

(No Model.)

E. W. FLAGG.
AUTOMATIC GRAIN MEASURER.

No. 504,155.

Patented Aug. 29, 1893.

Fig. 1.

Fig. 2.

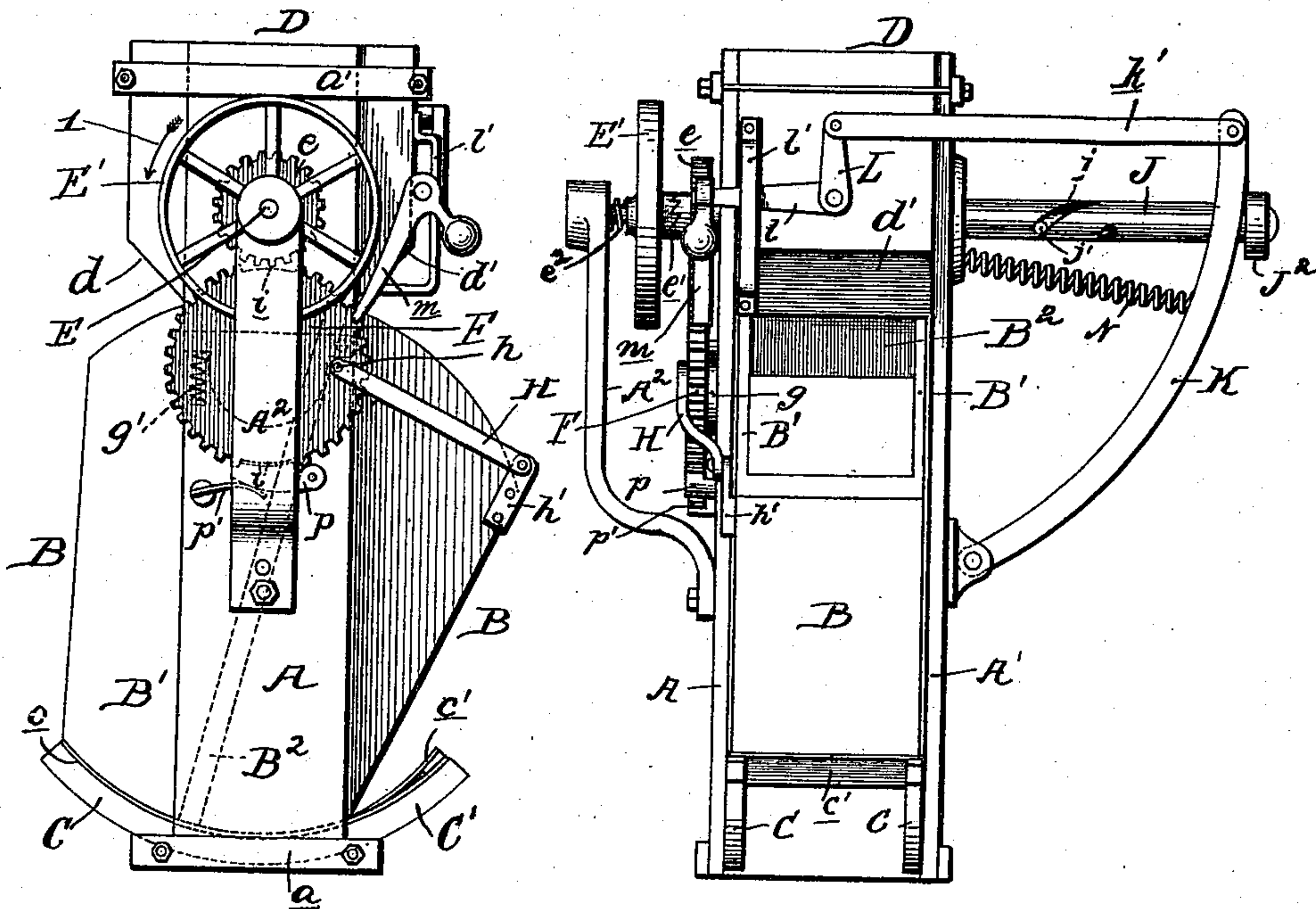


Fig. 3.

