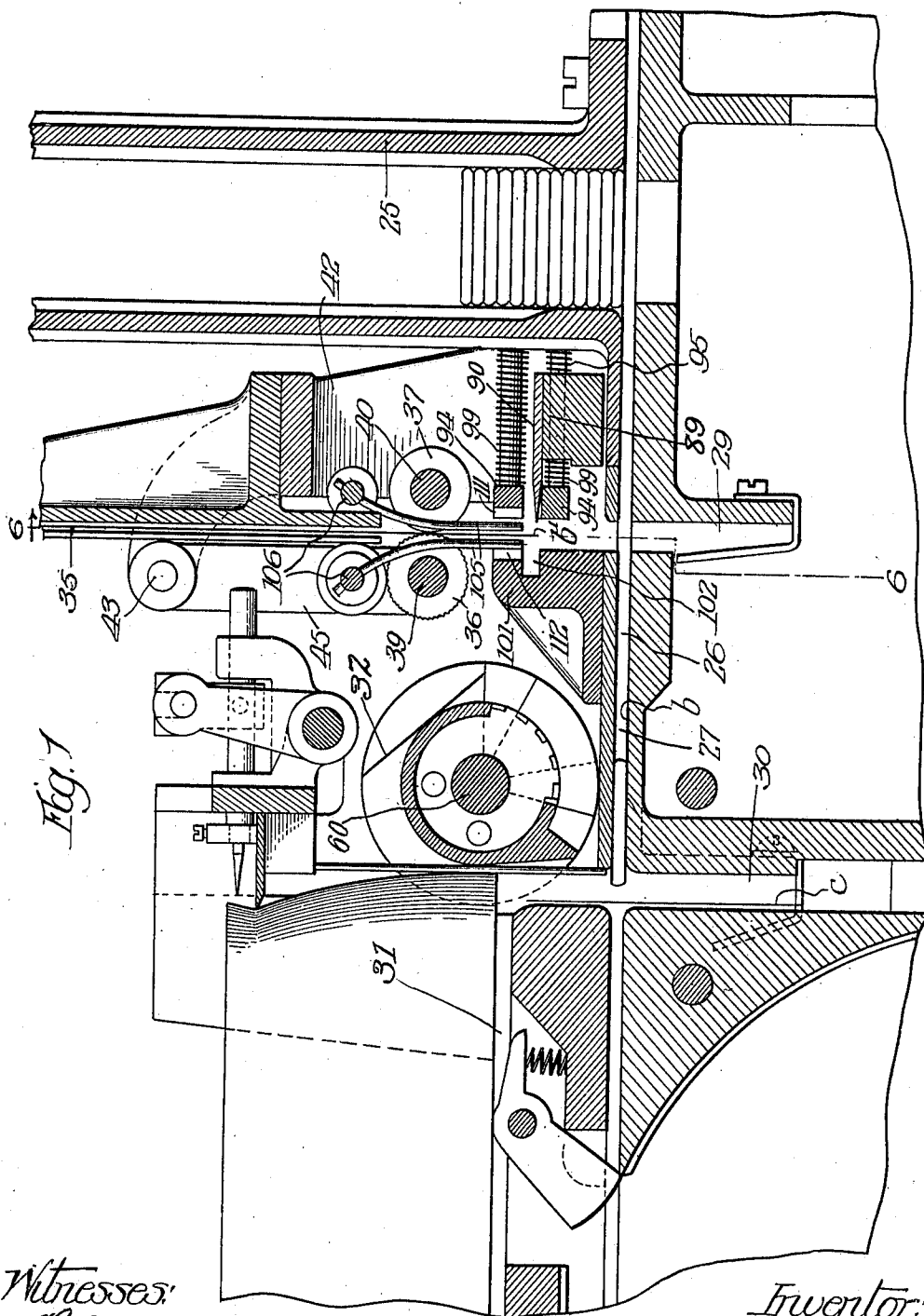


H. Y. ARMSTRONG.
MECHANISM FOR CUTTING SHEETS OR WRAPPERS FROM STRIPS.
APPLICATION FILED JAN. 8, 1910.

978,535.

Patented Dec. 13, 1910.

