

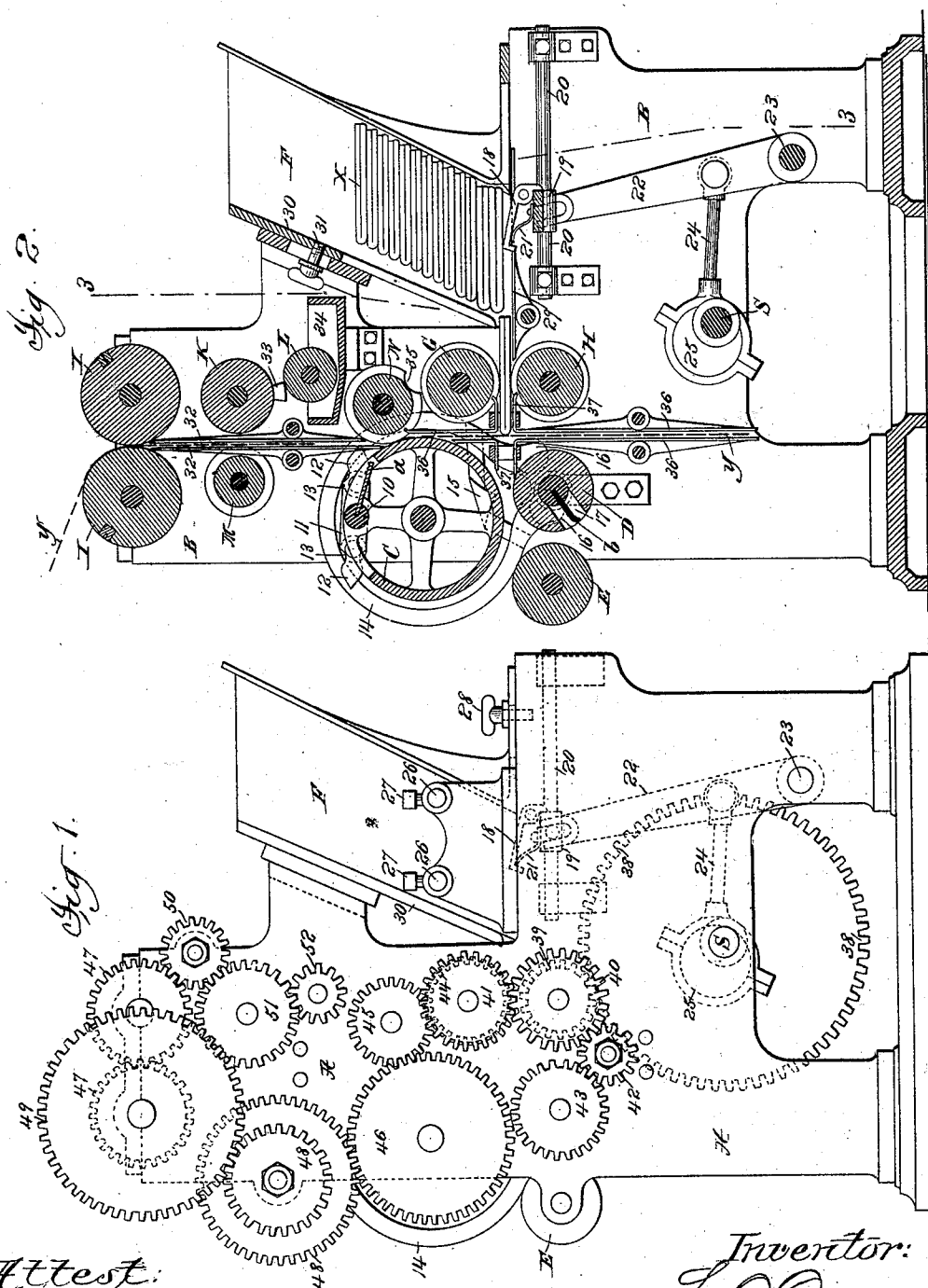
(No Model.)

