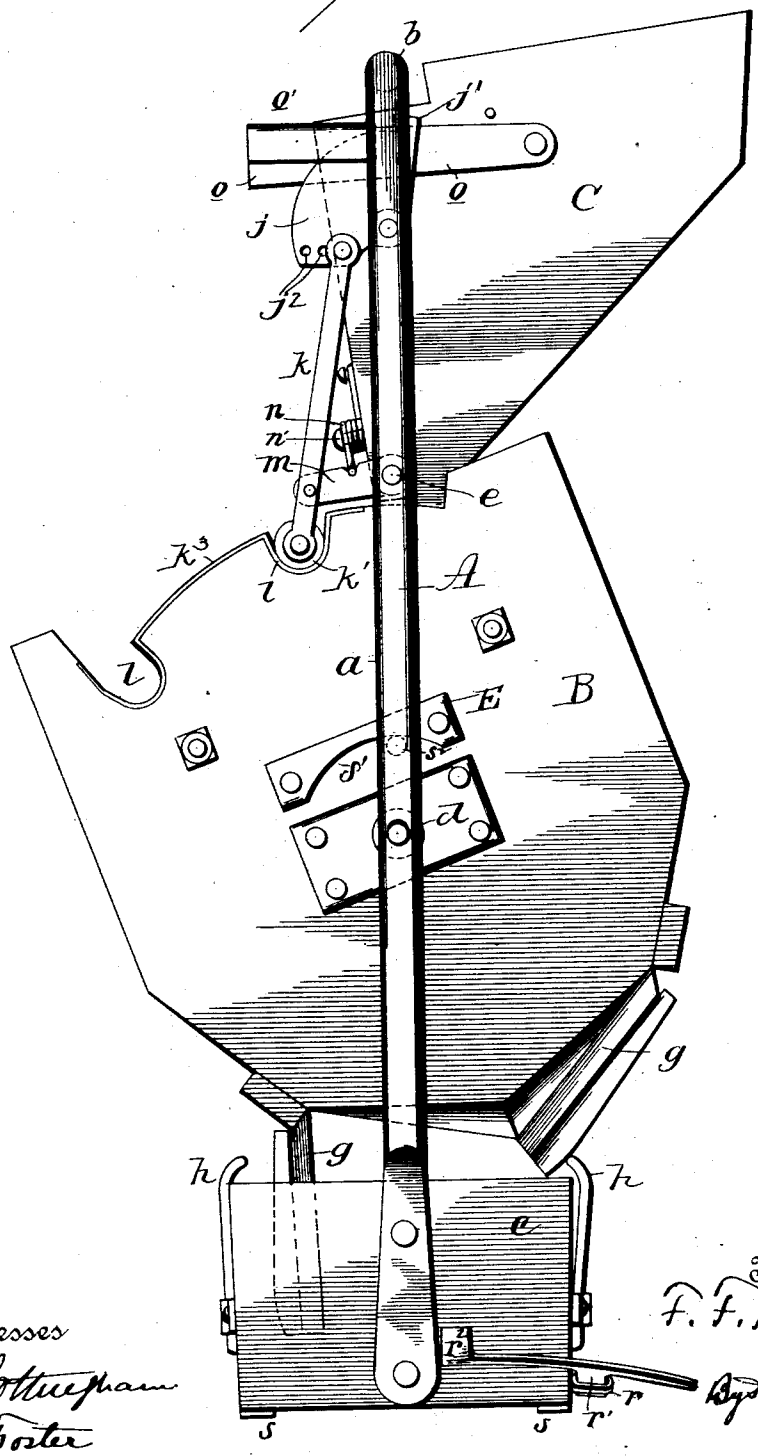
(No Model.) 4 Sheets—Sheet 1.

F. F. KANNE.

GRAIN METER.

No. 525,765. Patented Sept. 11, 1894.

Fig. 1.



