

J., C. H. & A. DAY.
 COMBINED PACKAGING AND BAG FORMING MACHINE.
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919,427.

Patented Apr. 27, 1909.

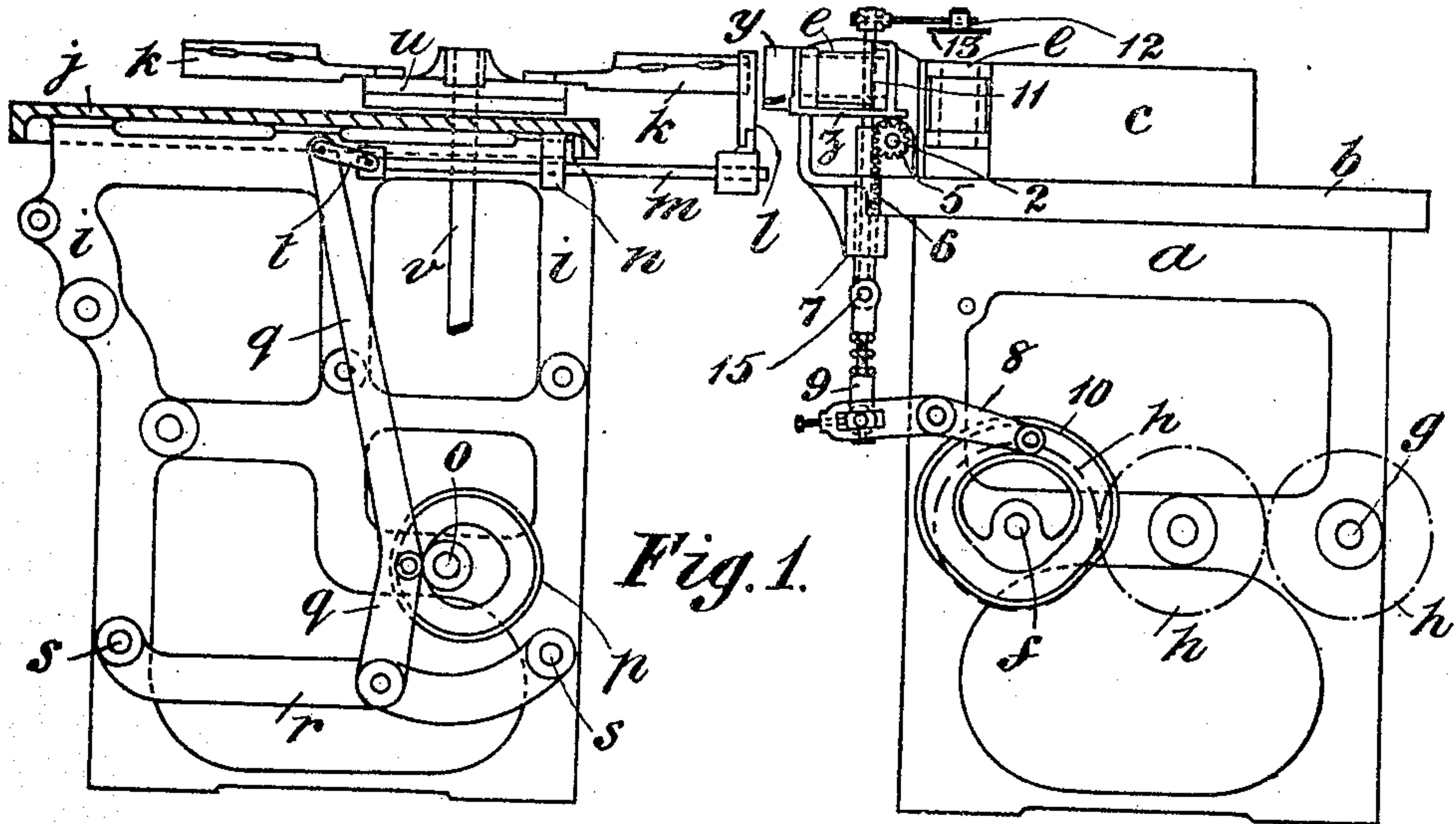


Fig. 1.