Fig. 4.

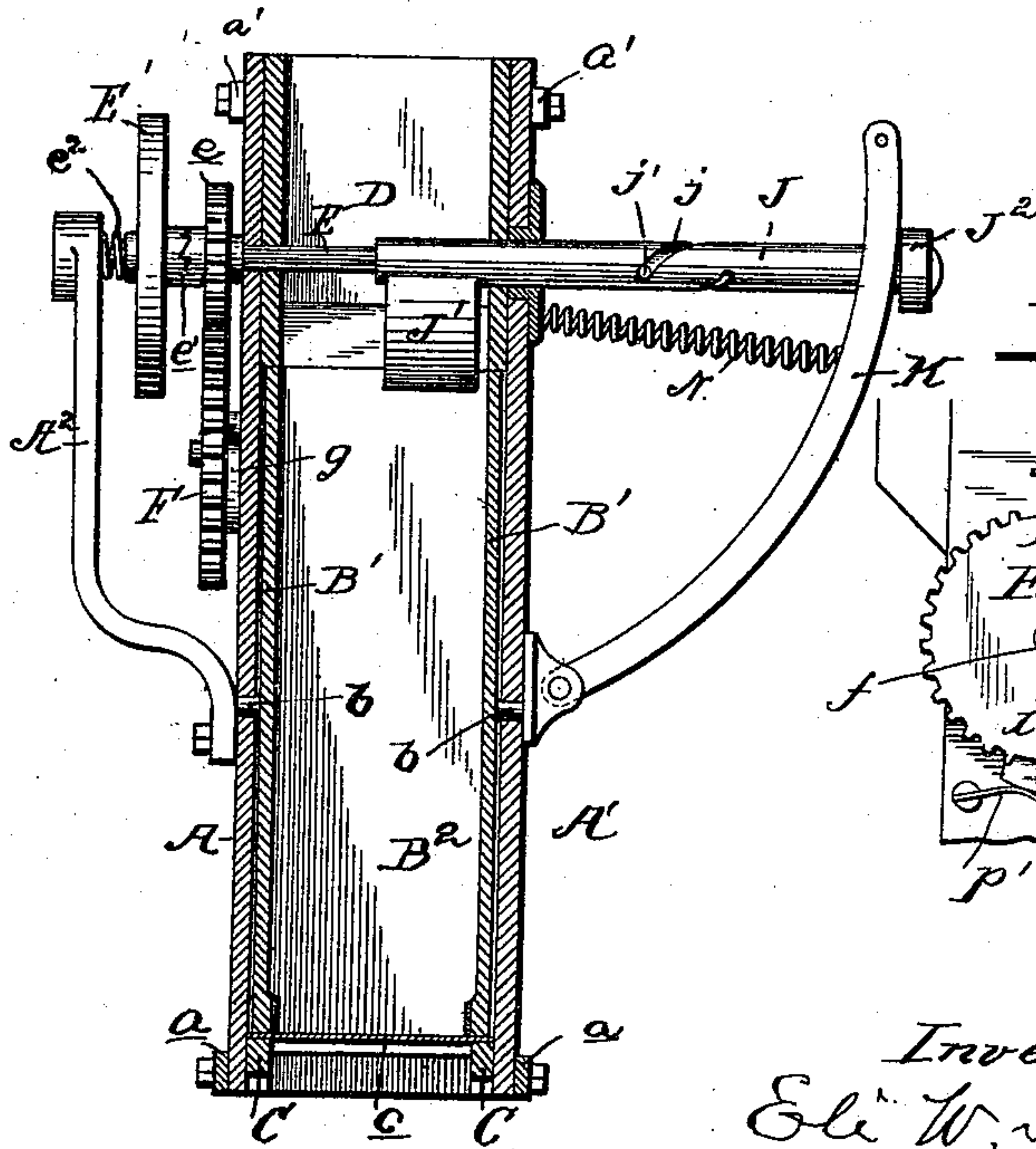