5 Sheets—Sheet 1.

L. C. CROWELL.
NEWSPAPER WRAPPING MACHINE.

No. 561,567.

Patented June 9, 1896.



Attest:
Geo. H. Botto.
C. J. Sawyer

Inventor:
L. C. Crowell
by
Chas. Munson Phelps
Atty

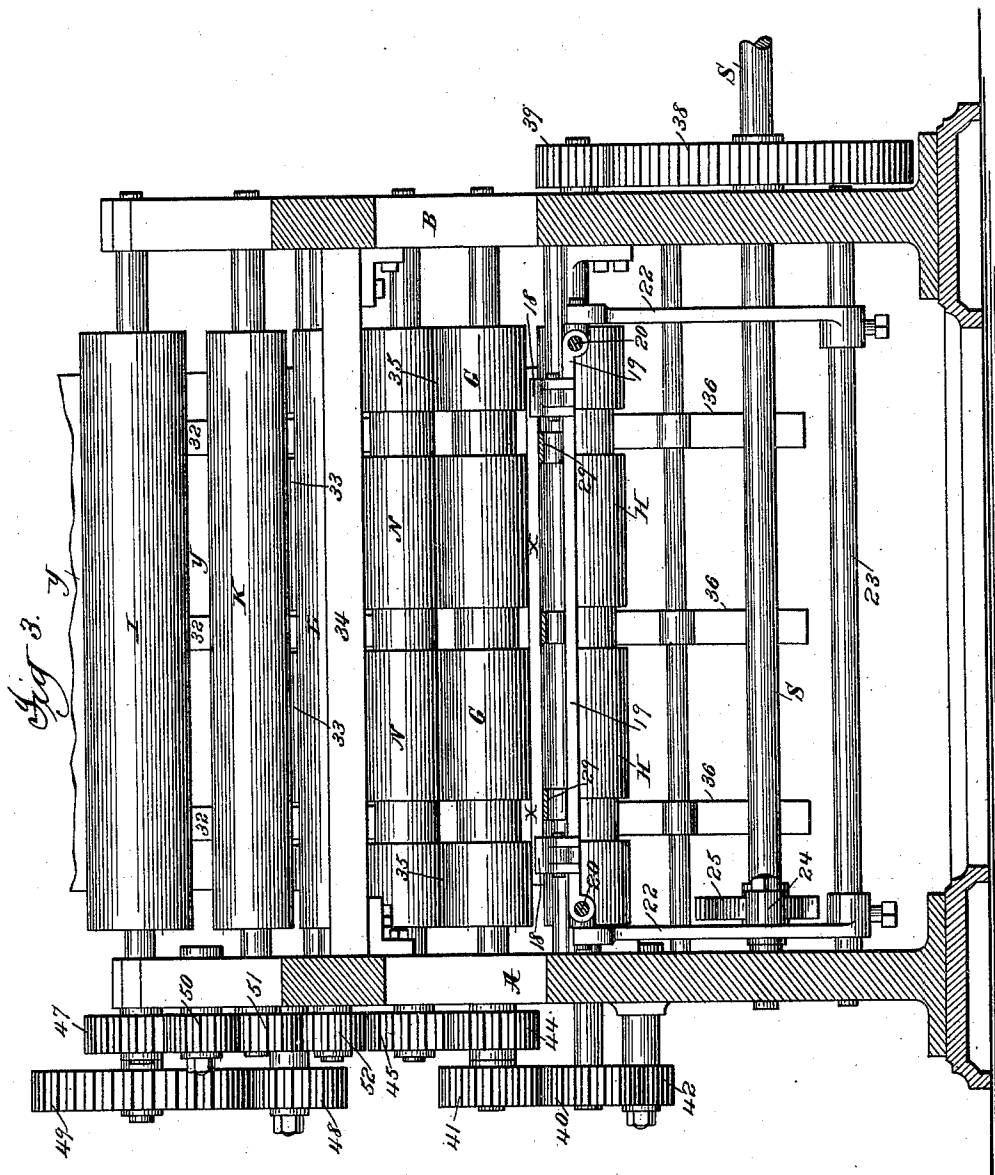
(No Model.)

