No. 700,315. Patented May 20, 1902.

W. FETZER.

GRAIN DRILL.

(Application filed Mar. 15, 1902.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

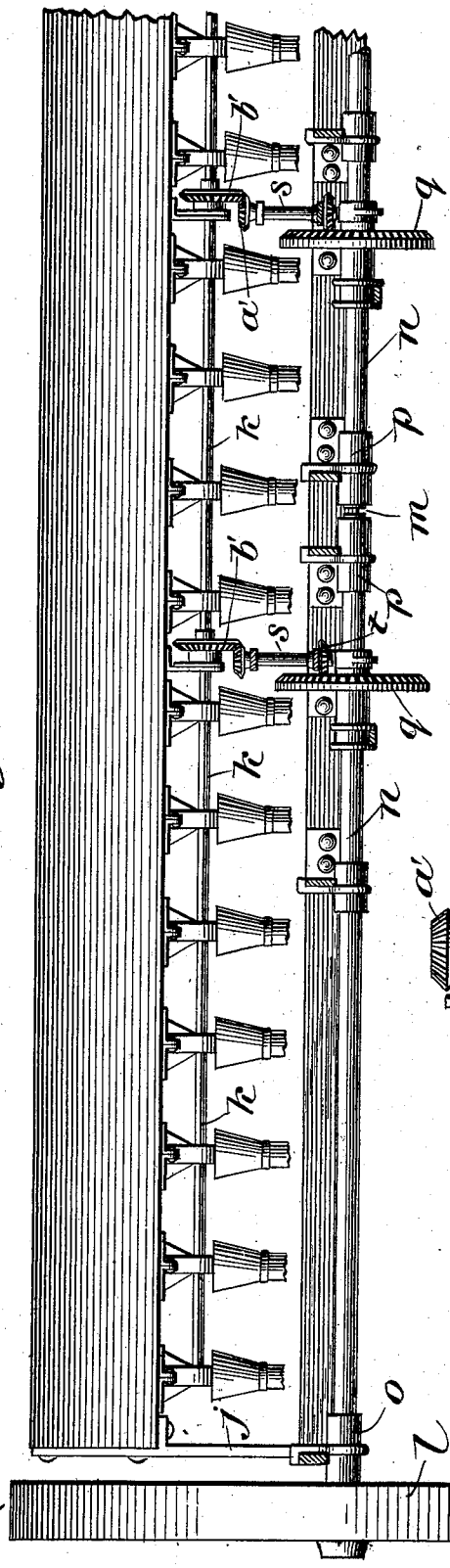
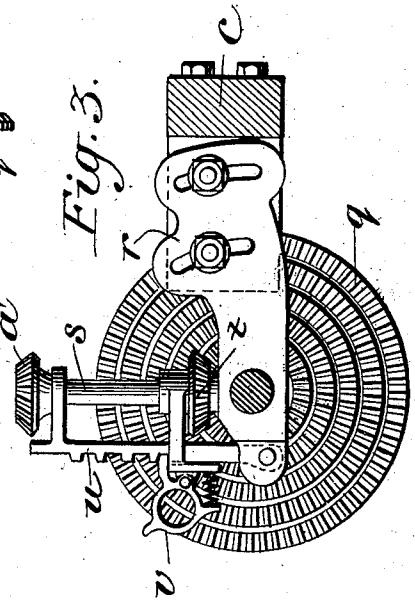


Fig. 3.



