M. D. GIBSON.

WRAPPING MACHINE.

APPLICATION FILED JUNE 3, 1912.

1,056,164.

Patented Mar. 18, 1913.

5 SHEETS—SHEET 1.

Fig. 1.

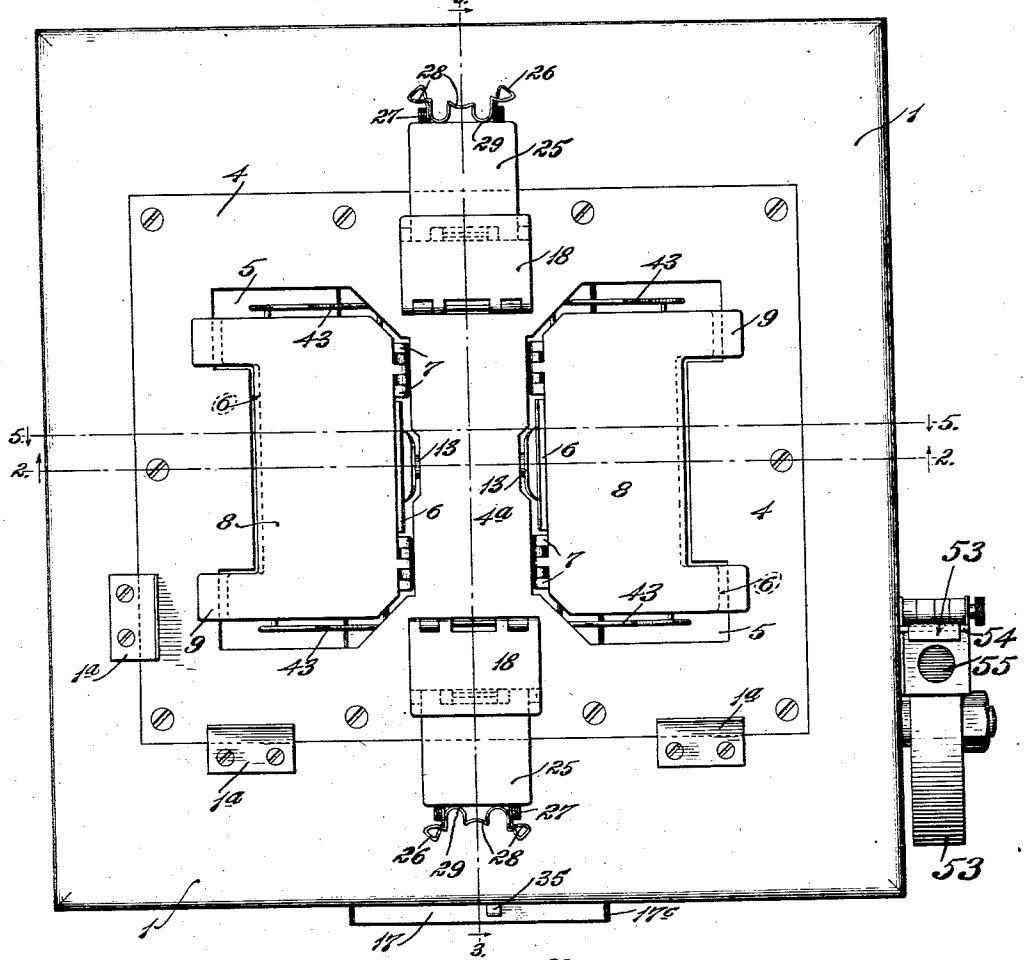
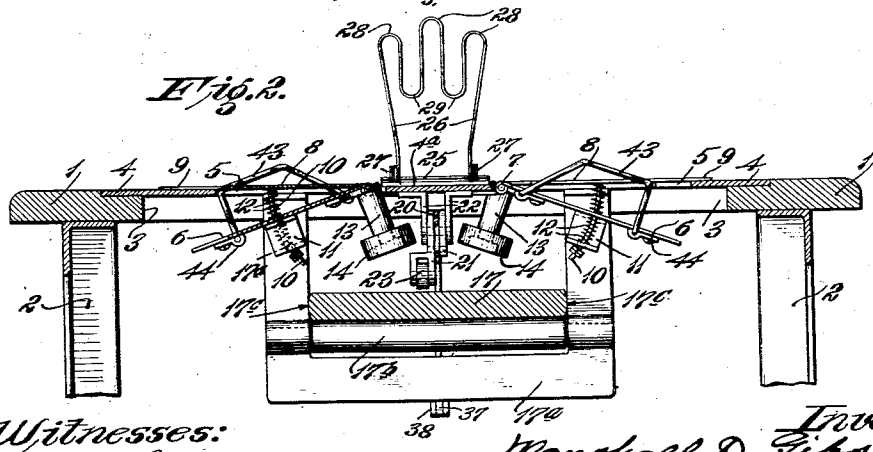


Fig. 2.



