected with the cranked axle of the running wheels and which spindle rigidly yet adjustably connects both said cranked axles.

A further object of the present invention resides in the provision of lifting up or operating depth adjusting means in machines of the type set forth, whereby the axle of the support wheel is cranked and can be turned for operating depth adjusting purposes independently from other operating depth adjusting means whereby desired cooperation of all operating depth adjusting and lifting up means is obtained.

It is a further object of the present invention to provide a machine of the type set forth in which the axle for the running wheels and/or the axle for the support wheel is cranked and in which the frame of said machine comprises tubular elements which are also used for housing said axle or axles.

Further and other objects of the present invention will be hereinafter set forth in the accompanying specification and shown in the drawings which, by way of illustration, show what I now consider to be a preferred embodiment of my invention.

In the drawings:

Figure 1 is a diagrammatic side view of the parts of a machine which constitute my present

invention, the machine frame being in lowered position.

Figure 2 is a top view of the machine parts shown in Fig. 1.

Figure 3 is a schematic illustration of various operating positions of the machine parts shown in Figs. 1 and 2.

Figure 4 is a side view of a machine as shown in Fig. 1 with the axles housed in tubular frame elements.

Figure 5 is a top view of the machine illustrated in Fig. 4.

Like parts are designated by like letters in all figures of the drawings.

Referring more particularly to Figures 1 to 3 of the drawings rigidly connected members *a* and *b* make up part of the frame of the machine to which the present invention is applied. Member *a* serves for revolvably carrying the cranked axle *c* of the running wheels *d*; member *b* which is connected at an angle to member *a* and extends at a slant rearward carries the cranked member *f* to which the support wheel *h* is movably connected; member *f* extends into the neighborhood of the running wheels and carries at its forward free end a crank arm *i*. Arm *i* movably carries at its free end a nut *k* through which the threaded spindle *l* extends; spindle *l* also extends through the nut *m* which is movably connected to the free end of arm *n* which arm is rigidly connected with the cranked axle *c*. Thus the spindle *l* rigidly yet adjustably interconnects the axle *c* and the member *f*. The member *f* is of L shaped configuration and comprises a short arm *g* having a cranked end portion to which the support wheel *h* is movably connected. The long arm *j* is movably connected with the structural member *b*.

A lever *o* is connected rotatably with axle *c* and has an abutment *p* which rests on crank arm *x* of axle *c*. A nut *q* is rotatably connected with lever *o* and rotatably carries threaded spindle *s* which has a cranked end *s'* and also extends through nut *r* which is swingably connected with frame member *b*. The frame *a* *b* is held in position by means of spindle *s* and the lever *o* with the abutment *p* resting on crank *x*.

The members *a* and *b* may be of tubular configuration such as members *u* and *t* shown in Figs. 4 and 5 and the axle *c* and the member *f* arranged within said tubes *u* and *t*. Tubular members *u* and *t* are rigidly interconnected with one another as are members *a* and *b* in the embodiment of my invention according to Figs. 1 to 3. To make this connection more rigid an

additional connecting member *z* is provided which revolvably carries the nut member *r* through which the threaded part of the spindle *s* extends. The other parts of the machine according to Figs. 4 and 5 are exactly like the ones of the machine shown in Figs. 1 to 3 and designated by the same letters. Since all parts have been described supra, a repetition of such description is unnecessary.

10 The operation of the new lifting up device takes place as follows:

When revolving the threaded spindle *s* by manipulation of the cranked end *s'* lever *o* with its nut *q* is moved downwards along the threaded part of spindle *s* and thereby swings about axle *c*; at the same time abutment *p* of lever *o* presses against crank *x*, whereby axle *c* revolves counterclockwise about the axis of rotation *y* of the running wheels *d* whereby the frame part *a* and also part of *b* is lifted up. In the embodiment of my invention shown in Figs. 4 and 5, parts *t* and *u* are lifted up on manipulation of crank handle *s'*.

Together with crank arm *x* also arm *n* which is rigidly connected with arm *x* is moved and moves crank arm *i* upwards to which it is connected by means of spindle *l* and joints *m* and *k*. When swinging arm *i* upwards member *f* is revolved and arm *g* of member *f* pressed downwards; arm *g* carries support wheel *h* which rests on the ground so that by said downward pressure frame part *b* or in the case of the machine according to Figs. 4 and 5, part *t* is lifted upwards.

When operating, i. e. revolving, adjustment spindle *l*, arm *i* is rotated independently from the cranked axle of the running wheels, whereby the frame adjacent to the support wheel *h* is lifted or lowered and the latter assumes an inclined position.

By lowering the frame the machine is lowered into operation position; by lifting it is brought into non-operating position.

In Fig. 3 the solid lines show the machine in lowermost position; the dash and dot lines show the machine in uppermost position and the dotted lines show the machine in an intermediate position, such as is obtained, for example, by operating the spindle *l*.

While I believe the above described embodiments of my invention to be preferred embodiments, I wish it to be understood that I do not desire to be limited to the exact details of design and construction shown and described, for obvious modifications will occur to a person skilled in the art.

55 I claim:

1. A farming machine having a frame, a support wheel and running wheels, a cranked member connected with said support wheel, a cranked axle connected with said running wheels, said member and axle being individually movably connected with said frame, arm members individually, connected with said cranked member and axle, a nut member movably connected to each of said arm members, and a threaded spindle extending through both said nut members, whereby upon rotation of said spindle the relative position of said arm members and the operating position of said frame is changed.