4 SHEETS-SHEET 1.



Witnesses:
A. G. Barrett
W. Goldberger

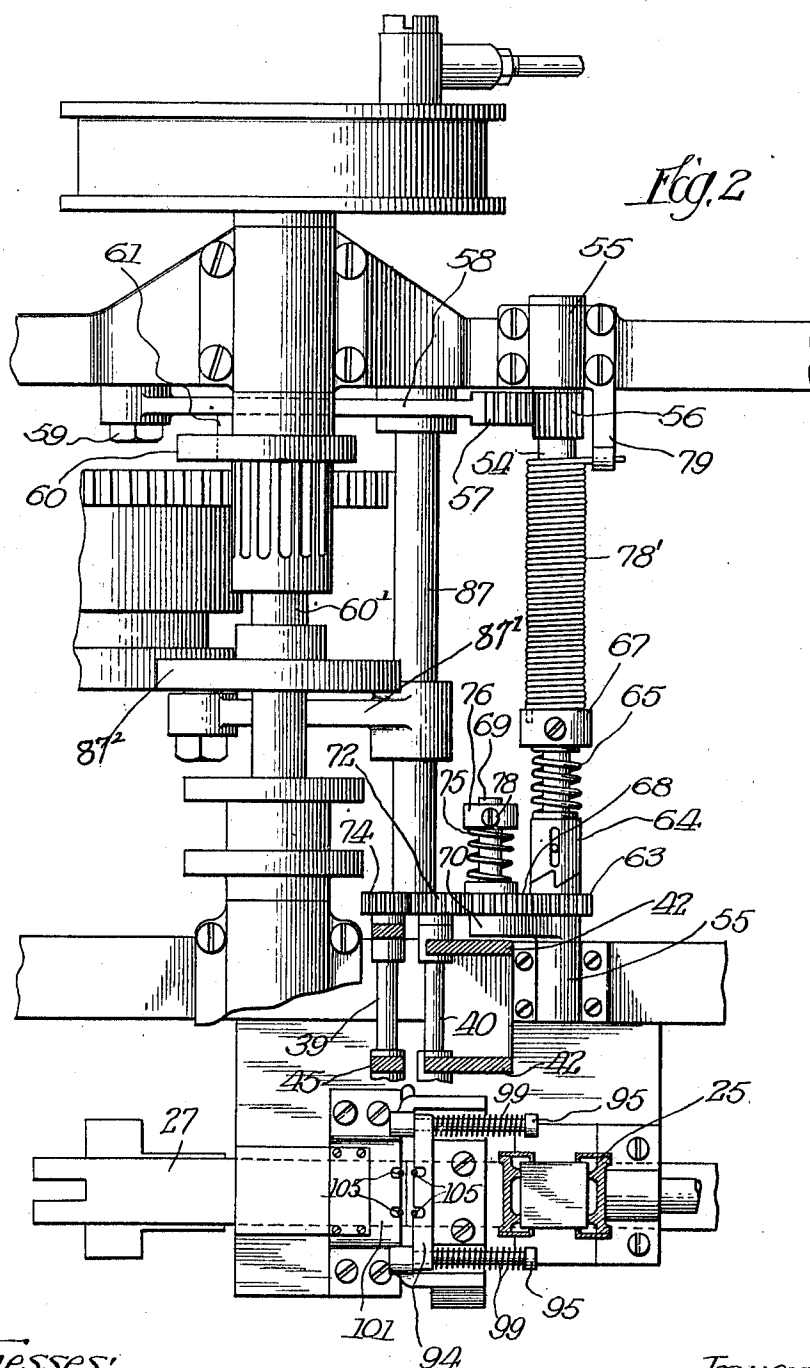
Inventor:
Harry Y. Armstrong,
by William H. Hall,
his Atty.

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4 SHEETS—SHEET 2.



Witnesses:

J. G. Barnett
W. Goldberger.

Inventor:

Harry Y. Armstrong.
By William Hall,
his Attorney.