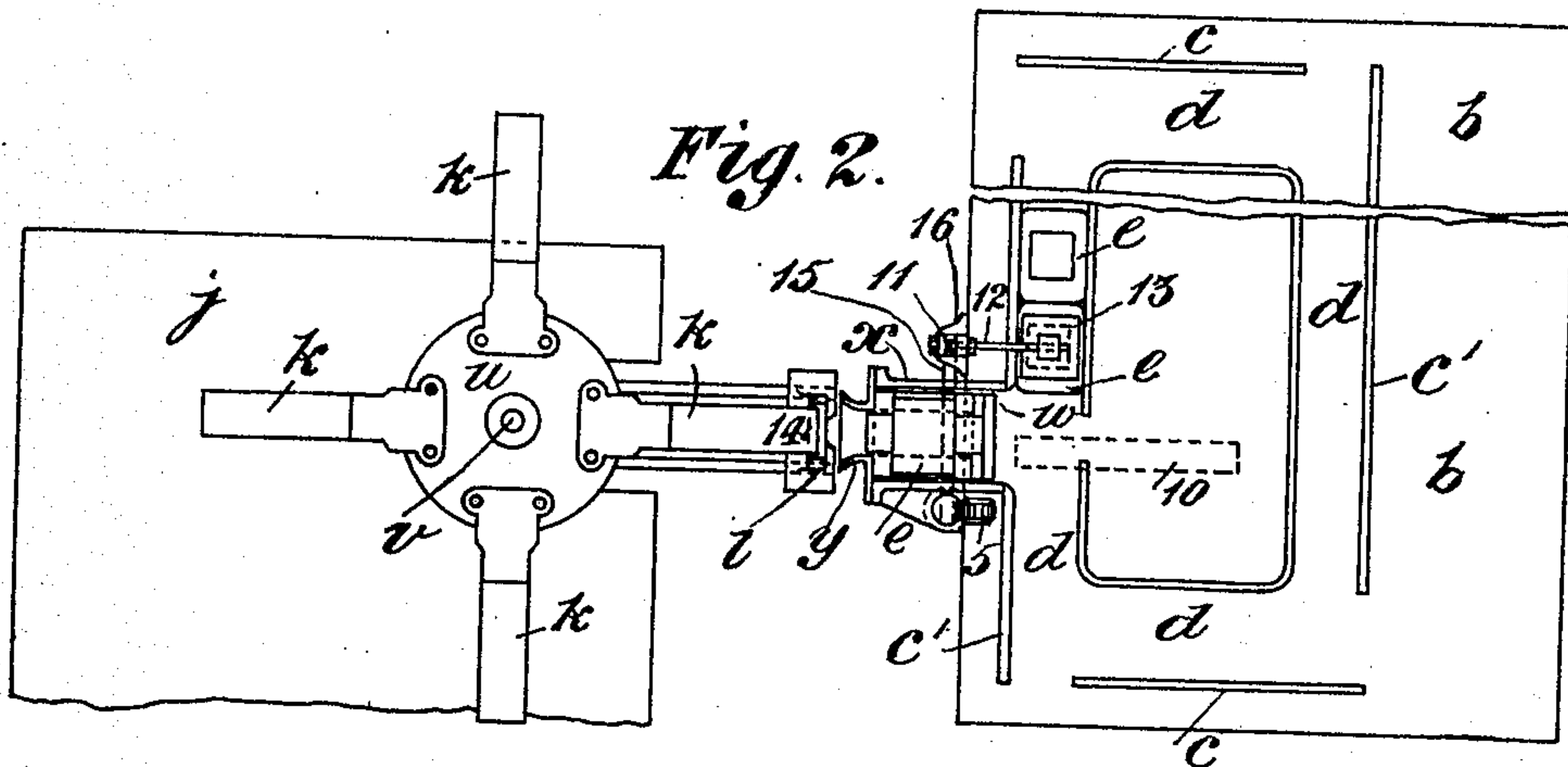


Fig. 2.