Witnesses
S. W. Foster

Inventor
F. F. Kanne
By H. A. Seymour
Attorney

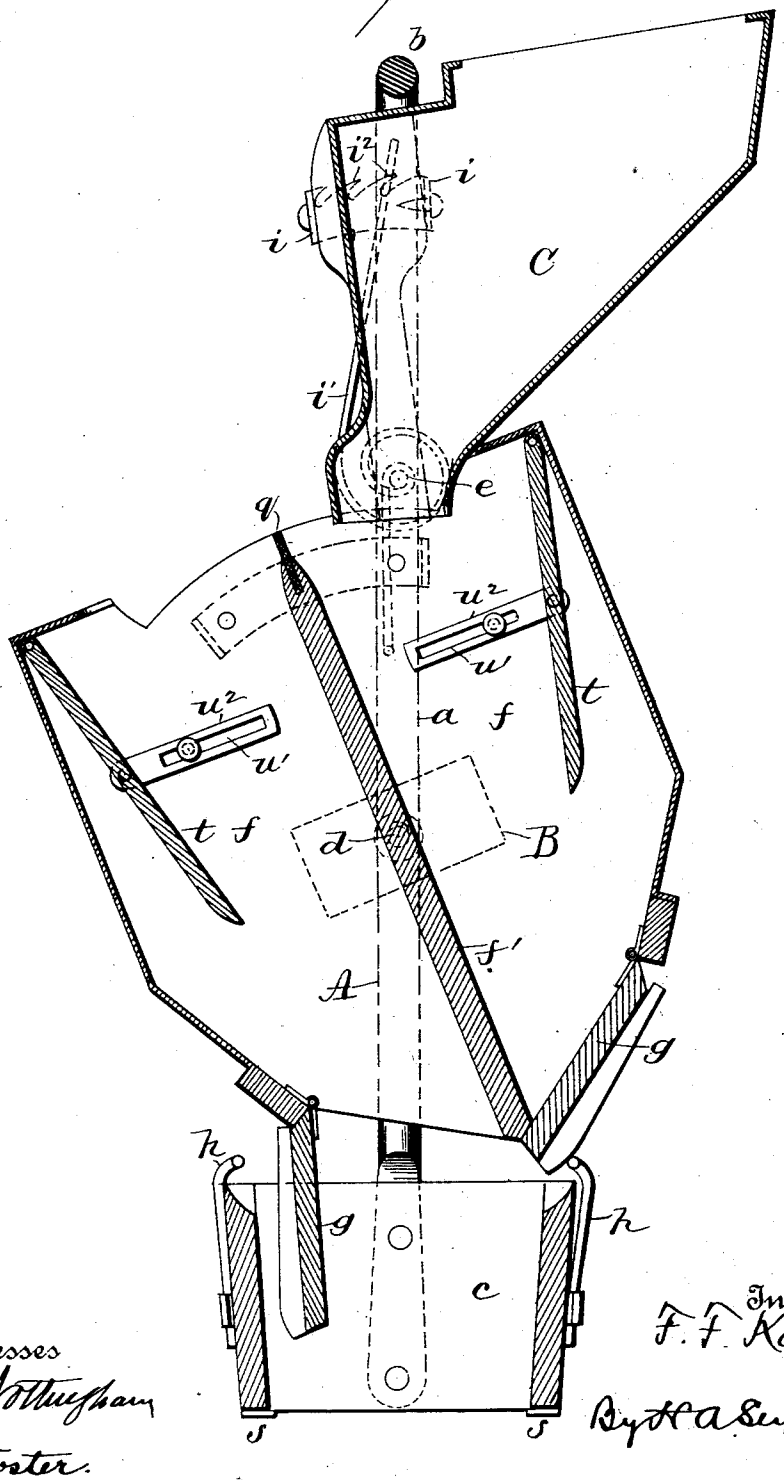
(No Model.) 4 Sheets—Sheet 2.

F. F. KANNE.

GRAIN METER.