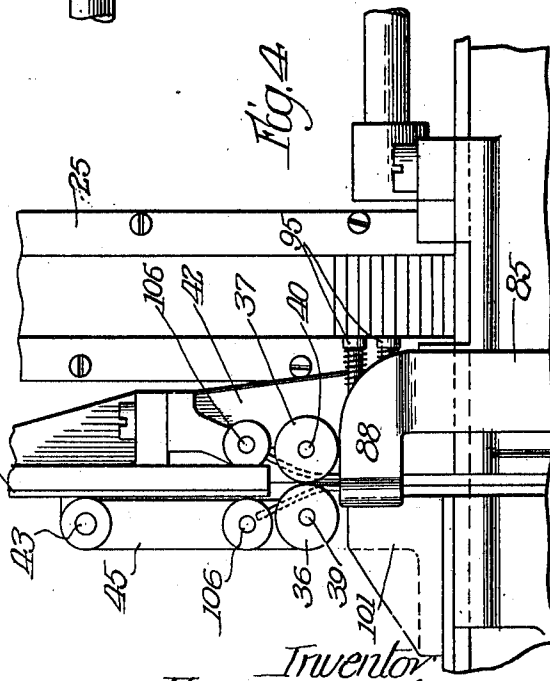
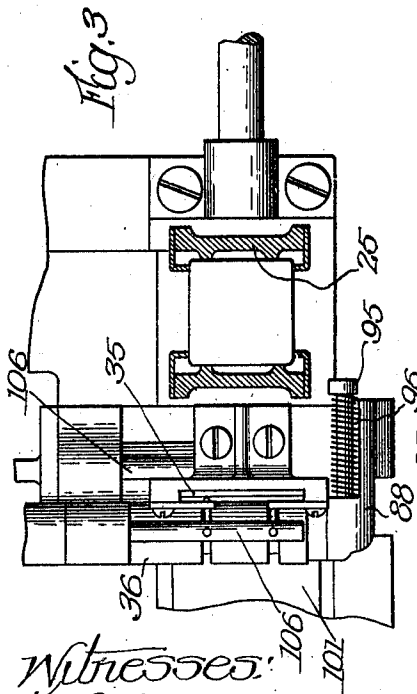
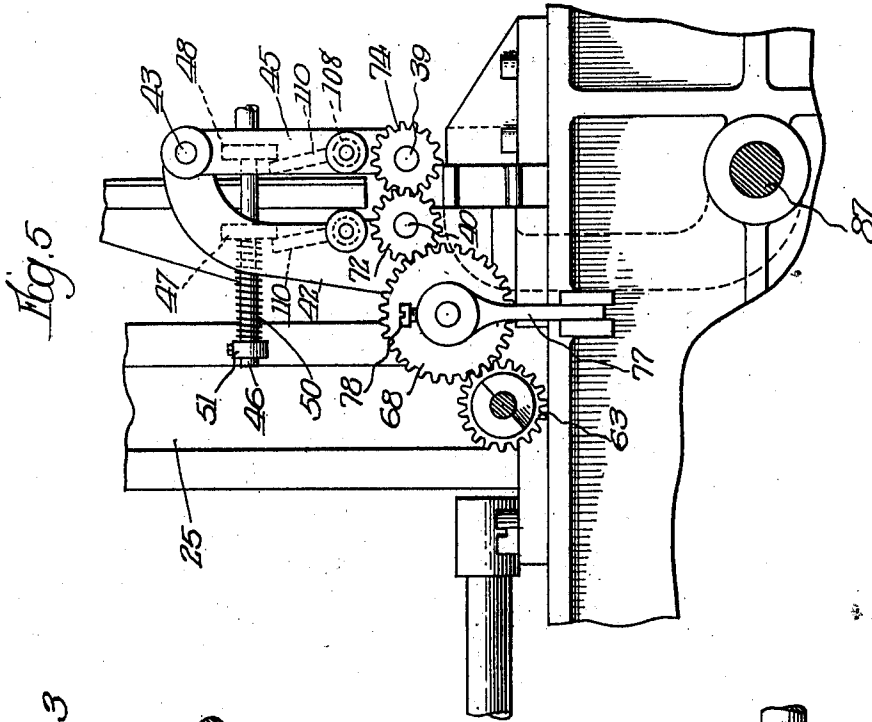
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4 SHEETS—SHEET 3.



Witnesses:
S. H. Barrett
W. Goldberger

Inventor
Harry Y. Armstrong.
by William H. Hall Atty.

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4 SHEETS-SHEET 4.

