(No Model.) 2 Sheets—Sheet 1.

N. A. FIELD.

GRAIN MEASURING DEVICE.

No. 566,155. Patented Aug. 18, 1896.

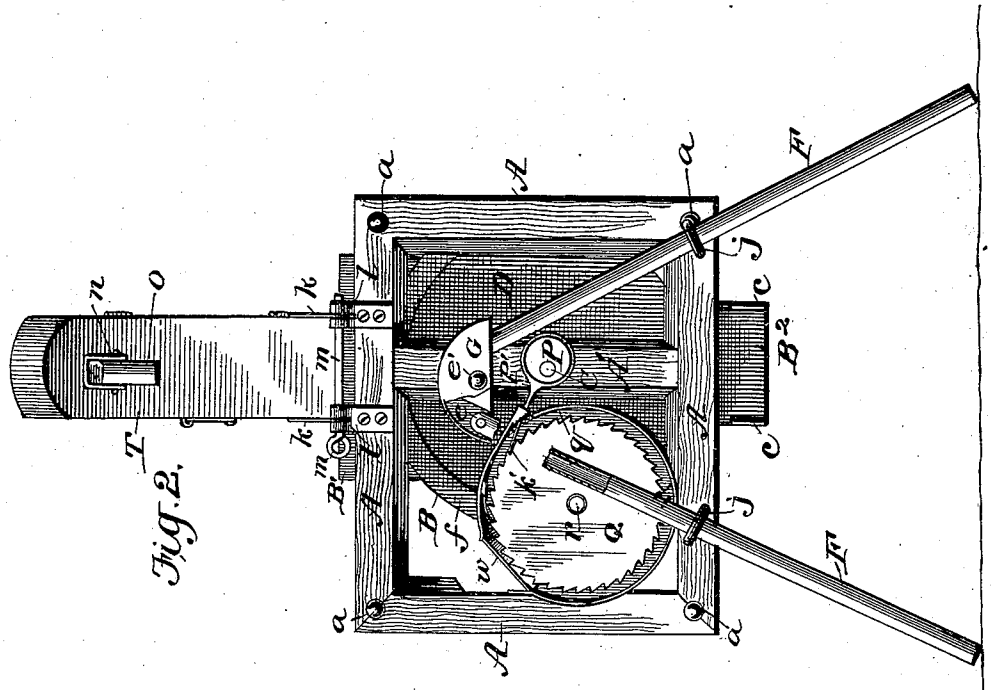

Fig. 2.

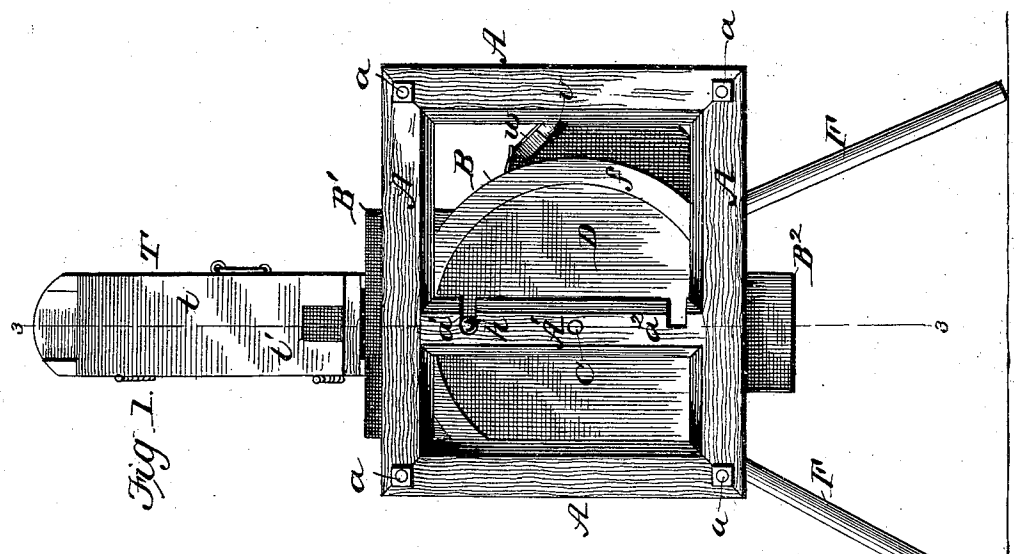

Fig. 1.

