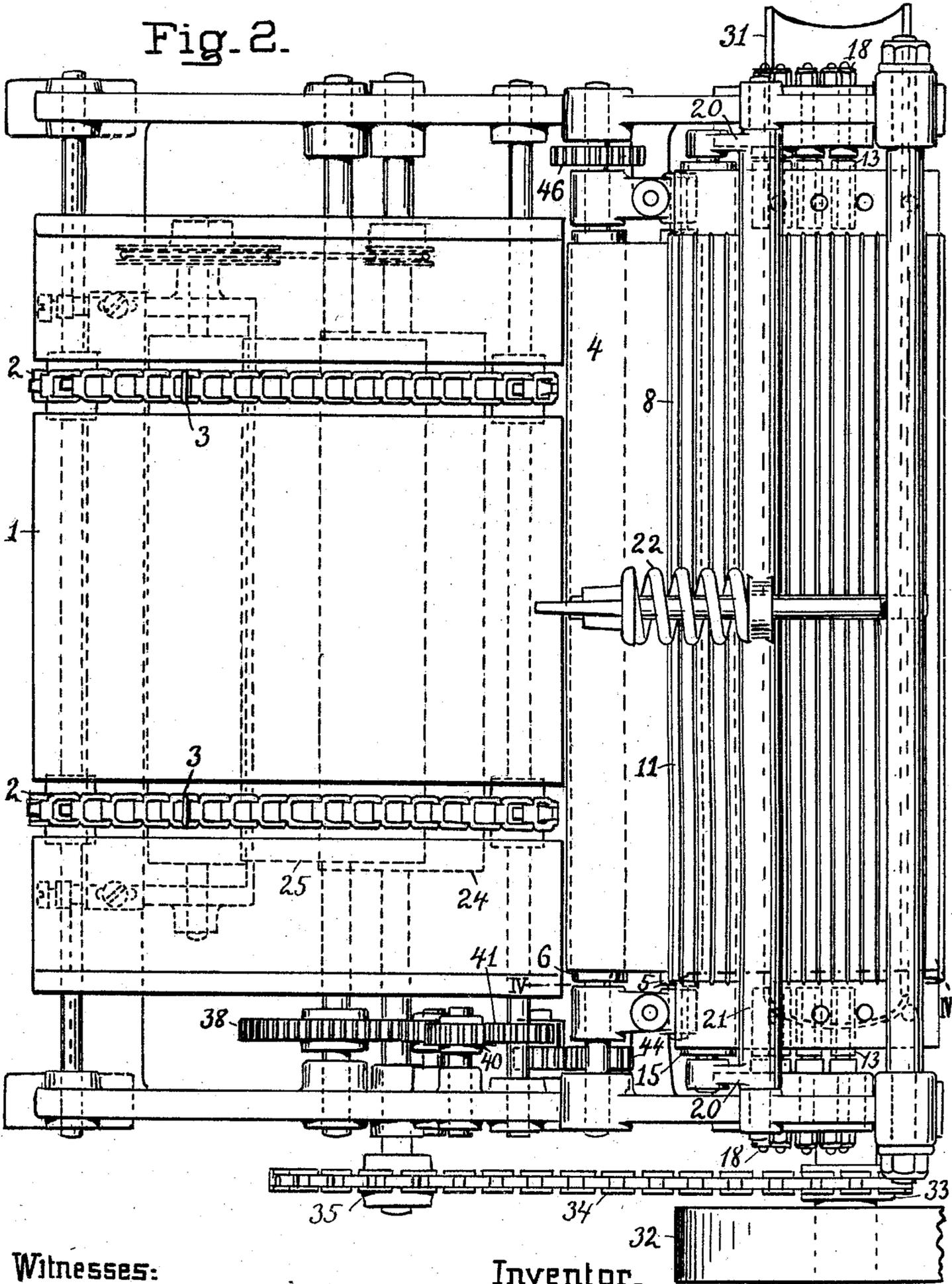


F. C. WALDRON.
WRAPPING MACHINE.
APPLICATION FILED OCT. 5, 1903.

NO MODEL.

3 SHEETS—SHEET 2.

Fig. 2.



Witnesses:

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3 SHEETS—SHEET 3.

Fig. 3.