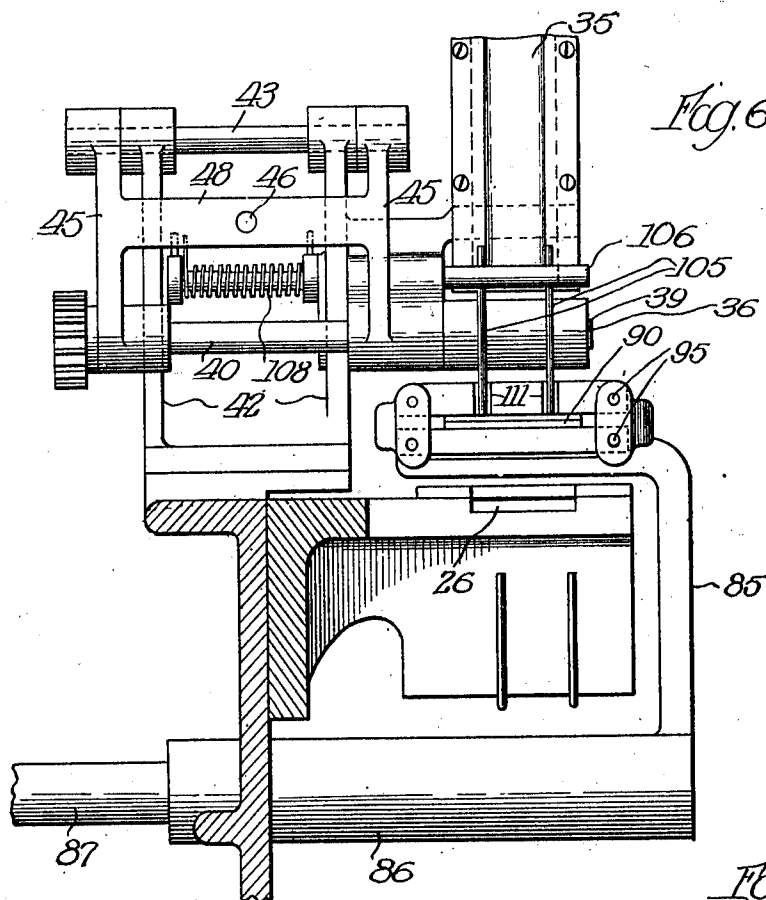


Fig. 7

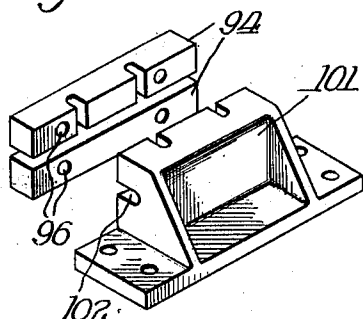
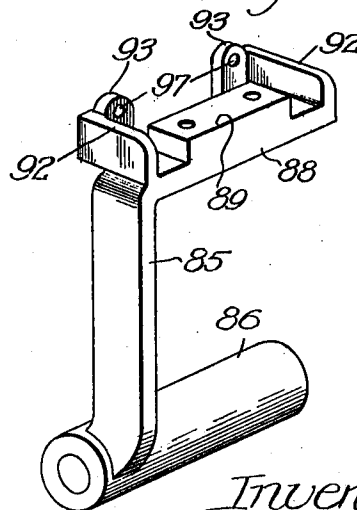


Fig. 8



Witnesses:
J. H. Barrett
W. Goldberger

Inventor:
Harry Y. Armstrong.
by William L. Hall
Atty.

UNITED STATES PATENT OFFICE.

HARRY YARRINGTON ARMSTRONG, OF ELGIN, ILLINOIS.

MECHANISM FOR CUTTING SHEETS OR WRAPPERS FROM STRIPS.

978,535.

Specification of Letters Patent. Patented Dec. 13, 1910.

Original application filed October 9, 1909, Serial No. 521,834. Divided and this application filed January 6, 1910. Serial No. 536,717.

To all whom it may concern:

Be it known that I, HARRY Y. ARMSTRONG, a citizen of the United States, and a resident of Elgin, in the county of Kane and State of Illinois, have invented certain new and useful Improvements in Mechanism for Cutting Sheets or Wrappers from Strips; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

This invention relates to a wrapper or sheet delivery mechanism for wrapping machines and other uses, for instance, to deliver wrappers to a wrapping mechanism by which the wrappers are wrapped about the articles.

