No. 688,808. Patented Dec. 10, 1901.

J. L. ASHURST.

GRAIN DRILL.

(Application filed Sept. 6, 1901.)

(No Model.)

Fig. 1.

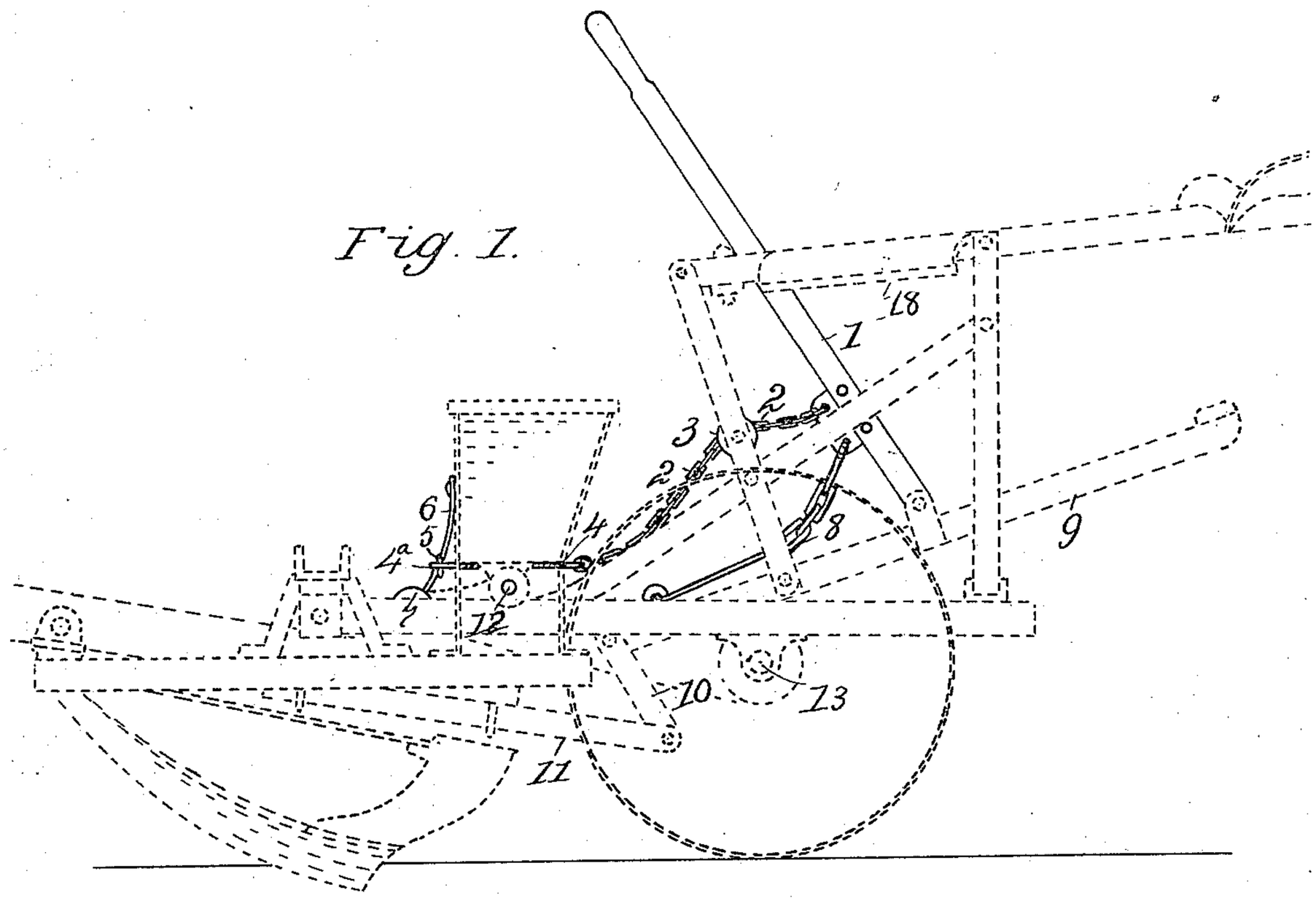
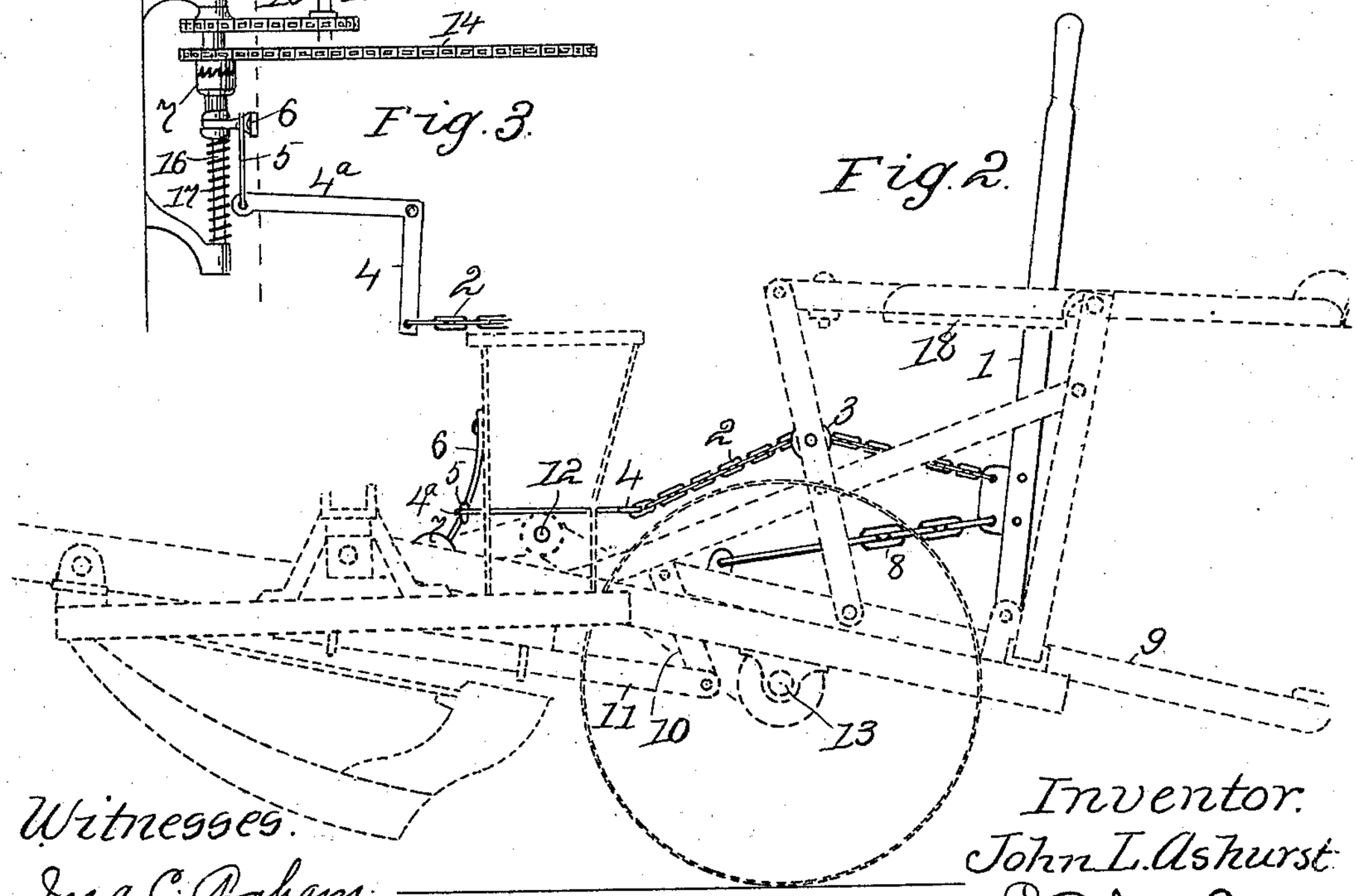