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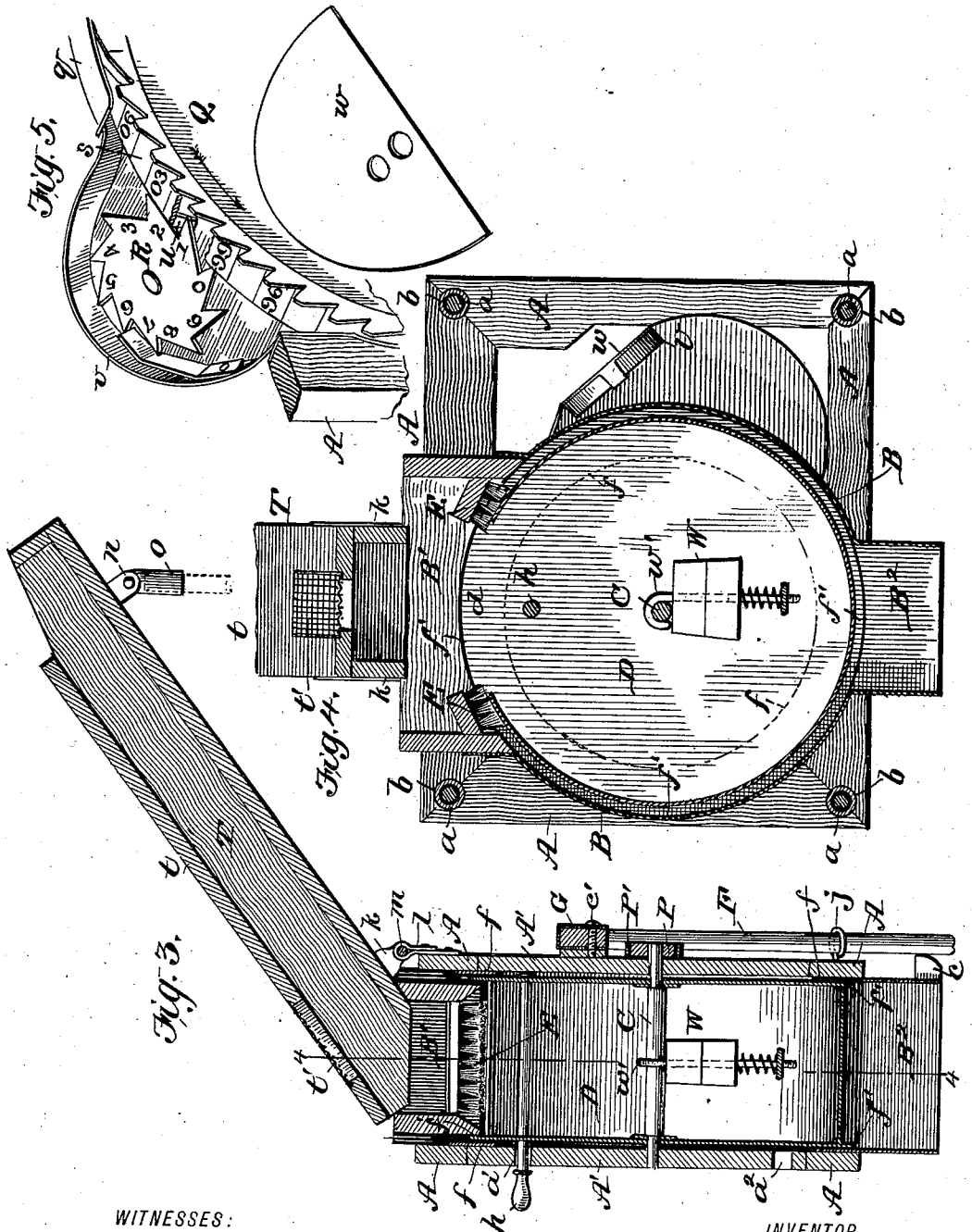

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UNITED STATES PATENT OFFICE.

NELS A. FIELD, OF LARK, IOWA.

GRAIN-MEASURING DEVICE.

SPECIFICATION forming part of Letters Patent No. 566,155, dated August 18, 1896.

Application filed March 16, 1896. Serial No. 583,398. (No model.)

To all whom it may concern:

Be it known that I, NELS A. FIELD, of Lark, in the county of Worth and State of Iowa, have invented a new and useful Improvement in Grain-Measuring Devices, of which the following is a specification.

The object of my invention is to provide a simple and accurate grain-measuring device which can be attached to any threshing-machine or any wagon-loader thereon, and which may be placed a sufficient distance therefrom to be out of the dust or be changed in its position to adapt it to the circumstances of the case.

