Feb. 25, 1930. H. H. WHEELER 1,748,594

WRAPPER FOLDING DEVICE

Filed May 22, 1928

Fig. 1.

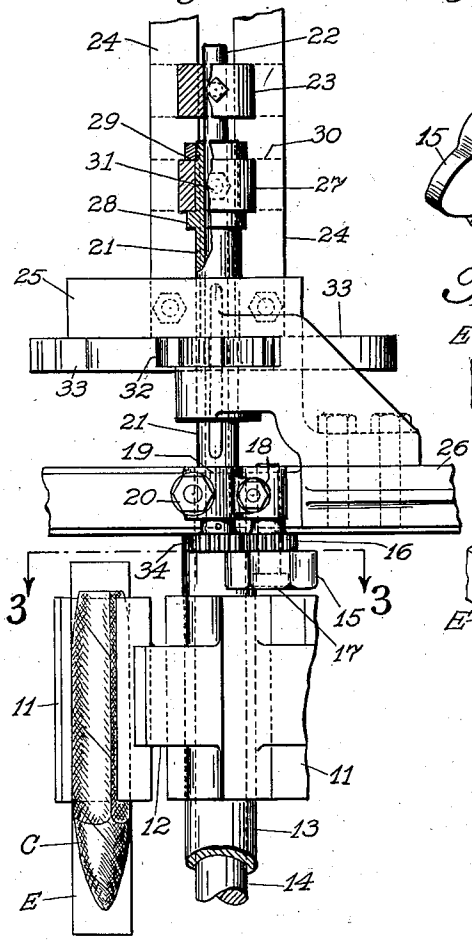


Fig. 3.

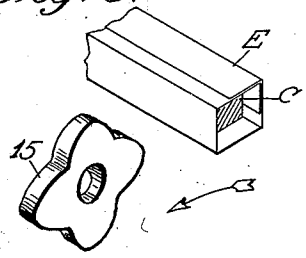


Fig. 4.

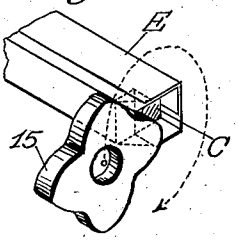


Fig. 5.

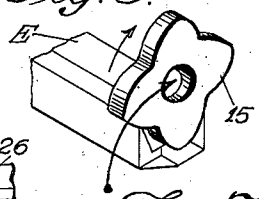


Fig. 6.

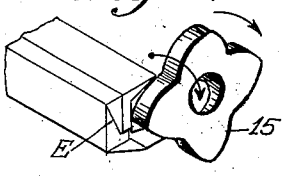


Fig. 7.

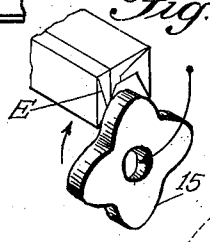


Fig. 8.

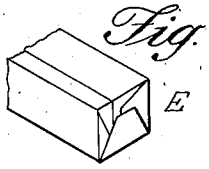


Fig. 9.

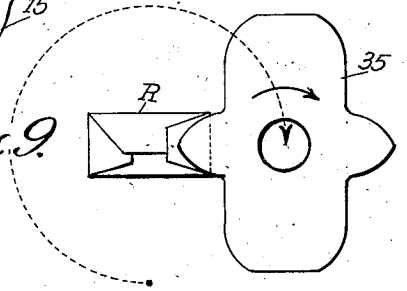


Fig. 2.

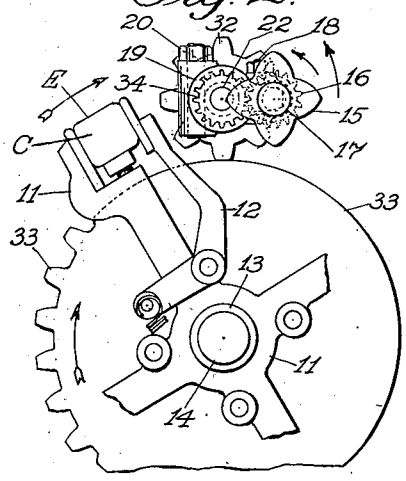
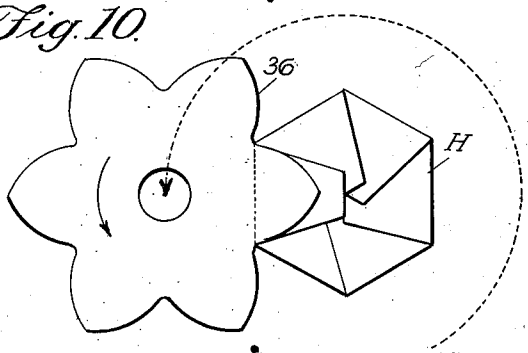


Fig. 10.



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UNITED STATES PATENT OFFICE

HENRY H. WHEELER, OF BROOKLYN, NEW YORK, ASSIGNOR TO INTERNATIONAL CIGAR MACHINERY COMPANY, A CORPORATION OF NEW JERSEY

WRAPPER FOLDING DEVICE

Application filed May 22, 1928. Serial No. 279,630.

