

No. 667,977.

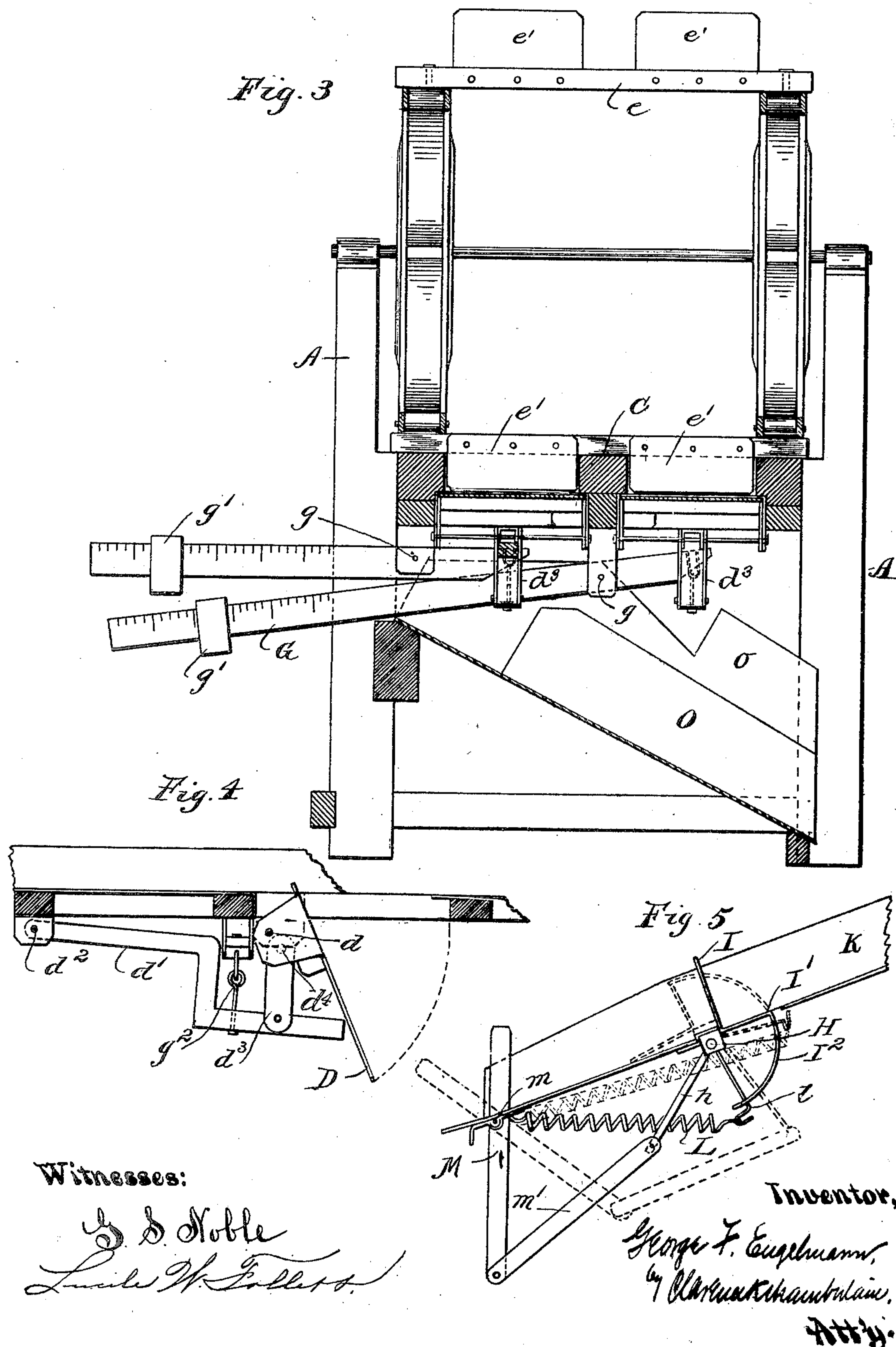
Patented Feb. 12, 1901.

G. F. ENGELMANN.
WEIGHING AND SORTING MACHINE.

(Application filed Jan. 12, 1900.)

(No Model.)

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UNITED STATES PATENT OFFICE.

GEORGE F. ENGELMANN, OF CHICAGO, ILLINOIS.