Fig. 3.

Fig. 2.



Witnesses.
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Nora Graham.

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UNITED STATES PATENT OFFICE.

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GRAIN-DRILL.

SPECIFICATION forming part of Letters Patent No. 688,808, dated December 10, 1901.

Application filed September 6, 1901. Serial No. 74,538. (No model.)

To all whom it may concern:

Be it known that I, JOHN L. ASHURST, of Havana, in the county of Mason and State of Illinois, have invented certain new and useful Improvements in Grain-Drills, of which the following is a specification.

This invention relates to grain-drills composed of two frames hinged together, the front frame being supplied with furrow-openers and seed-drilling mechanism and the rear frame being mounted on wheels which develop the force used to drive the drilling mechanism and which carry the front frame while turning around.

The invention is particularly applicable to press-drills used to plant wheat, oats, and the like; but in its broadest sense it is also applicable to planters used to drill corn.

My principal object is to make it impossible for the clutch of the drilling mechanism to be thrown out of mesh while the drill is in operation, and I attain that and other incidental results in the manner hereinafter explained.

The invention is exemplified in the structure hereinafter described, and it is defined in the appended claims.

In the drawings forming part of this specification, Figure 1 is a side elevation showing in broken lines so much of a press-drill as is needed in the description of my invention and also showing essential details in solid lines. Fig. 2 is the same as Fig. 1, excepting the relative positions of parts, the front frame being lowered in Fig. 1 and raised in Fig. 2. Fig. 3 is a detail in plan of the clutch preferably used in the particular drill herein described.