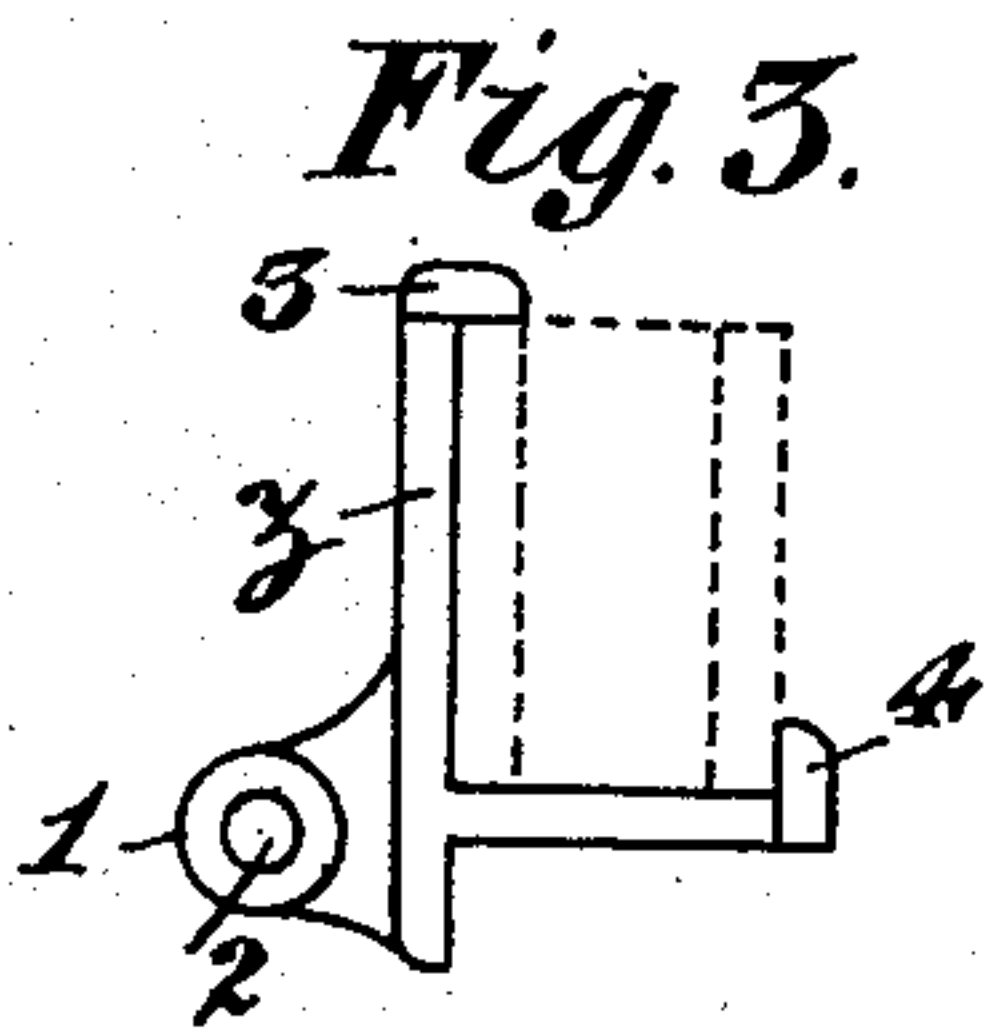


Fig. 3.

