

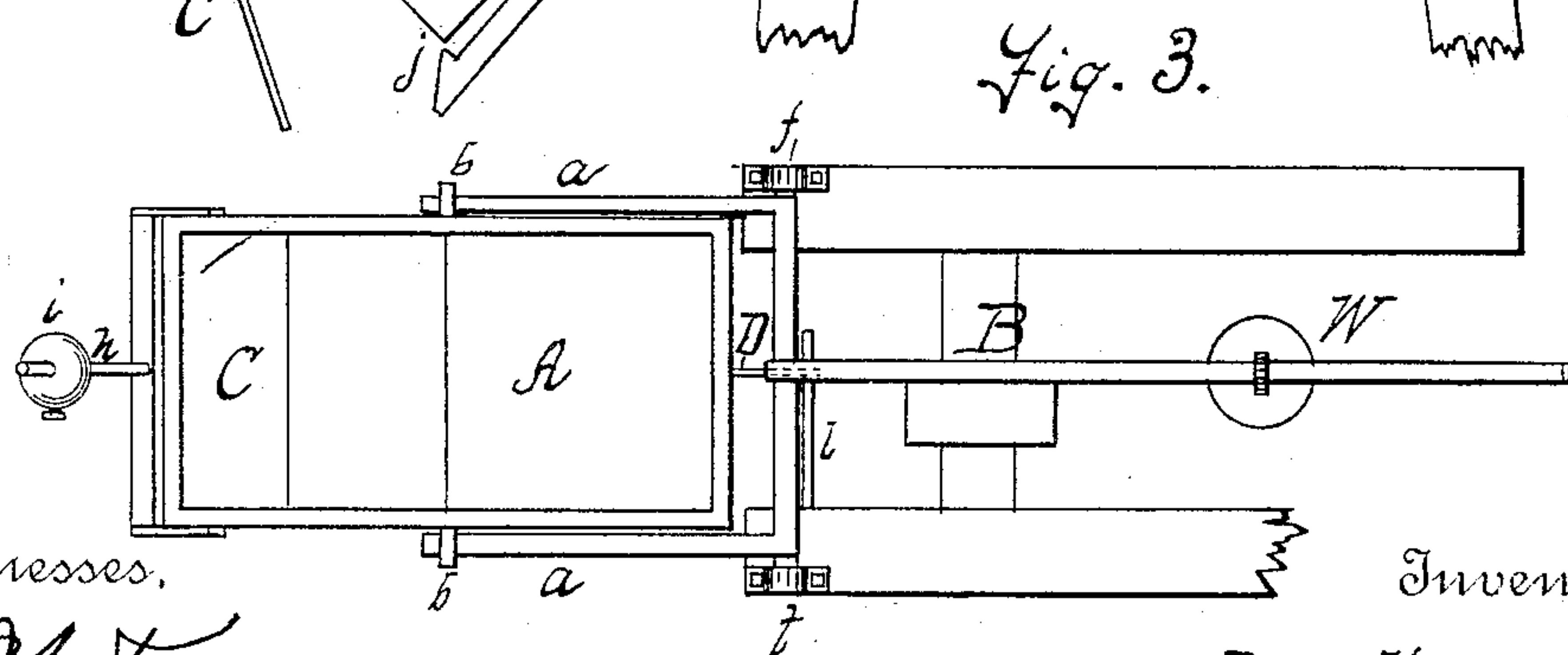
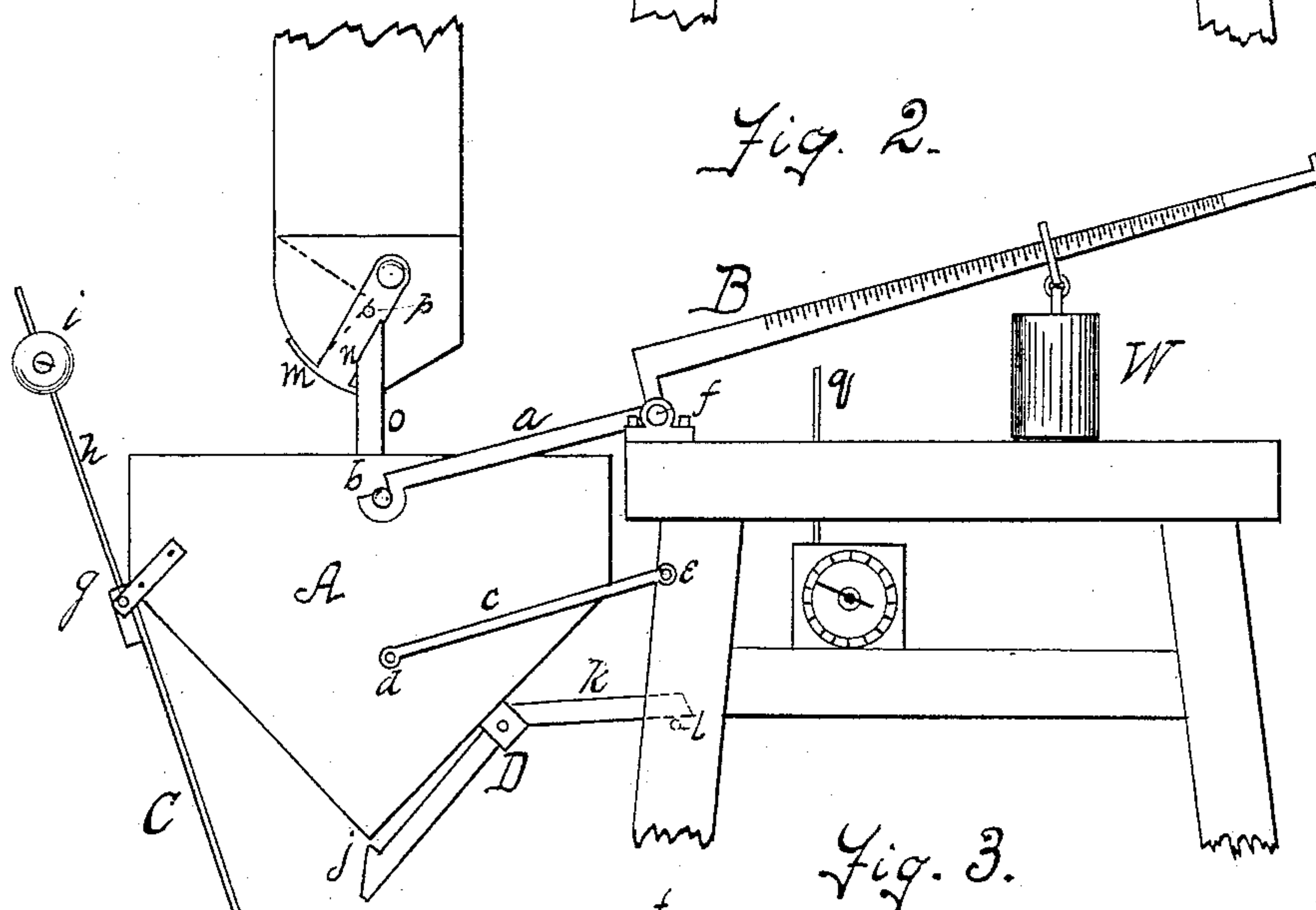