Witnesses:
Edgar T. Farmer.
G. A. Pennington

Inventor:
Marshall D. Gibson,
By Cameron & Cameron, his Attys.

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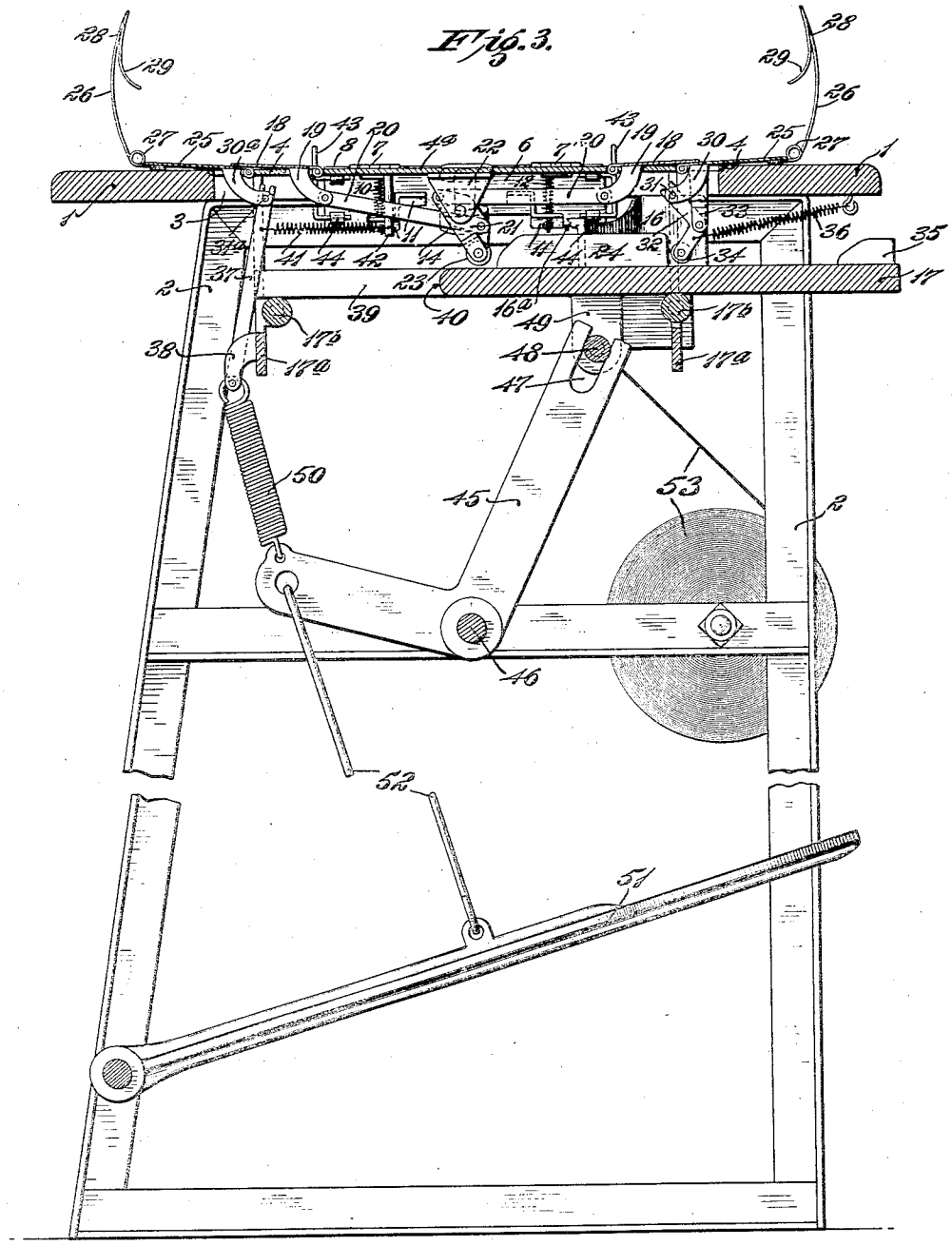
5 SHEETS—SHEET 2.