5 Sheets—Sheet 2.

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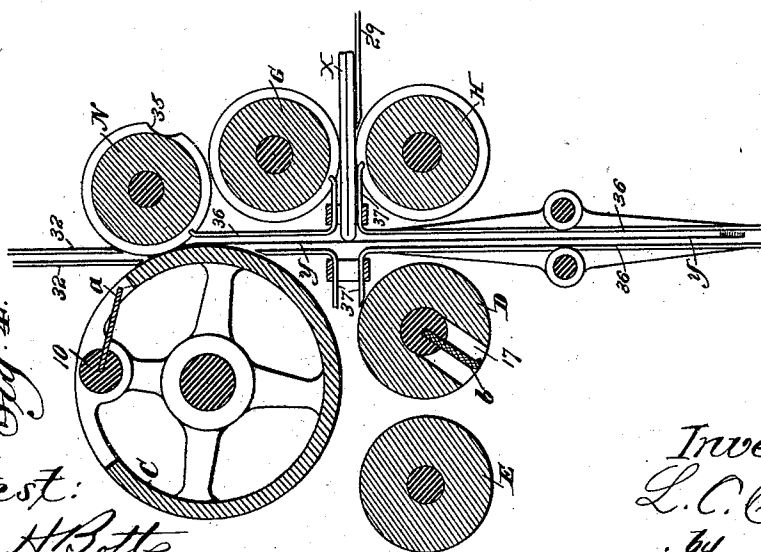
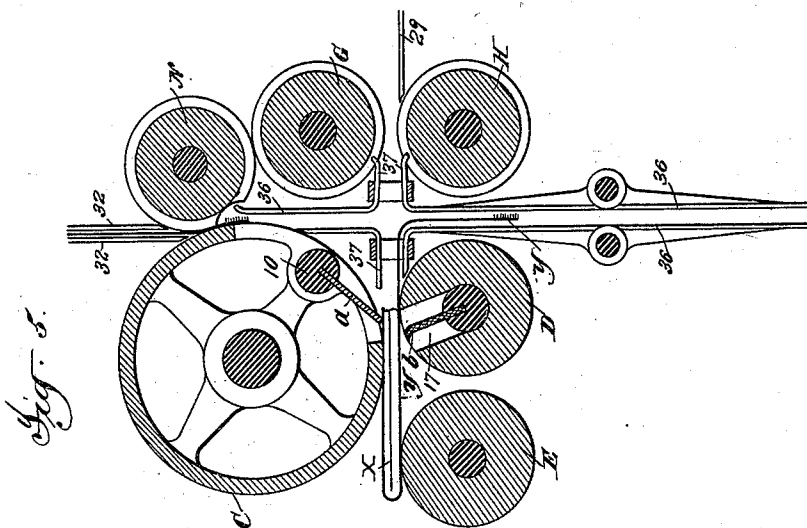
(No Model.)

5 Sheets—Sheet 3.

L. C. CROWELL.
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No. 561,567.

Patented June 9, 1896.



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(No Model.)

5 Sheets—Sheet 4.

L. C. CROWELL.
NEWSPAPER WRAPPING MACHINE.

No. 561,567.

Patented June 9, 1896.

