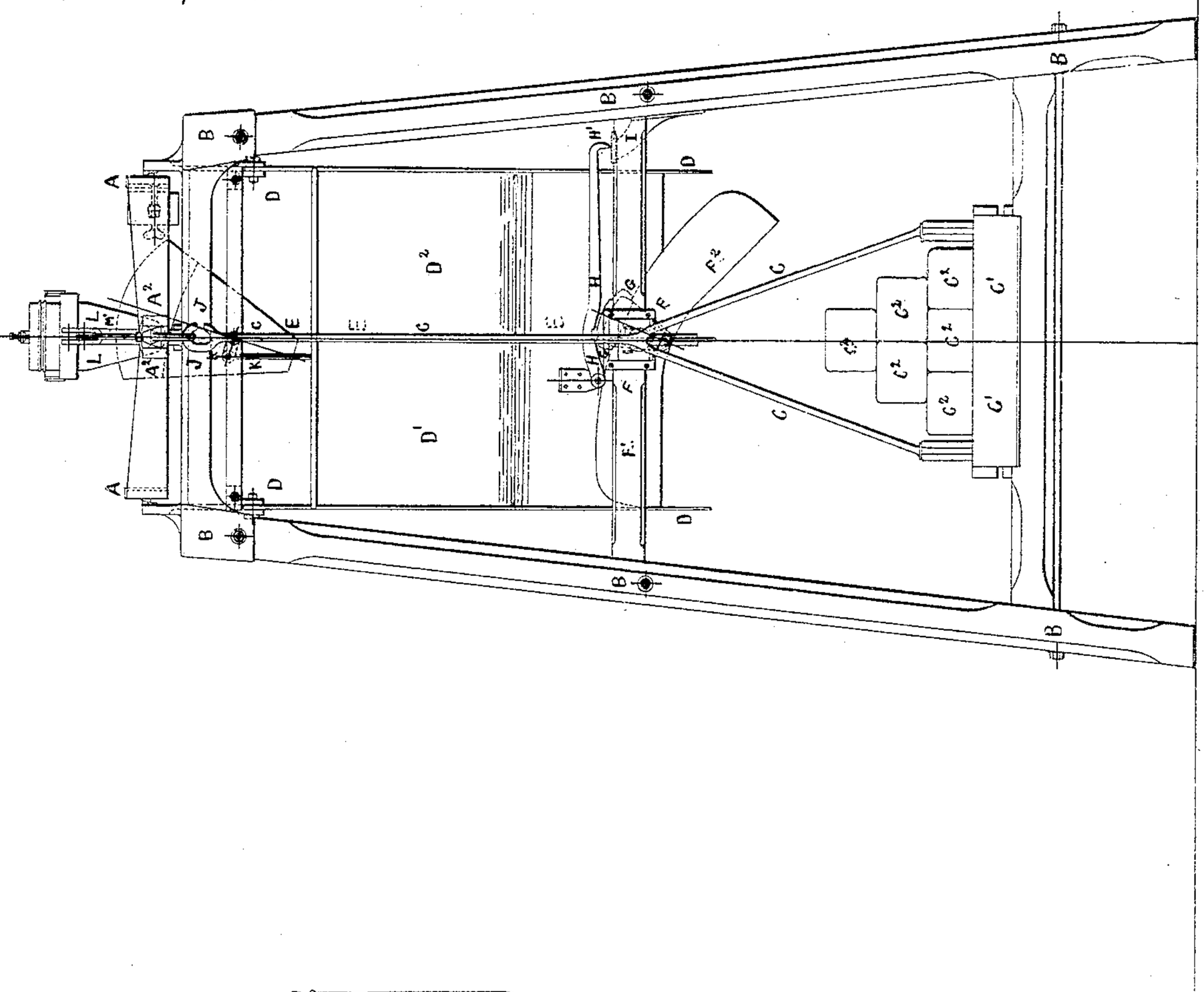
2 Sheets--Sheet 1.

HENRY POOLEY, T. ROBERTS, & E. O'BRIEN.

Improvement in Grain Meters.

No. 125,612. Patented April 9, 1872.

FIGURE 2.