Fig. 3.



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5 SHEETS—SHEET 3.

Fig. 4.

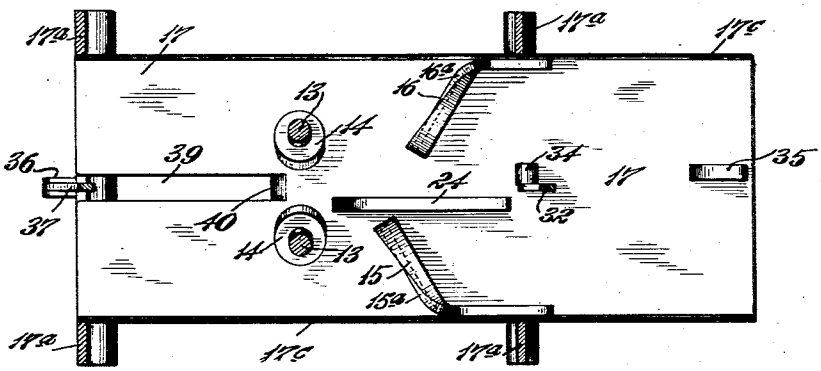
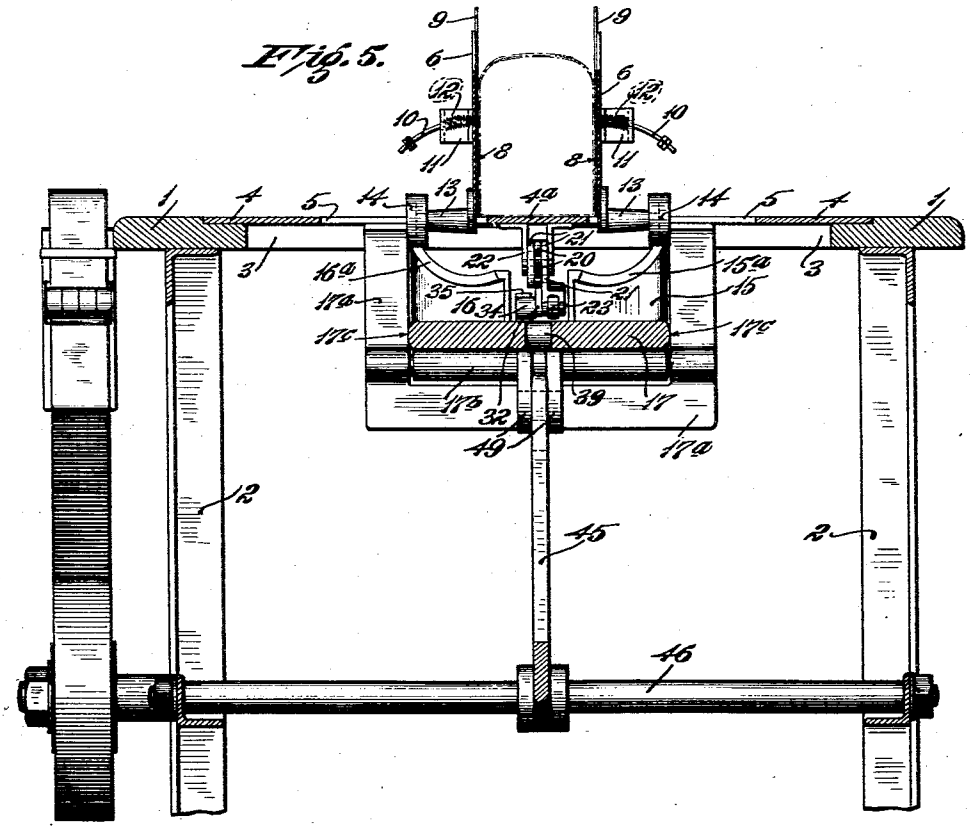


Fig. 5.



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5 SHEETS—SHEET 4.

Fig. 6.