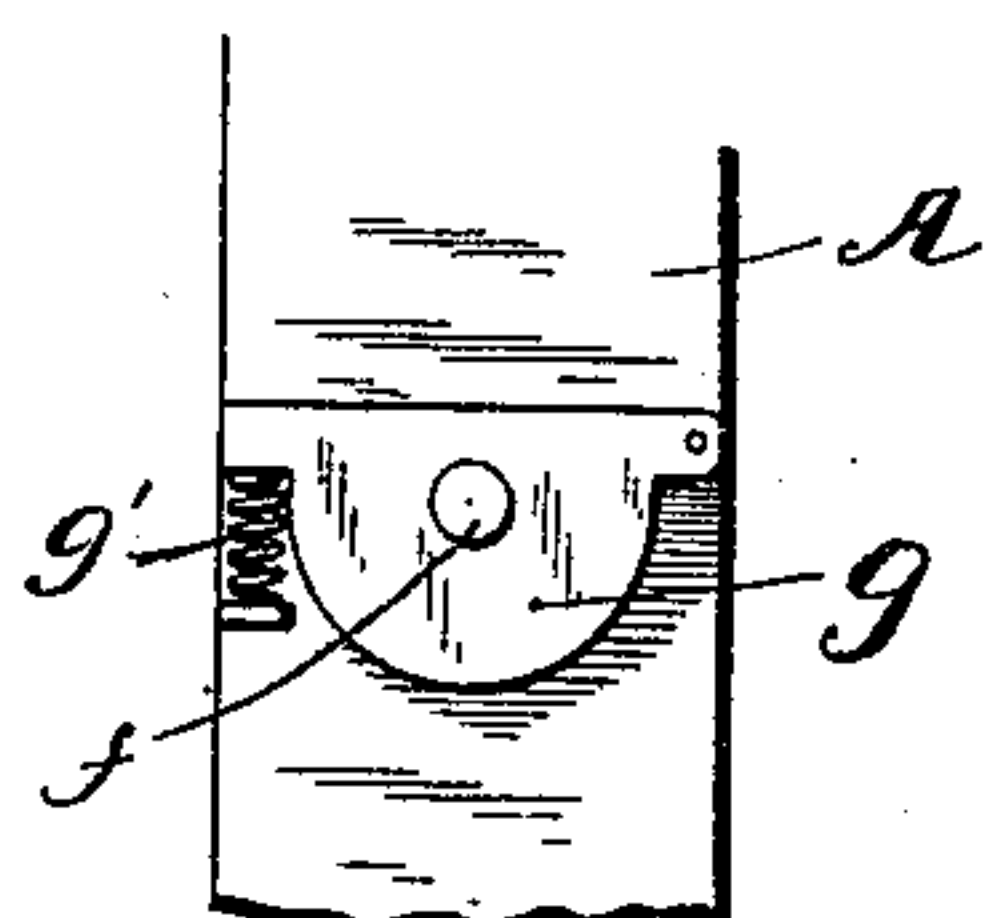
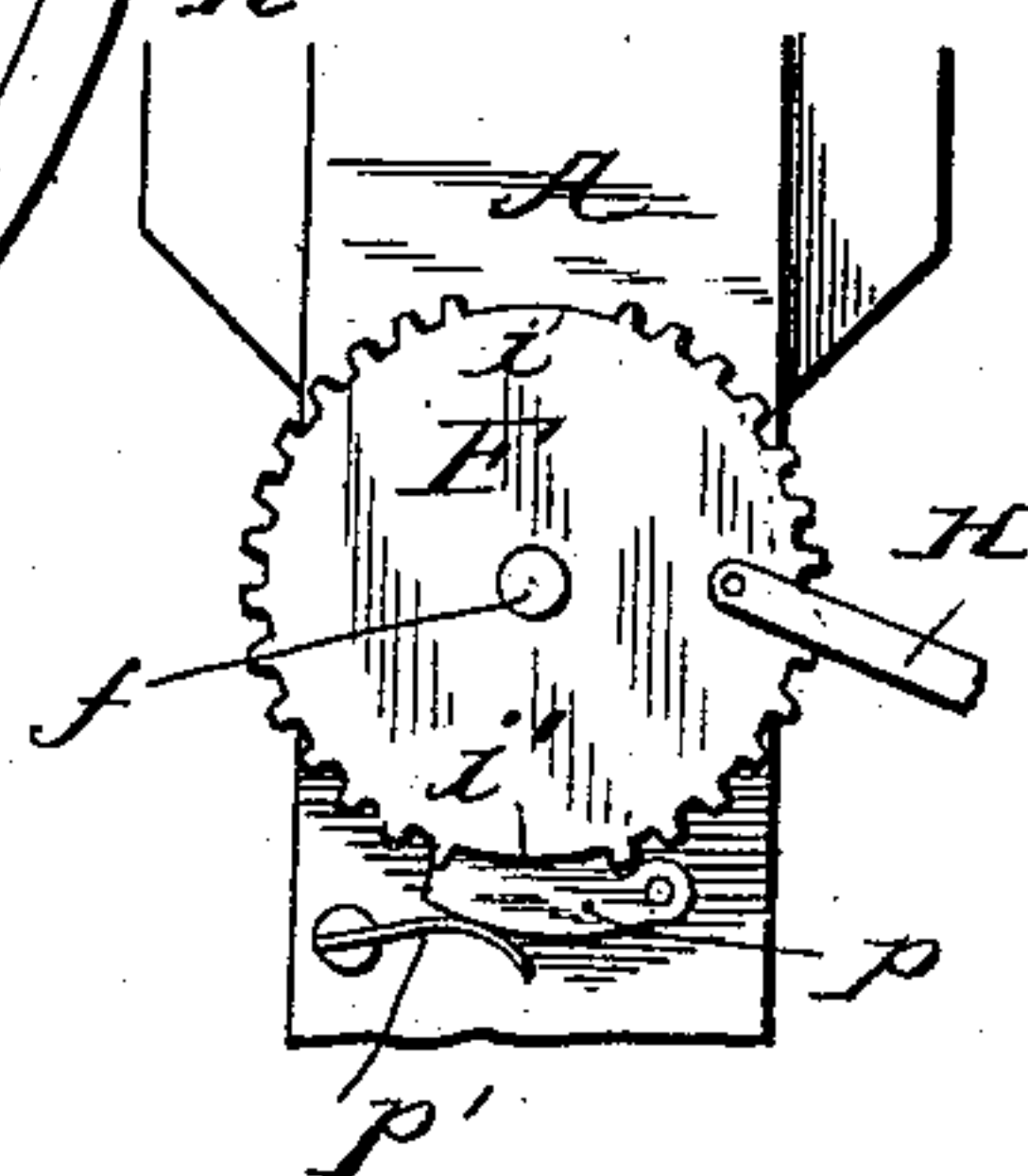