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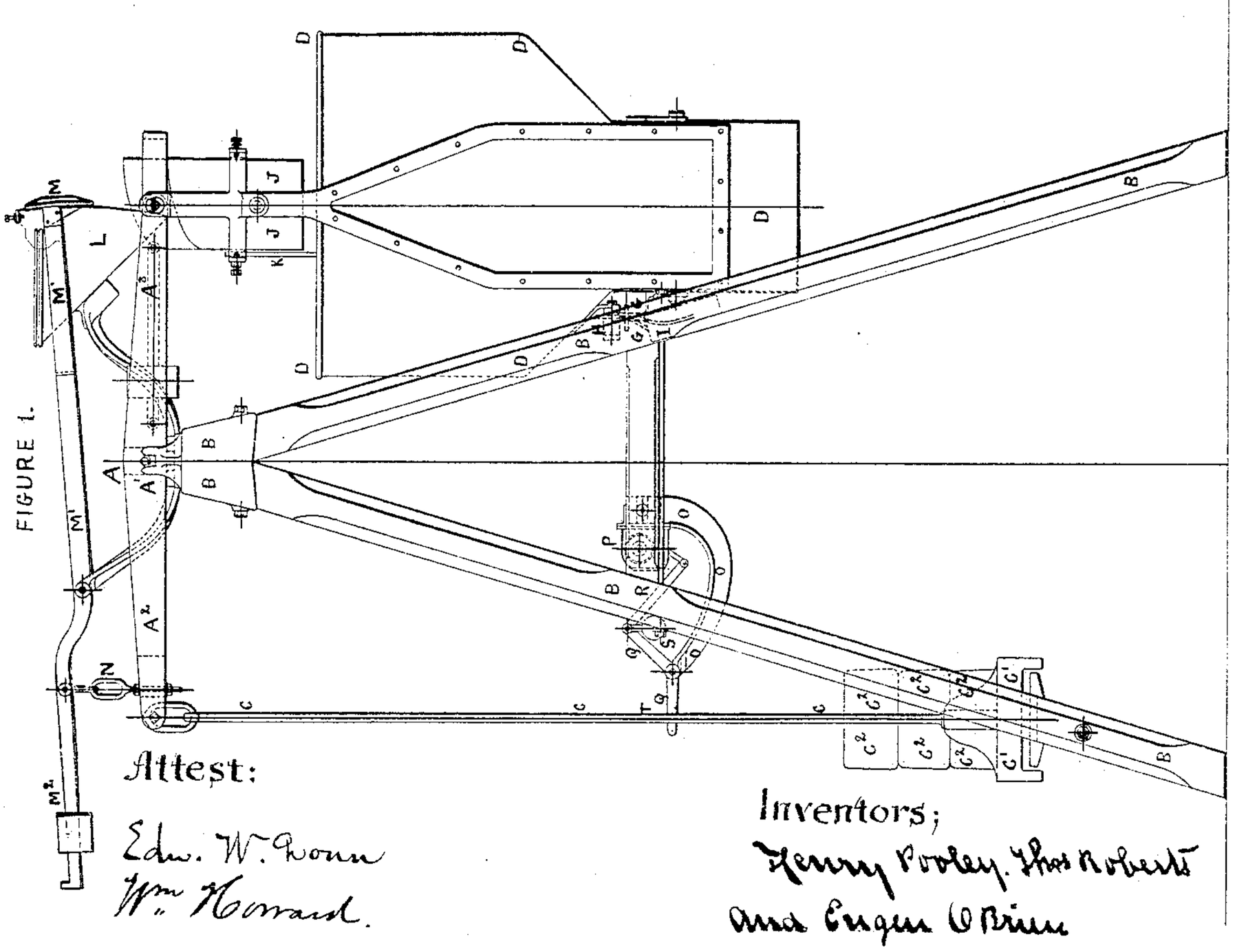

Attest:

Edw. W. Dunn

Wm Howard.

Inventors;

Henry Pooley. Thos Roberts

and Eugene O'Brien

per F. Z. Alexander Atty

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FIGURE 3.