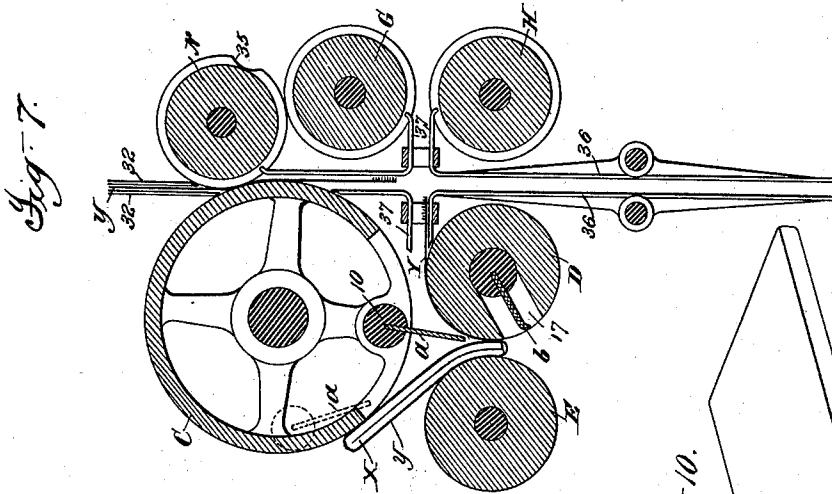
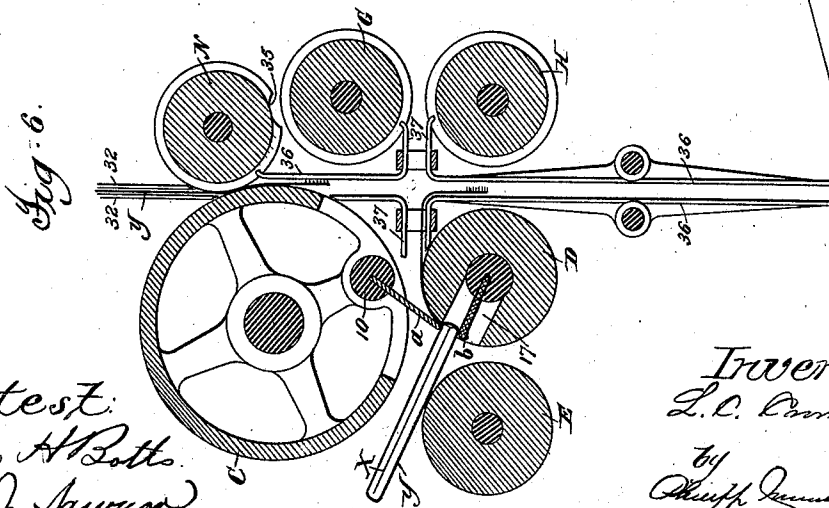


Fig. 10.



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(No Model.)