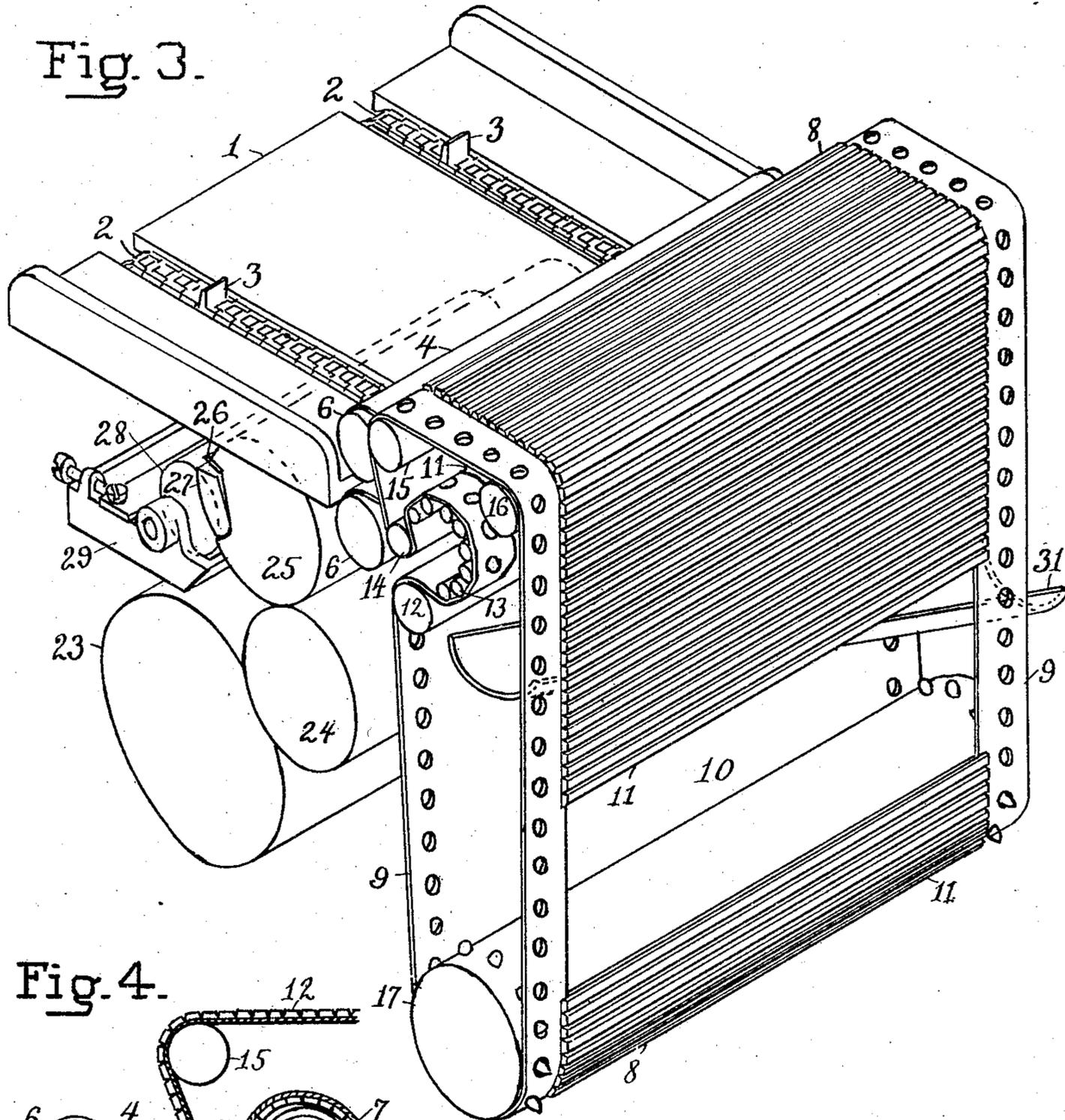
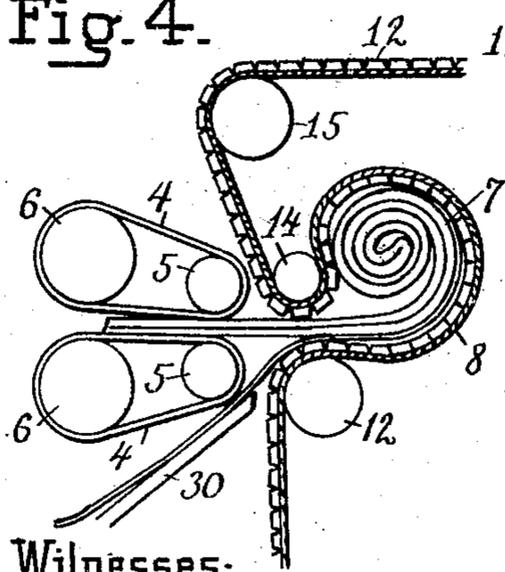


Fig. 4.