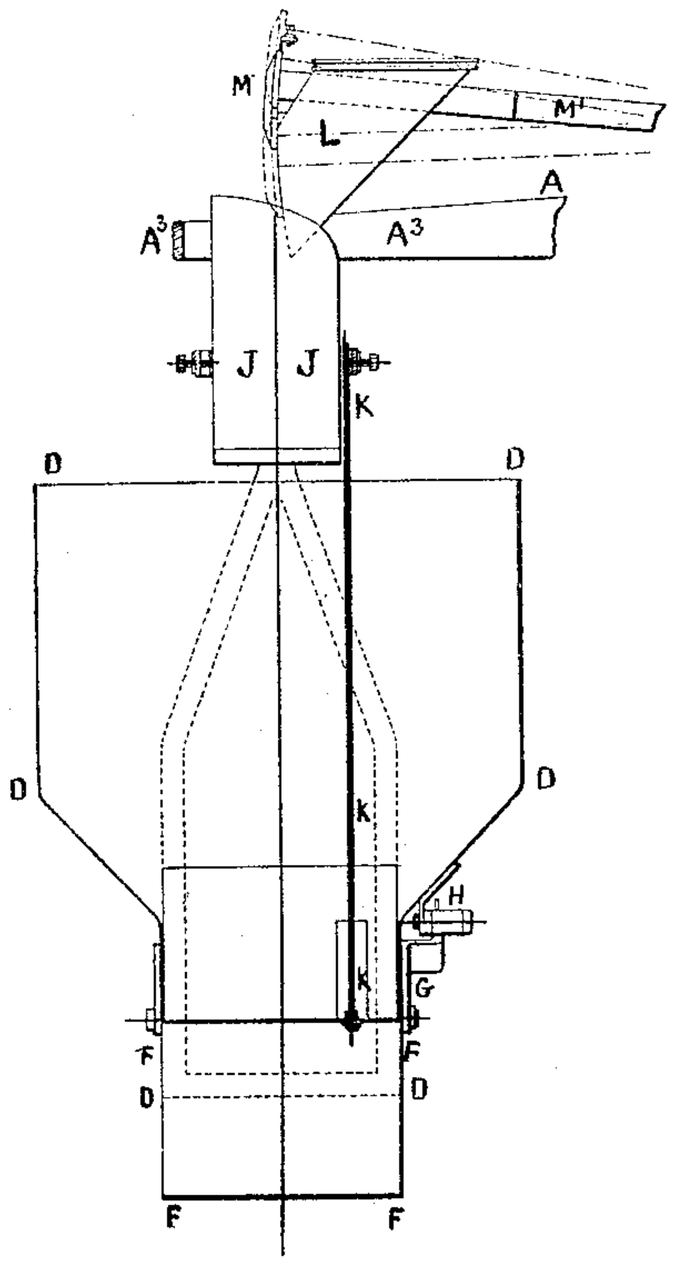
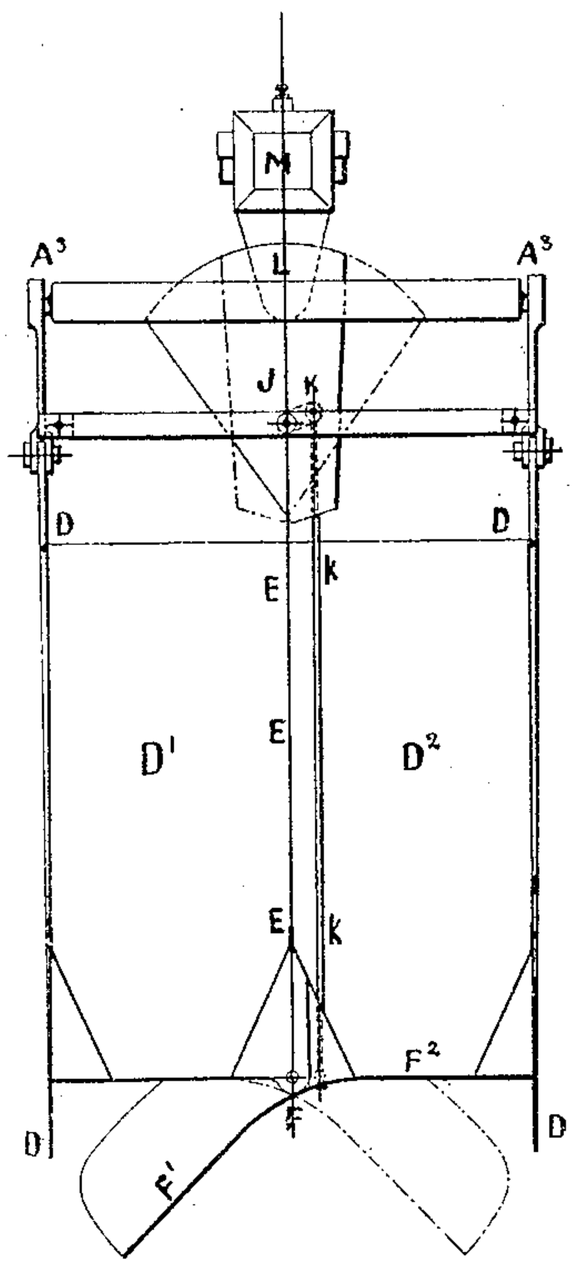


FIGURE 4.