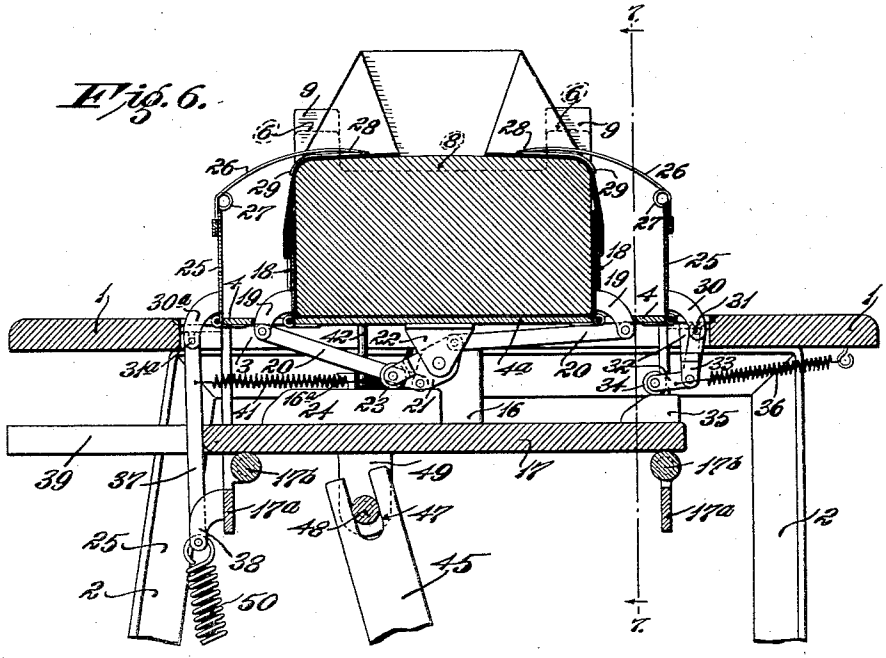
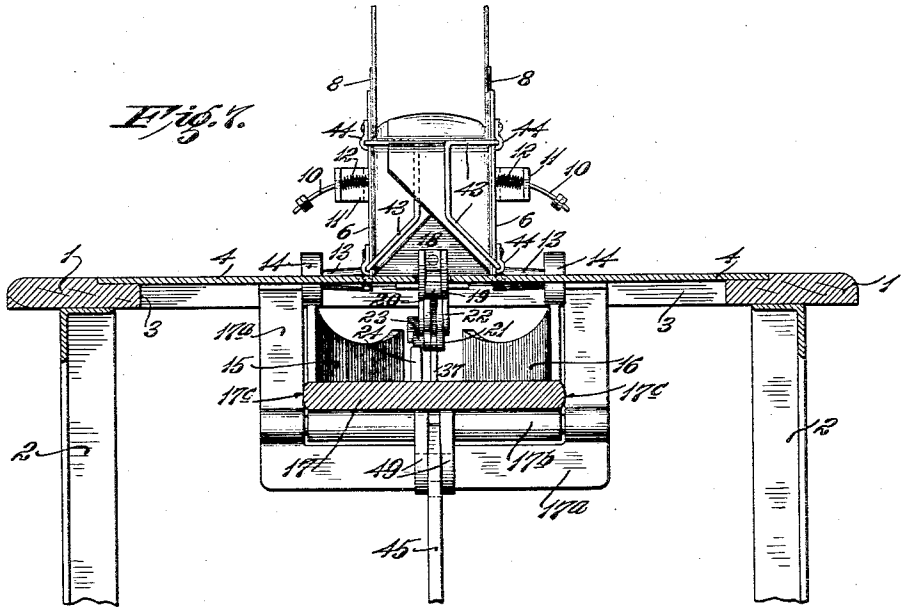


Fig. 7.



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5 SHEETS—SHEET 5.

Fig. 8.

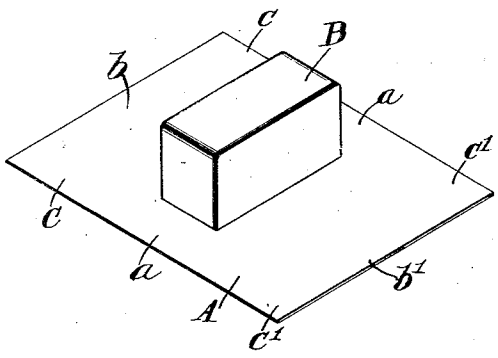


Fig. 9.