My improvements are illustrated in a machine having means for delivering both an inner and an outer wrapper into the path of the articles to be wrapped, such as is shown in my pending application for United States Letters Patent, Serial Number 521,834, filed October 9th, 1909, of which this application is a division. As herein shown the inner wrappers comprise thin wax paper and are cut one at a time from the advance end of a strip of such material.

The present invention relates to mechanism for cutting sheets or wrappers from a strip of wrapper material and delivering the severed sheet to a place of use, as to a wrapping mechanism and relates also to means for preventing the strip clinging to the mechanism in a manner tending to clog the same, and to other features of improvements in mechanisms of this character as will hereinafter more fully appear.

In the drawings, Figure 1 is a central vertical section taken through a wrapper delivery mechanism embodying my invention. Fig. 2 is a partial plan view and partial horizontal section thereof together with the operating mechanism therefor. Fig. 3 is an enlarged plan view of the wrapper delivering mechanism with parts shown in section. Fig. 4 is a side elevation thereof, as viewed from the outside of the machine. Fig. 5 is a side elevation thereof, as viewed from the opposite or inner side of the machine. Fig. 6 is a vertical section on the

line 6—6 of Fig. 1. Fig. 7 is a perspective view of the clamping jaws which clamp the paper while it is being cut in sections or lengths. Fig. 8 is a perspective view of the supporting and actuating arm for the movable cutting knife.

Only such parts of the wrapping machine proper are herein shown as will facilitate an understanding of the application of my invention thereto, said machine being fully shown in my prior United States Letters Patent, Number 890,953 and Number 918,641.

Referring first to the general construction of the wrapping machine to which my invention is shown as applied, 25 designates a hopper from the lower end of which the gums or other articles are discharged into a way 26 by means of a plunger 27 that reciprocates through said way and the lower end of said hopper. Said way 26 extends over and intersects two wrapper receiving recesses 29 and 30 into which wrappers are deposited by the wrapper delivery mechanisms, with their upper sides extending across the path of the articles so as to be partially folded about said articles as the latter are advanced through the way to the mechanism for wrapping the articles. The recess 29 receives the thin inner wrappers *b* discharged thereinto by the mechanism to which the present invention relates, and the recess 30 receives the outer wrappers or sheets *c* that are fed thereinto one by one from a compact bundle of wrappers held in a magazine 31 by a feed roller 32, as set forth in my aforesaid application for Letters Patent.

The strip of wax paper *b'*, from which the inner wrappers *b* are cut, is fed downwardly from a suitable reel (not shown) through a vertical guide 35, located just in rear of the hopper 25, between two horizontal feed rollers 36, 37 into the wrapper space or recess 29. One of the rollers, the roller 36 as herein shown, is roughened in order to facilitate the feed of the paper between the rollers. The feed rollers 36, 37 are fixed to rotative shafts 39, 40. The shaft 40 is mounted in two vertical standards 42 fixed to and extending above the machine frame, laterally inside the rollers. The roller shaft 39 is mounted in a swinging frame, comprising an upper horizontal

shaft 43 extending through the upper ends of the standards 42 and depending arms 45, 45 mounted at their upper ends on the shaft 43 and in the lower ends of which the shaft 39 is rotatively mounted. The upper ends of the standards 42 are curved rearwardly in order that the arms 45 may hang parallel to said standards. The said rollers are pressed yieldingly together by an adjustable pressure device, comprising a pin 46 extending through an apertured cross-bar 47 connecting the standards 42 and is fixed at its rear end to a like cross-bar 48 connecting the arms 45, and a spiral spring 50 surrounding the pin and interposed between the bar 47 and a nut or head 51 adjustably fixed to the forward end of the pin. The mechanism for rotating said feed rollers is made as follows:

