Apr. 17, 1923 1,452,286

H. B. BOZARD ET AL

POWER LIFT DRILL

Filed July 15, 1920 2 Sheets-Sheet 1

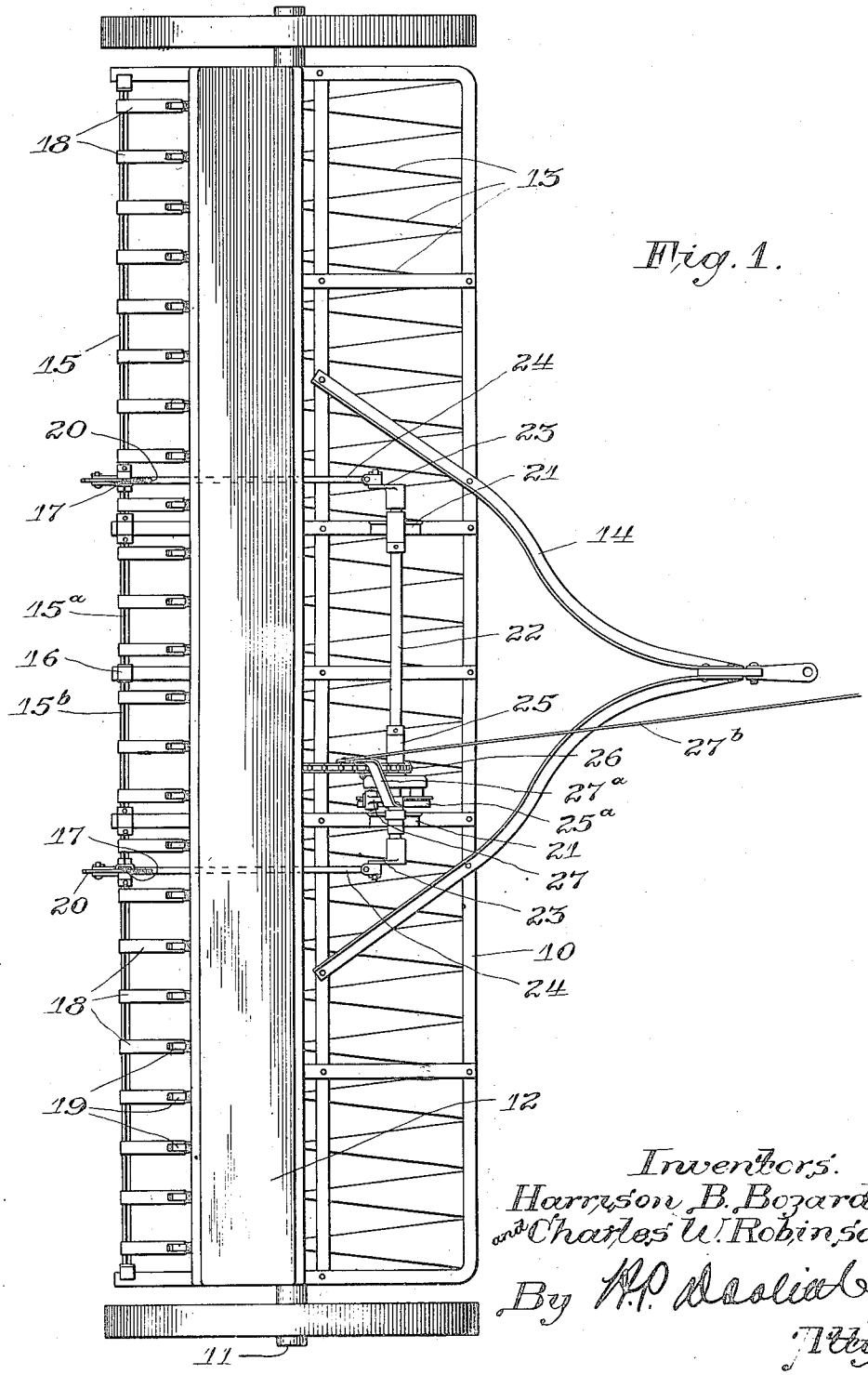



Fig. 1.

Inventors:
Harrison B. Bozard
and Charles W. Robinson,
By H. P. Dodd & Co.
Atty.