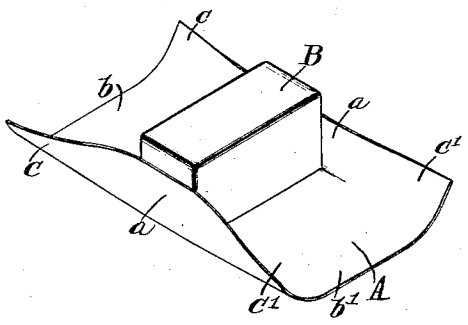


Fig. 10.

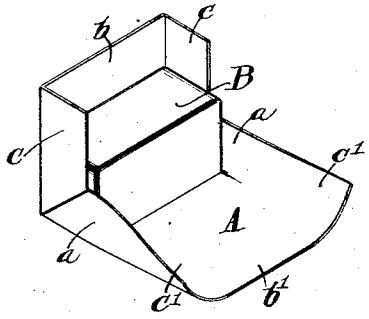


Fig. 11.

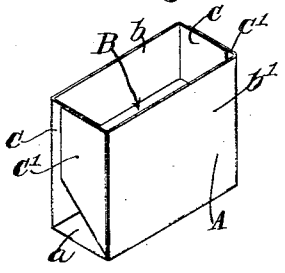


Fig. 13.

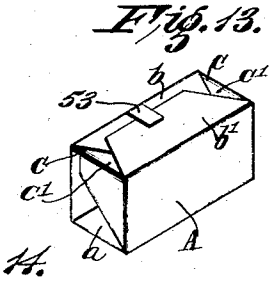


Fig. 12.

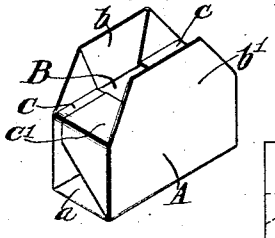
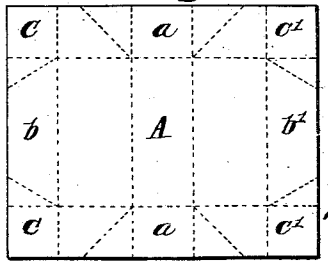


Fig. 14.



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UNITED STATES PATENT OFFICE.

MARSHALL D. GIBSON, OF WEBSTER GROVES, MISSOURI.

WRAPPING-MACHINE.

1,056,164. Specification of Letters Patent. Patented Mar. 18, 1913.

Application filed June 3, 1912. Serial No. 701,167.

To all whom it may concern:

Be it known that I, MARSHALL D. GIBSON, a citizen of the United States, and a resident of the city of Webster Groves, in the county of St. Louis and State of Missouri, have invented a new and useful Improvement in Wrapping-Machines, of which the following is a specification.

This invention relates to wrapping machines and more particularly to machines for wrapping cubical pieces of somewhat irregular shapes and sizes, such as loaves of bread, cakes and other goods which it is desirable to inclose in a wrapper.

The principal objects of the invention are to produce a simple and efficient mechanism which will automatically fold the wrapper about the article so that a final fastening or sealing fold may be readily accomplished by hand, and to attain certain advantages which will hereinafter more fully appear.

The invention consists in the parts and in the arrangements and combinations of parts hereinafter described and claimed.

In the accompanying drawings which form part of this specification and wherein like symbols refer to like parts wherever they occur,—Figure 1 is a top plan view of a machine illustrating an embodiment of the invention, the parts being in normal position; Fig. 2 is a vertical section through the upper part of the machine on the line 2—2 of Fig. 1; Fig. 3 is a vertical section on the line 3—3 of Fig. 1; Fig. 4 is a top plan view of the cam carrier detached; Fig. 5 is a vertical section through the upper part of the machine on the line 5—5 of Fig. 1, the side folders being raised; Fig. 6 is a section taken on the same line of section as Fig. 3, the side and end folders being raised and the wrapping completed with the exception of the top fold; Fig. 7 is a section on the line 7—7 of Fig. 6; Figs. 8 to 13, inclusive, are schematic views illustrating the different stages in folding the wrapper; and Fig. 14 is a view of the wrapper blank, illustrating by dotted lines, the lines of the respective folds.

The machine comprises a table 1, which is mounted on a suitable stand or supporting frame 2. The middle portion of the table is provided with a rectangular opening 3 which is covered by a metal plate 4, preferably embedded so as to be flush with the top face of the table. Secured on the table adjacent to the front and one side margin of the plate 4 are locating members 1^a for the sheet of wrapping material. The plate 4 is provided with openings 5 through which side folders 6 work.

