J. L. DUTTON, Sr.

Combined Hoisting and Weighing Apparatus.

No. 27,623. Patented March 27, 1860.

Fig: 1.

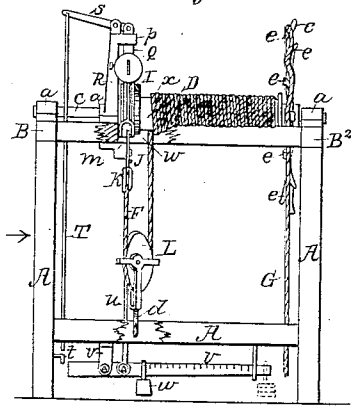

Fig: 2.

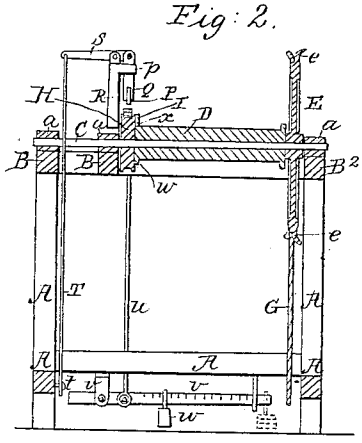

Fig: 3.

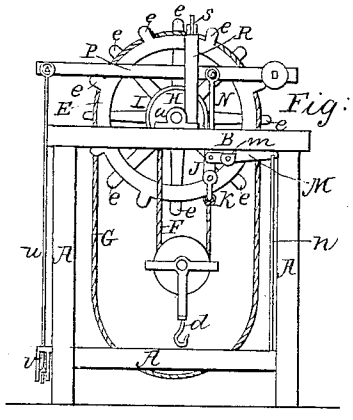

Fig: 4.

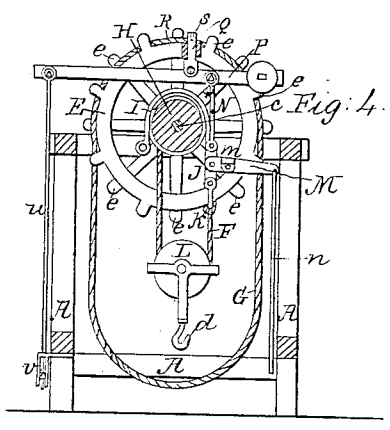

Fig: 5.

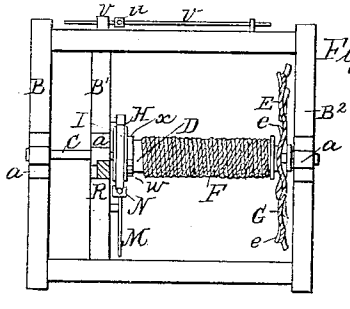

Fig: 6.

Witnesses.

Henry Howson

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UNITED STATES PATENT OFFICE.

JOSEPH L. DUTTON, SR., OF PHILADELPHIA, PENNSYLVANIA.

HOISTING AND WEIGHING MACHINE.

Specification of Letters Patent No. 27,623, dated March 27, 1860.

To all whom it may concern:

Be it known that I, JOSEPH L. DUTTON, Sr., of the city and county of Philadelphia and State of Pennsylvania, have invented a new and Improved Combined Hoisting and Weighing Apparatus, and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing and to the letters of reference marked thereon.

My invention consists in certain devices combined, arranged, and operating substantially in the manner described hereafter so as to form an instrument by which the hoisting of goods in stores, warehouses and other localities, and the weighing of the same, may be accomplished without the necessity of resorting to the usual process of removing the goods from a weighing machine to a hoisting machine or vice versa.

In order to enable others to make and use my invention I will now proceed to describe its construction and operation.

On reference to the accompanying drawing which forms a part of this specification, Figure 1, is a side view of my combined hoisting and weighing machine; Fig. 2, a sectional elevation of the same; Fig. 3, an end view looking in the direction of the arrow Fig. 1; Fig. 4, a transverse sectional elevation; Fig. 5, a ground plan, and Fig. 6, a detached view of part of the apparatus.

Similar letters refer to similar parts throughout the several views.

A A′ is a frame-work which in the present instance takes the place of the hatchway of a store or warehouse to which my apparatus is applied, B B′ and B² representing beams secured near the top of the hatchway, the said beams having suitable boxes *a a* in which turns a shaft C. To this shaft is secured the barrel D and a wheel E, the former for receiving the hoisting rope F, and the latter for receiving the operating rope, G.

On the periphery of the wheel E are a series of projections *e e* which are bent outward one projecting in a contrary direction to that of the adjacent projection, as best observed on reference to Fig. 5, so that the rope G at the point where it passes over the wheel will assume the waved or zigzag form represented, and tend to bear against the teeth in such a manner as to prevent the possibility of the rope slipping over the periphery of the wheel.

A flanged pulley H is hung loosely to the shaft C, and to this pulley is adapted brake strap I, one end of which is hinged to the side of the beam B′, the other end of the strap being jointed to the upper end of a link J, to the lower end of which is jointed an eye K for receiving the end of the hauling rope F the latter passing around the pulley L and upward to the barrel and the pulley being furnished with a hook *d* for receiving the load to be hoisted and weighed.

