(Model.)

J. E. KIMBLE.

GRAIN WEIGHER AND MEASURE.

No. 290,066. Patented Dec. 11, 1883.

Fig 3

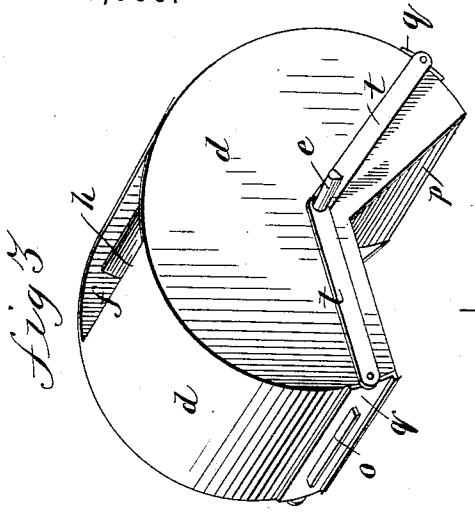


Fig 4

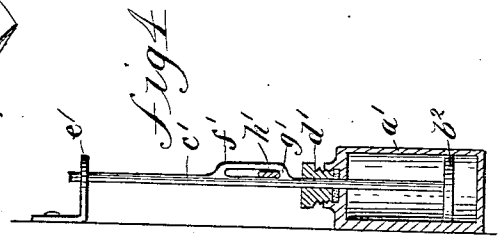


Fig 2

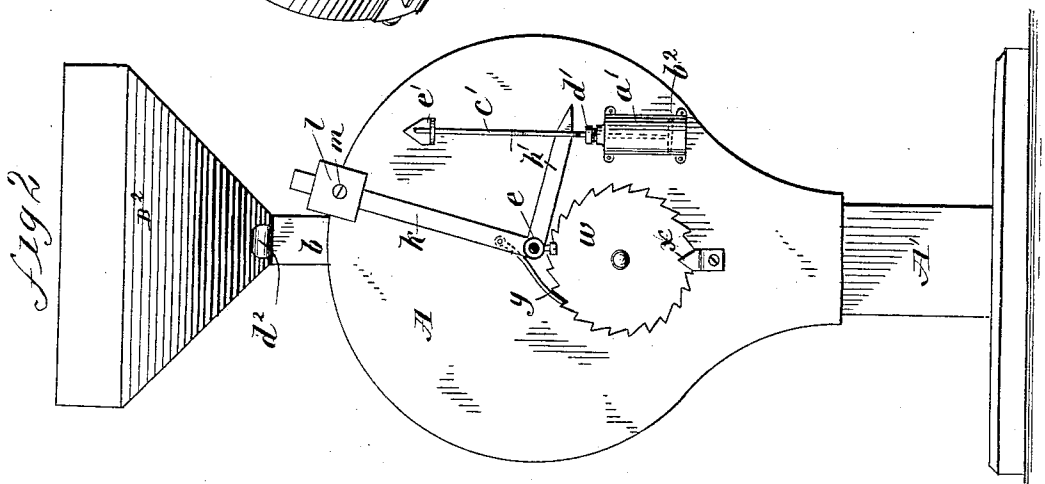


Fig 1

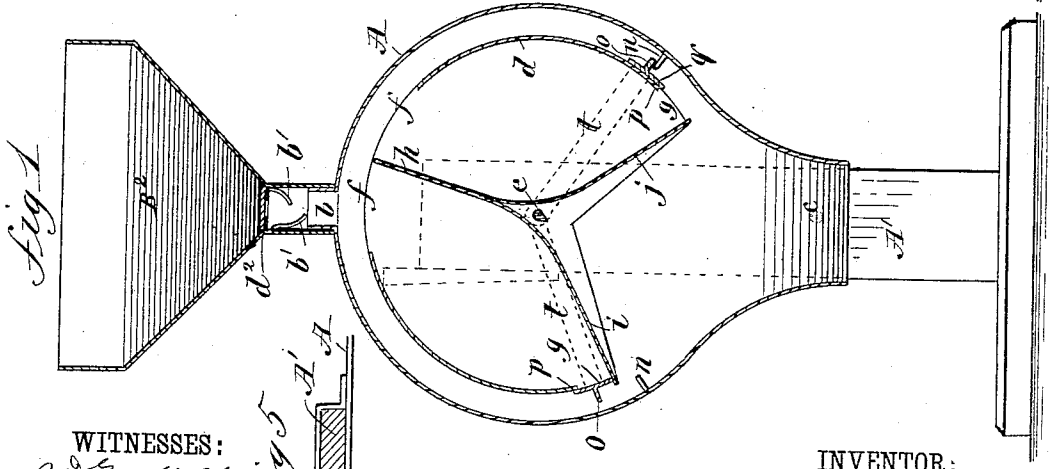
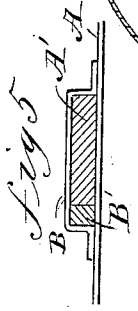


Fig 5



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UNITED STATES PATENT OFFICE.