WEIGHING AND SORTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 667,977, dated February 12, 1901.

Application filed January 12, 1900. Serial No. 1,209. (No model.)

To all whom it may concern:

Be it known that I, GEORGE F. ENGELMANN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Weighing and Sorting Machine, of which the following is a specification.

My invention relates to improvements in machinery which is designed to separate and grade according to weight any number of articles of similar size and shape which may be presented to it. I attain this object by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 shows a side elevation of one of my machines, the central portion being broken away. Fig. 2 is a top view of the same. Fig. 3 is an enlarged view of Fig. 1 in cross-section on the dotted line 3 3 looking in the direction of the arrow. Fig. 4 shows an enlarged view of one of the separating or sorting traps looked at from the front. Fig. 5 is an enlarged view of the feed apparatus.

Further describing the drawings, in which like letters of reference denote the same parts throughout, A is a substantial framing of wood or other suitable material. A bed (indicated by B) runs the entire length of the same. The said bed is divided longitudinally into two portions separated from each other by the dividing-strip C. Openings *b* are provided at regular intervals throughout the length of the separate divisions of the table, to which are fitted trap-doors D, which are hinged so as to open downwardly in the direction from which the material is fed onto the bed or table of the machine. Sprocket-wheels E, carrying an endless chain or apron E', are mounted on shafts transversely journaled to the framing of the machine. The chain or apron E' has attached thereto at regular intervals cross-pieces *e*, to which are secured flanges *e'* of form corresponding to the separate longitudinal divisions of the bed or table.

One of the trap-doors D, by which the openings in the bed of the machine above referred to are closed, except when actuated by a piece of material of the proper weight being deposited thereon, is shown in Fig. 4 in the open position. It is hinged at the point *d* on the side farthest from the end of the machine to which

the material is delivered. A lever *d'* is hinged on the under side of the bed of the machine at *d*². A supporting-link *d*³ is pivoted at its lower extremity to the other end of the said lever and at its upper extremity is pivoted at *d*⁴ to the trap D, so that its upward movement will raise the latter.

Levers G are pivoted transversely to the bed of the machine at the pivots *g*. Adjustable weights *g'* are attached to the outer or long arm of the same, while the shorter arm is attached to the suspending-link *g*², by which the lever *d'* is suspended and raised to the normal position. (Shown in Fig. 1, in which the trap-doors D are represented as closed.)

A feed-controlling mechanism by which the articles to be sorted are separated and delivered to the bed of the machine one by one is shown in Fig. 5.

A rock-shaft H, to which is rigidly attached the arm *h*, is journaled transversely to the feed-table of the machine. Longitudinally to the said rock-shaft and substantially at right angles to each other are attached the flanges I and I'. The space between the same is approximately that which would be filled by any one of the articles to be sorted or separated. The feeding-receptacle thus formed is held in its normal position with the flange I perpendicular to the feed-table K by the spiral spring L, which is attached at one end to the framing of the feed-table and at the other end to the hook *l*, which is rigidly fastened to the rock-shaft.

The feed-table K is apertured above the rock-shaft to allow the flange I' to seat itself therein, so as to be flush with the bed of the table, to which position its downward movement is limited. To the upper edge of the said flange and projecting downwardly through the said aperture is an extension shield or guard I², formed in the arc of a circle whose center is the rock-shaft H. A lever M is pivoted to the framing of the table at *m*. The lower end thereof is attached by a link *m'* to the arm *h*.

The operation of my machine is as follows: When it is desired to separate and grade a large number of pieces of material of similar shape and size—as, for instance, hams or shoulders—the same are deposited in the upper portion of the inclined feed-table K.

One of the hams will occupy the space between the flanges I I'. The endless chain is put in motion by the sprocket-wheels E, thus carrying the regularly-placed flanges through the several longitudinal divisions of the table from end to end thereof. As each flange e' comes over the feed-table it comes in contact with the upper arm of the lever M, thus actuating the feed mechanism and permitting the single ham or other like article to be discharged from the feeding-receptacle formed by the flanges I I'. Any other articles are held back by the extension I² until the feed-receptacle is released and returned to its normal position by the action of the spring L. Another ham or other article then moves under the influence of gravity down the feed-table until stopped by the flange I, when on the operation of the feed mechanism as before it is discharged upon the main bed or table of the machine. The articles when thus deposited are drawn forward by the next flange e' and carried over one trap-door after another until they respectively reach the one appropriate to each. This door yielding under the weight for which it was adjusted allows the article thereon to fall through the opening and be deposited in the chute O, whereupon under the traction of the lever G it again closes the opening. It will be observed that the door nearest the feed-table will be set to open with the greatest weight of any, whereby the heaviest articles will fall through the same and the lighter ones be carried on to the doors adjusted to their several weights. The lightest articles may be carried on and off from the end of the machine, as many grades being possible as there are doors in each division of the machine plus the lightest articles carried over.