The short arm of the lever M, which has its fulcrum on a pin in a bracket *m* attached to the framework, is connected to the link J the end of the long arm of the lever being furnished with a chain or cord *n* the lower end of which is in a proper position to be handled by the same attendant who has to operate the rope G.

By the same joint which connects the link J to the brake strap I, the same link is connected to the lower end of the rod N, the upper end of which has an eye fitting over a sharp edged projection on the short arm of the weighted lever P the fulcrum of which is in the eye of the link *q* the latter sliding in the projecting portion *p* of the bracket or standard R which is secured to the framework.

The link Q is jointed to the end of the short arm of the lever S which has its fulcrum on the bracket R and the long arm of which is furnished with a cord or rod T the lower end of the latter having an eye adapted to a stationary pin *t* which is situated within a convenient distance to be readily reached by the operator of the rope G. The end of the long arm of the lever P is connected by a rod U to the graduated lever V which has its fulcrum in a permanent bracket *v* and which is furnished with an adjustable sliding weight *w* and at the end with a rod on which may be placed one or more weights after the manner of the steel yard of an ordinary weighing machine.

The shaft C is furnished with a ratchet wheel W at one end of the barrel D, the point of a spring pawl *x* jointed to the face of the brake wheel H being adapted to the teeth of this ratchet wheel, which together with the pawl is so arranged that the barrel cannot turn so as to lower the weight at-

tached to the hoisting rope without the brake wheel turning simultaneously with the barrel and so that the latter can be turned to hoist the weight without any turning of the brake wheel.

Operation: The pulley L with its hook *d* being lowered to the proper point for receiving the weight to be hoisted and the latter being properly connected to the hook, the attendant pulls at the rope G so as to turn the shaft C and with it the barrel D, thereby hoisting the weight. When the latter has been raised to the desired height the attendant may safely leave the operating rope G as the barrel cannot turn back owing to the brake strap I which is maintained in contact with the brake wheel H by the weight itself, the barrel not being able to turn without the brake wheel owing to the above mentioned ratchet wheel and spring pawl. When the weight has to be lowered the attendant pulls at the rope or cord *n* thereby slightly raising the link J and removing the brake strap I from contact with the brake wheel H, which, with the barrel, is enabled to turn by the action of the weight. When the latter has been lowered to the desired point the attendant lets go his hold of the cord *n* when the weight itself immediately brings the brake strap in contact with the brake wheel and thus stops the further descent of the weight.

It will be understood that during the above described operation the weighing portions of the apparatus remained undisturbed, for although the raising of the brake strap involves the necessity of raising the rod N connected to the weighing levers the eye on this rod is so large compared to the sharp pointed projection on the lever P over which the rod fits, that the slight movement required for raising the brake strap will not disturb the said lever.

When the weight attached to the hook *d* has to be weighed, the attendant pulls the rod or chain T and connects its eye to the stationary pin *t*. This movement of the rod causes the lever S to raise the sliding link Q and with it the lever P so as to bring the sharp edged projections, which form the connections of the weighing levers and rods as in ordinary weighing machines, to their proper bearings.

As the raising of the lever P involves the necessity of the removal of the brake strap from contact with the surface of the brake wheel the rope G must be held so as to prevent the turning of the barrel during the process of weighing.

The weight on the hook *d* must, through the link J and rod N, be communicated to the lever P and from thence through the rod U to the lever V which is so graduated that by adjusting the sliding weight *u* the exact weight of the load on the hook *d* is indicated. After this the end of the rod or chain T is detached from the pin *t*, thereby allowing the lever P to fall to its original position when the weighing apparatus is, as before, out of gear and remains undisturbed by any further hoisting and lowering operations, until its services for weighing the load are again required.

It will now be seen without further explanation that the above described apparatus composes in one instrument a complete hoisting and weighing machine which may be applied to warehouses, stores, and other buildings in which a machine for raising and lowering goods, and an apparatus for ascertaining the exact weight of the goods, is required. It will also be seen that the system of weighing levers and rods may be modified both in number and arrangement without departing from the main principles of my invention. In some cases, for instance, the graduated lever may be situated in the office, at a distance from the hoisting apparatus. In fact, the arrangement of weighing levers may be altered to suit the locality in which my invention is applied.

Without confining myself to the precise arrangement of levers and rods by which the weight exerted on the lever P is communicated to the graduated lever, I claim as my invention and desire to secure by Letters Patent—

1. The hoisting and lowering apparatus composed of the barrel D, the brake wheel H and brake strap I, the latter being connected to one end of the hoisting rope F and to the lever M or its equivalent in combination with the ratchet wheel W and spring pawl *x*, the whole being arranged and operating substantially as set forth so that the application of the brake for the retention of the weight in the position to which it has been hoisted, is dependent on the weight itself, as specified.

2. I claim the bar P, when connected to the hoisting rope F and to the graduated lever V substantially in the manner and for the purpose herein set forth.

3. The sliding link Q operated by the lever S or its equivalent and combined with the lever P, hoisting rope F and brake strap I, substantially as specified, so that the operating of the brake-strap and throwing in and out of gear of the weighing apparatus may be accomplished simultaneously by raising or lowering the said link Q as specified.

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

JOSEPH L. DUTTON, SEN.

Witnesses:

HENRY HOWSON,

CHARLES D. FREEMAN.