It consists in the peculiar construction and arrangement of the measuring devices and feed-chute, which I will now proceed to describe with reference to the drawings, in which—

Figure 1 is a side elevation from the front side. Fig. 2 is a side elevation from the rear side, partly broken away. Fig. 3 is a vertical section through line 3 3 of Fig. 1. Fig. 4 is a vertical section through line 4 4 of Fig. 3. Fig. 5 are details of the registering devices.

In the drawings, A A represent two rectangular frames connected together side by side by means of long bolts *a* and spacing-tubes *b*, Fig. 4, which latter are arranged between the two vertical parallel frames A and A and hold them apart, and also give passage to the bolts *a*, which pass through said spacing-tubes. Between these two rectangular frames is arranged a circular sheet-metal casing B, which opens at the top into a hopper B′ and at the bottom into a discharge-spout B^2. This discharge-spout is large enough to distend the mouth of the bag, and to better support the latter is provided on the rear side, Figs. 2 and 3, with two rearwardly-projecting hooks or lugs *c*, over which the rear edge of the bag-mouth is hooked, while the front edge is held by the hand of the operator.

A′ A′ are two vertical bars connecting the top and bottom members of the rectangular frames A. In these is journaled an axial shaft C, which is rigidly connected to and arranged to support an oscillating grain-receiver D, which is of a flat drum shape with an opening *d* in the periphery of the same which (see Fig. 4) may be turned into registration with the hopper B′ to fill it with grain, and then be turned into registration with the spout B^2 to discharge it into the bag secured to the latter. To oscillate this drum, a handle-rod *h* passes through its two sides and projects outside and is received into seats or notches *a*′ a^2 in the bar A′ of the main frame, which notches act as stops to limit the oscillation of the drum, the upper notch *a*′ receiving the handle when the receiver is taking grain from the hopper, and the lower notch receiving the handle when the grain is being discharged from the receiver into the bag. Instead of the handle shown, a crank may be fixed to the axial shaft.

To keep the grain from spilling out of the edges of the casing, the latter has a flange *f* projecting inwardly, while the drum has at each edge an outwardly-projecting flange *f*′ *f*′. E E are brushes arranged one on each side of the hopper B′ and bearing upon the periphery of the drum. These brushes serve to sweep off or level the grain in the drum and prevent any of it from being carried down between the periphery of the drum and the casing when the drum is being oscillated.

To support the measuring device, I provide a pair of detachable and folding legs F F, Figs. 1 and 2, made of tubular metal, wood, or other material, which at their upper ends are each secured upon a pivotal bolt *e* within a head G, which latter is detachably secured by a screw *e*′ to the middle bar A′ of the framework. These legs may be detached from the measuring device and folded parallel for compact storage and easy transportation, but when applied to the measuring device the legs are protruded through screw-eyes *i i* on the lower part of the framework, and when the head G is secured by the screw *e*′ they form a rigid and wide spreading support for the measuring device, which in connection with the chute attachment above holds the measuring device steady and still leaves the spout of the device easy of access for the manipulation of the bags.

The chute attachment is a light wooden trunk T of rectangular cross-section having a top door *t* hinged along one of its longitudinal edges and provided with a hook-fastening on the other, and having in its lower end a screen *t*′ of perforated metal or wire-cloth just

above the point where it opens into the hopper of the measuring device. This screen is for the purpose of enabling the operator to see when the grain piles up under it, by which circumstance he knows that the receiver-drum is full and ready to be discharged.

A glass window might be used in the place of the screen, but the screen gives a ventilation or escape outlet for dust and is to be preferred.

For detachably fastening the chute to the top of the measuring device two metal bars *k* are fastened to the sides of the lower end of the chute and are perforated and adapted to register with perforated ears or lugs *l* on the top of the framework, and to be connected thereto by a pintle-rod *m*, which is passed through these ears and the perforated lugs of the frame, forming a separable hinge-joint. The upper end of the chute has on its lower side a clip *n*, between whose downwardly-projecting lugs is pivoted a sleeve *o*, which is adapted to fit over a pin or stud (shown in dotted lines) which is attached to or forms a part of the thresher or loader, which carries up the grain from the thresher. This connection permits the chute to be extended at any angle from the thresher which is most convenient, and as the chute is from twelve to fourteen feet long permits the measuring attachment to be located a sufficient distance from the thresher to get rid of the dust or otherwise suit the convenience of the operator.