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UNITED STATES PATENT OFFICE.

FRANKLIN C. WALDRON, OF NEW YORK, N. Y.

WRAPPING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 765,606, dated July 19, 1904.

Application filed October 5, 1903. Serial No. 175,862. (No model.)

To all whom it may concern:

Be it known that I, FRANKLIN CHAMBERLAIN WALDRON, a citizen of the United States of America, and a resident of the city, county, and State of New York, have invented certain new and useful Improvements in Wrapping-Machines, of which the following is a specification.

The object of the invention is to provide an improved machine for wrapping newspapers, pamphlets, and similar articles, and especially to provide a machine in which the article to be wrapped is compactly coiled as well as wrapped and in which the coiling, wrapping, and release of the package when the wrapping is completed is effected by parts which have a continuous and rapid movement and smooth action.

The machine is provided with a coiling and wrapping chamber which is formed by a loop in a traveling wrapping-web which encircles the chamber. The article to be wrapped is fed through an opening in the loop, and when the coiling has partly progressed the forward edge of the wrapper, which is automatically cut from a roll of paper and its rearward edge gummed, is presented at the opening to the wrapping-chamber and drawn in and wrapped around the coiled article and the freshly-gummed edge is pressed down. The coiling, wrapping, and pressing down of the gummed edge of the wrapper is effected by the continuous movement of the wrapping-web, and then the web is withdrawn from the wrapped article, thereby leaving the latter unsupported and free to discharge by gravity from the machine. The wrapping-web is then re-formed into a loop, and the operation as above outlined is repeated in wrapping the next article.

The invention relates to various details of the machine above outlined, as hereinafter claimed.

In the accompanying three sheets of drawings, which form a part of this patent application, Figure 1 is a side view of the machine embodying my invention with one of the side frames omitted in order that the operating parts may more clearly appear. Fig. 2 is a top view of the machine. Fig. 3 is a perspec-

50 tive view of the operating parts which are directly concerned in the coiling and wrapping and the feeding of the newspapers or other articles and the wrappers, but omitting the framework, the gearing, and the other actuating mechanism. Fig. 4 is a section through the wrapping-chamber on the line IV IV of Fig. 2. 55

The pamphlets, newspapers, or other articles to be coiled and wrapped are laid one at a time on a table 1. With a machine of about double the dimensions of the machine as drawn in Figs. 1 and 2 of the original patent drawings a newspaper with a page two feet in length should be folded to one-quarter size by two folds intersecting midway of the page. This is the ordinary fold to the newspaper as it comes from the press in presses of modern construction. Conveyer-chains 2 2 underlie the table and lugs 3 3 on the chains and projecting upwardly through slots in the table push the articles into the wrapping-chamber at the proper times. When a paper, pamphlet, or other article which can be coiled and wrapped by the machine is pushed forward, it is engaged by feeding-webs 4 4, which are carried by pulleys 5 5 and 6 6, the latter being suitably driven, and the article to be wrapped is fed into the coiling and wrapping chamber 7. This chamber is formed by a loop in a traveling wrapping-web 8. There are, in fact, two wrapping-webs, which are the middle portions of an endless belt 9, in which are two rectangular openings 10 10, each with a length equal to the length of the chamber and a width about equal to the circumference of the chamber. Each of the wrapping-webs extends from the margin of one of the rectangular openings to the margin of the other rectangular opening. The number of wrapping-webs and of rectangular openings that may be in the belt depends on the length of the belt and is immaterial, except that the length of the webs should each be sufficient to effect the wrapping and the widths of the openings should be sufficient to permit the discharge of the wrapped article. The wrapping-webs are reinforced by transverse bars 11, which give transverse stiffness to the webs. The bars 90

are especially important at the ends of the webs adjoining the square holes in the belt; but it is desirable that they should substantially cover the webs, as shown. The bars 5 are preferably coated with rubber to increase the friction between the walls of the wrapping-chamber and the articles to be coiled or the wrappers. The loop in the wrapping-web substantially encircles the chamber, so that the 10 leading end of the newspaper or other article to be coiled will be carried by the web around the periphery of the chamber and the paper or article thereby folded over and coiled upon itself. The side portions of the belt are end- 15 less and are perforated at regular intervals, so that they may be engaged by sprocket-teeth and positively driven.

