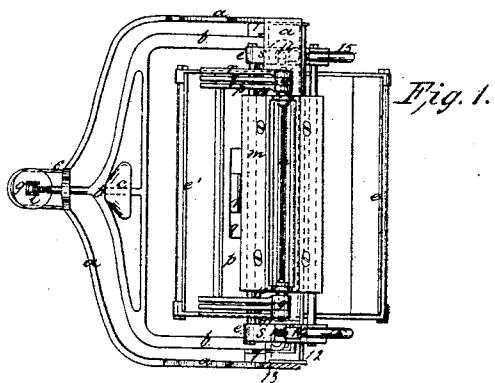
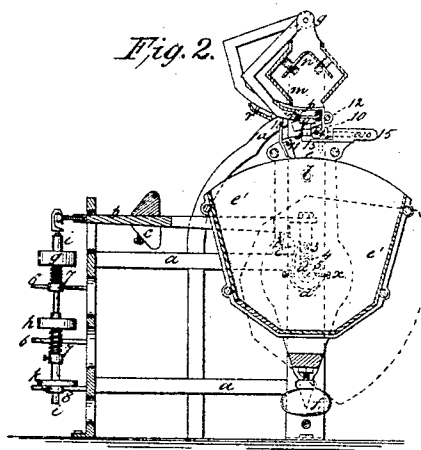
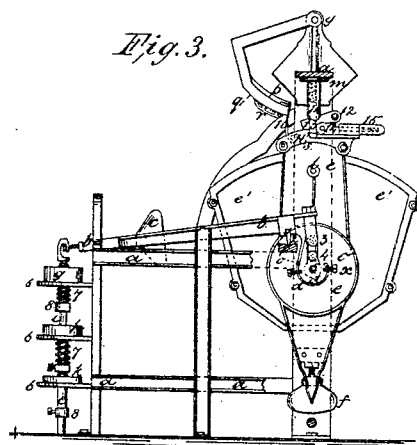


L. S. CHICHESTER.
GRAIN WEIGHER.

No. 41,906.

Patented Mar. 15, 1864.



Witnesses:

Lemuel W. Sewell

Chas. H. Smith

Inventor:

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UNITED STATES PATENT OFFICE.

LEWIS S. CHICHESTER, OF NEW YORK, N. Y.

IMPROVEMENT IN GRAIN-WEIGHERS.

Specification forming part of Letters Patent No. **41,906**, dated March 15, 1864; antedated March 14, 1864.

To all whom it may concern :

Be it known that I, LEWIS S. CHICHESTER, of the city and State of New York, have invented, made, and applied to use a certain new and useful Improvement in Grain-Weighers; and I do hereby declare the following to be a full, clear, and exact description of my said invention, reference being had to the annexed drawings, making part of this specification, wherein—

Figure 1 is a plan of my said grain-weigher with part of the frame removed. Fig. 2 is a vertical section of the same, and Fig. 3 is a side view with part of the frame removed to show the scale-beam and connections to the bucket.

Similar marks of reference denote the same parts.

My present invention is an improvement upon that for which Letters Patent were granted to me May 20, 1862; and it consists, first, in a mode of hanging a swinging bucket that receives the grain and tips the same out by swinging on its centers and then swings back again to receive a fresh supply of grain; second, in a mode of fitting a series of weights so that they shall be successively and gradually raised as the weight of grain causes the said bucket to descend, thereby avoiding any sudden motion or shock of the parts; third, in an arrangement of cut-offs that check and finally stop the flow of grain from a hopper or spout into the bucket as the said bucket descends, in consequence of the weight of grain deposited in such bucket; fourth, in a peculiar construction of delivery-mouth at the lower end of the hopper or spout to arrest the momentum of the grain, and thereby insure accuracy in the weighing operation, because the impetus of the descending grain is checked before reaching the scale; fifth, in a peculiar catch for holding the bucket while being filled.

In the drawings, *a* is a frame, of suitable size and material, carrying the brackets 1 1 that receive the knife-edge centers 2 2 of the lever-scale beam *b*, which is formed as two arms uniting near the movable balance-weight *c*, and extends to the rear, where the weights are applied, as hereinafter shown.

From the ends of each arm of lever *b* are pendent links over knife-edge centers 3, pass-

ing down to similar centers, 4, on the boxes *d* that carry the gudgeons 5 of the swinging bucket-frame *e*, within which is the bucket *e'*, that is formed of a suitable size and shape, and is largest above the centers 5, so that the weight of grain supplied into said bucket shall aid in tipping the frame and bucket forward to empty said bucket, after which the weights *f*, attached at the bottom of said bucket-frame, bring it and the bucket back into a vertical position, because said weights are sufficiently heavy to overbalance the empty bucket. The bucket *e'* is attached to the frame *e* by the gudgeons *l* or knife-edges, and is allowed a slight swinging motion on said gudgeon, two stops, (shown by dotted lines at *o o*, Fig. 3,) that are on opposite sides of a projection on the frame *e*, determining the extent of motion. A crutch, *d'*, descending from the scale-beam *b*, is fitted with regulating-screws on each side of the hanging journal *d*.

The weights *g* and *h* are placed over the rod *i* that hangs on knife-edge centers from the beam *b*, and the said rod is free to move within these weights, the weights themselves when not lifted resting on supports 6 from the frame *a*. Beneath each of these weights *g* and *h* is a spring, 7, around the rod *i*, resting upon an adjustable collar, and *k* is a small weight, which is the last to be lifted.

