(No Model.)

# J. F. MILLIGAN.

## AUTOMATIC GRAIN SCALE.

No. 321,129. Patented June 30, 1885.

*Fig. 1.*

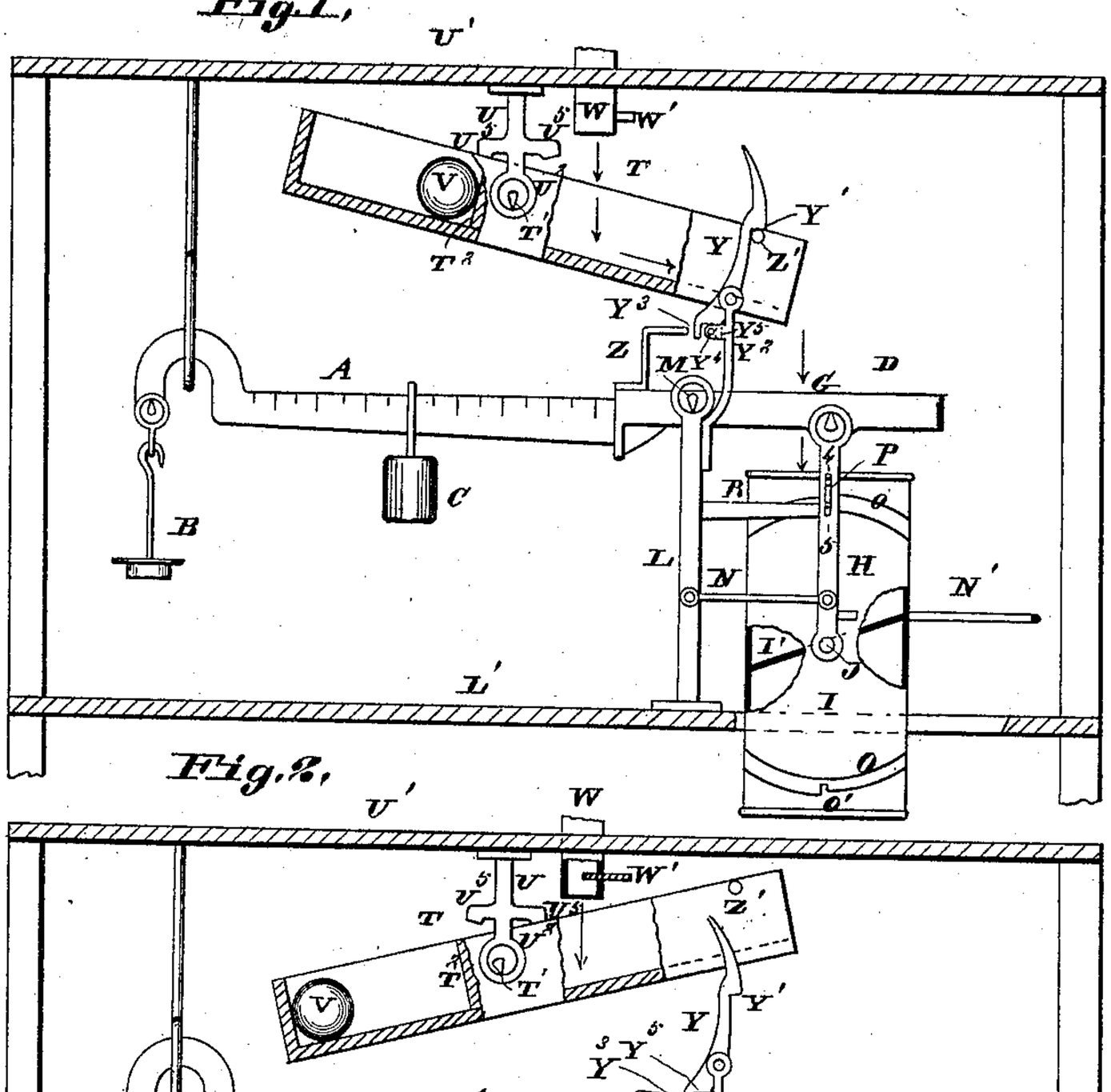


*Fig. 2.*

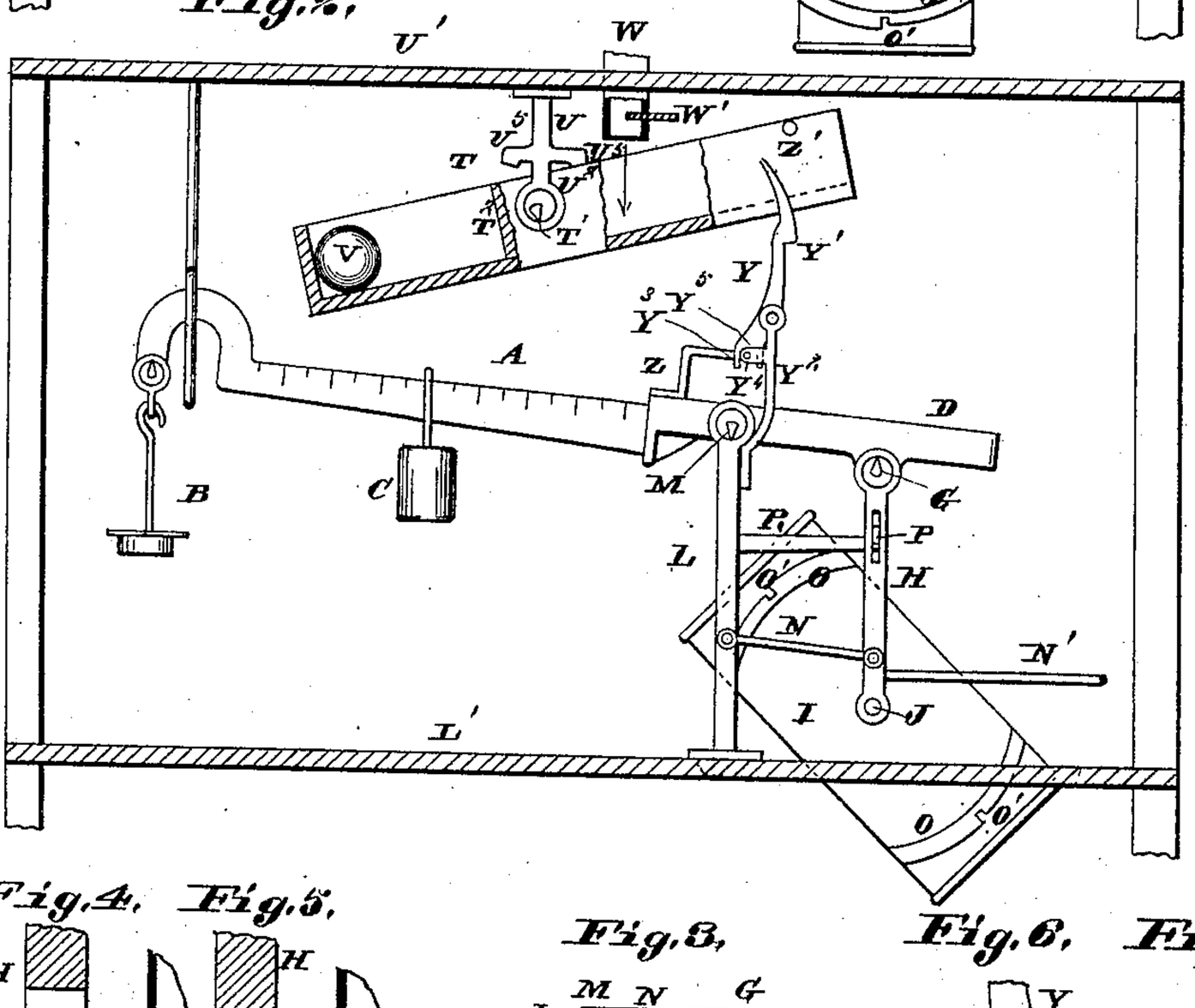


*Fig. 4.*




*Fig. 5.*




*Fig. 3.*




*Fig. 6.*




*Fig. 7.*




*Attest:*

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# UNITED STATES PATENT OFFICE.

JOHN F. MILLIGAN, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF TO GEORGE S. FOSTER, OF SAME PLACE.

## AUTOMATIC GRAIN-SCALE.

SPECIFICATION forming part of Letters Patent No. 321,129, dated June 30, 1885.

Application filed February 24, 1885. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN F. MILLIGAN, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Automatic Scales, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, and in which—

Figure 1 is an elevation, part in section, of my improved scale. Fig. 2 is a similar view showing the parts in another position from Fig. 1. Fig. 3 is a top view of the dumping-receptacle. Figs. 4 and 5 are sections taken on line 4 5, Fig. 1, the two figures showing the parts in different positions. Figs. 6 and 7 are enlarged views of the trip arrangement.