Fig. 5.



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ELI. W. FLAGG, OF BATTLE CREEK, MICHIGAN, ASSIGNOR TO THE NICHOLS & SHEPARD COMPANY, OF SAME PLACE.

AUTOMATIC GRAIN-MEASURER.

SPECIFICATION forming part of Letters Patent No. 504,155, dated August 29, 1893.

Application filed April 13, 1893. Serial No. 470,218. (No model.)

To all whom it may concern:

Be it known that I, ELI. W. FLAGG, a citizen of the United States, and a resident of Battle Creek, county of Calhoun, and State of Michigan, have invented a new and useful Improvement in Automatic Grain-Measurers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

My invention relates to that class of automatic grain measuring machines employing twin measuring buckets, arranged side by side and tilting to cause the buckets to alternately receive and discharge the grain, and, more particularly, to the means for setting in motion and stopping the mechanism for tilting the buckets and substituting the empty one for the full one as the buckets are filled, alternately, and will be understood from the following description and claims, reference being had to the accompanying drawings, in which—

Figure 1 is an end elevation of a grain measurer embracing my improvements; Fig. 2, a side elevation, and Fig. 3, a vertical section through the same. Fig. 4 is a detail view showing, in side elevation, the yielding plate supporting the mutilated gear, and Fig. 5 is a similar view of the mutilated gear and its yielding stop or pawl.