In order to effect the operations hereinafter set forth, it is necessary that the bucket *e'* descend gradually as the grain is supplied, until the beam *b* comes level, when there is a pause for a few grains to be added to perfect the balance. This is effected by the springs and weights, for as the grain is supplied into the bucket, as hereinafter shown, the spring 7 under the weight *g* is first gradually compressed until sufficiently powerful to raise this weight *g*, when the next spring, 7, takes beneath the weight *h*, and is compressed until that weight also is raised. Thus the movement is gradually, without any shock, and the bucket descends vertically until the beam *b* comes level, at which time a collar, 8, around *i*, comes up against the under side of the weight *k*, and the parts remain in that position until sufficient grain is added to lift this weight *k* and cause the descent of the bucket, which operation stops the further supply of grain. At this moment the bucket disconnects from

stops, hereinafter described, and the screw x in crutch d' takes against the journal d so that said journal cannot swing on the center 3, and the further raising of the scale-beam as the bucket slightly descends tends to turn the frame e in the direction in which the scale-beam is moving on its centers 2, and hence the bucket, which had descended perfectly vertically is thrown slightly forward, and the weight of grain being above the center 5, and the bucket also slightly swinging on l , cause the bucket and frame to turn on the gudgeons 5 in the boxes d and tip out the grain into a bag, spout, or other suitable receptacle.

As the grain is tipped out, the scale-beam descends and leaves the weights g , h , and k on their respective supports 6, and raises the centers 5 of the bucket, and the bucket and frame swing back by the counterpoise f to their former position.

In order to supply the grain to the bucket, I employ any suitable hopper trough or spout, at the lower end of which is the delivery-mouth formed of a box, m , in which is a deflector, n , that directs the grain upon the inner sides of such box m , so that it falls thereon at right angles to the surface, and hence the momentum the grain may have acquired in running down the spout or trough is checked, and the grain simply falls through the mouth at the lower edge of this box m into the bucket e' . Hence the momentum of the grain can have no effect upon the accuracy of the weighing.

The supply of grain to the bucket is checked and finally entirely stopped or cut off (when the given weight has passed into the bucket) by swinging cut-offs. I have shown three of these, but two or more may be used. These cut-offs p , q , and r are hung at each end on the studs 9 9. Projecting from the sides m and 10 are pendent toe-pieces from the respective cut-offs, that are acted upon by the projecting plates 11 from the frame e .

The toe-pieces of the cut-off p are shorter than those of the cut-off q , and those of the cut-off r are the longest, and this cut-off p has an opening near the center, larger than the opening near the center, larger than the opening in q , while the cut-off r has no opening.

As the bucket swings back and is held by a suitable latch, the plates 11 press back the toe-pieces and cut-offs, opening the mouth for the supply of grain. The grain runs quickly into the bucket, and as said bucket descends, as before specified, the plates 11 draw below the toe 10 of the cut-off p , and that drops, checking the flow of grain, but the grain still runs through the hole in p , and the further descent of the bucket causes the cut-off q to drop, and the small supply running through the hole in the same perfects the balancing of the weigher, and the dropping of the cut-off r prevents the further descent of the grain un-

til the bucket tips, empties the grain, and, swinging back again, opens the cut-offs. The cut-offs as they fall take against a cross-rod, 12, or similar stop, and an apron, of leather or other material, may hang from the edge of m , near this rod 12, to prevent the cut-offs scattering the grain as they pass through the descending stream.

The peculiar stops that I employ for retaining the bucket while being filled consist each of a block, 13, fitted on a vertical stem in a pendent stud, 14, from a , and a helical spring around this stem presses it and the block downward, and inclines s on each side of the bucket-frame e' pass under the respective stops as the bucket swings up to place, and the said blocks 13, springing down behind this incline, hold the bucket until the descent of the bucket again draws the inclines below said stops 13, and allows the bucket to swing, as before mentioned.

I make use of a roller, 14, on a rod in a socket, 15, on e , that acts against the other side of the stop 13, so that the bucket is held by the incline 8 and roller 14, but is free to descend, because the roller relieves friction and yielding prevents the parts binding; and as the bucket comes up to its place, the said roller and spring relieve the shock on the stop 13.

What I claim, and desire to secure by Letters Patent, is—

1. Hanging the box d , on which the bucket swings or turns, by a link taking the center 3 on the scale-beam b for the purposes and as specified.

2. The crutch d' and screws x , in combination with the box d and scale-beam b , for the purposes specified.

3. The bucket-frame e , receiving the bucket e' , in the manner substantially as specified, in combination with the counterpoise f , for the purposes set forth.

4. A spring or springs applied to the weight or weights, substantially as specified, for allowing a gradual movement to the scale-beam and grain-buckets, for the purposes specified.

5. The arrangement of the cut-offs p q r , in combination with the swinging or oscillating bucket e' and frame e , for the purposes specified.

6. The deflector n , at the delivery-mouth m , of the hopper or spout, to check the momentum of the grain, as specified.

7. The stop 13, in combination with the incline s , to retain the bucket as it comes up to position for receiving the grain, as specified.

8. The spring-roller 14, in combination with the stop 13, for the purposes and as specified.

In witness whereof I have hereunto set my signature this 11th day of May, 1863.

LEWIS S. CHICHESTER.

Witnesses:

LEMUEL W. SERRELL,
CHAS. H. SMITH.