2. A farming machine having a frame, a support wheel and running wheels, a cranked member connected with said support wheel a cranked axle connected with said running wheels, said member extending in between said running wheels, said member and said axle being movably connected with said frame, and being movable

with respect to one another, whereby upon movement of said member and axle relatively to one another the operating position of said frame is changed.

3. A farming machine having a support wheel and running wheels, a cranked member connected with said support wheel and a cranked axle connected with said running wheels, a frame movably supporting said member and axle, two independently operable adjusting means adjustably interconnecting said member and axle, whereby the position of said frame can be changed independently with respect to said support wheel and with respect to said running wheels and the position of individual parts of said machine with respect to the ground may be changed individually.

4. A farming machine having a support wheel and running wheels, a cranked member connected with said support wheel, an axle having a cranked part and being connected with said running wheels, a frame movably supporting said member and axle, a threaded spindle swingably supported by said frame, a lever swingably supported by said axle and having an abutment which abuts the cranked part thereof and movably carrying a nut through which said spindle extends, whereby upon rotation of said spindle the position of said axle and of the frame connected therewith with respect to the ground is changed.

5. A farming machine having a support wheel and running wheels, a cranked member connected with said support wheel, an axle having a cranked part and being connected with said running wheels, a frame movably supporting said member and axle, connecting means movably connected to and inter-connecting said member and axle, a threaded spindle swingably supported by said frame, a lever swingably supported by said axle and having an abutment which abuts the cranked part thereof and movably carrying a nut through which said spindle extends, whereby upon rotation of said spindle the position of said member and axle and of the frame connected therewith with respect to the ground is changed.

6. A farming machine having a support wheel and running wheels, a cranked member connected with said support wheel, an axle having a cranked part and being connected with said running wheels, a frame movably supporting said member and axle, adjustable connecting means movably connected to and interconnecting said member and axle, a threaded spindle swingably supported by said frame, a lever swingably supported by said axle and having an abutment which abuts the cranked part thereof and movably carrying a nut through which said spindle extends, whereby upon rotation of said spindle and operation of said adjustable connecting means the position of individual parts of said frame with respect to the ground may be changed individually.

7. A farming machine having a support wheel and running wheels, a structural member connected with said support wheel, an axle having a cranked part and being connected with said running wheels, a frame movably supporting said member and axle, an arm individually connected with each of said member and axle, a threaded spindle movably and adjustably interconnecting said arms, a threaded spindle swingably supported by said frame, a lever swingably supported by said axle and having an abutment which abuts the cranked part thereof and movably carrying a nut through which said last mentioned spindle extends, whereby upon individual operation of said threaded spindles the position of individual

parts of said frame with respect to the ground may be changed individually.

8. A farming machine having a support wheel and running wheels, a movable member movably connected with said support wheel and a cranked axle connected with said running wheels, a frame comprising tubular elements which rotatably support said axles, said member being movably connected with said axle, whereby upon movement of said member and axle relatively to one another the position of said frame with respect to the ground is changed.

9. A farming machine having a support wheel and running wheels, a movable member movably connected with said support wheel and an axle connected with said running wheels, a frame comprising tubular elements which are rigidly connected with one another and which rotatably support member and axle, said member being movably connected with said axle, whereby upon movement of said member and axle relatively to one another the position of said frame with respect to the ground is changed.

10. A farming machine having a support wheel and running wheels, a movable member movably connected with said support wheel and an axle connected with said running wheels, a frame comprising tubular elements which are rigidly connected and in slanting position with respect to one another and which rotatably support said member and axle, said first member being movably connected with said axle, whereby upon movement of said axles relatively to one another the position of said frame with respect to the ground is changed.

11. A farming machine as claimed in claim 8 in which said movable member and said axle extend through the inside of said tubular elements.

12. A farming machine as claimed in claim 9 in which said movable member and said axle extend through the inside of said tubular elements.

13. A farming machine as claimed in claim 10 in which said movable member and said axle extend through the inside of said tubular elements.

14. A farming machine having a frame, a support wheel and running wheels, a crank member movably connected with said support wheel and with said frame, a cranked axle movably connected with said running wheels and also with said frame, two individually operable crank actuated adjusting members individually intercon-

necting said crank member and said axle, whereby, upon individual actuation of said adjusting members, the operating position of said frame is changed in two different ways.

15. A farming machine having a frame which includes two substantially longitudinal structural members which are positioned at a slant with respect to one another, a support wheel and running wheels, a substantially L-shaped crank member having a short arm movably connected with said support wheel and a long arm which is movably connected with one of said structural members, a cranked axle movably connected with said running wheels and with the other of said structural members, a crank actuated adjusting member interconnecting said member and said axle, whereby, upon actuation of said adjusting member, the operating position of said frame is changed.

16. A farming machine as claimed in claim 15 in which said structural members have tubular configuration and in which said crank member and said axle extend through the inside of said tubular structural members.

17. A farming machine having a frame, a support wheel and running wheels, a substantially L shaped member having a long arm and a short arm comprising a cranked end portion, said support wheel being movably connected to said end portion, a cranked axle movably connected with said running wheels, the long arm of said L shaped member and said axle being individually movably connected with said frame, and an adjusting member interconnecting said frame and said axle, whereby upon actuation of said adjusting member, the operating position of said frame is changed.

18. A farming machine having a frame, a support wheel and running wheels, a substantially L shaped member having a long and a short arm, said support wheel being movably connected with said short arm, said long arm being movably connected with said frame, a crank arm connected with said long arm, a cranked axle movably connected with said running wheels and with said frame, and an adjusting member interconnecting said crank arm and said axle, whereby, upon actuation of said adjusting member the operating position of said frame is changed.

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