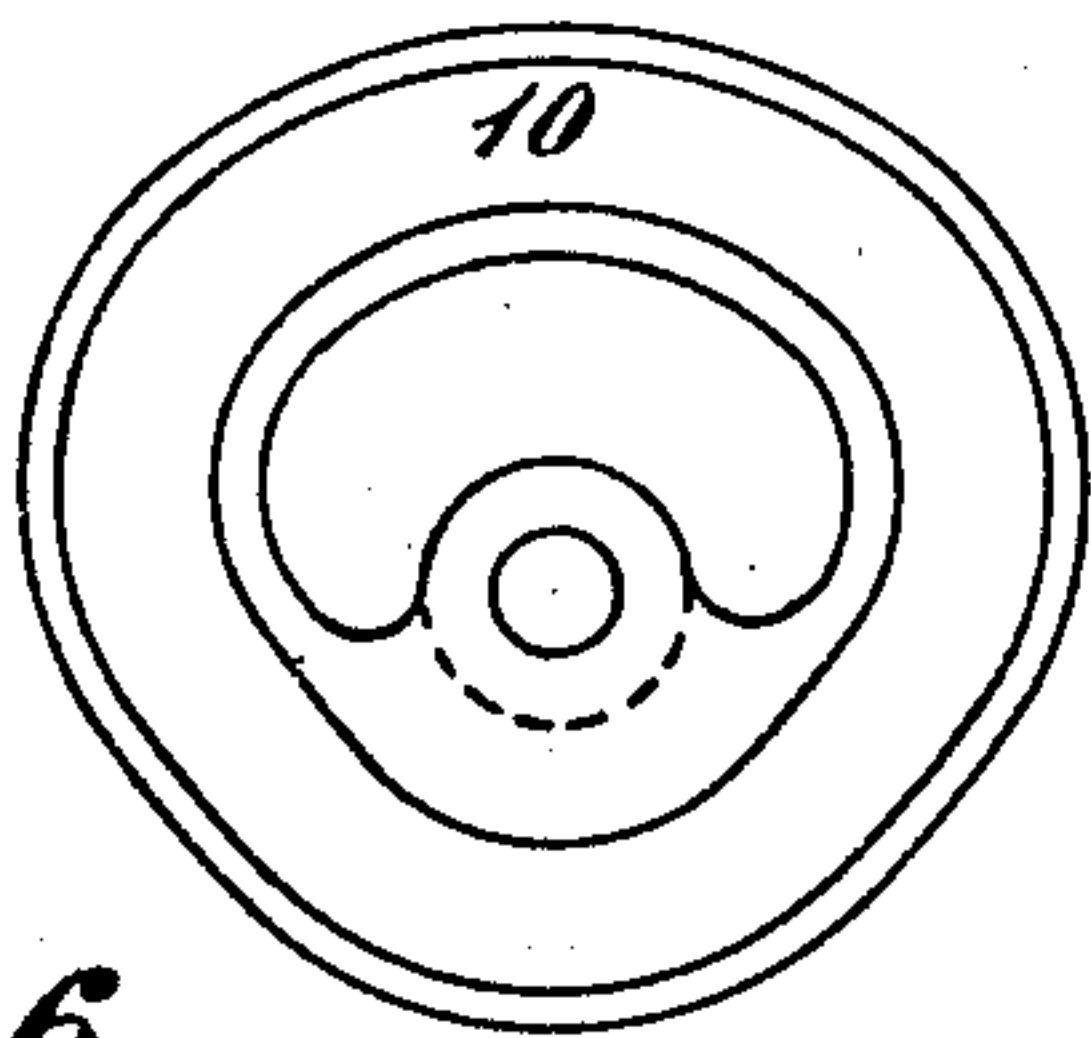


Fig. 4.

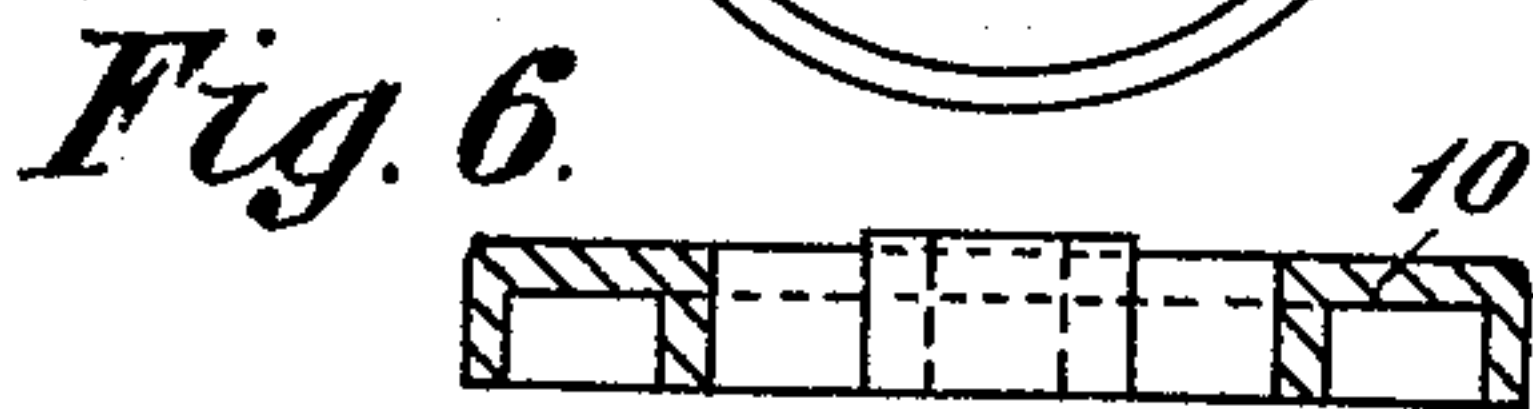


Fig. 5.



Fig. 6.

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UNITED STATES PATENT OFFICE.

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COMBINED PACKAGING AND BAG-FORMING MACHINE.