No. 525,765. Patented Sept. 11, 1894.

Fig. 2.



Witnesses
E. Mottershaw
S. W. Foster.

Inventor
F. F. Kanne
By H. A. Seymour
Attorney

(No Model.) 4 Sheets—Sheet 3.

F. F. KANNE.

GRAIN METER.

No. 525,765. Patented Sept. 11, 1894.

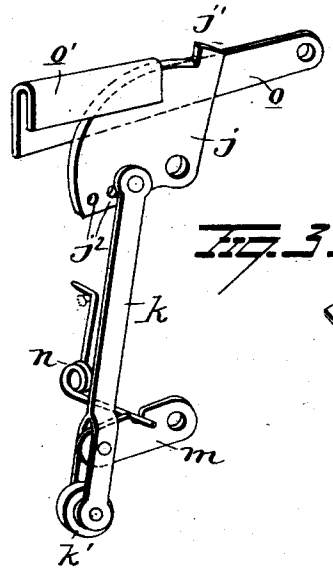


Fig. 3.

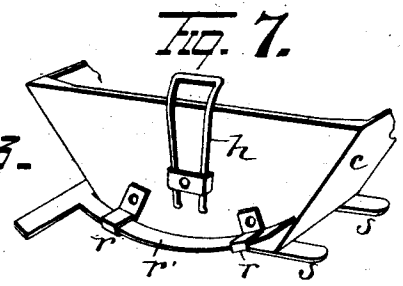


Fig. 7.

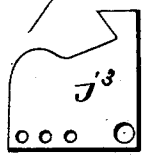


Fig. 9.

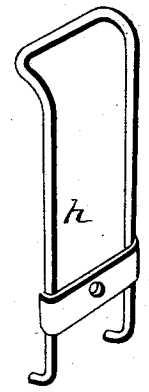


Fig. 5.

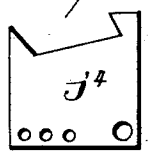


Fig. 10.

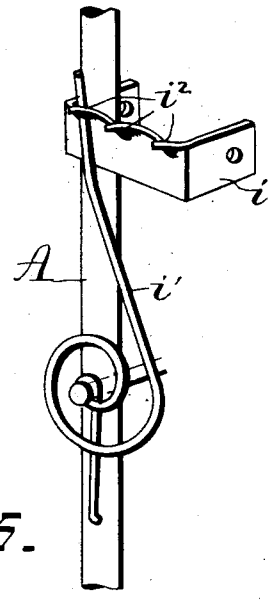


Fig. 4.

Fig. 6.

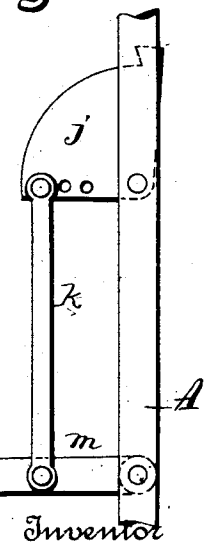


Fig. 8.

Witnesses
E. Nottingham
S. W. Foster.

Inventor
F. F. Kanne
By H. A. Seymour
Attorney

(No Model.)

4 Sheets—Sheet 4.

F. F. KANNE.

GRAIN METER.

No. 525,765. Patented Sept. 11, 1894.