5 Sheets—Sheet 5.

L. C. CROWELL.
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Fig. 9.

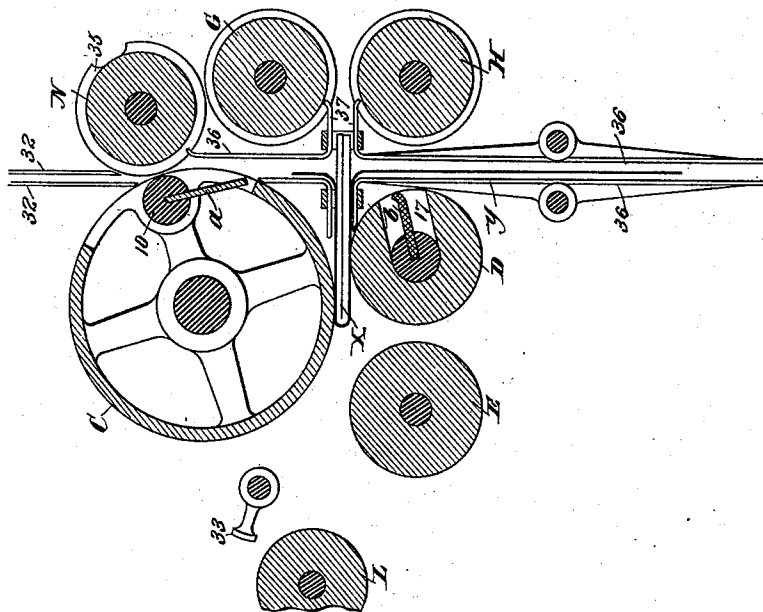
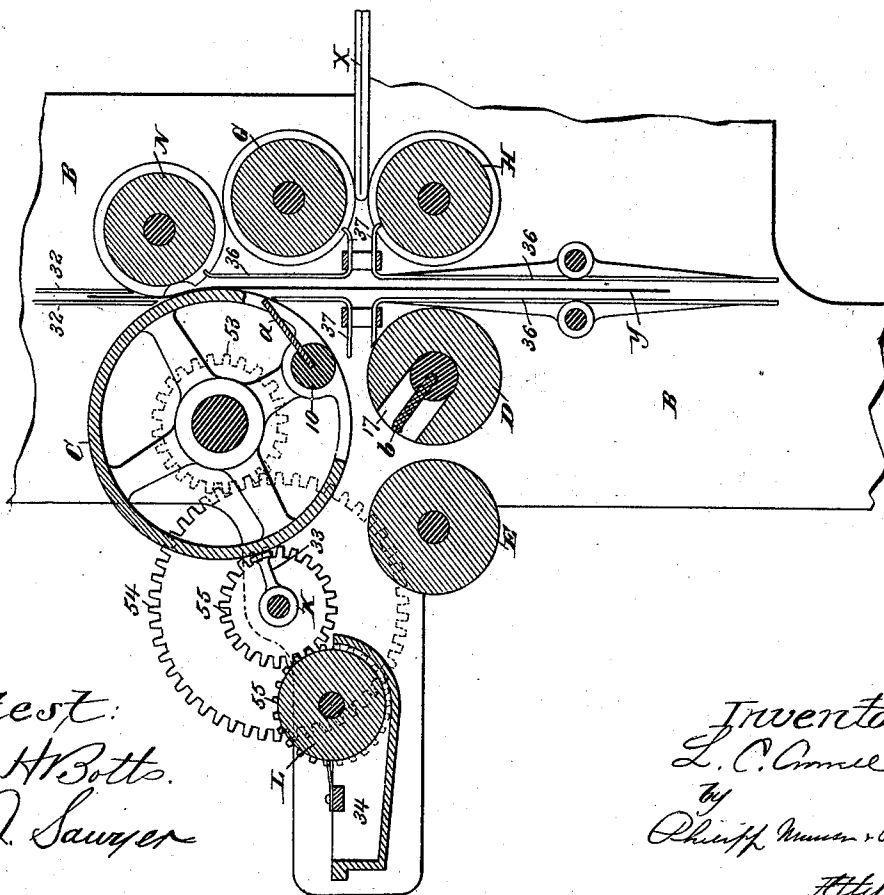


Fig. 8.



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UNITED STATES PATENT OFFICE.

LUTHER C. CROWELL, OF BROOKLYN, NEW YORK, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO ROBERT HOE, THEODORE H. MEAD, AND CHARLES W. CARPENTER, OF NEW YORK, N. Y.

NEWSPAPER-WRAPPING MACHINE.

SPECIFICATION forming part of Letters Patent No. 561,567, dated June 9, 1896.

Application filed January 27, 1892. Renewed November 9, 1895. Serial No. 568,500. (No model.)

To all whom it may concern:

Be it known that I, LUTHER C. CROWELL, a citizen of the United States, residing at Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Newspaper-Wrapping Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

The object of the present invention is to provide an improved wrapping-machine, and especially to provide a simple and rapid machine of that class used in wrapping newspapers and other publications for mailing, and generally known as "newspaper-wrapping machines."

In another application I have described and claimed, broadly, a machine for wrapping, applicable generally but especially adapted to wrapping newspaper and other publications, in which the paper is advanced with the wrapper lapped over the leading end of the paper sufficiently to provide a surface for pasting the other end of the wrapper thereto, and with the other end of the wrapper projecting behind the paper sufficiently to overlap upon the first layer of wrapper upon the paper, and the paper then reversed and delivered between pressing-surfaces, by which the end of the wrapper is pressed down and pasted upon the layer of wrapper upon the paper and the wrapped paper thus secured.

