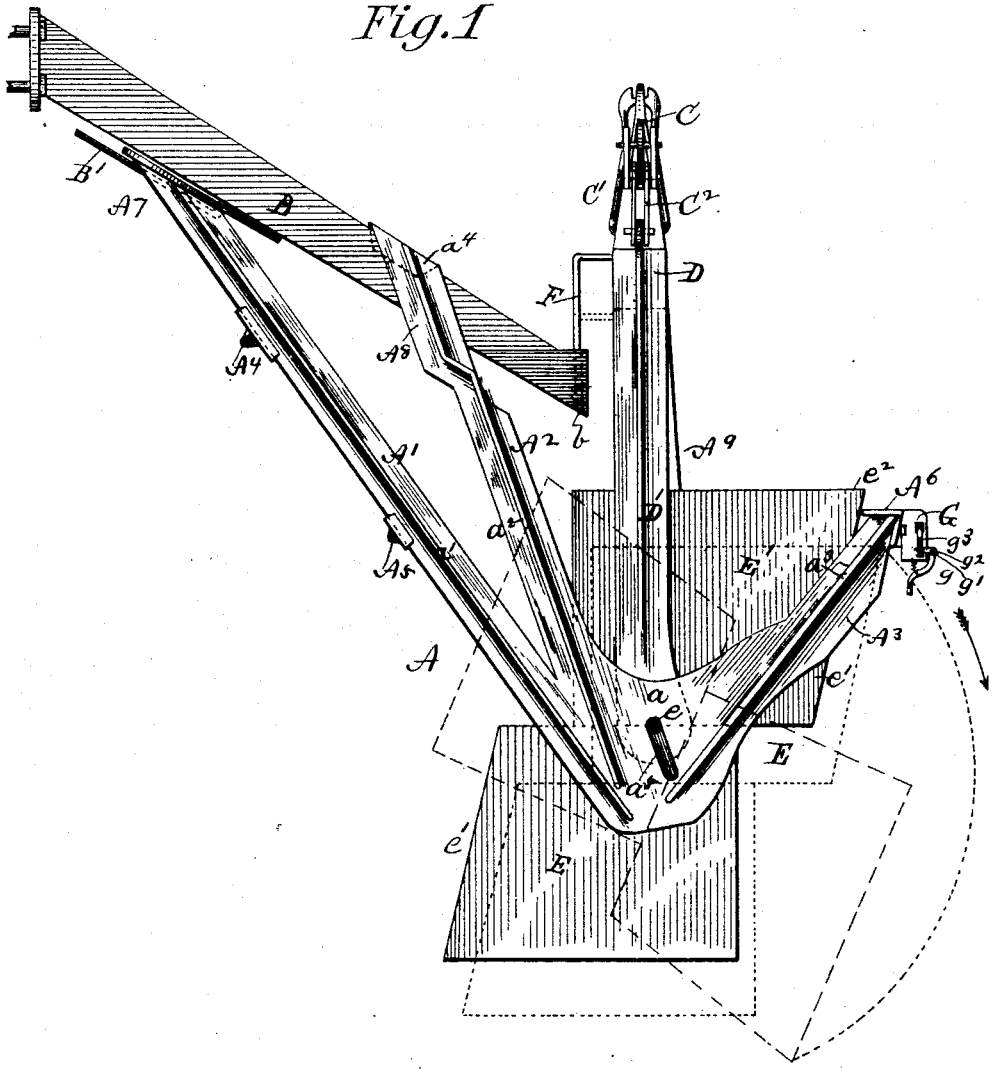
(No Model.) 2 Sheets—Sheet 1.

C. J. WIBORG.

AUTOMATIC GRAIN WEIGHER.

No. 342,411. Patented May 25, 1886.

Fig. 1



Witnesses:
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N. W. Richards.

Inventor:
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(No Model.) 2 Sheets—Sheet 2.

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AUTOMATIC GRAIN WEIGHER.

No. 342,411. Patented May 25, 1886.