Attest;

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Inventors:

Henry Pooley. Thos Roberts
Chas Eugene O'Brien
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125,612

UNITED STATES PATENT OFFICE.

HENRY POOLEY, THOMAS ROBERTS, AND EUGENE O'BRIEN, OF LIVERPOOL, ENGLAND, ASSIGNORS TO HENRY POOLEY & SON, OF SAME PLACE.

IMPROVEMENT IN GRAIN-METERS.

Specification forming part of Letters Patent No. 125,612, dated April 9, 1872.

SPECIFICATION.

Specification describing "an Improved Automatic Machine for Weighing and Registering Grain and other Substances," invented by HENRY POOLEY and THOMAS ROBERTS and EUGENE O'BRIEN, all of Liverpool, in the county of Lancaster, in that part of the United Kingdom of Great Britain and Ireland called England.

Our invention relates to a simple and improved self-regulating, feeding, discharging, and registering beam-scale for weighing grain and other substances; and consists of a balance-beam with arms of equal length, mounted on a frame or stand. To one end of the balance-beam is suspended a scale or tray for carrying ordinary standard weights, and on the other end of the balance-beam is suspended a box-scale, divided into two equal parts by a vertical diaphragm; and the bottom of each compartment is formed hopper-shaped, having three inclined and one vertical side, which latter is formed by the side of the diaphragm, which divides the box-scale into two equal chambers. The lower end of the box-scale is fitted with a double vibrating valve or bottom in one piece, jointed to, or having its axis in line with, the lower edge of the diaphragm. The chambers on each side of the diaphragm are filled and emptied alternately, as will be hereinafter described.

In order that this invention and its parts and gear may be more distinctly seen and understood, we refer to the accompanying two sheets of drawing, which illustrate and explain our invention, like letters and figures being used to denote similar parts throughout the various views.

Figure 1, Sheet 1, is a side elevation of a machine constructed according to our invention, and is drawn to a scale of three-quarters of an inch to the foot. Fig. 2, Sheet 1, is an end elevation of the same. Fig. 3, Sheet 2, is a sectional side elevation of the box-scale, drawn to the scale of three-quarters of an inch to the foot. Fig. 4, Sheet 2, is a sectional end elevation of the box-scale.

It will be seen upon reference that a machine constructed according to our invention consists of a balance beam or lever, A, which has its fulcrum A^1 at the center and arms of equal length, A^2 and A^3, and is mounted on a frame, B, by pivots or centers, at its fulcrum A^1. To one arm, A^2, of the lever is suspended a rod, C, carrying a tray or scale, C^1, and weights C^2. To the other arm A^3 of the balance-beam is suspended a box-scale, D, divided into two equal compartments, D^1 and D^2, by a vertical diaphragm, E, and the bottom of each compartment is formed hopper shaped. The lower end of the scale-box is fitted with a double vibrating valve or bottom, F, formed in one piece, and jointed to, and having its axis in line with, the diaphragm E, dividing the compartments D^1 and D^2. This bottom F is formed with two inclined planes, F^1 and F^2, on its upper surface, diverging from the center at such an angle that when one side, F^1, is brought to a horizontal position it closes or forms the bottom of the compartment D^1, and the other side, F^2, of the vibrating valve or bottom is deflected, so as to be clear of the compartment D^2, and allows the grain or other substance being weighed to escape from the compartment D^2, the same action taking place with the compartment D^1 when the vibrating valve or bottom moves and closes the compartment D^2. The sides F^1 and F^2 of the vibrating valve or bottom F, when in a horizontal position, are locked, when so placed, by a quadrant, G, which has cut on its upper surface two notches, and is held in position by a lever, H, which has a stop-piece taking into the notches on the quadrant G, and thus holding the vibrating valve or bottom in position, according to the compartment, D^1 or D^2, which is closed. The end of the lever H at H′ takes onto or rests on a bracket, I, fitted to one of the legs of the frame B. Suspended from the balance beam, and having its center directly over the diaphragm of the scale-box, is an oscillating or rocking spout, J, which is actuated by a rod and lever, K, attached to one side of the vibrating valve or bottom of the box-scale, and so arranged that the vibrating valve or bottom moves or cants the spout J from side to side, according to that compartment of the box-scale which is being fed. Over the oscillating or rocking spout J, and supported by means of a bracket from the frame B, is a stationary feed-chute L, having a variable and adjustable cut-off, M, worked by the lever M^1 and sliding