54 designates a rock-shaft that extends horizontally across the machine frame and is mounted in bearings 55, 55 on said frame. The said shaft is provided at one end with a gear pinion 56 which meshes with a gear segment 57 carried by an arm 58 that is pivoted to the machine frame at its end remote from the segment by means of a pivot stud 59. Said gear segment arm is swung on its axis to impart rotation to the shaft 54 through the means of a cam 60 fixed to a rotative power driven shaft 60' and adapted to engage a roller bearing 61 on said arm 58. Mounted on the end of the shaft 54 remote from the pinion 56 is a second gear pinion 63 that is arranged to rotate freely about the shaft, but is adapted to be clutched thereto to rotate with the shaft in one direction. For this purpose the hub of said pinion 63 and the adjacent end of a sleeve 64, surrounding and having non-rotative but endwise movement on the shaft, are provided in their adjacent ends with clutch teeth which operate to turn the pinion in one direction, but said sleeve and the shaft rotate in the other direction without turning the pinion. Said sleeve 64 is held against the clutch element of the hub of the pinion 63 by means of a light spring 65 interposed between said sleeve and a collar 67 fixed to the shaft. The said gear pinion 63 meshes with a pinion 68 mounted on a stud 69 that is fixed in a bracket 70 which rises from the adjacent bearing 55. The said pinion 68 meshes with a pinion 72 that is fixed to the adjacent shaft 40 of the roller 37, and said pinion 72 meshes with a like pinion 74 that is fixed to the other or movable roller shaft 39.

A braking or retarding device is applied to the pinion 68 to arrest rotation of the shafts 39, 40 at the time the feed shaft 54 is arrested, and thereby prevent overrunning of the feed rollers. The brake or retarding device shown comprises a spiral, expansively

acting spring 75 which surrounds the stud 65 and is interposed between the gear wheel 68 and a collar or head 76 fixed to the upper end of an arm 77 and sliding on the stud 69. The collar may be adjustably fixed on the stud by the set screw 78 shown. The spring 75 thus exerts a braking friction on the wheel 68, and such frictional action may be varied by adjusting the collar 76 on the stud toward and away from the gear wheel 68.

The shaft 54 is positively rotated through the medium of the pinion 56 and the cam actuated gear segment 57 an angular distance sufficient to give the proper feed motion to the feed rollers 36, 37 to feed the strip the length of an inner wrapper. Thereafter when the gear segment arm is released from the cam 60, the said shaft and gear segment are quickly retracted through the medium of a volute spring 78' surrounding said shaft 54 between the collar 67 and the bearing 55 adjacent to the pinion 56; said spring being fastened at one end to said collar and its other end to an arm 79 extending inwardly from said bearing 55. During the restoring movement of the feed shaft 54, the clutch sleeve 64 yields backwardly against the action of the light spring 65, so that the restoration of the feed shaft does not have the effect to produce a corresponding angular movement of the pinion 63 and the feed rollers geared thereto. After the strip has thus been fed downwardly the proper distance between the feed rollers, the cutting mechanism is set in motion to sever a wrapper from the lower or advance end of the strip, the advance margin of the strip resting at this time against the bottom of the wrapper receiving chamber 29. The mechanism for so cutting the inner wrappers from the lower end of the strip of paper is made as follows:

85 designates a vertically rocking arm provided at its lower end with a hub 86 that is fixed to a horizontal rock-shaft 87 extending transversely across the machine frame and mounted in suitable bearings therein. Said rock shaft is designed to be operated in suitable timing relation to the feeding movement of the feed rollers by any convenient form of operating mechanism, as, for instance, by means of the arm 87' fixed to the rock shaft and operated by a cam 87² fixed to the continuously rotative shaft 60' that operates the outer wrapper feed roller 32, as shown in Fig. 2. The rocking arm 85 is provided at its upper end with a generally horizontal head 88 which is formed with a central, horizontal, raised seat 89 on which is fixed, by screws or the like, a cutting knife 90 for cutting the strip into wrappers of proper lengths. The said head 88 is provided with vertical wings 92, 92 and said wings are provided at their rear edges with