The course of the belt is over a roller 12 at the mouth of the wrapping-chamber, thence 20 around two guides each consisting of a set of rollers 13, which engage the side portions of the belt and define the minimum size and shape of the loop of the traveling wrapping-web which forms the wrapping-chamber, 25 thence a half-turn around a roller 14, which is set as close as possible to the roller over which the wrapping-web enters the wrapping-chamber, but leaving a narrow opening sufficient for the free entrance of the article to 30 be coiled and wrapped, thence over a tension-roller 15, thence over a roller 16 and a roller 17, by which the belt is actuated and the wrapping-webs are passed around the wrap- 35 ping-chamber, and thence back to the roller 12. The rollers which define the size and shape of the wrapping-chamber are sufficiently numerous and are so placed that the encircling wall of the chamber will be substantially an involute, and the article to be coiled and 40 wrapped will be given a gradually-increasing curvature as it is carried around the periphery of the wrapping-chamber and lapped on itself, so as to be properly coiled. The rollers are supported on studs 18, which are bolted 45 to the frames of the machine. The studs pass through radially-disposed slots 19 in the side frames and can be set in these slots so as to give any desired size and shape of curve to the wrapping-chamber. The tension-roller 50 is mounted on two arms 20, which project from a rock-shaft 21. A spring 22 presses against an arm midway of the rock-shaft and throws out the tension-roller so as to give the required tension. The tension-roller by yield- 55 ing will permit the loop to enlarge beyond the size determined by the guides or rollers 13 whenever the article makes a larger package when coiled than the normal capacity of the wrapping-chamber, thereby making the 60 coiling and wrapping chamber elastic. The roller 17, which drives the belt, is provided with teeth which engage with perforations in the side portions of the belt, so that the belt

may be positively driven. The necessity for a positive instead of a friction drive for the 65 belt arises from the fact that the wrapping-webs must be passed around and withdrawn from the wrapping-chamber in proper time with reference to the operations of the mech- 70 anisms which feed the articles to be wrapped and the wrappers to the wrapping-chamber. The side portions of the belt are shown as integral with the body of the wrapping-webs. They are, in effect, actuating sprocket-belts 75 for the wrapping-webs, which are bridged between them, and their purpose is to pass the wrapping-webs around the wrapping-chamber and withdraw the wrapping-webs 80 from the wrapping-chamber. It is not material that the tension-roller and the driving-roller should have the particular locations in the circuit of the belt in which they are shown in the drawings.

The machine is organized to feed the wrap- 85 pers from a roll of paper 23. The wrapping-paper is led between two feeding-rolls 24 25. The upper of these rolls is provided with a knife 26 and a spring-pressed gumming-pad 27, which severs the wrappers at each revolu- 90 tion and applies gum to the rear edge of each wrapper. The circumference of the roll carrying the knife is equal to the length required for the wrapper, which need only be sufficient to encircle the tightly-rolled newspaper or 95 other article and overlap, so that the gummed edge will fall on the wrapper and not on the newspaper. The gumming-pad at each revolu- 100 tion of the roll by which it is carried strikes a gum-roll 28, which revolves in a gum-fountain 29. The feeding of the wrapper is preferably so timed that it will be entered into 105 the wrapping-chamber between the article to be wrapped and the wrapping-web after the article has been partly coiled, and the remaining portion of the article to be drawn into the 110 wrapping-chamber has a length which is a little less than the length of the wrapper.

The wrapping-web travels a sufficient distance to effect the coiling and wrapping and 115 release of the coiled and wrapped article in the same time that one wrapper is fed, cut off, and released, and as the length of each portion of the wrapping-webs between the 120 openings 10 is greater than the length of a wrapper the speed of movement of the wrapping-web is greater than the peripheral speed of the feeding-rolls 24 25, which determines the speed at which the wrapper is fed, in order that the movement of the feeding may be 125 continuous and uniform. The forward end of the wrapper is not entered into the wrapping-chamber sufficiently to be firmly engaged by the wrapping-web until the rear end has been cut off from the roll of paper and released from the feeding-rolls, the feeding-rolls being placed at a distance from the

mouth of the wrapping - chamber which is nearly equal to the length of the wrapper for this purpose. A table 30 for the wrapper to slide over bridges the space between the feeding-rolls and the wrapping-chamber.