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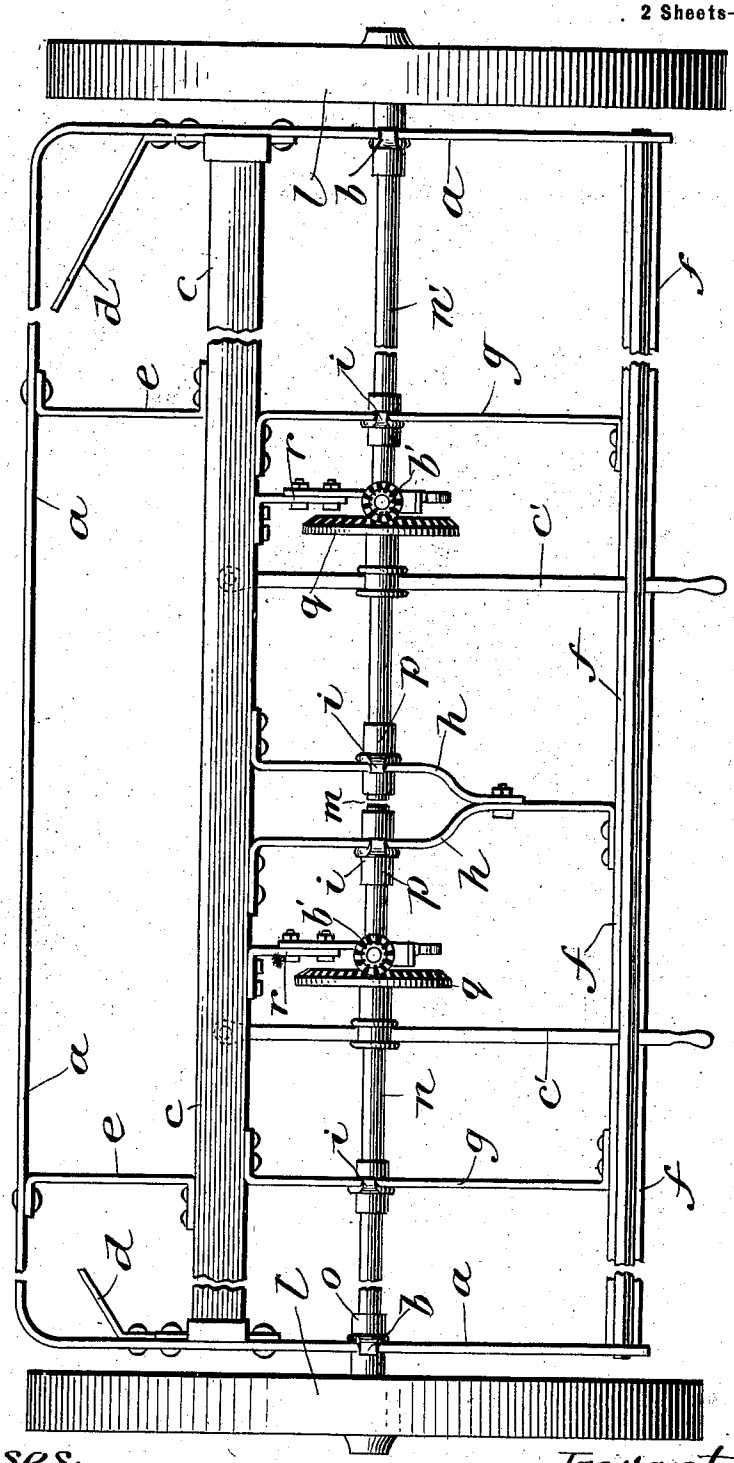


Fig. 2.

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UNITED STATES PATENT OFFICE.

WILLIAM FETZER, OF MIDDLETOWN, OHIO.

GRAIN-DRILL.

SPECIFICATION forming part of Letters Patent No. 700,315, dated May 20, 1902.

Application filed March 15, 1902. Serial No. 98,336. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM FETZER, a citizen of the United States, residing at Middletown, in the county of Butler and State of Ohio, have invented certain new and useful Improvements in Grain-Drills; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention relates more especially to such drills as employ grain-feeds that are positively driven by gearing from the axle. In this class of machines a feed-shaft usually extends the full length of the seed-hopper and is operated by driving-gears secured to the axle near the center through the intermediacy of short vertical shafts which are intergeared with the drivers, so that the rate of feed may be changed as desired. There has always been considerable annoyance in the feeding mechanisms of these machines, owing to the bending or sagging of the main axle carrying the driving-gears, and as the present demand of the trade is for very wide drills this difficulty has increased with every attempt to widen the machines. The present invention overcomes this difficulty in a very simple and effective manner, the characteristic feature of which is that instead of employing one long axle extending the full width of the machine two short axles are employed, or, what is the same thing, the long axle is divided in the center and one of the feed-shaft driving-gears is carried by one of the axles or sections and the other gear is carried by the other section or axle, both gears, however, being arranged to drive the feed-shaft by the same variable feed-gear that has heretofore been employed.

The improvement will be fully understood from the following description taken in connection with the accompanying drawings, wherein—

Figure 1 is a rear elevation of a part of a grain-drill embodying the improvements, all the parts being broken away except those necessary to illustrate the arrangement of the divided axle and gearing for driving the feed-shaft. Fig. 2 is a top plan view of the same, the machine being shortened up, so as to show both wheels. Fig. 3 is a side elevation of the variable feed-gear alone.