The lever 1 is typical of the lift-levers commonly used in grain-drills and corn-planters, and its distinctive feature is its connection with the front frame. This connection provides for a limited amount of swing in the lever independent of the front frame, and it is exemplified by a pivotal conjunction with some part of the rear frame and a flexible hitch, as chain 8, extending forward from the lever and connecting directly or indirectly with the front frame. In this instance the lift-lever is pivotally connected with a foot-lever 9 back of the fulcrum thereof, and the chain is connected with the foot-lever in front of the fulcrum thereof. The lift-lever may swing forward independent of the foot-lever and of the front frame with which the foot-lever is connected; but it cannot swing backward to its fullest extent without the front frame has been previously raised or without raising such front frame. A chain 2 or other flexible connection extends forward from lift-lever 1 and connects in some suitable manner with some suitable form of clutch used to make and break connections between the axle-shaft 13 of the rear frame and the drill-shaft 12 of the front frame. The connection of the chain 2 with the clutch of the drill is such that extreme backward swing of the lift-lever will disengage the clutch; but apart from that essential characteristic the clutch and the connection therewith may be of any desired form, so far as the broad scope of the invention is concerned.

In Fig. 3 is shown a form of clutch and a means for connecting the chain 2 with the clutch which I have found to work well on the particular drill outlined in Figs. 1 and 2, and the details of such clutch and connection are as follows: A counter-shaft is shown at 16. Chain 14 conveys motion from a sprocket-wheel on drive-shaft 13 to a sprocket-wheel mounted loosely on the counter-shaft and provided on its hub with clutch projections. Chain 15 runs from a sprocket-wheel fixed on the counter-shaft to a sprocket-wheel on the drill-shaft 12. Clutch-sleeve 7 is splined onto the counter-shaft and provided with projections to engage the clutch projections of the hub of the loose sprocket-wheel. An arm 6 is hinged at its upper end to the seedbox, and its lower end engages an annular groove in the clutch-sleeve. An L-lever 4 and 4^a is fulcrumed below the seedbox. A link 5 connects arm 4^a of the L-lever with the swinging arm 6, and the chain 2 is connected with arm 4 of the L-lever. A spring 17 tends to hold the clutch-sleeve 7 in clutch with the loose sprocket-wheel, and under these conditions motion is imparted to the counter-shaft through the chain 14, the sprocket-wheel thereof, and the clutch-sleeve, while the chain 15 takes the motion of the counter-shaft to the drill-shaft.

The foot-lever 9 connects with extension 11 of the tongue of the drill through link 10.

When the front frame of the drill is lowered, as shown in Fig. 1, the lift-lever swings forward sufficiently far to give considerable slack to chains 2 and 8 and the runners may follow irregularities of the ground, as great as are ever met in actual operation, without taking all the slack out of chain 2 while descending into depressions. On the rise of the runners in riding over elevations the slack of the chains is increased, and the front frame may rise as high as it is held in turning around without affecting the clutch. The front frame may be raised by pressure applied to the foot-lever 9, in which case the lever 1 will rest in the position shown in Fig. 1 until pulled back by hand to lock the front frame in a raised position; but ordinarily the pressure is applied simultaneously to the foot-lever and the hand-lever. In the case last named the slack will be taken up in chain 8 and the pull on the hand-lever will be imparted to the foot-lever and thence to the front frame before the chain 2 is tightened sufficiently to affect the clutch. As the raising of the front frame continues the slack of chain 2 is taken up, and with the final raising motion of the front frame the clutch is shifted by the pull of the chain. The lever 1 is locked at its extreme backward swing, preferably by being swung sidewise into engagement with a notch in a bar 18 on the frame, and it holds the front frame raised and the clutch broken until it is released. The chain 2 preferably runs over a pulley 3, suitably journaled in the rear frame.

I claim—

1. Front-frame-raising and clutch-shifting mechanism for grain-drills of the class described, comprising a lift-lever and a flexible connection between the lift-lever and the clutch.

2. Front-frame-raising and clutch-shifting mechanism for grain-drills of the class described, comprising a lift-lever having a limited amount of free swing and a flexible connection between the lift-lever and the clutch.

3. Front-frame-raising and clutch-shifting mechanism for grain-drills of the class described, comprising a lift-lever pivotally connected with the rear frame, and connecting with the front frame through a chain that permits a limited amount of free swing in the lever, and a chain connecting the lever with the clutch and acting on the clutch when the lever is thrown back to complete the raise of the front frame.

4. Front-frame-raising and clutch-shifting mechanism for grain-drills of the class described, comprising a foot-lever on the rear frame connected with the front frame, a hand-lever pivoted on the foot-lever, a chain extending forward from the hand-lever and connecting the hand-lever with the foot-lever, and a flexible connection extending forward from the hand-lever to the clutch.

5. Front-frame-raising and clutch-shifting mechanism for grain-drills of the class described comprising a counter-shaft on the front frame, a chain running from the shaft of the rear frame to a wheel on the counter-shaft, a chain running from the counter-shaft to a wheel on the drill-shaft, a clutch on the counter-shaft to make and break the train of force-transmitting gearing connecting the drive-shaft with the drill-shaft, a lever to lift the front frame and a flexible connection between the lift-lever and the clutch.

In testimony whereof I sign my name in the presence of two subscribing witnesses.

JOHN L. ASHURST.

Witnesses:
H. G. BRUNING,
J. B. FAGER.