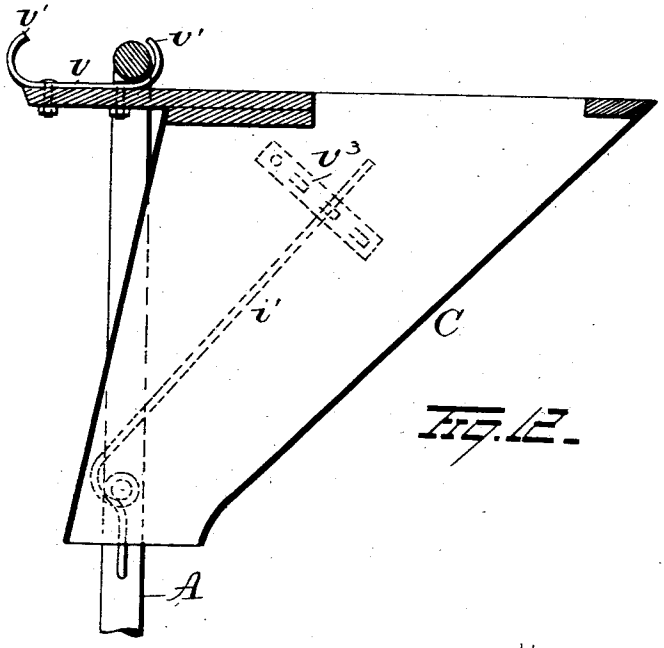


Fig. 2.

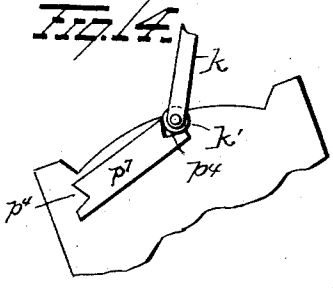


Fig. 4.

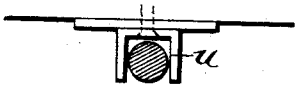


Fig. 3.

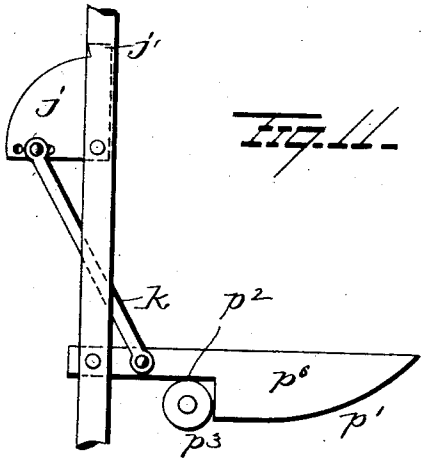


Fig. 1.

Witnesses
Ed Whittemore
F. W. Foster

Inventor
F. F. Kanne
By H. A. Seymour
Attorney

UNITED STATES PATENT OFFICE.

FREDERICK FRANK KANNE, OF WATERVILLE, MINNESOTA.

GRAIN-METER.

SPECIFICATION forming part of Letters Patent No. 525,765, dated September 11, 1894.

Application filed July 22, 1893. Serial No. 481,219. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK FRANK KANNE, a citizen of the United States, residing at Waterville, in the county of Le Sueur and State of Minnesota, have invented certain new and useful Improvements in Grain-Meters; 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.

My invention relates to an improvement in grain meters,—the object of the invention being to produce a simple apparatus for measuring grain and to construct the same in such manner that the weight of the grain in one receptacle will serve to release another or measuring receptacle and permit the latter to discharge its contents.

A further object is to produce simple and efficient means whereby the weight of grain in one receptacle will serve to operate a trip to release another or measuring receptacle and permit the latter to discharge its contents, the receptacles and tripping mechanism being so constructed and arranged that the tripping mechanism will, at all times, be ready to lock the measuring receptacle whether the other receptacle shall have moved back to its normal position or not.

A further object is to provide a grain meter having an upper and a lower receptacle, with tripping mechanism so constructed and arranged that the weight of the grain in one receptacle will serve to operate the tripping mechanism to release the other receptacle, and so that when the tripping mechanism is thus operated, it will be automatically released (after releasing the lower receptacle) and be ready to lock the lower receptacle at the end of the movement of the latter, whether the upper receptacle shall have moved back to its normal position or not.

A further object is to provide an oscillatory grain meter with an automatic, self-adjusting brake.

A further object is to produce a grain meter which shall be simple in construction, cheap to manufacture, sure in operation and effectual, in every respect, in the performance of its functions.