My invention relates to an improved automatic scale for weighing grain, &c.; and my invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Referring to the drawings, A represents the graduated beam of the scales provided with the weights B and C, as usual, and having an extension, D, provided with the knife-edges G, from which depend arms H, supporting a dumping-receptacle, I, which has gudgeons J, fitting in perforations in the lower ends of the arms. The beam is supported on standards, L, secured to a base, L′, to which it is connected by knife-edges M. The arms H are connected to the standards L by rods N and are strengthened by a yoke, N′. The dumping-receptacle has a bar, O, to receive the free end of a pawl, P, fitting in a slot in one of the arms H and hinged or pivoted at P′ to the arm. When the receptacle descends, as hereinafter described, the pawl is disengaged from the notches in the bars, by an arm, R, projecting from one of the standards L. The pawl has a projection, $P^2$, that comes against a pin, $P^3$, in the arm, (see Figs. 4 and 5,) when the pawl is in its lower position to hold it (the pawl) horizontal. The receptacle has an inclined central partition, I′. Above the beam is a tilting box, T, supported on hangers U depending from a plate or strip, U′, or it may be supported by other suitable means. The hangers have projections $U^5$ to limit the tilting of the box. The box has knife-edges T′, fitting in eyes $U^2$ on the hangers. It is divided by a partition, $T^2$, back of which it contains a ball, V, and the front part of which acts as a chute to transfer the grain from a supply-spout, W, to the receptacle I. (See arrows, Fig. 1.) The box is held in the position shown in Fig. 1 by a dog, Y, having a notch, Y′, above which it is curved backward and hinged or pivoted to a support, $Y^2$, secured to one of the standards L. Below the pivot the dog is bifurcated or forked, and between the fingers $Y^3$ fits a pin, $Y^4$, in lugs $Y^5$ on the support $Y^2$. Z represents a trip arm or finger secured to the beam A, and which comes against the lower end of the dog when the receptacle descends for the purpose of disengaging the notch Y′ of the dog from a pin, Z′, on the box T to permit the ball to move the box into the position shown in Fig. 2, while the receptacle is emptying, as described in the operation, which is as follows: The parts being in the position shown in Fig. 1, the grain or other material discharged from the spout W, which is provided with a valve, W′, falls into the box T and is conveyed to the receptacle I. As soon as the receptacle has received the number of pounds indicated by the weights on the beam, which it then overbalances, it descends, the outer end of the beam rising to the position shown in Fig. 2, and in doing so causes the free end of the pawl P to be raised from the notch O′ by the arm R, as described, and as soon as this is done the upper end of the receptacle begins to tip forward, owing to the inclined partition I′, which causes an excess of grain to be in the front part of the receptacle, as will be plainly seen. As the receptacle descends the arm Z on the beam comes against the lower end of the dog Y and disengages the notch Y′ from the pin Z′ on the box, which will at once be tilted into the position shown in Fig. 2 by the ball, which rolls down to the outer end of its compartment, as shown. This prevents a discharge of grain from the box, although it is passing continuously from the spout W.

In tipping over the receptacle dumps the

grain, and in doing this it makes a half-revolution, (when it is caught again by the pawl P,) it being double-ended, as explained, the partition I′ being in the center. As soon as the grain is discharged from the receptacle the weights on the beam raise the receptacle again to the position shown in Fig. 1, and after it returns to this position the flow of grain into the box overcomes the weight V and tilts the box to the position shown in Fig. 1, where it is held, until the receptacle descends again, by the dog engaging the pin Z′, as described; and the operation thus goes on continuously and automatically.

The device may be portable or fixed, as desired. The grain could be transferred from the spout to the receptacle by other suitable means than the tilting box described.

I claim as my invention—

1. In an automatic scale, in combination with the graduated beam and dumping-receptacle, the tilting box provided with a rolling weight and arranged to act as a chute when the receptacle is in the position to receive the material and to act as a receiver while the receptacle is dumping, substantially as shown and described.

2. In an automatic scale, the combination of the beam, dumping-receptacle, tilting box, and supply-spout, arranged and operating substantially as shown and described, for the purpose set forth.

3. In an automatic scale, the combination of the beam, dumping-receptacle, two-part tilting box, supply-spout, and rolling weight in one part of the box, arranged and operating substantially as shown and described, for the purpose set forth.

4. In an automatic scale, the combination of the beam, dumping-receptacle, two-part tilting box, one part acting as a chute and the other adapted to contain a weight, hangers or stands supporting the box and provided with projections to limit the tilting of the box, and supply-spout, arranged and operating substantially as shown and described, for the purpose set forth.

5. In an automatic scale, the combination of the beam, dumping-receptacle, weighted tilting box, dog secured to a support and adapted to engage a pin on the box, and the arm on the beam for coming in contact with the dog as the receptacle descends and disengages it from the pin on the box, substantially as shown and described, for the purpose set forth.

6. In an automatic scale, the combination of the beam, dumping-receptacle, weighted tilting box, dog secured to a support and adapted to engage a pin on the box, and bifurcated at its lower end, pin fitting between the fingers of the dog to limit its movement, and the arm on the beam for coming in contact with the dog as the receptacle descends and disengaging it from the pin on the box, substantially as shown and described, for the purpose set forth.

JOHN F. MILLIGAN.

Witnesses:
BENJN. A. KNIGHT,
JOSEPH WAHLE.