The side folders 6, as shown, comprise plates which are hinged, as at 7, at opposite sides of the middle portion 4^a of the plate 4. Hinged to the plates 6, preferably about the same axis with the hinges 7, are supplemental or auxiliary folder plates 8 preferably of flexible and resilient metal. These plates 8 have corner extensions 9 which rest upon the top of the plate 4 so as to support the plates 6 in lowered position. They are, however, primarily provided to sustain flimsy wrapping material when folded up to the sides of the article.

The plates 8 have arcuate rods 10 secured thereto which work through relatively large perforations in the plates 6 and also smaller perforations in bracket members 11 secured to the under faces of said plates 6, which latter perforations are just large enough to permit an easy sliding movement of the rods 10. The rods 10 have springs 12 coiled loosely around them, said springs bearing at one end against the plates 8 and at their opposite ends against said brackets 11, the perforations in the plates 6 being large enough in diameter to permit the springs to move freely therethrough. Secured to the under faces of the folder plates 6, at about the middle thereof, are studs 13 having rollers 14 journaled on the lower ends thereof. These rollers are respectively engaged by cam members 15 and 16, arranged on a reciprocatory cam carrier or plate 17, as will hereinafter more fully appear.

Primary or initial end folders 18 are hinged on the plate 4 at the opposite ends of the middle portion 4^a thereof and adjacent to the ends of the side folder plates. These end folders 18 are provided with arcuate lever extensions 19 which work through openings in the plate 4. The end portions of these lever extensions 19 are connected by links 20 to a rocking member 21 which is journaled between bracket members 22 secured to the underside of the plate 4. This rocking member is provided with an extension in which is journaled a roller 23 arranged in the path of a cam block 24 on the reciprocatory cam carrier 17. The extension of the rocking member 21 which carries the roller 23 is preferably weighted so as to over-balance the rocking member and always

restore it together with the end folders 18 connected thereto to normal position.

Hinged on the plate 4 adjacent to the end folders 18 are plates or members 25 having thereon resilient secondary or auxiliary end folders 26 adapted to fold the infolded side end portion of the wrapper over upon the article. These secondary end folders, as shown, each comprise a piece of wire coiled adjacent to its ends as at 27, the middle portion of wire being crenelated or rebent successively to provide forwardly disposed fingers 28 at the sides and middle of the device and rearwardly disposed fingers 29 interposed between said fingers 28. Said fingers 29 have their ends curved as more clearly shown in Figs. 2 and 3.

The forward folder plate 25 is provided with an arcuate lever extension 30 having a pin 31 which works in the bifurcated end portion of one arm of a bell crank lever 32 journaled between brackets 33 on the under side of the plate 4. The opposite arm of the bell crank lever is provided with a roller 34 in the path of a cam block 35 on the reciprocatory cam carrier 17. This arm of the bell crank lever has one end of a spring 36 connected thereto, the opposite end of the spring being secured to a hook or an eye on the under side of the table. The function of the spring is to restore the parts to normal position after the cam block 35 is moved away from the bell crank lever. The rear folder plate 25 is provided with a lever extension 30^a similar to the extension 30 on the forward plate 25. This lever extension 30^a is provided with a pin 31^a working in the bifurcated end portion of a lever 37 pivoted in a bracket 38 secured on the rear hanger 17^a which supports the cam carrier 17. The cam carrier is provided with a slot 39 through which the lever 37 works; and the end of the slot which is obviously rounded as at 40, is adapted to contact with the lever 37 when it moves rearwardly and thereby swing the lever on its pivot so as to raise the plate 25. A spring 41 is connected at one end to the lever 37 and at its opposite end to a pin or stud 42 projecting down from the plate 4. The function of this spring is to restore the parts when the end 40 of the slot 39 moves away from the lever 37.

The side folders 6 are provided at their ends with infolder members 43. As shown, these members 43 are made of a stiff piece of wire bent into the form of a trapezoid with respect to the folder plate. That is, the members 43 have one side parallel with the plate and a perpendicular side and an inclined side. The ends of the wire are bent at right angles and secured by clips 44 to the underside of the side folders 6. The infolder members project from the upper sides of the plates 6 just so far that they nearly meet at the middle of the article when said plates are raised as shown more clearly in Fig. 7.