Fig. 2

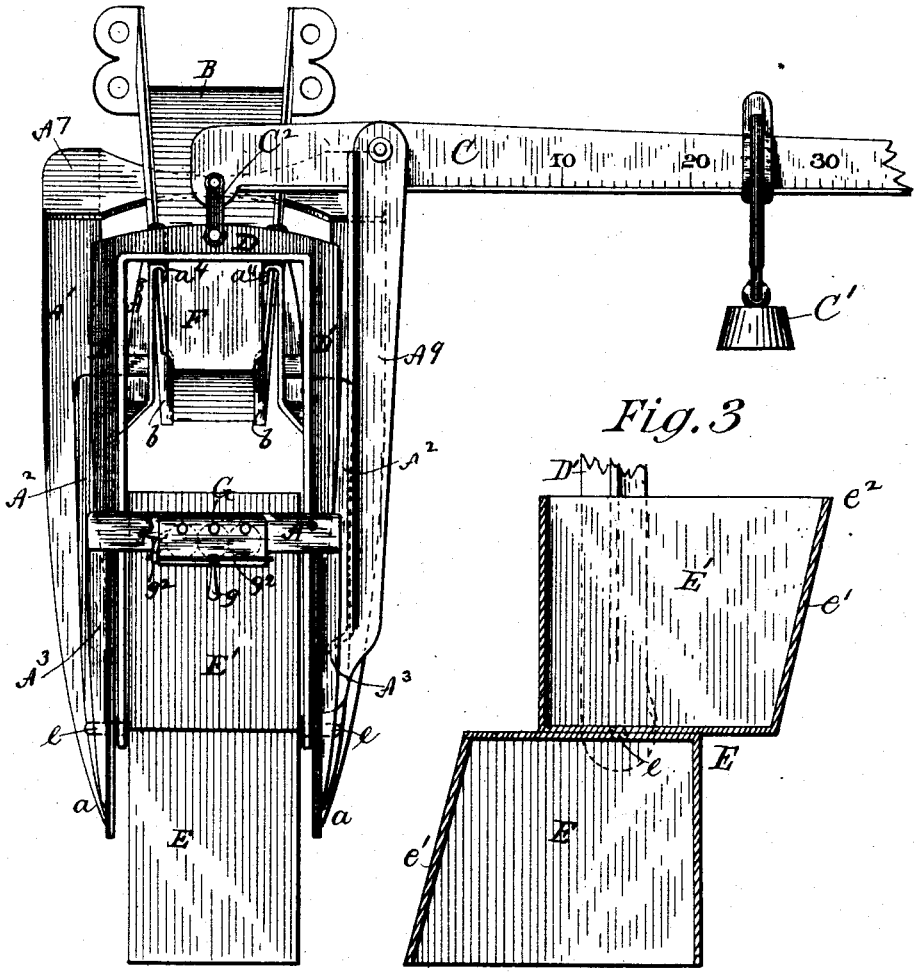

Fig. 3

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UNITED STATES PATENT OFFICE.

CHARLES J. WIBORG, OF OSCO, ILLINOIS.

AUTOMATIC GRAIN-WEIGHER.

SPECIFICATION forming part of Letters Patent No 342,411, dated May 25, 1886.

Application filed January 26, 1886. Serial No. 189,809. (No model.)

To all whom it may concern:

Be it known that I, CHARLES J. WIBORG, a citizen of the United States, residing at Osco, in the county of Henry and State of Illinois, have invented certain new and useful Improvements in Automatic Grain-Weighers, of which the following is a specification.

My invention relates to automatic grain-weighers of the class which employ rising and falling and intermittingly-rotating buckets suspended from a scale-beam and arranged to receive the falling grain from the spout or discharge-pipe of a separator, bin, elevator, or other supply, the said spout being provided with a valve automatically operated by the falling movement of the bucket to intercept or cut off the flow of grain during the permutation of the buckets, successively, and after a given quantity or weight of grain has been deposited in them, respectively.

The improvement consists, generally, in a novel construction of supporting-frame, in combination with rising and falling and intermittingly-rotating buckets; in novel means for suspending the buckets within the supporting-frame; in a novel arrangement of valve upon the bucket-supporting bail for automatically controlling the discharge of grain from the supply-spout; in novel means for suspending, attaching, and detaching the supporting-frame from the discharge-spout of the grain-supply, and in a novel form of double-compartment bucket suspended within the frame, as will hereinafter more fully appear.

In the accompanying drawings, Figure 1 is a side elevation of my improved machine, showing by full lines a bucket in position to receive the grain from the supply-spout, by dotted lines the buckets dropped to their second position, to close the valve of the supply-spout and to bring the buckets into position to rotate, and by broken lines the third position, after the buckets have been partially rotated in the direction of the arrow to discharge their contents. Fig. 2 is a front elevation of the same in the position shown by full lines in Fig. 1; Fig. 3, a vertical sectional elevation of the buckets and a portion of the suspending arm or bail.

The frame A is formed by branching arms A' A^2 A^3, projecting upwardly from their sides or connecting-webs *a*, and connected together by cross-braces A^4 A^5 A^6, to provide a light, well-braced structure, the cross-braces being preferably made angular in cross-section, and the arms provided, respectively, with stiffening-ribs a' a^2 a^3, to add to the strength without materially increasing the weight of the structure. The upper ends of the rearwardly-projecting arms A' are connected together by a flat plate, A^7, and the spout D of a grain-supply is provided with a keeper-plate, B′, arranged beneath and in a plane parallel with the bottom of said spout, to hook under and interlock with the plate A^7 of the frame-arms. The upper ends of the intermediate and rearwardly-projecting arms, A^2, are provided with inwardly-projecting hanger-plates A^8, formed with hooked ends a^4, which overlap the upper edges of the side walls of the spout B, and together with the interlocking plates A^7 B′, above referred to, serve to suspend the frame from the spout in a simple, secure, and effective manner, which will admit of their ready removal or separation one from the other, when desired.