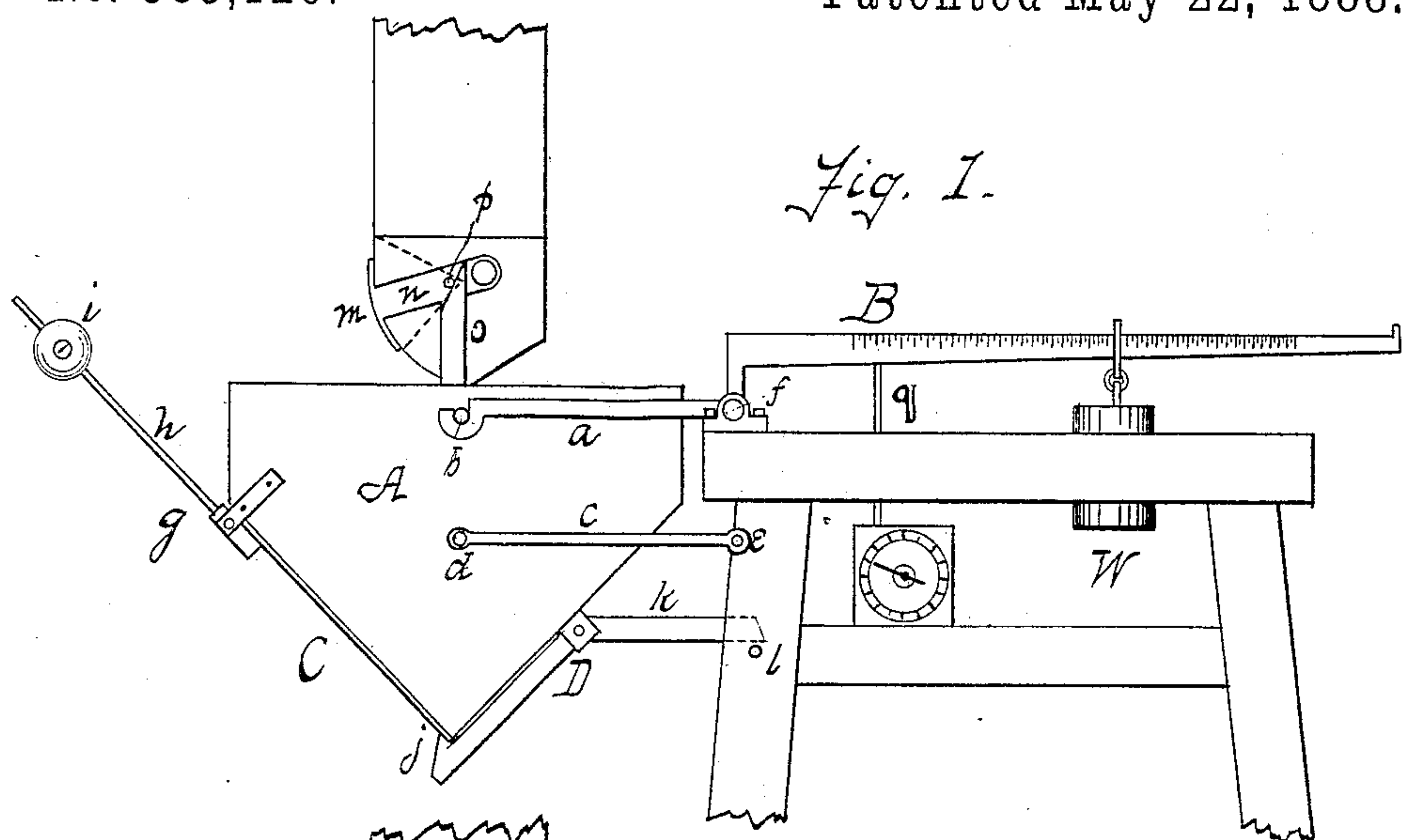
(No Model.)