To register or keep tally of the grain measured, I secure rigidly to the shaft of the measuring-drum an eccentric P, Fig. 2, which turns inside of a strap P′, which latter has a spring-pawl *k′* attached to it that passes inside a circular flange *q* and engages with the ratchet-teeth of a register-wheel Q. The register-wheel turns on an axial stem *r*, and has a peripheral band *s*, Fig. 5, that is marked with graduations corresponding to the teeth and with figures at every other tooth increasing by threes. The purpose of this is as follows: The bags usually are made to hold one and a half bushels, and I accordingly make the receiving-drum to hold one and a half bushels, and the markings are designed to indicate only every other bag in marking of three bushels, so as to avoid fractions on the register-wheel. The wheel, however, turns one tooth for each bushel and a half, but the indications or markings only show the amount of registration at every other bag. When the wheel turns a complete revolution and indicates one hundred bags, the higher numbers are registered in hundreds upon a small wheel R, arranged in a case beside the large wheel and having ten teeth, and this wheel is turned one tooth every time the large wheel makes a complete revolution by a lug *u* on the large wheel, which strikes a tooth of the small wheel and turns it one space as it passes by it. The small or hundreds wheel is arranged in a case *v*, connected to the flange *q* of the large wheel, and has a detachable cover *w* with two holes in it, through one of which show the numbers on the large wheel, and through the other of which show the numbers on the small wheel.

In measuring different kinds of grain I have found that all kinds of grain will not pack in the drum and fill it to the same extent. Smooth heavy grains, like wheat or flax, will, but oats, because of their refusal to pack closely, will not fill the drum perfectly, and will therefore register "short." To provide for this, I vary the capacity of the drum according to the kind of grain to be measured. That is to say, I make it to hold enough more than a bushel and a half to compensate for the failure of oats and other light grain to fill perfectly, and then, when measuring wheat and other grains which lie compactly, I introduce a displacing body which reduces the drum to a capacity of exactly one and a half bushels.

To do this, a displacing-block (or blocks) W is provided with a hook-bolt *w′*, which has a spring-seated or yielding connection by which it may be forced onto the axis of the drum and there held to displace that much of its capacity. These displacing-blocks are to be made of different sizes to suit the characteristics of different grains, so that the measuring device will be applicable to all sorts of grain, as well as other loose commodities of varying form or consistency.

To operate this measuring device, it is set up at any convenient point to receive the grain or other material, and as the grain passes down the chute it flows into and fills the receiving-drum and backs up in and fills the lower end of the chute, which fact is observable through the perforated screen. When the drum is thus seen to be filled, it is given a half-revolution by the handle and its contents transferred to the bag, and the registering devices move one space.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A measuring device comprising two rectangular frames connected by bolts as described, a cross-bar A′ having axial bearings and stop seats or notches, a cylindrical casing having a receiving-hopper at the top and a discharge-spout at the bottom, an axial shaft sustained in cross-bar A′ and having a rigidly-attached measuring-drum fitting within the casing and provided with an opening in its periphery and an oscillating handle adapted to strike against the cross-bar A′ to determine a semirevolution, and brushes arranged on each side of the hopper and bearing upon the periphery of the measuring-drum substantially as and for the purpose described.

2. A measuring device comprising two rectangular frames connected by bolts as described, a cross-bar A′ having axial bearings and stop seats or notches, a cylindrical casing having an inwardly-projecting flange, a hopper at the top and a spout at the bottom, an axial shaft sustained in cross-bar A′ and

having a rigidly-attached measuring-drum with outwardly-projecting flanges at its edges and an opening in its periphery, an operating-handle adapted to strike against the cross-bar A′ to determine a semirevolution, and brushes arranged on each side of the hopper, and bearing upon the periphery of the measuring-drum substantially as and for the purpose described.

3. The combination with a measuring device of a detachable feed-chute having a hinged lid with a window or opening in its lower end, the lower end of the chute and the measuring device being connected by separable hinge-sections, and the upper end of the chute having a pivotal support substantially as and for the purpose described.

4. The combination with the frame of the measuring device having two eyes near its lower edge, of a pair of folding legs, a head pivotally connected to the tops of each leg, and means for attaching the head to the measuring device with the legs in the eyes, substantially as and for the purpose described.

5. The combination of the rotary measuring-drum having a rigid eccentric attached to its axis, a strap encircling the eccentric and terminating in a pawl, a toothed register-wheel having a peripheral band marked with graduations and numbers at every other tooth, the numbers increasing by threes, a casing with flange q inclosing the same and having an offsetting portion u for a hundreds-wheel, and a hundreds-wheel R arranged in said offsetting portion of the casing in a plane at right angles to the larger register-wheel, and adapted to be operated upon at every complete revolution of said larger wheel substantially as and for the purpose described.

6. The combination with the oscillating measuring drum or device, of a displacing-block and means for detachably securing it within the drum at or near its axis substantially as and for the purpose described.

NELS A. FIELD.

Witnesses:
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SOLON C. KEMON.