The carrier 17 may be actuated by any suitable power mechanism. As illustrated in the drawings, the carrier is supported on hangers 17^a adjacent to the front and rear ends of the machine, antifriction rollers 17^b being preferably provided, as shown. It is also preferable to round the side edges of the carrier, as at 17^c, so as to minimize friction. A bell crank lever 45 is mounted on a pivot rod or shaft 46 extending transversely of the frame 2. One arm of the bell crank is bifurcated as at 47 and engages a roller 48 journaled in a bracket 49 projecting down from the carrier 17. The opposite arm of the bell crank has a spring 50 secured thereto, the opposite end of the spring being attached to the bracket 38 on which the lever 37 is pivoted. The function of this spring 50 is to restore the cam carrier 17 to normal forward position as shown more clearly in Fig. 3. This second mentioned arm of the bell crank is connected to a treadle or foot lever 51 by a rod 52 so that, by depressing the treadle, the cam carrier is moved rearwardly.

In using the machine, the wrapper sheet A is first laid on the table centrally over the end and side folders. The article B to be wrapped is then placed on the wrapper sheet, as shown in Fig. 8 so as to be supported by the middle portion 4^a of the table plate 4; and the foot lever is then depressed to effect the actuation of the cam carrier. The various cams are timed and correlated so that the initial operation of raising the end folders 18 is effected by the cam 24 which is the first to come into play as the carrier 17 moves rearwardly. Almost immediately the cam 24 engages the roller 23 and rides thereunder, thereby rocking the member 21; and, through the medium of the links 20 and lever extensions 19, it raises the members 18 as shown in Fig. 6, thereby effecting the initial end folds *a* of the wrapper as illustrated in Fig. 9. As soon as this operation has been completed, the cam 15 which is located on the left hand side of the carrier 17 some distance ahead of the opposite cam 16, engages the roller 14 of the side folder 6 on the adjacent side of the machine and thereby swings the stud 13 outwardly and raises the side folder to the position shown in Fig. 7. As the folder rises the adjacent side portion *b* of the sheet is folded up, the resilient plate 9 moving ahead of the plate 6 until it brings the sheet against the side of the article; and the plate 6, which is permitted to continue its upward movement, carries the infolder members 43 across the end of the article, thereby folding inward the side end portion *c* and giving to the wrapper the form shown in Fig. 10. The opposite cam 16 in the meantime moves

into engagement with the roller 14 on that side of the machine and starts to fold the side b' of the wrapper up to the adjacent side of the article before the wrapping is developed to the stage shown in Fig. 10; the completion of the folds of the side portions b' and side end portion c' to the stage shown in Fig. 11 following closely those on the other side of the article. The next operation is the engagement of the roller 34 on the bell crank 32 by the cam block 35 which effects the raising of the forward secondary end folder member 25 so that the resilient member 26 folds the upper folded end portions c and c' of the wrapper in upon the top of the article. The rear secondary end folder may or may not operate simultaneously with the forward one, as desirable; depending upon the length of the slot 39 in the carrier 17 and the correlation of the end portion 40 thereof with respect to the cam block 35. These last mentioned operations complete the mechanical operations and the wrapping is developed to the stage shown in Fig. 12. The final top folds as shown in Fig. 13 are completed by hand and a sticker or seal 53 may or may not be applied like that shown in Fig. 13, as desirable.

After the top folds have been completed, the foot lever is relieved of pressure and the spring 50 acts to restore the cam carrier to normal forward position. The springs 36 and 41 respectively restore the top end folder members 25; and, as the cams 15 and 16 move out of engagement with the rollers 14, the side folders drop back to normal position by gravity. As soon as the wrapped article is lifted, the initial end folders 18 about which the end folds of the wrapper were folded, are restored by the overbalancing weighted portion of the rocking member 21, as above set forth. To secure an easy movement of the side folders the track portions 15^a and 16^a of the cams 15 and 16 are respectively curved and disposed so that only the peripheral faces of the roller move in coöperative relation to the cams, and this continuously throughout the actuation thereof.

At the right hand side of the machine may be mounted a reel of the gummed labels or stickers 53 which can be severed over a cutter 54 located adjacent to a moistening device 55. By this arrangement the top folds may be readily completed by the left hand of the operator, leaving the right hand free to sever, moisten and apply the sticker.

Obviously, the device admits of considerable modification without departing from the invention. Therefore, I do not wish to be limited to the specific construction and arrangement shown.