The invention in the present case relates to machines for carrying out this method, and especially to the means by which the paper is reversed and transferred from the feeding devices to the pressing devices for securing the wrapper and delivering the wrapped paper; and the invention consists, broadly, in combining with the feeding and pressing devices a blade actuated to engage the rear end of the paper and transfer it without folding to the pressing devices with the wrapper in proper position and in various constructions and combinations of parts, all of which will be particularly described and pointed out hereinafter.

In the preferred form of machine embodying the present invention I employ a blade-cylinder and a pair of feeding and pressing

rolls located adjacent thereto, the cylinder with one of said feeding-rolls forming feeding devices by which the paper with the wrapper overlapping its leading end is advanced in one direction, the blade carried by the cylinder operating to tuck the rear end of the paper between the roll coöperating with the cylinder and the second feeding-roll, so that the reversed paper is then advanced by these rolls and the end of the wrapper pasted down upon the portion of the wrapper overlapping the leading end of the paper.

The paste for securing the wrapper may be applied to the first layer of wrapper upon the paper, in which case it will preferably be applied to the blade-cylinder and then deposited upon the wrapper as the cylinder and feeding-roll advance the paper and wrapper, or the paste may be applied to the end of the wrapper prior to or during the operation of wrapping. With this wrapping mechanism any suitable feeding devices for advancing the paper and wrapper together or independently of each other may be provided, and the papers may be previously folded to the size desired, or folded by mechanism embodied in and forming a part of the machine. The wrapper also may be previously cut to the desired size and fed to the wrapping mechanism as sheets, or fed from a web and severed in the machine. I prefer, however, to feed the wrapper from a wrapper-web, and a simple form of machine is produced especially adapted for papers folded to small size, so as to consist of a large number of plies, or for pamphlets, by feeding the papers or pamphlets to be wrapped from a box or holder. The proper position of the paper and wrapper when delivered to the wrapping mechanism may be secured in any suitable manner, but I prefer to feed the wrapper downward in the line of movement of and in front of the papers and to advance a paper transversely thereto, so that as the paper is advanced to the wrapping mechanism it will engage the wrapper upon the desired line and carry it with it to the wrapping mechanism.

In the accompanying drawings, forming a part of this specification, I have shown a simple machine of the general construction above

described which will be found an efficient and convenient construction embodying my invention, and a detailed description of the same will now be given, and the features of construction therein forming my invention specifically pointed out in the claims.

In the drawings, Figure 1 is a side elevation of the machine. Fig. 2 is a vertical section of the same, taken inside the frame. Fig. 3 is a sectional elevation of the front or receiving side of the machine with the paper-holder removed, the section being taken on the line 3 3 of Fig. 2. Figs. 4, 5, 6, and 7 are detail sections of the wrapping mechanism, showing the parts in different positions during the operation of the machine. Figs. 8 and 9 are similar views showing a modified arrangement of pasting devices. Fig. 10 is a perspective view of the product.

Referring to said drawings, the frame of the machine may be of any suitable construction for supporting the operating parts. As shown, it consists simply of two end frames A B, in which all the parts are mounted. At the rear or delivery side of the frame is mounted the wrapping mechanism proper, which consists of the rotating blade-cylinder C and the two rolls D E, the former of which coöperates with the blade-cylinder in advancing the paper and wrapper, the rolls D E forming a pair of feeding and pressing rolls, to which the reversed paper is transferred and by which the pasted wrapper is secured and the wrapped paper delivered.