No. 919,427.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, JOB DAY, CHARLES HERBERT DAY, and ALBERT DAY, residing, respectively, at 54 Sholebroke avenue, Chapeltown Road, Leeds, in the county of York, England; 22 St. John's Terrace, Belle Vue Road, Leeds aforesaid, and 36 Delph Lane, Leeds aforesaid, have invented new and useful Improvements in a Combined Packaging and Bag-Forming Machine, of which the following is a specification.

This invention has reference to that class of packaging machine in which a number of boxes traverse a rectangular track between guides being moved intermittently by plungers at the corners of the tracks.

The object of this invention is to combine the packaging machine with a bag forming machine by providing the packaging machine with box tilting apparatus for automatically receiving the paper bag or carton as it is ejected from the "former" of the bag forming machine, thus saving the time and labor of conveying the bag or carton from the bag forming machine to the packaging machine by hand to and placing it in one of the traveling boxes. We attain this object by apparatus illustrated in the accompanying drawings, in which:—

Figure 1 is a part elevation of a packaging machine fitted with box tilting apparatus and arranged in position to receive the bag as it is ejected from the "former" of a paper bag forming machine; Fig. 2. a part plan of the same; Fig. 3. an elevation of traveling box tilting apparatus; Fig. 4. an end elevation of the same; Fig. 5. an elevation of cam for operating the tilting apparatus; Fig. 6. a sectional elevation of the same.

a is the framework and *b* the table of a packaging machine. The table is provided on its top with guides *c*, *c*¹, which form the rectangular track *d*, in which the boxes or molds, hereafter termed "the traveling boxes *e*," are caused to be intermittently moved by plungers,—not shown in the drawings,—arranged to work through the openings at the corners of the guides *c*.

f is the driving shaft of the machine which is connected to the shaft *g* by means of spur gearing *h*.

i is the framework of a bag forming machine provided with a table *j* and with a number of "formers" *k*. Each "former" is divided diagonally, one part sliding on the other so as to diminish its size and enable a

forked piece, hereafter termed "the ejector *l*" which embraces a "former," to remove a bag therefrom. The ejector is mounted upon a horizontal rod *m* carried in bearings *n* fixed to the underside of the table *j*, and an intermittent reciprocating motion is imparted to the ejector from shaft *o* of the bag machine by means of a cam *p* mounted thereon through lever *q* fulcrumed to a cross-piece *r* attached to the stays *s* of the bag machine. The lever *q* is connected at its upper end to the ejector rod *m* by a link *t*. The "formers" *k* are connected to one of a pair of brake disks *u* which are mounted upon the upper end of a vertical shaft *v*, to which an intermittent rotary and rising and falling motion is imparted from one of the shafts of the bag machine.

The bag machine is placed in such a position with regard to the packaging machine that when a bag is removed from a "former" *k* by the ejector *l*, it can be passed into one of the traveling boxes *e*, which has been tilted on to its side to receive the same.

The above described parts of the packaging and bag forming machine are of known construction, and therefore do not require further explanation here, seeing that the essential feature of this invention is the means applied to the packaging machine for tilting a traveling box into the position for receiving the bag as it leaves a "former" *k* of the bag forming machine.

In the guides *c*¹ is formed an opening *w*, which forms an entrance to a box or trough *x*, hereafter termed "trough," fixed to the outer portion of the said guide, and which projects at a right angle thereto. The trough is made U-shaped, and preferably with an open top, and it is provided with a bell or other mouth-piece *y* which is fixed to its outer portion. The mouth-piece is of such a size as to permit of the bag passing freely through it and guiding it into the tilted box *e* in the trough *x*. Within the trough *x* is mounted a carrier *z* which is fulcrumed by lugs 1 upon a shaft 2 carried in suitable bearings. The carrier *z* is provided with projections 3, 4, for retaining a box *e* in position during the tilting operation. The carrier *z*, as shown at Fig. 3, is shaped somewhat in the form of the letter L, the projection 3 being at the top of the vertical portion of the carrier, while the projection 4 is at the end of the horizontal portion, so that the box as it is made to travel in the

track *d* passes between the inner faces of the said projections and is held in position while the carrier is being tilted. The horizontal and vertical portions of the carrier, when it is in the position shown at Fig. 3, form a portion of the floor of the track *d* and of the guide *c*¹.