What I claim is:

1. A wrapping machine comprising a table adapted to receive thereon the wrapper blank and the article to be wrapped, primary end folder members hinged on said table, said end folder members having lever extensions projecting below said table, a rocking lever mounted on the under side of said table and links connecting said rocking lever and the lever extensions of said end folder members, side folders hinged on said table between said end folder members, said side folders having lever extensions projecting below said table, secondary end folders hinged on said table adjacent to said first mentioned end folder members and having lever extensions projecting below the table, bell-cranks mounted on the under side of said table and having one of their arms operatively connected to the respective lever extensions of said secondary end folders, a reciprocatory cam carrier mounted beneath said table and having cam elements thereon adapted to respectively engage said rocking lever and said bell-cranks to effect the actuation of said end and side folders, and means for actuating said cam carrier.

2. A wrapping machine comprising a table adapted to receive thereon the wrapper blank and the article to be wrapped, primary end folders hinged on said table so as to fold the end portions of the wrapper against the ends of the article to be wrapped, a rocking lever mounted beneath said table and having an operable connection with said end folders so as to actuate them simultaneously, side folders hinged on said table and adapted to fold the side and side end portions of the wrapper against the sides and ends of the article, respectively, said side folders having supplemental members hinged thereon and resiliently held in advance thereof, lever extensions on said side folders projecting below said table, a reciprocatory cam carrier mounted beneath said table and having a series of cam elements thereon adapted to respectively engage said rocking lever for the end folders and the lever extensions of said side folders, and means for actuating said cam carrier.

3. In a wrapping machine, a table adapted to receive thereon the wrapper blank and the article to be wrapped, primary end folders hinged on said table and adapted to fold the wrapper initially against the ends of the article, side folders hinged on said table and having resilient supplemental members adapted to move the wrapper against the side of the article in advance of said side folders, infolder members mounted on said side folders and adapted to fold the side end portions of the wrapper in upon the ends of the article, and secondary end folders hinged on said table and adapted to fold the folded upper end portions upon the top of the article.

4. In a wrapping machine, a table adapt-

ed to receive thereon the wrapper blank and the article to be wrapped, primary end folders hinged on said table and adapted to fold the wrapper initially against the ends of the article, side folders hinged on said table and having resilient supplemental members adapted to move the wrapper against the side of the article in advance of said side folders, infolder members mounted on said side folders and adapted to fold the side end portions of the wrapper in upon the ends of the article, and secondary end folders hinged on said table and having resilient members adapted to fold the folded upper end portions upon the top of the article.

5. In a wrapping machine, a table adapted to receive thereon the wrapper blank and the article to be wrapped, primary end folders hinged on said table and adapted to fold the wrapper initially against the ends of the article, side folders hinged on said table and having resilient supplemental members adapted to move the wrapper against the side of the article in advance of said side folders, infolder members mounted on said side folders and adapted to fold the side end portions of the wrapper in upon the ends of the article, and secondary end folders hinged on said table and having resilient members adapted to fold the folded upper end portions upon the top of the article, said resilient members having spaced forwardly disposed fingers and interposed rearwardly extending fingers whose ends are curved downward so as to bear against the ends of the article.

6. In a wrapping machine, a table, initial end folders hinged on said table, said end folders being connected to an operating device so as to act simultaneously, side folders hinged on said table and having independent operating means whereby they are actuated successively, infolder members mounted on said side folders so as to operate therewith and being adapted to fold the side end portions of the wrapper in upon the ends of the article, secondary end folders hinged on said table and adapted to fold the folded upper end portions of the wrapper upon the top of the article, and a reciprocatory power member having means for actuating the operating devices for the respective folders.

7. In a wrapping machine, a table adapted to receive thereon a sheet of wrapping material and the article to be wrapped, initial end folders adapted to fold the wrapper against the ends of the article, side folders adapted to fold the wrapper against the sides of the article, infolder members adapted to fold the side end portions of the wrapper against the ends of the article, secondary end folders adapted to fold the folded upper end portions of the wrapper upon the top of the article, said folders having operating means projecting below the table, a reciprocatory member mounted beneath said table and having thereon means for effecting the actuation of said folders during its stroke in one direction, said means on the reciprocatory member being timed so that the initial end folders act first, then the side folders and infolder members act in succession, and then the secondary end folders act, and means for actuating said reciprocatory member.

Signed at St. Louis, Missouri, this 31st day of May, 1912.

MARSHALL D. GIBSON.

Witnesses:
G. A. PENNINGTON,
PAULINE AMBERG.