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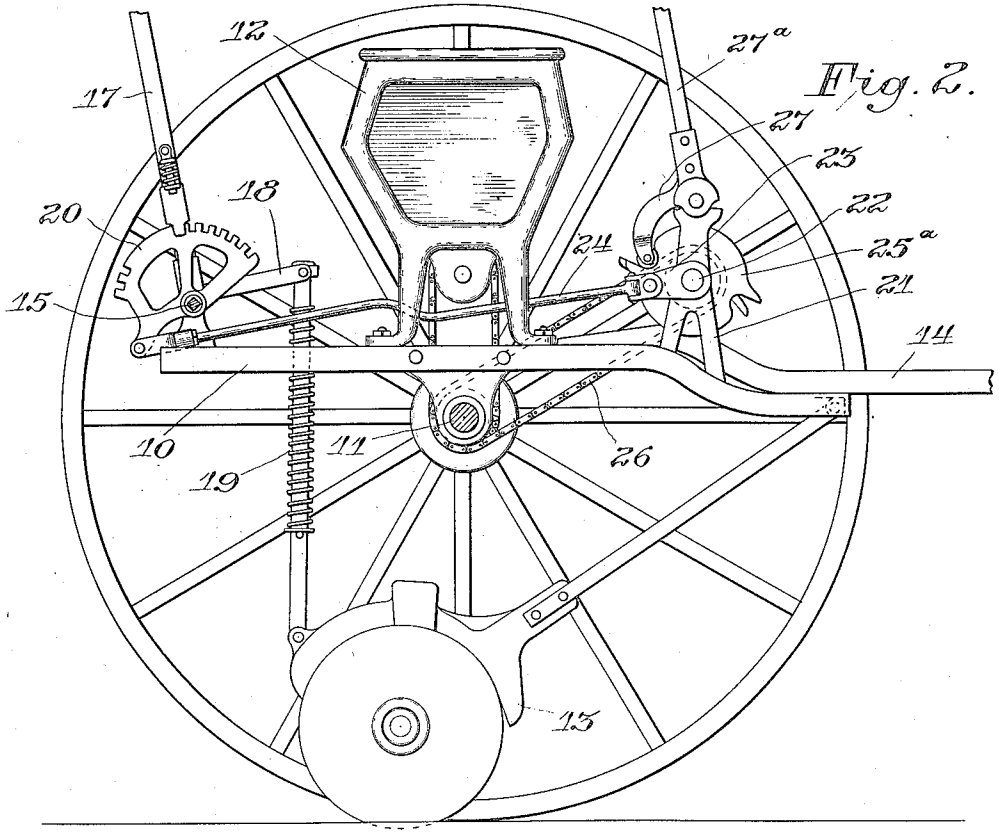



Fig. 2.

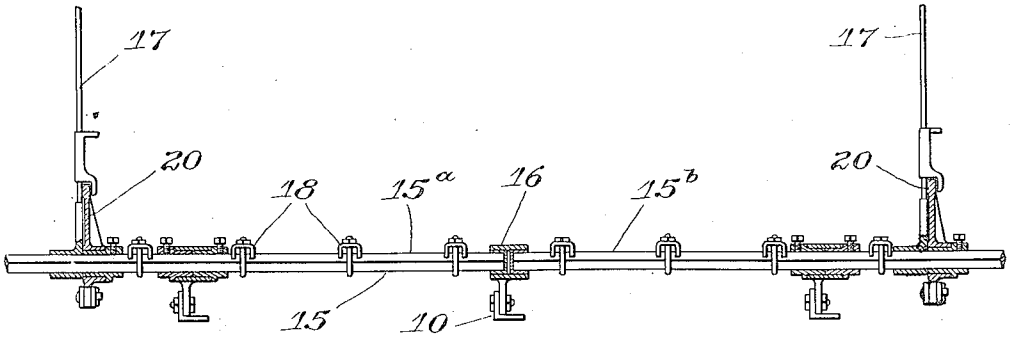



Fig. 3.

Inventors.
Harrison B. Bozard,
and Charles W. Robinson,
By W. P. Doolittle
Atty.

Patented Apr. 17, 1923. 1,452,286

# UNITED STATES PATENT OFFICE.

HARRISON B. BOZARD, OF HAMILTON, ONTARIO, CANADA, AND CHARLES W. ROBINSON, OF AUBURN, NEW YORK, ASSIGNORS, BY MESNE ASSIGNMENTS, TO INTERNATIONAL HARVESTER COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF NEW JERSEY.

## POWER-LIFT DRILL.

Application filed July 15, 1920. Serial No. 396,402.

*To all whom it may concern:*

Be it known that we, HARRISON B. BOZARD and CHARLES W. ROBINSON, citizens of the United States, and residents, respectively, of Hamilton, in the county of Wentworth, Province of Ontario, Dominion of Canada, and of Auburn, in the county of Cayuga and State of New York, have invented certain new and useful Improvements in Power-Lift Drills, of which the following is a full, clear, and exact specification.

Our invention relates to grain drills, and more particularly to a power lift device designed especially for the heavier types of these machines which are now, as a rule, drawn by tractors.

The objects of our invention are to provide hand-operated means for lifting the gang of drill units in sections independently of power lift mechanism, and to combine with such hand lifts a single power lift device that will simultaneously lift or lower all the drilling units.

A further object is to so relate the hand and power lifts as to make each capable of use independently when desired.

With these and other objects in view, our invention consists in the organization, details of construction, parts or their equivalents hereinafter described, and more particularly defined in the claims.

Having reference to the drawings—

Figure 1 is a plan view of a grain drill including our invention;

Fig. 2 is a side view with one wheel omitted; and

Fig. 3 is a detail sectional view of a portion of the rock shaft.