inwardly turned flanges 93, 93. Between said vertical flanges 93 and the raised knife supporting seat 89 are located upper and lower jaw members 94, 94 which are yieldingly mounted in the head through the medium of upper and lower pairs of headed pins 95, 95 which extend through openings 96 in said members and are fixed in openings 97 in the vertical flanges 93 of the head. Said pins extend between the end wings 92 of the head and the ends of the central knife supporting seat 89, and they are located a vertical distance apart to space the jaw members a sufficient distance to permit the knife 90 to pass therebetween, as will hereinafter more fully appear. Interposed between the jaw members and the heads of pins 95 and surrounding said pins are spiral expansively acting springs 99, 99 which act to press the jaw members against the vertical flanges 93, but permit said jaw members to yield backwardly, relatively to the arm 85 and its head 88, there being thus provided lost motion between the knife 90 and the jaw members 94 for a purpose hereinafter to be described. The said movable jaw members 94, 94 oppose a stationary jaw 101 which is attached in any suitable manner to the frame of the machine. Said stationary jaw is made shorter than the movable jaw and slightly shorter than the distance between the flanges 93 of the head 88, so that it may pass between said flanges for contact with the movable, yielding jaw. The space separating said jaws is in vertical alinement with the coacting faces of the feed rollers and the wrapper receiving chamber 29, and it is between these jaws that the paper is clamped while being cut by the knife 90. The stationary jaw is provided in line with the space between the yielding jaw members with a groove 102 to receive the knife when the movable jaw and knife are advanced toward the stationary jaw, and the stationary jaw constitutes a fixed abutment or a fixed knife against which the movable knife acts in severing the strip.

The operation of cutting the strip that is fed in proper cutting alinement with respect to the knife, consists in first moving the movable jaw, comprising the members 94, 94, into contact with the stationary jaw. This is effected through the rocking of the shaft 87 and arm 85. Upon contact of the jaws, the spring pressed jaw yields backwardly, as permitted by its backing springs 99, while the knife 90, which is fixed to the head 88, advances to cut the paper gripped between the jaws. Thereafter the parts are retracted to their normal positions to free the severed wrapper and permit it to be folded or wrapped about the next gum advanced through the feed slot or way 27.

When using wax paper or the like, it

tends to stick to the clamping jaws between which the paper is clamped while being cut. In order to avoid this result, I may provide stripper wires 105, 105 which are fixed at their upper ends to transversely horizontal shafts 106, 106 which shafts are rockingly mounted in the hanger arms 45 and the upright standards 42, respectively. Said shafts are placed under the influence of volute springs 108 which tend to hold the lower ends of said wires out of contact with the jaws. The said springs 108 tend to swing both wires toward the movable jaw, but stops 110, 110 fixed to the shafts 106 (Fig. 5) and bearing against the cross-bars 47, 48 of the roller shaft supporting and bearing frame, serves to restrain said springs so that normally the wires, when the jaws are separated, are held free from the jaws. When the movable jaw is moved toward the stationary jaw, however, said stripper wires enter vertical notches or recesses 111, 112 in the movable and stationary jaws, respectively. After the strip of paper has been severed and the jaws separated, the stripper wires separate from the jaws under the control of the springs 108 and stops 110 and assume positions shown in Fig. 1, thereby stripping the severed wrapper and lower end of the strip from said jaws.

It will be obvious that the structural details illustrated may be varied without departure from the spirit of the invention, and the invention is not limited to the specific details shown, except as hereinafter made the subject of specific claims.

I claim as my invention:

1. In a sheet delivery mechanism, the combination with means for advancing a strip, of clamping jaws located in advance of the feeding means and adapted to clamp the strip, a knife for severing the strip when so clamped and spring controlled stripper wires for preventing the strip and the severed sheets from clinging to said jaws.

2. In a sheet delivery mechanism, feed rollers between which a strip is advanced, stationary and movable clamping jaws, one at each side of the path of the strip, a swinging arm carrying the movable jaw, said latter jaw being yieldingly mounted on said arm, a knife fixed to and carried by the said arm, means for swinging said arm toward and from the stationary jaw, whereby the strip is first clamped between the jaws, whereupon the movable jaw yields backwardly and the knife moves forwardly relatively to the latter to sever a sheet from the strip, and spring pressed stripper wires located between said jaws for stripping the paper from the jaws.

3. In a sheet delivery mechanism, feed

rollers between which a strip is advanced and strip cutting mechanism below said rollers comprising a movable cutting blade and a stationary cutting abutment toward
5 and from which the movable blade is moved, one at each side of the path of the strip, a vertically swinging arm carrying at its upper end the movable cutting blade, a horizontal rock shaft to which said arm is
10 fixed and by which it is swung to move the movable blade into and out of cutting position, and means for rocking said shaft.