JAMES E. KIMBLE, OF VICKSBURG, MICHIGAN.

GRAIN WEIGHER AND MEASURE.

SPECIFICATION forming part of Letters Patent No. 290,066, dated December 11, 1883.

Application filed April 7, 1883. (Model.)

To all whom it may concern:

Be it known that I, JAMES E. KIMBLE, of Vicksburg, Kalamazoo county. Michigan, have invented a new and Improved Grain Weigher and Measurer, of which the following is a full, clear, and exact description.

This invention pertains to improvements in grain-weighing apparatus; and it consists of the combination and arrangement of parts, substantially as hereinafter fully set forth and claimed.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional elevation of the machine. Fig. 2 is a side elevation. Fig. 3 is a perspective view of the tilting box. Fig. 4 is a sectional elevation of a retarder for limiting the shocks of the falling weigh-bar, and Fig. 5 is a transverse section of the supporting-standard and connecting device for securing the apparatus thereto.

A represents a case, of substantially circular form, set up edgewise on any suitable standard, A′, and secured by a clip-band key, B′, and provided with an opening, *b*, at the top, for spouting in the grain from a hopper or bin, B^2; also with a passage, *c*, at the bottom, for the escape of the grain to any suitable receptacle after being weighed and measured. The opening *b* is provided with inclined shelves *b′*, for the purpose of checking the motion of the grain and allowing it to enter the tilting case with even velocity. Inside of the stationary case A is another circular case, *d*, which forms part of the weighing and measuring device. It is arranged on a horizontal axial bar or shaft, *e*, the projecting ends of which form knife-edge pivots, which have bearings in the outer case, on which the case *d* vibrates, to effect the changes for dividing the grain into measured quantities. The upper side of this case has a large opening, *f*, through which the grain enters it from spout *b* above, and the lower side has two openings, *g*, for the discharge of the grain after measuring. The case *d* is partitioned from the middle of opening *f* by partition *h*, which has branches *i* and *j* dividing off the discharge-openings *g* between the edges *p* of the rim of the case.

q represents valves for alternately closing and opening the discharge-passages *g*. They are pivoted on or near shaft *e* by arms *t*, so as to be swung thereon, and have stops *o*, by which to limit the range of their motion by contact with stops *n* on the interior of case A. The branches *i* and *j* of the partition *h* extend a little beyond the rim of case *d* and under the valves *q*, so that when the loaded side of case *d* falls for the discharge of the grain in it through its passage *g*, which is then open, by the arrest of the valve *q* on the stop *n* or *o*, the light side will be closed by the partition *i* or *j* of the light side rising against the valve *q* of the said light side.

The weigh-bar consists of an arm, *k*, attached to one end of shaft *e*, and carrying a weight, *l*, to be shifted along it, and secured in any position by the set-screw *m*, according to the kind and quantity of grain to be weighed, and it is to be raised to the vertical line by the overbalancing weight of the grain, and to fall therefrom to the limit of its range by gravity, which is governed by the stops *n* in case *t*, valves *q*, and partitions *i j* of tilting case *d*.

The entire operation is performed by the tilting of the case *d*, in which the loaded side falls to discharge the weighed load, while the light side rises to be filled.

The dial *w* records the weights indicated by the pointer *x*, along which it is turned by the pawl *y*, attached to the weigh-bar *k*.

To prevent the loaded side of the case *d* and the weigh-beam from falling too heavily and jarring too much, I propose to employ a retarder, consisting of a hollow cylinder, *a′*, containing a piston, b^2, to work against air or any liquid substance in said cylinder. The piston is fitted a little slack in the cylinder, to allow the air or liquid to escape from side to side, and the rod *c′*, which extends through a suitable stuffing-box, *d′*, and works in a guide, *e′*, has stops *f′* and *g′*, against which an arm, *h′*, of the weigh-bar *k* strikes just before the stops *n o* come together, so that the fall is mainly, but not wholly, arrested by the resistance of the air or liquid passing the piston, and the stops come together without any thumps or jars.

A gate, d^2, is arranged in the passage from hopper B^2 to the weighing apparatus, to shut off the grain when required.

Having thus fully described my invention, I

claim as new and desire to secure by Letters Patent—

1. The combination of valves *q*, case *d*, and case A, said valves being pivoted in or near the axis of case *d*, and provided with stops *o*, case *d* having openings *g* and projecting partitions *i j*, and case A having stops *n*, substantially as described.

2. The circular stationary case A, circular oscillating case *d*, oscillating valves *q*, and weigh-bar *k*, in combination, said cases A and *d* having passages, and case *d* having partitions, substantially as described.

3. In a grain-weighing apparatus, the weighted lever or bar *k*, having the right-angularly disposed arm *h'*, and the pawl *y*, engaging with the toothed surface of the dial *w*, in combination with the cylinder *a'*, piston b^2, and rod *c*, having stops *f' g'*, and between said stops a slot which receives and guides the movement of the arm *h'* of the weighted bar *k*, substantially as and for the purpose set forth.

JAMES E. KIMBLE.

Witnesses:

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