The invention is not particularly concerned with the construction of the framing of the machine, and, though an especially strong and simple construction is shown herein, the invention is not to be understood as in any way limited thereto. As here shown, this frame consists of a metallic bar *a*, that is secured to the axle by clips *b* and is continuous clear across the front of the machine, as best shown in Fig. 2. Extending across from side to side of the frame, some distance in front of the axle, there is a wooden sill *c*, and the front part of the bar *a* is braced from this sill by diagonal and other braces *d e*. The side bars *a a* extend to the rear considerably beyond the axle and are united at their ends by a wooden bar *f*, which runs parallel with the sill *c* and is firmly united thereto by cross-braces *g g* and *h*, all of which are secured to the main axle by clips *i i*, similar to the clips *b*, which secure the end bars. The seed-hopper is erected on this framing in the usual way, uprights, as *j*, being secured to the side bars *a*, just over the axle. The seed-cups are secured to the under side of the hopper in the ordinary way, and the angular feed-shaft *k* extends through the center of the disks in the cups in the usual manner, so as to operate all the disks simultaneously.

The supporting-wheels are denoted at *l* in Figs. 1 and 2. The main axle instead of being continuous and extending clear across the machine from one of these wheels to the other is divided at *m* or formed in sections *n n'*, each section being journaled in a bearing-box *o* at the sides of the machine and having also an independent bearing *p* for its inner end under the center of the machine, as best illustrated in Fig. 2. These central boxes are secured to the cross-brace *h*, which is conveniently forked, as shown in the drawings, or two independent braces may be employed, if preferred. Additional bearing-boxes may be provided at the braces *g g* for increased rigidity, though in narrow machines it will probably be unnecessary. Each section of the axle carries a driving-gear *q*, provided with a plurality of annular rows of gear-teeth, as shown in Fig. 3, and a bracket *r*, that is ad-

justably bolted to the still *c*, carries a short vertically-arranged counter-shaft *s*, having a bevel-gear *t*, that is adapted to slide up and down on the shaft and to rotate with it at whatever elevation it may be set. The bracket *r* also carries a rack *u*, and the hub of the pinion *t* has a spring thumb-piece which takes into the notches of the rack, so as to set the pinion higher or lower on the counter-shaft, so as to gear with the different rows of teeth on the driving-gear. At its upper end the counter-shaft carries a bevel-pinion *a'*, and this pinion gears into a bevel-gear *b'*, that is fast on the feed-shaft *k*, which has already been described. This shaft is therefore driven from the main axle in practically the same way as before, notwithstanding the axle is divided into two separate parts.

In Fig. 2 *c' c'* denote hand-levers that are pivoted to the cross-sill *c* at their forward ends and connected to the hub of the driving-gears *q q*, so that these gears may be shifted along the axle out of mesh with the gears of the counter-shafts, when it is desired to throw the feeding-gear out of action.

The construction, being as thus described, it is to be noted that in the old arrangement, where the axle was continuous, the seed-hopper and machine-frame were supported by the axle; but in the present improvement it is really the seedbox and the frame that support the axle, for it will be obvious that as the axle is divided in the center the two parts are connected together only through the intermediacy of the frame parts and box. The invention therefore involves a complete reversal of the principle of construction that has heretofore prevailed in this class of machines.

Having thus described my invention, what I claim is—

1. In a grain-drill, the combination of the feed-shaft, the main axle, and changeable-speed gearing intermediate between the shaft and axle, the axle being divided or formed in two sections, and the gearing being duplicated for each section.

2. In a grain-drill, the combination of the feed-shaft, the main axle, the latter being divided into two separate sections, *n*, *n'*, a driving-gear on each section, a gear on the feed-shaft, and an adjustable gear connection between each driving-gear, and the corresponding gear on the feed-shaft.

3. In a grain-drill, the combination of the feed-shaft, the main axle, the latter being divided into two separate sections, *n*, *n'*, a driving-gear *q* on each section, pinions *b'*, *b'* on the feed-shaft, one for each gear *q*, and counter-shafts *s*, *s*, connecting the driving-gears *q* with the pinions on the feed-shaft, the counter-shafts having adjustable pinions *t* adapted to be adjusted so as to mesh with different rows of teeth on the gears *q*.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM FETZER.

Witnesses:
A. C. FREEZE,
W. D. VORHIS.