The rear end of the newspaper or other article to be wrapped passes into the wrapping-chamber just in advance of the rear gummed end of the wrapper, and the gummed end will be pressed down on the wrapper and the package sealed by the continued movement of the wrapping-web. Following this the rear end of the wrapping-web reaches the wrapping-chamber, passes around the loop, and the wrapping-web having then completely left the loop the walls of the wrapping-chamber are thereby removed. The wrapping-chamber therefore for the moment vanishes, and the wrapped package being entirely unsupported falls to the trough 31 and slides out from the machine.

The mechanism for actuating the conveyer-chains, which determine when the newspaper or other article to be wrapped shall enter the wrapping-chamber, the mechanism for actuating the feeding-rolls for the wrappers, and the mechanism for actuating the wrapping-web are all positively geared together, and their movements are so timed with respect to each other that they will cooperate, as above described. It is not necessary that the parts of all these mechanisms which come in direct contact with either the article to be wrapped or the wrapper should operate at the same peripheral or linear speed; but each can be operated continuously and at a uniform speed, and hence rapidly and without shock. It is only necessary that they should be so driven that the wrapping-web, articles to be wrapped, and wrappers shall be entered into the wrapping-chamber in proper relative time, and hence with the same frequency.

The machine is power-driven through a pulley 32, which is conveniently placed on the shaft which carries the roller 17. Power is communicated from this shaft to the shaft carrying one of the wrapper-feeding rolls 24 by a sprocket-wheel 33, chain 34, and sprocket 35. Gears 37 38 communicate positive motion to the other feeding-roll 25. The conveyer-chains feeding the article to be wrapped are driven from the gear 38 through two idle gears 39 40 and a gear 41 on a shaft with sprocket-wheels for the conveyer-chains. A further extension of this train of gearing through the pinion 42, driven from the gear 41, a gear 43, connected with the pinion, to the gear 44 communicates motion to the lower feeding-web, the gear 44 being on a shaft with the pulley 6, over which this web passes. The pulley 6 for the upper feeding-web is driven from the shaft of the lower pulley by the pair of gears 45 46.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a wrapping-machine, a traveling wrapping-web, and means for returning the web on itself forming a loop to embrace the article to be wrapped, and means for passing the web around the loop to effect the wrapping of the article to be wrapped and for withdrawing the web from the wrapped article by continued movement in the same direction in passing around the loop to release and discharge the wrapped article, substantially as described.

2. In a wrapping-machine, a belt consisting of endless side portions, and a traveling wrapping-web bridged between the side portions, and means for returning the web on itself forming a loop to embrace the article to be wrapped, and means for actuating the belt and passing the web around the loop to effect the wrapping of the article to be wrapped, and for withdrawing the web from the wrapped article by continued movement in the same direction in passing around the loop to release and discharge the wrapped article, substantially as described.

3. In a wrapping-machine, a belt consisting of side portions and a traveling discontinuous wrapping-web bridged between the side portions, guides for the side portions for forming the wrapping-web into a loop, a wrapping-chamber comprised between the guides and the loop in the wrapping-web, and means for passing the web around the chamber, substantially as described.

4. In a wrapping-machine, a belt consisting of endless side portions and a traveling wrapping-web bridged between the side portions, guides for the side portions for forming the wrapping-web into a loop, a wrapping-chamber comprised between the guides and the loop in the wrapping-web, and means for actuating the belt and passing the web around the chamber to effect the wrapping of the article to be wrapped and for withdrawing the web from the wrapped article by continued movement in the same direction in passing around the loop to release and discharge the wrapped article, substantially as described.

5. In a wrapping-machine, a belt consisting of side portions and a traveling wrapping-web bridged between the side portions, transverse stiffening-bars attached to the wrapping-web, guides for the side portions for forming the wrapping-web into a loop, a wrapping-chamber comprised between the guides and the loop in the wrapping-web, and means for passing the web around the chamber, substantially as described.

6. In a wrapping-machine, a coiling and wrapping chamber, an opening in one side thereof, continuously-operating means for coiling, wrapping and releasing the wrapped

article, continuously-operating means for
feeding wrappers to the wrapping-chamber
spaced from the wrapping-chamber a distance
approximately equal to the length of a wrap-
5 per, and positive driving mechanism for ac-
tuating the coiling means and the wrapper-
feeding means at different rates of speed, sub-
stantially as described.

Signed by me at New York city, (borough
of Manhattan,) New York, this 2d day of Oc- 10
tober, 1903.

FRANKLIN C. WALDRON.

Witnesses:

SAMUEL W. BALCH,
THOMAS EWING, Jr.