In its present embodiment, our invention is disclosed as applied to a grain drill having the usual frame 10, which is supported on a transverse wheel-supported axle 11, and carries the usual seed box 12 and pivoted gang of drill units 13. A draft frame 14, preferably of a type designed for attachment to a tractor, is connected to the front of the frame, and at the rear thereof there is journalled a sectional rock shaft 15 shown in this instance as comprised of two parts, $15^a$ and $15^b$, meeting at the center of the frame in a journal box 16. On each side of this central box there is fixed to each part of shaft 15 a hand lever 17, and at intervals in the length of each part of the shaft corresponding to the position of the drill units there is fixed to the shaft lifting arms 18, which are connected to the drill units by the usual spring-pressed links 19. Adjacent each hand lever 17 and adjustably connected thereto by the usual latch mechanism is a sector 20, which is journalled on the shaft 15. It follows from the construction just described that swinging of either lever 17 will rock one part of the shaft 15, and lift or lower the drilling units associated therewith.

Journalled at the front of the frame in brackets 21 is a countershaft 22, which is centrally positioned on the frame and has its ends provided with cranks 23, which are in alignment with the hand levers 17 on rock shaft 15. The cranks 23 are disposed in the same plane, and each is provided with a link 24 which passes beneath the grain hopper, and is pivotally connected to the lower end of a sector 20. Journalled on countershaft 22 is a clutch member 25, which carries a sprocket connected by sprocket chain 26 to the axle of the machine. A complemental clutch element $25^a$ is fixed to the countershaft and the pair of clutch elements are subject to intermittent connection and automatic disconnection by conventional form of pawl mechanism specifically not part of this invention, and therefore not further described.

The usual trip arm 27, which is normally spring-pressed into position to disconnect the clutch, is mounted on one of the brackets 21, and has an upwardly extending arm $27^a$ by which the trip may be withdrawn through a pull on cord $27^b$ extending to the tractor to allow the clutch elements to connect, the trip arm returning at once into disconnecting position and engaging the diametrically opposite trip notch in the clutch when the shaft 22 has been given a half revolution. It will be evident, therefore, that at each half revolution of the clutch and of shaft 22 the cranks 23 will be moved through an arc of 180°, thereby swinging the sectors 20 and with them lever 17 and the two parts of the rock shaft 15, causing raising or lowering of the entire gang of drilling units at each actuation of the clutch. It is particularly to be noted that the lowering of the gangs is positive, and that the furrow forming elements used will be driven into the soil to the depth set by positioning lever 17 on sectors 20. It will also be evident that either lever 17 can

be swung to adjust the drilling elements without interference from the power lift mechanism.

It will thus be seen that we have provided a simple and effective device for applying the tractive power to the lifting mechanism of a grain drill, and that various modifications might be made without departing from the scope of the invention as defined in the appended claims.

Claims:

1. An implement comprising the combination of a wheel supported frame, a gang of drag bars pivoted to the frame, a sectional rock shaft journaled on the frame and provided with lifting arms connected to each bar, means on each section of the rock shaft for oscillating it independently, and means for jointly oscillating all sections of the shaft comprising a countershaft journaled on the frame and having an operating connection with each of the independent shaft oscillating means, and a power driven intermittent clutch mechanism on the countershaft for imparting a predetermined degree of rotation thereto at each actuation of the clutch thereby operating the independent shaft oscillating means in unison.

2. A grain drill comprising the combination of a wheel supported frame, a gang of drilling units pivoted on the frame, a two-part rock shaft journaled on the frame and provided with lifting arms connected to each unit, a hand lever fixed to each part of the rock shaft for manually oscillating each part independently, and traction actuated means for oscillating the shaft comprising a sector journaled on each part of the rock shaft, a countershaft journaled on the frame and provided with a pair of cranks, a pitman connecting each crank with a sector on the rock shaft, traction driven means for giving the countershaft a half revolution at each actuation, and means for adjustably locking the hand levers to the sectors.

3. A grain drill comprising the combination of a wheel supported frame, a gang of drilling units pivoted to the frame, a two part rock shaft journalled on the frame and provided with lifting arms connected to each unit, a lever fixed to each part of the rock shaft, a sector journalled on each part of the rock shaft and adjustably connected to the lever, a countershaft positioned centrally on the frame with its ends in alignment with the sectors, a crank on each end of the countershaft connected to each sector and a power driven intermittent clutch on the countershaft for imparting a half rotation thereto at each actuation of the clutch.

4. An implement comprising the combination of a wheel supported frame, a gang of drag-bars pivoted to the frame, a sectional rock-shaft journaled on the frame, a lifting connection between each drag-bar and the shaft, means for oscillating each section of the rock-shaft independently to lift and lower the drag-bars connected to that section, and a single traction actuated lift device connected to all the shaft sections for oscillating them jointly.

5. An implement comprising the combination of a wheel supported frame, a gang of drag-bars pivoted to the frame, a sectional rock-shaft journaled on the frame, a lifting connection between each drag-bar and the shaft, a hand lever fixed to each section of the rock-shaft for oscillating that section and adjusting the drag-bars connected thereto, and a single traction actuated lift device provided with links connected to each of said hand levers and adapted to actuate them jointly.

In testimony whereof we affix our signatures.

HARRISON B. BOZARD.
CHARLES W. ROBINSON.