The required tilting motion is imparted to the box for tilting it into the horizontal position shown at Fig. 1. by means of a spur pinion 5 mounted upon a shaft 2. The spur pinion is made to engage with the spur rack 6 mounted vertically in the bearings 7. The lower end of the rack is connected to a double ended lever 8 by means of the adjustable link 9. The end of the link that is connected to the double ended lever may be also made adjustable. The lever 8 is fulcrumed to the framework *a* and its inner end is arranged to engage with cam 10 mounted upon the shaft *f*. To the adjustable rack is also connected by a spindle 15 a vertical rod 11 carried in bearings 16 and on its top is fixed a horizontal lever 12 on which is adjustably mounted a plate 13 which is employed for pressing the bag to the bottom of the box *e* after the carrier and box have been tilted in the vertical position shown at Fig. 1.

The action of the apparatus is as follows:—A bag having been formed on a "former" *h* and rotated in the delivery position 14 is removed from the "former" by the ejector *l*. When the "former" is in the position 14 it will then have been brought opposite to the mouth-piece *y* and trough *x*. The carrier and box *e* that is passed therein will then have been, by cam 10, lever 8, link 9, rack 6, and pinion 5, tilted into the horizontal position shown at Fig. 1. When the carrier *z* and box *e* are in this horizontal position, the adjustable plate 13 will then be at its lowest point above the track *d* and guides *c*¹. As the ejector *l* moves the bag from the "former" its folded and closed end passes into the mouth-piece *y* and is conducted by it into the box *e*. As soon as the bag is deposited in the mold, and by both the mouth-piece and trough being open at the top, the carrier *z* can then be tilted back into a vertical position, allowing the box to then be traversed along the portion of the track *d* in the direction of arrow. The box is caused to resume its normal vertical position by means of cam acting through the said lever, link and rack and pinion. When the box, with the bag therein, is in a vertical position and has been moved forward into the position shown at Fig. 2, the adjustable plate 13 will have been drawn downward,—at the same time that the carrier *z* is again tilted into a horizontal position,—for pressing upon the top of the bag for insuring that it is placed at the bottom of the box. The box with the

mold therein can then be traversed forward and be carried to the point at which it is to be filled and operated upon by the packaging machine. By this means the bag can be deposited in the box direct from the "former" of the bag forming machine automatically, thereby dispensing with any hand labor or other handling for placing it in the traveling box *e* of the packaging machine.

We claim:—

1. In a packaging machine, the combination of the table of the machine having guides fixed thereon to form a rectangular track, with openings at the corners and boxes intermittently moving in said track, with a trough fixed to said guides and provided with a contracted mouth-piece, a carrier mounted in said trough capable of being tilted from a vertical into a horizontal position and means for tilting the carrier as set forth.

2. In a packaging machine, the combination of the table of the machine having guides fixed thereon to form a rectangular track with openings at the corners and with an opening in one of its sides, and bag receiving boxes intermittently moving therein, with an open topped trough fixed to the guides in front of said side opening, a contracted mouth-piece for the said trough, a carrier for receiving and holding a traveling box, said carrier being mounted upon a shaft within the trough and adapted to fill the opening in the guides and in the track, and means for tilting the carrier and traveling box from the vertical to the horizontal position for receiving the bag as it is removed from the "former" of a bag forming machine, and afterward returning the carrier and traveling box to their normal position, a bag machine provided with a "former" and an ejector arrangement adjacent to the packaging machine, as set forth.

3. In a packaging machine, the combination with the table having guides and a rectangular track formed thereon, and bag receiving boxes intermittently moved therein, of a carrier for receiving one of the said boxes and tilting it into a horizontal position, means for automatically tilting and returning the carrier and the box to their normal position, a plate mounted upon an intermittently reciprocating rod for pressing the bag down into the said box, and means for attaching said plate and rod to the means for tilting the carrier and box, as set forth.

4. In a packaging machine, the combination of the table having guides and a rectangular track formed thereon, and bag receiving boxes intermittently moved therein, with a trough fixed to the said guides and having a contracted mouth-piece fixed thereto in a line with the delivery position of a bag forming machine "former," a tilting

carrier mounted within the said trough and adapted to receive and tilt one of the said boxes from the vertical into the horizontal position for receiving the bag as it is removed from the "former," means for tilting the carrier and for pressing the bag into the box after the latter has been returned to its normal position, a bag forming machine provided with a number of intermittently re-

ciprocating "formers" and an intermittently reciprocating ejector arranged adjacent to the packaging machine, as set forth.

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