With these objects in view the invention consists in certain novel features of construction and combinations and arrangements of parts as hereinafter set forth and pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation illustrating my improved apparatus. Fig. 2 is a vertical sectional view. Fig. 3 is a detail view of the tripping mechanism. Figs. 4 and 5 are detail views. Figs. 6 to 14 are views of certain modifications.

A represents a metallic frame, comprising two uprights *a*, *a*, and a cross bar *b*, the lower ends of the uprights being secured to an outlet hopper *c*, the function of which will appear farther on in this description. An oscillatory measuring receptacle B is located between the uprights *a*, *a*, and the trunnions *d* of said receptacle are mounted in said uprights. Above the measuring receptacle, a smaller or tipping receptacle or hopper C is located, the trunnions *e* of said tipping receptacle or hopper being located at the lower end of the same and mounted in the uprights *a*, *a*.

The main or measuring receptacle B is divided into two compartments *f*, *f*, by means of a central fixed partition *f'*, and the compartments *f*, *f*, are adapted to alternately discharge their contents into the receptacle or hopper *c*, from which the grain passes to a bag or other receptacle. The lower end of each compartment *f* is provided with a door *g*, hinged at its upper edge to the receptacle B and adapted, when released, to swing down by its own gravity. When the receptacle B is in its normal position, one of the doors *g* is open so as to permit the discharge of the contents of the corresponding receptacle or compartment *f*, and the other door *g* will be retained closed by means of a spring arm *h*, secured to the hopper *c*, there being, of course, one of such arms for each door *g*. It is necessary, as will hereinafter appear, that the receptacle B should always make a complete movement, but it may sometimes occur that an obstacle will find its way between the free edge of one of the doors *g* and the abutment of the door which would prevent the receptacle B from making a complete movement if the arms *h* were rigid, but by making said arms of spring metal, it will be seen that the said receptacle will be permitted to make a complete movement and thus permit the

proper operation of the tripping mechanism presently to be described.

The upper or tipping receptacle C has its pivotal support at one end and at one edge, and the major portion of said receptacle is disposed at one side of the frame A, or, more properly speaking, forwardly from said frame, the lower end of said receptacle C which communicates with the receptacle B, being comparatively small and the upper end being considerably larger. A bracket i is secured to the receptacle C and is adapted to limit the movement thereof. A spring i' is secured at one end to one of the uprights a of the frame A, and at the other end engages one of a series of lugs or projections i^2 on the bracket i, the function of said spring being to return its receptacle C to its normal position after it shall have been tipped by the weight of grain therein.

To one of the uprights a of the frame A, an arm or segment j is pivotally connected, and provided with a single tooth j'. The lower edge of the arm or segment j is made with a series of perforations j^2, for the reception of a pin whereby to adjustably and pivotally attach to said segment, a depending latch bar k, preferably having a roller k' journaled at its lower end. The roller k' is adapted, when the apparatus is operated, to run on the upper edge of one of the sides of the receptacle B and enter one of two sockets or recesses l, l, said sockets and the edge of the side of the receptacle on which the roller runs being preferably faced with a metal plate k^3. A short arm m is pivoted at one end to the receptacle C and at the other end to the depending latch bar k. A spring n is coiled on a pin n' secured to the receptacle C, said spring bearing at one end against another pin or projection on the receptacle C and at the other end against the short arm m and serves to insure the engagement of the roller k' of the latch bar with the sockets or recesses l, l. An arm o is pivotally connected at one end to the receptacle C and is disposed practically parallel with one side thereof. The arm o is made with a flange o' adapted to embrace the arm or segment j, the tooth j' being adapted to be engaged by the end of said flange or the shoulder produced thereby. If desired, instead of providing the upper edge of one of the sides of the receptacle B with the recesses l, l, a block p may be pivoted to the frame A and bar k and provided with an inclined edge p', and a recess p^2 for the reception of a roller or wheel p^3 carried by the receptacle B as shown in Fig. 6, in which case the roller k' at the end of the latch bar k will be dispensed with. Or, if preferred, a block p^7 having recesses p^4 at its ends may be secured to the side of the receptacle B, as shown in Fig. 14—in which case I prefer to provide the roller in the end of the latch bar.