4. In a sheet delivery mechanism, the combination with feed rollers for a strip of
15 paper, of a cutting mechanism comprising a stationary member having a notch and a horizontally reciprocating jaw comprising yielding jaw members separated by a space
20 opposite to said notch and movable toward and from and adapted to be yieldingly pressed against said stationary member, a knife fixed to said reciprocating jaw and occupying the space between said jaw members and adapted to enter said notch of the
25 stationary member when the yielding jaw members are pressed against the stationary member, and means for operating said rollers and said reciprocating jaw.

5. In a sheet delivery mechanism, the
30 combination with feeding means for a strip, and means for intermittently operating said feeding means, of a cutting mechanism below the feeding means for cutting wrappers from said strip comprising a vertically
35 swinging arm, a cutting knife fixed to the upper end of said arm, a stationary knife or abutment with which the movable knife coöperates to sever the strip into wrappers and means for intermittently swinging said
40 arm to move the movable knife toward and from the stationary knife or abutment during periods of inaction of the feeding means.

6. In a sheet delivery mechanism, the combination with a fixed frame and a swinging
45 frame hinged thereto, feed rollers, mounted one in the fixed frame and the other in the swinging frame, for feeding a strip and a spring applied to said swinging frame to press the rollers yieldingly together, of a
50 cutting mechanism located below said rollers for cutting wrappers from said strip comprising a movable knife and a fixed knife or abutment coöperating therewith for severing wrappers from the strip and means for
55 operating said rollers and said movable knife.

7. In a sheet delivery mechanism, the combination with a fixed frame and a swinging
60 frame hinged thereto, feed rollers, mounted one in the fixed frame and the other in the swinging frame, for feeding a strip and a spring applied to said swinging frame to press the rollers yieldingly together, of a cutting mechanism located below said rollers

for cutting wrappers from said strip comprising a fixed knife or abutment, a vertically swinging lever, a horizontal rock shaft to which the lower end of said lever is fixed, a knife carried by the upper end of said lever and movable thereby toward and from
70 the fixed knife to sever the wrappers from the strip and means for rotating said rollers and rocking said shaft.

8. In a sheet delivery mechanism, the combination with feed rollers between which
75 a continuous strip is advanced, and a knife for severing the sheets from the advance end of the strip, of means for rotating said feed rollers, embracing a rotative shaft geared to said feed rollers, means for intermittently rotating said shaft in one direction, and a spring applied to the shaft to restore the same after each intermittent rotation thereof.

9. In a sheet delivery mechanism, the
85 combination with feed rollers between which a continuous strip advanced, and a knife for severing the sheets from the advance end of the strip, of means for rotating said feed rollers, embracing a rotative shaft geared to
90 said feed rollers, means for intermittently rotating said shaft in one direction, a spring applied to the shaft to restore the same after each intermittent rotation thereof, and a clutch between said shaft and rollers whereby the rollers are rotated when the shaft rotates in one direction, but are free when the shaft is restored by its spring.

10. In a sheet delivery mechanism, the combination with feed rollers between which
100 a continuous strip is advanced, and a knife for severing the sheets from the advance end of the strip, of means for rotating said feed rollers, embracing a rotative shaft geared to said feed rollers, means for intermittently rotating said shaft in one direction, a spring applied to the shaft to restore the same after each intermittent rotation thereof, a clutch between said shaft and rollers whereby the rollers are rotated when
110 the shaft rotates in one direction, but are free when the shaft is restored by its spring, and a braking or retarding device applied between said feed shaft and rollers to prevent overrunning of the rollers.

11. In a sheet delivery mechanism, the combination with feeding rollers for advancing a continuous strip and means for severing the sheets from the advance end of the strip, of means for intermittently rotating
120 said rollers, comprising a rotative feed shaft geared to said rollers and provided at one end with a pinion, a cam actuated gear segment engaging said pinion to rotate said shaft forwardly, a retracting spring against
125 the action of which said shaft is rotated and operating to restore the shaft and segment at the end of each intermittent move-

ment, and a clutch between said shaft and the rollers operating to transmit rotation to the rollers when the shaft turns forwardly, while transmitting no rotation to the rollers when returned by the action of the spring.

In testimony, that I claim the foregoing

as my invention I affix my signature in the presence of two witnesses, this 11th day of December A. D. 1909.

HARRY YARRINGTON ARMSTRONG.

Witnesses:

WILLIAM L. HALL,

WILLIAM GOLDBERGER.