This invention relates to an improvement in a wrapper folding device, a principal object being to neatly fold the overhanging flaps of a wrapper over the ends of the wrapped article. Another object is to produce a device of this nature which will cooperate with a cigar enveloping machine of the type having a turret in the pockets of which partially enveloped cigars are supported, to fold the overhanging flaps of the envelops over the ends of the cigars. Other objects are to produce such a device which is simple and rugged in construction, effective in operation and which is readily adaptable to fold wrappers on articles differing considerably in length and cross sectional shape. With these and other objects not specifically set forth in view, the invention consists in certain constructions and combinations which will be hereinafter fully described and then pointed out in the claims.

In general, the improved device consists of a star shaped wheel having as many star points as the package has sides which, with its axis perpendicular to and with its inside face in line with the end of the article being wrapped, is placed at such a distance from the package that one of the star points overlaps the corresponding wrapper flap. Upon establishing such relation by either moving the wheel or the package into operating position, the wheel is revolved as a whole about the article being wrapped, the star wheel at the same time turning on its axis as it is rolled around at the end of the package, so that each point of the star in turn engages with the successive flaps of the wrapper, folding them down over the end of the package.

In the accompanying drawings in which the application of the star wheel folding principle to the blunt end of a cigar envelop is shown:

Fig. 1 is a top view of a cigar envelop folding device embodying the invention, shown partly in section;

Fig. 2 is an end elevation of the same, with the supporting bracket omitted;

Figs. 3 to 8 are perspective views showing the successive stages of the folding operation, as seen from line 3—3 of Fig. 1; and

Figs. 9 and 10 show diagrammatically the shapes and operating positions of star wheels used for a rectangular and hexagonal package, respectively.

In carrying the invention into effect, there is provided means for supporting a partially enveloped article with an unfolded end of its envelop overhanging the end of the article, a folding device, and means for producing a relative movement of said support and said means to cause said device to successively fold sections of the overhanging part of the envelop on the end of the article. In the best constructions contemplated, the said movement producing means include means for producing an orbital movement of said device about the unfolded end of the envelop. In the best constructions also, the means for folding the unfolded end of the envelop comprise a star wheel and means for causing said star wheel to successively engage sections of the unfolded end. The means above referred to may be widely varied in construction within the scope of the claims, for the particular machine selected to illustrate the invention is but one of many possible embodiments of the same. The invention, therefore, is not to be restricted to the precise details of the structure shown and described.

Referring to Figs. 1 and 2, C indicates a cigar and E its envelop, as held in the intermittently rotated turret 11 of a cigar enveloping machine by a spring actuated clamp 12 rotating with the turret which is mounted on the sleeve 13 surrounding the main shaft 14 of the machine, in the direction of the arrow. The star wheel 15 and fast to it the gear 16, is loosely mounted on a stud 17 which is clamped by a bolt 18 in an arm 19, the latter being clamped by a bolt 20 to a sleeve 21 turning on a shaft 22. The shaft 22 is stationarily held in a bracket 23 secured to the rails 24 carried by a bracket 25 attached to the frame 26 of the enveloping machine. The sleeve 21 is journalled in the bracket 25 and turns in a bearing 27 in which it is held against axial movement with relation to the bracket by its flange 28 and a nut 29, the bearing 27 being removably attached to the rails 24 by the plate 30 clamped to them from

below by the bolt 31, thereby enabling the axial position of the star wheel 15 to be adjusted to different lengths of cigars to be enveloped. Keyed to the sleeve 21 and held in place by the bracket 25, is a pinion 32 which meshes with an interrupted gear 33 on the shaft 14. On the stationary shaft 22 is mounted a gear wheel 34 meshing with the gear 16 on the star wheel 15.

The shaft 14 is preferably driven through suitable driving connections from the same main drive as the turret 11, and is thereby driven to timed relation to said turret so that the star wheel will be operated after the turret arm has brought the partially enveloped articles into the range of action of the star wheel.

In Fig. 3, the relative position of the cigar C and the star wheel 15 corresponding to Figs. 1 and 2, is shown in perspective as seen from line 3—3 of Fig. 1. When the cigar C arrives in its uppermost position on the turret 11, the envelop E engages one point of the star wheel 15, thereby folding one side flap of the same (Fig. 4). At the same time, the first tooth of the interrupted gear 33 comes into engagement with the pinion 32, thereby turning the arm 19 around the cigar in the direction of the arrow, the stationary gear 34 causing the gear 16 and star wheel 15 to turn on the stud 17. After a quarter turn of the arm 19, Fig. 5, in the uppermost position on the star wheel 15, the top flap of the envelop is folded down; after a half turn of the arm 19 is completed (Fig. 6), the other side flap is folded; and upon a further quarter turn in the position of the star wheel shown in Fig. 7, the bottom flap is folded up, thereby giving the foiled cigar end the appearance shown in Fig. 8.