J. HENRY.

AUTOMATIC GRAIN WEIGHER.

No. 383,126.

Patented May 22, 1888.



Witnesses.

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UNITED STATES PATENT OFFICE.

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TO JOHN GEORGE NEILSON AND WILLIAM T. SHEPARD, BOTH OF SAME
PLACE.

AUTOMATIC GRAIN-WEIGHER.

SPECIFICATION forming part of Letters Patent No. 383,126, dated May 22, 1888.

Application filed September 20, 1887. Serial No. 250,191. (No model.)

To all whom it may concern:

Be it known that I, JOHN HENRY, a citizen of the United States, residing at Ardoch, in the county of Walsh and Territory of Dakota, have invented certain new and useful Improvements in Automatic Grain-Weighers; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to apparatus for weighing grain in the course of its discharge from elevators or other receptacles; and it consists, in general, of a hopper-shaped receiver pivotally suspended between the two arms of a forked scale-beam, the receiver having a discharge-aperture normally closed by a hinged valve, actuated in opening by the weight of the contents of the receiver, and in closing by a counterbalance-weight, the said valve being retained in its closed position by a catch formed upon the end of a bell-crank lever pivotally mounted upon the receiver, which is automatically tripped to release the catch, and thus open the discharge aperture; also, in the means for automatically actuating the cut off of the supply-spout when it is desired to discontinue the supply of grain to the receiver.

The particular construction and arrangement of the various parts will be hereinafter particularly shown and described.

The invention is especially designed to be used in connection with the discharge-spout of an elevator, though it may be equally well used in any position where it is desired to automatically weigh grain in process of delivery from a spout or other means of conveyance. It is fully illustrated and described in the drawings, in which—

Figure 1 is a side view of the weighing apparatus in position for receiving the grain, and also showing its connection with the cut-off in the supply-spout and with the registering apparatus. Fig. 2 is a similar view showing the apparatus in position for discharging the contents of the receiver, and Fig. 3 is a top view of the same.

Like letters designate corresponding parts in all of the figures.

The receiver A is made substantially hopper-shaped in form, having two of its opposite sides vertical, and the other two sides sloped downwardly and inwardly and meeting each other at an angle, forming the bottom of the receiver V-shaped in cross-section. One of these sloping sides of the receiver is hinged at its upper edge to the adjacent parts of the receiver, so as to swing outwardly upon pressure from within, thus forming a discharge-aperture for the receiver and a valve for closing the same.

The receiver A is pivotally suspended between the two arms *a a* of a forked scale-beam, B, and balanced thereon by means of gudgeons *b b*, secured to the sides of the receiver. It may be still further supported from lateral movement, and thus retained always in a vertical position, by means of two supplementary arms, *c c*, parallel to the scale-beam and connected with the receiver and the frame-work of the apparatus by means of pivots or gudgeons *d e*, located vertically underneath the supporting-gudgeons *b b* of the receiver and the fulcrum *f* of the scale-beam, respectively.