The blade mechanism of blade-roll C may be of any suitable construction of the many forms used in folding mechanism; but I prefer to use the construction shown, which is that of my Patent No. 453,395. In this construction the blade-shaft 10, carrying the blade *a*, and mounted in the opposite heads of the cylinder, is provided outside one of the heads with a cross-arm 11, which is provided with heart-shaped ends 12, and inside said ends with bowls 13, which run upon the interior surface of an annular cam 14, so that the blade is held in the position shown in Fig. 2 during a large part of the revolution of the cylinder. In proper position for the protrusion of the blade, so as to guide the rear end of the paper between the rolls D E, the annular cam 14 is curved outward, and this outward curve coöperates with an interior cam 15 to guide the blade outward from the cylinder by engagement with the bowls 11, so that the blade is first protruded from the cylinder as the leading bowl passes outward under the control of the cams 15 14, and is then reversed and withdrawn as the bowl passes onward on the opposite side of the point of cam 15. The positive movement of the blade at the point of its greatest protrusion, which is just as the bowl passes the point of the cam 15, is insured by the engagement of one of the heart-shaped ends 12 with two stationary cams 16, mounted in the frame outside the

cylinder, and preferably formed by projections from the inner face of the cam 14.

The roll D is provided with a recess 17 on one side in position to receive the rear end of the paper and blade *a* in order that the paper may be positively held and guided into the control of rolls D E with certainty, and I prefer to provide within this opening an elastic abutment *b*, against which the blade *a* presses the end of the paper and the edge of the wrapper, this abutment yielding slightly under the pressure of the blade and following up the blade for a short distance as the blade is withdrawn, so that a firm holding of the paper and wrapper between the abutment and the blade is secured until the paper and wrapper are in position to insure their being gripped by the rolls D E. The abutment *b* is shown as formed by a spring-plate secured at one edge in the shaft of roll D; but it will be understood that it may be formed in any other suitable manner, as by making one wall of the recess 17 of elastic material. It will be understood also that such an elastic abutment is not absolutely essential.

As above stated, the paper and wrapper may be advanced to this wrapping mechanism by any suitable means and the proper relative positions of the paper and wrapper secured in any manner desired. In the machine shown, however, which is adapted for wrapping paper previously folded to wrapping size or magazines, the papers or magazines are placed within a holder F, mounted on the front side of the machine, and the bottom paper is advanced from the holder to feeding-rolls G H and thereby to the cylinder C and roll D of the wrapping mechanism.

Any suitable feeding devices may be used for advancing the bottom paper from the holder to the rolls G H. As shown, a series of pivoted fingers 18 are used, these feeding-fingers being carried by a slide 19, moving on rods 20, mounted in the frame of the machine and being pressed upward, so as to engage the bottom paper when withdrawn by means of springs 21, mounted on the slide under the fingers. This slide 19 is reciprocated upon the rods 20 to advance the papers in proper time by means of slotted levers 22, carried by rock-shaft 23, mounted in the side frames A B and operated from the main shaft of the machine S by means of a pitman 24, connected to one of the arms 22, and an eccentric 25 on the shaft I.

The holder F is shown as adjustable, so as to hold papers of different widths and lengths, this result being secured by mounting the sides on rods 26, adjustably secured in the frame by means of set-screws 27, and the rear end of the box being slotted and made adjustable by set-screws 28. The holder F is open at the bottom, and the papers are fed out by the fingers 18 over guides 29, between which the fingers play. In order that papers of different thicknesses may be fed out from the

holder and the delivery of more than one paper at a time be prevented, the front end 30 of the holder F is preferably made adjustable to and from the guides 29 by a set-screw 31, as shown.

The wrappers may be previously cut and fed from a holder by suitable mechanism; but I prefer to use a wrapper-web, and in the construction shown the wrappers are cut, 10 pasted, and advanced to the wrapping mechanism by the following mechanism: At the top of the machine are mounted two cutting and feeding rolls I, to which the wrapper-web *y* is advanced and by which it is partially 15 severed to form a single wrapper. From the cutting and feeding rolls I the partially-severed web is fed downward between guides 32 and paste is applied to the leading end thereof, on the side farthest from the cylinder, by 20 means of a rotating paster-roll K, carrying paster 33, which receives paste from a fountain-roll L, rotating in a paste-fountain 34, the paster applying paste against a roll M, mounted in the frames A B opposite the 25 paster-roll K. The paster 33, as shown in Fig. 3, is cut away opposite the guides 32, so as to apply paste only between the same, as usual in such constructions.