Instead of maintaining the roller in the end of the bar k, the bar m, may be extended forwardly and downwardly and the roller k' mounted in the end of it, as shown in Fig. 8. When the receptacle B is made single instead of double, the block may be made arrow shaped as shown at p^6 in Fig. 11.

Instead of making the segment j with a concentrically curved edge, the edge of said segment may be made partly straight and partly curved as shown at j^3 in Fig. 9, or it may have its upper edge inclined in two directions as shown at j^4 in Fig. 10.

The upper edge of the partition is provided with a strip q of flexible material, so that when the receptacle B oscillates, a close joint will be maintained between the two receptacles without danger of binding.

Secured to one side of the outlet hopper or spout c are two brackets r, set slightly at an angle and adapted to receive and support a T-shaped bracket r', one of the laterally projecting arms of which is made with a hook r^2. Two plates s, s, are secured to the bottom of the outlet hopper or spout c and project from the end thereof,—said plates and the T-shaped arm constituting a simple and efficient bag holder. The long arm of the T-shaped bracket is curved and the bracket is adapted to be adjusted to accommodate bags of different sizes. The long arm of the bracket being curved the weight of the bag will serve to hold it tight in its supporting brackets.

In large grain meters of the class to which my invention relates, when the oscillatory receptacle moves from one position to the other, the weight of its contents will tend to cause it to move very quickly and often too quickly, resulting in unduly jarring the apparatus and injury to some of the parts. And again, with heavy grain the receptacle will move quicker and the jar will be greater than with light grain. To remedy this objection I provide a self adjusting brake which will serve to ease the movement of the receptacle and prevent injury thereto and which will adjust itself to heavy or light grain.

I prefer to make the bearings of the receptacle B loose or slightly elongated, and to one or both sides of the said receptacle, a block E is secured or made integral therewith. The under face of the block E is curved as at s' and receives a pin s^2 projecting from the upright a of the frame A. Thus it will be seen that as the bearing of the receptacle B is somewhat enlarged or elongated, the weight, or at least a greater portion thereof, will come upon the pin s^2 and block E, so that when the receptacle oscillates, the block will slide upon the pin s^2 and retard the motion of the receptacle. It is evident that with heavy grain the friction between the block and pin will be greater than if light grain is being measured. The friction of the brake produced by said pin and block will be gaged by the weight of the receptacle B and its contents and is self adjusting as the difference in the friction between said parts varies with

the difference of weight of the grain being measured.

In large meters where the brakes are placed at each side of the receptacle B, the latter need not be pivoted, but guides *u* will be employed as shown in Fig. 13.

Instead of arranging the stop and spring for the upper receptacle as above described, a plate *v* having upturned ends *v'*, may be secured to the top of the receptacle C and made to engage the top cross bar of the frame A. See Fig. 12. In this form of the invention a plate v^3 is secured to the side of the receptacle C for the engagement of the spring *i'*.

The operation of my improved meter is as follows: Assuming that one of the compartments *f* has been emptied, with the parts in the positions shown in Fig. 1, grain is entering the other compartment *f* from the upper receptacle C. When said receptacle C shall have become filled it will tip by its own weight, carrying the pivoted arm *o* with it. The flange or shoulder on said pivoted arm will engage the tooth *j'* on the segment *j*, causing said segment to turn and raise the latch bar *k* sufficiently to release the receptacle B, after which and before the receptacle C returns to its normal position carrying the arm *o* forward away from the tooth *j'*, tooth *j'* will ride past the shoulder *o'* and release the segment and latch bar so that the latter will be in position to lock the receptacle B when the latter reaches the end of its movement. When the receptacle B shall have shifted its position, the door at the lower end of the filled compartment *f* will be opened by its own gravity and by the weight of the grain upon it. The grain from the receptacle C will now flow into the other receptacle, which has been moved directly under it and when the grain which had accumulated in the upper receptacle runs out, said receptacle will be returned to its normal position by means of the spring *i'*.