I have shown a machine which practically exhibits the principles of my invention. I do not limit myself to the form or construction shown. The bed of the machine may be formed with one division or a multiplicity thereof. The traps may be controlled by springs or by levers adjusted in any other or convenient way, and in many ways the form and construction may be varied without departing from the spirit or scope of my invention.

What I claim, and desire to secure by Letters Patent, is the following:

1. A weighing and grading machine, comprising a table provided in the bed thereof with a plurality of apertures, downwardly-opening traps adapted normally to close said apertures, means for graduatedly balancing said traps so as to be sprung in regular succession by the application of successively-decreasing weights and to return said traps into the said openings on the removal of said weights, and a carrier to convey the articles to be sorted upon or over the said traps, substantially as set forth.

2. A weighing and grading machine, comprising a table provided in the bed thereof

with a plurality of apertures, downwardly-opening traps fitted to said apertures so as to close the same, levers connected to said traps, adjustable means for setting the said levers to close the said traps and a carrier to convey the articles to be sorted upon or over the said traps, substantially as set forth.

3. A weighing and grading machine, comprising a table provided in the bed thereof with a plurality of apertures, downwardly-opening traps fitted to said apertures so as to close the same, levers connected to said traps, adjustable means for setting the said levers to close the said traps and a carrier comprising an endless chain or belt and flanges attached thereto to convey the articles to be sorted upon or over the said traps, substantially as set forth.

4. In combination with a weighing and grading machine comprising a table provided in the bed thereof with a plurality of apertures, downwardly-opening traps adapted normally to close the said apertures, means for graduatedly balancing said traps so as to be sprung in regular succession by the application of successively-increasing weights and to return said traps into the said openings on the removal of said weights, a conveying mechanism consisting of an endless chain or belt, suitably-actuated revolving supports therefor, and means on said chain or belt to engage the material to be graded, substantially as set forth.

5. In combination with a weighing and grading machine comprising a framing, a table supported thereby and balanced traps fitted to apertures in said table, a conveying mechanism consisting of pulleys journaled at opposite ends of the table, an endless band passing thereover, flanges attached to said band, and means for actuating said pulleys and the band passing thereover, substantially as set forth.

6. In a weighing and grading machine having a bed or table with openings therein, traps pivotally fitted to said openings to close the same, supporting-levers on the under side of said traps one end of which levers is pivotally attached to the framing, links pivotally attached to the under side of said traps at one end and pivotally attached to said levers at the other end, and balancing-levers arranged to actuate the supporting-levers, substantially as set forth.

7. In a weighing and grading machine having a bed or table with openings therein, traps pivotally fitted to said openings to close the same, supporting-levers for said traps one end of which levers is pivotally attached to the framing, links pivotally attached to the said traps at one end and pivotally attached to said levers at the other end, balancing-levers arranged to actuate the supporting-levers, and a carrier to propel the articles to be graded upon or over the said traps, substantially as set forth.

8. In a weighing and grading machine hav-

ing a conveying mechanism, a feed device comprising a table, a pivotally-mounted receptacle above the same, a shield attached to one side of said receptacle and extending
5 downwardly through the table, and means for tilting said receptacle by means of the said conveying mechanism, substantially as set forth.

9. In a weighing and grading machine having a conveying mechanism, a feed device comprising a sloping table, a rock-shaft pivoted thereto, flanges attached to said rock-shaft to form a V-shaped receptacle, a shield

attached to the outer edge of one of said flanges and extending downwardly through
15 the said table, and means for rocking said shaft by the action of said conveying mechanism, substantially as set forth.

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

GEORGE F. ENGELMANN.

Witnesses:

M. H. CAZIER,
LUCILE W. FOLLETT.