The frame A supports a vertically-arranged standard, A^9, upon the upper end of which is fulcrumed a scale-beam, C, in any well-known or preferred manner. The scale-beam is provided with an adjustable weight, C′, and its shorter arm is connected by links C^2 with the cross-bar of a bail, D, which is thus suspended between the side sections of the frame.

Double-compartment buckets E, provided with intermediate and centrally-arranged stud-axis, *e*, are supported in bearings upon the lower ends of the bail-arms D′, to turn freely therein and project laterally through the slots a^5, arranged vertically, or nearly so, in the lower ends of the side plates of the frames. The buckets E are free to rise and fall in a vertical plane a distance determined by the length of the slot a^5, and are held thereby from swinging out of working position. A plate-valve, F, secured to the cross-bar of the bail D, is arranged to move vertically in guides *b b*, fixed to the lower end of the supply-spout B, and serves to open or close the spout by the rise and fall of the bail and bucket.

The bucket E is made of two sheet-metal rectangular compartments secured together, with their bottoms arranged to rest partly upon and partly to overlap each other, and

their projecting sides e' inclined from their bottoms outwardly. The upper edge, e^2, of the inclined side of the receiving-bucket E′ rests upon the cross-brace A^6 of the frame, which serves to support the bucket in its vertical position until the scale-beam is tipped by the excessive weight of grain, and the bucket is thereby allowed to drop below the cross-brace A^6 and tilt or turn on the axis e, to discharge its contents into any suitable receiver.

The operation of filling, weighing, and emptying the buckets is as follows: The receiving-bucket E′ and valve F are held up by the bail and scale-beam until a sufficient amount of grain has been deposited in the bucket to overbalance and tip the weighted scale-beam. The buckets, bail, and valve, when the scale-beam tips, as above described, will drop to the position shown by dotted lines in Fig. 1, and the supply of grain will be abruptly shut off by the valve. The buckets will then have dropped until the axis e is arrested by the bottom of the slot a^5 of the frame, and the upper edge of the bucket has passed below the cross-brace A^6. The bucket will then be free to revolve upon its axis in the direction shown by the arrow and by dotted lines until the bucket has assumed the position approximately indicated by the broken lines. When this position is reached, the grain will be dumped and emptied from the bucket, and the latter will be free to complete its half-revolution and be lifted by the tipping scale-beam to the position shown by full lines in Fig. 1, and its further rotation intercepted by the cross-brace A^6 of the frame.

The position of the cross-brace A^6 relative to the upper and outer edge of the receiving-bucket and to the mouth of the supply-spout and valve for opening and closing the same is so regulated that the bucket cannot rotate or swing from under the spout until the valve has completely shut off the flow of grain to the bucket.

The lower end of the bail D is guided in the slots a^5 of the frame, and serves to direct the vertical movement of the valve F within its guides with precision.

The apparatus may be readily suspended from a grain-spout, to be supported securely and solely thereby in a simple manner, and is easily attached and detached from said spout when desired.

A registering device of any suitable well-known construction, inclosed in a box, G, secured to the cross-brace A^6, may be employed to register the number of bushels or pounds measured. The register, as shown, is operated by the edge e^2 of the bucket pressing upon a spring-lever, g, secured to a shaft, g', supported in bearings upon the box, and a crank-arm, g^2, secured to said shaft, is pivotally connected at its vibrating end with a spring-pawl, g^3, which is arranged to engage with and operate a ratchet-wheel in a well-known manner.

I claim as my invention and desire to secure by Letters Patent—

1. In an automatic grain-weighing machine, the frame formed of branching rearwardly-projecting supporting-arms, the forwardly-projecting abutment-arms, and cross-brace, in combination with rising and falling intermittingly-rotating buckets suspended between the frame-arms from a scale-beam, and adapted to be held normally upright by the said cross-brace, substantially as described.

2. The combination of the frame formed of branching rearwardly-projecting supporting-arms, the forwardly-projecting abutment-arms, and cross-brace, with the intermittingly-rotating buckets, the vertically-moving bail supporting the axis of the buckets at its lower end to move in guideways upon the frame, and the scale-beam from which the bail is suspended, fulcrumed upon the frame, substantially as and for the purpose specified.

3. The combination of the supporting-frame, the supply-spout, the rising and falling intermittingly-rotating bucket, the bail supporting the axis of the buckets, suspended from a scale-beam, and a valve secured to the upper end or cross-brace of the bail and arranged to move vertically to open and close the discharge end of the supply-spout, substantially as described, and for the purpose specified.

4. The combination of the supporting-frame, the scale-beam and standard secured thereto, the bucket-supporting bail suspended from the end of the scale-beam, and the grain-buckets pivotally connected to the bail and formed of two rectangular compartments having their bottoms arranged to rest partly upon and partly to overlap each other and their projecting sides inclined from the bottoms outwardly, substantially as described.

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

CHARLES J. WIBORG.

Witnesses:
C. R. DALRYMPLE,
S. J. CHILBERG.