The scale-beam is provided with the usual graduated scale and weight, and is so arranged in reference to its fulcrum that when the receiver is empty its weight shall be exactly balanced by the scale-weight at the zero-point of the scale. The fulcrum of the scale-beam forms the vertical support of the entire apparatus, and is so located that the receiver is just underneath the supply-spout from the elevator or other receptacle.

The hinged valve C is provided with a counter-balance, *g*, consisting of an arm, *h*, attached thereto, and provided with a weight, *i*, longitudinally adjustable along the arm. The counter-balance is so arranged as to close the valve C by its weight after the contents of the receiver are discharged.

To retain the valve C in position to close the discharge-aperture of the receiver, a catch, *j*, is formed on the end of a bell-crank lever, D, pivotally attached to the fixed side of the receiver opposite to the valve C, the outer arm, *k*, of which is constructed of sufficient

weight to act as a counter-balance to the other end of the lever in order to automatically close the end of the catch *j*, which is opened by the valve *C* striking its sloping outer edge and being carried along by the action of the counter-balance *g* until fully engaged and locked in position by the weight of the outer arm, *k*.

In order to release the catch to allow the valve to open for the purpose of discharging the contents of the receiver, a stop, *l*, is attached to the frame-work in such a position as to trip the lever *D*, when the receiver descends, thus opening the catch, releasing the valve, which is opened by the pressure of the grain in the receiver.

The operation of the mechanism as thus far described is as follows: The scale-weight being set at the required point—as, for instance, sixty-pounds—the grain is allowed to be discharged from the supply-spout into the receiver *A*. When a sufficient quantity of grain has entered the receiver to overbalance the scale-weight, in this instance sixty pounds, the scale-beam trips and the receiver descends. In its descent the lever *D* is tripped by its outer end, *k*, coming in contact with the stop *l*, the catch *j* is released from its hold upon the valve *C*, allowing the contents of the receiver to be discharged. The pressure on the inside of the valve being removed, it is returned to its former closed position by the counter-balance, is engaged by the catch *j*, actuated by the weight of the arm *k* of the lever *D*, while the scale-weight overbalancing the empty receiver restores the parts to their first position.

It is, however, necessary to provide means for cutting off the discharge-grain from the supply-spout when the required quantity of grain has entered the receiver and is about to be discharged therefrom. For this purpose the supply-spout may be provided with a cut-off of any approved form. I have shown a cut-off slide, *m*, attached to arms *n*, one on each side of the supply-spout, and pivoted to the spout at the ends of the arms, so as to allow the slide to swing over the mouth of the spout. The cut-off itself forms no part of my present invention. Attached to the receiver is an upwardly-extending tappet-arm, *o*, which is in position to engage with a pin or arm, *p*, attached to some convenient point upon one of the

arms *n* of the cut-off. The upward movement of the receiver after its contents are discharged causes this tappet *o* to touch the pin or arm *p* on the cut-off, raising the same and thereby raising the cut-off slide and opening the mouth of the supply-pipe. When the receiver descends, the pin is released from the tappet and the cut-off closes the mouth of the spout, preventing any discharge of grain until the empty receiver again ascends.

A register of any approved form may be placed upon the frame-work supporting the scale-beam in any place where it may be conveniently connected with the scale-beam. I have shown a pawl, *q*, attached to or in position to be moved by the beam, at a point between the fulcrum and the weight which engages with the register, so as to move the same with each return of the beam to its normal position after the contents of the receiver are discharged.

The entire construction of the above-described apparatus is exceedingly simple and inexpensive, is wholly automatic, and performs its required functions in the most efficient and satisfactory manner.

I claim as my invention—

In a grain-weigher, the forked scale-beam having fulcrum *f*, and weight *W*, the receiver pivotally suspended between the arms thereof and provided with a counterweighted hinged valve, *C*, closing the discharge-aperture of the receiver, the trip-lever *D*, pivotally mounted on the receiver, provided with catch *j* on one end, in position to engage with and retain the valve *C* when closed, and counterweighted opposite end, *k*, for closing said catch, stop *l*, mounted upon the frame-work in position to engage with end *k* of lever *D*, to release said catch, in combination with a self-closing cut-off on the supply-spout, and the tappet-arm *o* on the receiver, adapted to engage with pin *p* on said cut-off when the receiver is raised, and to release the same when the receiver is lowered, substantially as and for the purpose herein specified.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN HENRY.

Witnesses:

CORNELIUS S. SEE,
S. G. S. ROBERTS.