A and A' represent side uprights, secured at their lower and upper ends in open, rectangular frames α and α' .

B, indicates the double bucket, the sides B' of which are provided with trunnions b, b , journaled in the uprights A and arranged in the vertical plane of the central partition B², (shown in dotted lines in Fig. 1,) which divides the buckets into two equal compartments, forming twin buckets, open at top and bottom, and having the upper and lower edges of their sides rounded, each in an arc of a circle of which the pivots b, b , are the center.

The lower, open frame α , has wing extensions C, C', conforming in curvature to the lower end of the double bucket and covered each with an elastic plate c , or c' , which is made to press snugly against the end of the bucket resting over it and to form a close fitting bottom to said buckets or compart-

ments, as the latter swing to place, alternately, over one or the other of said plates, the full bucket emptying through the open frame α , between the wings, in a manner well understood.

D indicates the hopper, secured between the upper ends of the uprights A, and A', in the open frame α' , and having converging sides d, d' , at its lower end, contracting said end to about the width of one of the buckets, which receive the grain alternately therefrom.

The construction thus far described, is similar to that of other grain measuring machines now in use.

E, indicates a shaft extending transversely through the hopper D and mounted in bearings in the uprights A, A', and, at one end in a supplemental standard bracket A², secured to the upright A. The shaft E, has a spur pinion e fast on it adjacent to said upright A, and, between said pinion and the bracket A², is the driving band or gear wheel E', to which motion is imparted from any convenient power, ordinarily from the thrashing machine with which the measuring device is connected or from the motor actuating such thrasher, and, in a direction indicated by arrow 1. The wheel or pulley E', is loose on the shaft E, but the end of its hub and the adjacent end of the hub of pinion e , are provided with inclined-faced, intermeshing teeth e' , and the wheel E' is held in engagement with the pinion e , which is fast on the shaft, by means of a spring e^2 , interposed between the bracket A², and the wheel E'; this arrangement insuring the rotation of the shaft e and the proper action of the mechanism operated therefrom, when the wheel E', is rotated in the direction indicated, but permitting said wheel to back out of engagement with the pinion e and its shaft and thereby preventing breakage or injury to the mechanism, when from any cause, the wheel E' is made to revolve in the wrong direction, as for instance, through inadvertence, not reversing the belt, in transferring the measurer from one side of the thrashing machine to the other.

F indicates a mutilated spur gear, mounted loosely on a stud shaft f on a plate g , pivoted

at one side to the upright A, and upheld at its opposite side or end by a spring g' , which holds the shaft f and gear F, normally in position to engage the pinion e . The gear wheel F has a crank pin h on its outer face from which a pitman H, extends to a pin on a bracket h' , on the side of the bucket, as shown, and, by means of which the bucket is tilted from side to side, for bringing the twin compartments alternately under the hopper or feed spout, when the gear wheel F is rotated. The gear F is mutilated or has teeth removed at two points i and i' , diametrically opposite, and has between said points a number of teeth sufficient to give nearly a half revolution to the crank wheel F, and so to vibrate the bucket from one side to the other, when, the teeth of the pinion falling into the blank space i or i' , the wheel F and the bucket connected with it, are allowed to rest until the compartment underlying the hopper is filled, when the gear F is again thrown into mesh with the pinion and operated to tilt the bucket to the opposite side.