The shape and size of the star wheel depends upon the shape and size of the package to be wrapped. If the end of the package is square, the star wheel has four equal points as shown in Figs. 3 to 8, the width of each being substantially equal to the side of the square package. For a rectangular package, a four point star such as shown in Fig. 9 is used, which has two wide and two narrow points alternately placed corresponding to the long and short sides of the package R. Similarly, as illustrated in Fig. 10, for a hexagonal or other polygonal package H, a six point or a corresponding multi point star wheel is used, with similar or alternate dissimilar points, according to the requirements of the package.

In Figs. 9 and 10, the dotted lines indicate the orbits of the star wheel centers, and the arrows show the directions of the star wheels motion about their own axis.

Since the stud 17 is removably clamped to the arm 19, different star wheels may readily be substituted for folding the envelopes over article ends of differing shapes by merely removing stud 17 and substituting another star wheel thereon.

What is claimed is:

1. The combination with means for supporting a partially enveloped article with an unfolded end of its envelop overhanging an end of the article, of a star wheel folding device, and means including interupting gearing for producing a relative orbital movement of said support and said device to cause said device to successively fold sections of the overhanging part of the envelop on the end of the article.

2. The combination with means for supporting a partially enveloped article with an unfolded end of its envelop overhanging an end of the article, of a star wheel folding device, and means including interrupting gearing for producing a relative orbital movement of said support and said device to cause said device to successively fold sections of the overhanging part of the envelop on the end of the article, said supporting means including means for successively bringing partially enveloped articles into the range of action of said device.

3. The combination with means for supporting a partially enveloped article with an unfolded end of its envelop overhanging an end of the article, of a star wheel folding device, and means including interrupting gearing for producing a relative movement of said support and said device to cause said device to successively fold sections of the overhanging part of the envelop on the end of the article, said supporting means including a turret provided with a plurality of clamps for successively bringing partially enveloped articles into the range of action of said device.

4. The combination with means for supporting a partially enveloped article with an unfolded end of its envelop overhanging an end of the article, of a star wheel folding device, and means including interrupting gearing for producing a relative orbital movement of said support and said device to cause said device to successively fold sections of the overhanging part of the envelop on the end of the article, said device being of a size and form which is predetermined in accordance with the size and form of the enveloped article.

5. The combination with means for supporting a partially enveloped article with an unfolded end of its envelop overhanging an end of the aticle, of a folding device, and means including interrupting gearing for producing a relative movement of said support and said device to cause said device to successively fold sections of the overhanging part of the envelop on the end of the article, said device including a starwheel and means for rotating said starwheel on its own axis.

6. The combination with means for sup-

porting a partially enveloped article with an unfolded end of its envelop overhanging an end of the article, of a star wheel folding device, and means including interrupting gearing for producing a relative orbital movement of said support and said device to cause said device to successively fold sections of the overhanging part of the envelop on the end of the article, said movement producing means including means for producing an orbital movement of said device about the unfolded end of the envelop.

7. The combination with means for supporting a partially enveloped article with an unfolded end of its envelop overhanging an end of the article, of a star wheel folding device, and means including interrupting gearing for producing a relative movement of said support and said device to cause said device to successively fold sections of the overhanging part of the envelop on the end of the article, said movement producing means including means for producing an orbital movement of said device about the unfolded end of the envelop, and said device including gearing for rotating it on its own axis during its orbital movement.

8. Means for folding an unfolded end of an envelop overhanging an end of an article, comprising a starwheel, and means for causing said starwheel to intermittently travel around and successively engage sections of said unfolded end.

9. Means for folding an unfolded end of an envelop overhanging an end of an article, comprising a starwheel, means for causing said starwheel to intermittently travel around and successively engage sections of said unfolded end, and means for causing said starwheel to rotate on its own axis during its travel.

10. The combination with a folding device, of a gear fast to said device, a stationary gear meshing with the device gear, and means for causing said device to intermittently travel around said stationary gear.

11. The combination with a folding device, of a gear fast to said device, a stationary gear meshing with the device gear, and interrupted gearing for causing said device to periodically travel around said stationary gear.

12. The combination with a folding device, of a gear fast to said device, a stationary gear meshing with the device gear, an arm supporting said device and its gear, a member concentric with the axis of said stationary gear and to which said arm is fast, and interrupted gearing for periodically rotating said member.

13. The combination with means for supporting a partially enveloped polygonal article having unfolded flaps overhanging one end of the article from each side thereof, of an intermittently moving folding device, and means for producing a relative movement of said support and said device to successively position said device adjacent the outer surface of each of said flaps and simultaneously therewith to cause said device to successively fold each adjacent flap on the end of the article.

14. Means for folding an end of an envelop surrounding a polygonal article and having unfolded flaps overhanging the end of the article from each side thereof, comprising a star wheel having a folding point for each of said flaps and means for producing a relative movement of said support and said star wheel to cause each point to successively fold one of said flaps on the end of the article.

In testimony whereof, I have signed my name to this specification.

HENRY H. WHEELER.