In order to render the receptacle B capable of measuring different amounts of grain, within each compartment *f*, an adjustable partition or false side *t*, is located, each partition *t* being provided at its edges with slotted plates u^2 adapted to lie parallel with the diametrically opposite walls of the receptacle, and pins or screws secured to the walls of the receptacle project through the elongated slots *u'* of said plates.

My improvements are very simple in construction, cheap to manufacture and effectual in the performance of their functions.

Various slight changes might be made in the details of construction of my invention without departing from the spirit thereof or limiting its scope and hence I do not wish to limit myself to the precise details of construction herein set forth; but,

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

1. In a grain meter, the combination with an oscillatory receptacle having two compartments, and a door at the lower end of each compartment, of a pivotally supported upper receptacle adapted to be tipped by the weight of grain therein, means for returning said upper receptacle and latch mechanism for the main receptacle adapted to be actuated by the upper receptacle, said latch mechanism being so constructed and arranged as to automatically release the main receptacle and automatically release itself before the return of the upper receptacle, substantially as set forth.

2. In a grain meter, the combination with a frame, and a main receptacle pivotally mounted therein, of an upper pivoted receptacle adapted to be tipped by the weight of the grain therein, a segment pivoted to said frame, a latch bar pivoted to said segment and adapted to engage the main receptacle, and an arm carried by the upper receptacle and adapted to engage said segment and raise the latch bar and release said segment and latch bar before the upper receptacle returns to its normal position and means for returning said upper receptacle to its normal position, substantially as set forth.

3. In a grain meter, the combination with a frame and a main receptacle pivotally supported therein, of a segment pivoted to said frame, a latch bar pivoted to the segment and adapted to engage the main receptacle, an arm pivotally connected at one end to the upper receptacle and at the other end to the latch bar, a spring carried by the upper receptacle and bearing on said arm whereby to insure the engagement of the latch bar with the main receptacle, and an arm carried by the upper receptacle and adapted to engage said segment to release the latch bar from the main receptacle, said arm being so arranged as to release said segment and latch bar before the upper receptacle returns to its normal position, and means for returning said upper receptacle to its normal position, substantially as set forth.

4. In a grain meter, the combination with a frame, and two receptacles pivotally supported in said frame, one receptacle having a recessed upper edge, of a pivoted segment constructed and adapted to be operated by the upper receptacle when the latter tilts, and a latch bar pivoted to the segment and adapted to engage the recessed upper edge of the lower receptacle, substantially as set forth.

5. In a grain meter, the combination with a frame, and two receptacles pivotally supported thereon, of a segment pivoted to the frame, a latch connected with the segment and adapted to engage the lower receptacle and lock it, an arm pivoted to the receptacle for operating the segment and a spring actuated arm connected with one of the receptacles and with the latch, substantially as set forth.

6. In a grain meter, the combination with a frame, and a main receptacle pivotally sup-

ported therein, of an upper pivoted receptacle, a segment pivoted to said frame, a tooth projecting from said segment, a latch bar pivoted to said segment and adapted to engage the main receptacle, and an arm carried by the upper receptacle and adapted to engage said tooth to raise the latch bar and release it before the upper receptacle assumes its normal position and means for returning said upper receptacle to its normal position, substantially as set forth.

7. In a grain meter, the combination with a frame having a pin or projection extending inwardly therefrom, of a receptacle pivotally supported on the frame and capable of slight vertical movement relative thereto, and a brake secured to the receptacle and having an edge curved substantially concentric with the pivot and adapted to turn on the pin or projection on the frame, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

FREDERICK FRANK KANNE.

Witnesses:
A. J. KANNE,
T. L. EVERETT.