The means employed for throwing the gear wheel F into mesh with the pinion e , and thereby tilting the bucket to bring the compartments alternately under the hopper, are as follows:—On the shaft E, is mounted a sleeve J, one end of which extends within the hopper and is provided with a wing or paddle J' . This sleeve and paddle rotate, ordinarily, with the shaft E, but the sleeve is provided outside the hopper, with a spiral slot j , into which a pin j' on the shaft E enters, and which when the bucket is full and the grain stops the rotation of the paddle, forces the sleeve endwise on its shaft. The outer end of the sleeve carries a collar J^2 , the inner face of which rests against a curved arm or lever K, pivoted at its lower end to the upright A'. The upper end of this lever has a rod k' pivoted to it, the opposite end of which rod is connected with the upright arm of a bell-crank lever L, pivoted on the side of the hopper. The horizontal arm l of this lever L passes through a guiding loop l' , and has a weighted pawl m , pivoted on its end, said pawl engaging the teeth of the gear wheel F, on the descending side thereof. As the sleeve J, is forced inward by the stopping of its rotation as described, the arm K, is also carried inward and through the rod k' , vibrates the bell-crank lever L, forcing the arm l downward and with it the pawl, which carries with it the mutilated gear F until the blank i or i' therein passes the pinion e , and the gear F is thrown into mesh with said pinion, which through the connection described vibrates the bucket, bringing the empty compartment under the hopper and removing the full one, to discharge its load. A spring N serves to retract or throw outward the arm K and sleeve J with its paddle, as soon as the obstruction to the rotation of the latter is withdrawn. To prevent the wheel F from being carried past the blank i or i' , by its momentum and also,

to prevent its rebound, a dog p is arranged to enter the lower blank, between the teeth as shown in Fig. 1, said dog being pivoted at one end to the upright A, and upheld and forced into engagement with the wheel by a light spring p' , the tension of which is readily overcome when the gear is acted upon by pawl m . By supporting the shaft of gear F in the yielding plate g , the gear can yield to prevent shock to or "riding" of its teeth on those of the pinion, in being thrown into engagement therewith.

Parts of the machine not specifically described may be constructed in any usual or preferred manner.

The operation of the device or machine as a whole, will be readily understood without further description.

Having now described my invention, I claim as new—

1. The combination in an automatic grain measurer of the twin buckets, the mutilated gear connected to said buckets for vibrating them, the shaft and pinion for actuating said gear, and the sleeve sliding on said shaft and connected to said mutilated gear for throwing the latter into mesh with the actuating pinion, substantially as described.
2. The combination with the tilting double bucket, of the mutilated gear connected to said bucket, the pinion fast on the driving shaft for actuating said gear, the driving wheel or band pulley loose on said shaft, said driving wheel and pinion having inclined-faced or ratchet teeth on their adjacent sides for engaging them, and the spring for holding them in engagement, substantially as described.
3. The mutilated gear and crank wheel for actuating the double bucket, the shaft E, with its pinion for actuating said gear wheel, and the sleeve provided with the wing or paddle and sliding on said shaft, in combination with the pawl engaging said gear and connected with and operated by said sleeve for throwing the gear into mesh with its actuating pinion, substantially as described.
4. The combination with the twin buckets and the mechanism for tilting the same to bring them alternately into position to receive the grain, of the sleeve on the actuating shaft provided with the paddle and sliding on said shaft, and the connection between said sleeve and the tilting mechanism for setting the latter in motion; substantially as described.
5. The combination with the bucket, of the mutilated gear and crank wheel for tilting said bucket, the pinion for actuating said gear, and the yielding support for the shaft of the mutilated gear, substantially as described.
6. The combination with the mutilated gear for tilting the double bucket, of the pinion for actuating said gear and the yielding dog or pawl engaging said mutilated gear for stopping the rotation thereof, and causing the buckets to alternately fill and discharge substantially as described.
7. The combination in a grain measuring

device, of the twin buckets, the mutilated gear connected to said buckets for operating them, the pinion on the driving shaft for actuating said gear, the pawl engaging said gear, and
5 the sleeve and paddle sliding on said shaft and connected to said pawl for operating it to throw said gear into engagement with its actuating pinion, substantially as described.

10 8. In an automatic grain measurer, the shaft projected within the grain spout or hopper, in combination with the sleeve on said shaft carrying a wing or paddle, said shaft and

sleeve being connected by a pin working in a spiral slot or groove, whereby an endwise movement is imparted to the sleeve when its
15 rotary movement is retarded or stopped, substantially as described.

In testimony whereof I have hereunto set my hand this 10th day of April, A. D. 1893.

ELI. W. FLAGG.

Witnesses:

W. R. WOODEN,
C. P. ALDRICH.