balance-weight M^2, and attached to the balance-beam A by means of the link N. O is a bracket, which supports P, a registering-dial, which is worked or actuated by the bell-crank lever Q, the link R, and the balance-weight S, the bell-crank lever being actuated by a catch on the suspending-rod C at T.

The automatic actions of the machine may be thus enumerated. In the case of weighing, for instance, centals of grain, the grain to be weighed is led by a spout or funnel into the stationary feed-chute L, and flows from thence into the oscillating or rocking spout J, which feeds into the compartment D^1. (See Fig. 2, Sheet 1.) When that compartment is filled with grain to the weight of, say, nine-tenths of the amount required, the weight of grain partially overcomes the weights on the scale or tray C^1. The balance-beam A is deflected and the lever at M^1 released, allowing the adjustable cut-off M to slide down the mouth of the feed-chute L and partially cut off or reduce the feed. When the whole weight or remaining tenth has been fed into the compartment D^1 the scale-box is further depressed, entirely overcoming the weights on the tray or scale C^1; and as it is depressed it brings the end of the lever H at H′ onto the bracket I. The lever is thus raised and releases the quadrant G attached to the vibrating valve or bottom, thus allowing the bottom F^1 to open and the grain to escape from the compartment D^1. Simultaneously the bottom F^1 works the rod and lever K, which cants the oscillating or rocking spout over, so that the feed is led into the compartment D^2. In the act of opening, the side F^1 of the bottom is depressed and the side F^2 of the bottom raised and brought into a horizontal position, closing the compartment D^2, and is then held in place by the lever H and the quadrant G as the box-scale rises, the same action taking place consecutively. As the box-scale rises and the tray or scale C^1, with its weights, comes down, the catch-piece at T acts on the lever Q, and by the connected gear each load is indicated on the counter P. The sliding balance-weight M^2 on the lever M^1 is used to adjust the cut-off M and regulate the number of loads per minute required to pass through the machine.

Having now described the nature and object of this our joint invention, we would have it understood that we make no special claim for continuously and automatically weighing grain, as there are several machines known which effect this object; but

What we claim as new, and desire to have secured to us by Letters Patent as joint inventors, is—

The double-chambered box-scale D, constructed as described, and suspended on a beam-balance, A, carrying counter-weights C^2; the double vibrating valve or bottom F, and the construction and arrangement of the self-acting releasing and locking gear, composed of the quadrant G and the lever H, with their connected parts, and the oscillating or rocking spout J, actuated, by the rod and lever K, for the purposes described and set forth; and the peculiar arrangement of the several self-acting parts used for regulating and cutting off the feed, consisting of the chute L, cut-off M, and lever M^1, and adjustable weight M^2, and the arrangement of hanging tray or scale C^1, suspended from the balance-beam A, so arranged that any standard weight, C^2, may be used; and the registering-gear, consisting of the counter P and its connections, actuated by the rod C; the whole constituting an automatic machine for weighing and registering grain and other substances, substantially in the manner described and set forth in the beforegoing specification.

In witness whereof we, the said HENRY POOLEY and THOMAS ROBERTS and EUGENE O'BRIEN, have hereunto set our hands and affixed our seals this seventh day of December, in the year of our Lord one thousand eight hundred and seventy-one.

HENRY POOLEY. [L. S.]
THOMAS ROBERTS. [L. S.]
EUGENE O'BRIEN. [L. S.]

Witnesses:
FREDERICK JOHN CHEESBROUGH,
JOHN REDMOND,
Both of 15 *Water street,*
Liverpool, England.