From the rolls K M the perforated wrapper, 30 with its leading end pasted, passes to the cylinder C and a roll N, which roll coöperates with the cylinder C to form a pair of breaking-rolls rotating at a higher surface speed than that at which the wrapper is moving, so 35 as to entirely sever the wrapper from the web, as is common in such constructions. The roll N is cut away on one side at 35 so as not to touch the pasted portion of the wrapper. By the cylinder C and roll N the severed and pasted wrapper is advanced downward 40 between the two series of guides 36 into the path of the papers as they are advanced to the wrapping mechanism by means of the cylinders G H, and the parts are so timed 45 that the wrapper is fed downward sufficiently to be engaged by the leading end of the advancing paper on such a line that the wrapper is advanced with the paper to the wrapping mechanism with its rear end overlapping 50 the leading end of the paper for pasting and so as to be held by the blade in and positively transferred to the rolls D E and with its leading end pasted and extending sufficiently behind the paper to be wrapped about the paper and overlap upon the rear end for pasting. 55 The guides 36 are bent so as to form series of guides 37, between which the paper is advanced from the rolls G H to engage the wrapper and between which the paper and 60 wrapper are advanced to cylinder C and roll D of the wrapping mechanism.

The operating parts of the machine, independently of the means for feeding the papers from the holder F to the rolls G H, are driven 65 from the main driving-shaft S as follows: The shaft S carries outside the frame B a large gear 38, which drives a small gear 39

on the shaft of feeding-roll H. This shaft carries outside the opposite end frame A a gear 40, which meshes with gear 41 on the shaft of feeding-roll G. The shaft of roll H 70 also drives roll D from gear 40 through an intermediate 42 and gear 43 on the shaft of roll D. The roll E, coöperating with roll D, is shown as driven only by friction of the paper, 75 but it will be understood that it may be driven positively, if preferred. The shaft of feeding-roll D carries a second gear 44, by which roll H and cylinder C are driven, through gears 45 and 46 on the shafts of the 80 roll and cylinder, respectively. The shafts of feeding and cutting rolls I are geared together by gears 47, and are driven from gear 46 on cylinder C through intermediates 48 on the same shaft and a large gear 49 on the 85 shaft of one of the cutting-rolls I. The paster-roll K is driven from one of the gears 47 through an intermediate 50 and gear 51 on the roll-shaft, this gear in turn driving the paste-fountain roll N by gear 52. 90

The parts are so timed, as will be seen from an inspection of the drawings, that the blade-cylinder C rotates twice to each rotation of the main shaft S, while the feeding and wrapping cylinders I and the slide 19, carrying the feeding-fingers 18, operate in time 95 with the main shaft, a wrapper and paper being delivered at each revolution of the shaft. Thus the surface speed of the feeding-rolls G H D N and of cylinder C is the same and greater than that of the wrapper-cutting rolls I and paster K, so that the cylinder C and roll N, as above stated, coöperate as breaking-rolls to entirely sever the perforated wrapper. 100

The operation of the machine is as follows: With the parts in the position shown in the main views and Fig. 4 a wrapper *y* has been fed forward from the web-roll by the feeding and cutting cylinders I and perforated thereby, broken by the cylinder C and breaking-rolls N, and advanced into position to be engaged by the paper on the proper line. As shown, the wrapper is about three times the length of the paper, so as to overlap for pasting upon approximately the full side of the paper, and to be engaged by the blade in transferring the paper, and about one-third of the wrapper is above the paper-guides 37. 105 Another wrapper has been advanced by the rolls I and will be carried into the grip of cylinder C and breaking-roll N as the wrapper in advance is carried forward to the wrapping mechanism. The paper to be wrapped has been fed from holder F to the feeding-rolls G H, and is being advanced thereby, being just in position to engage the wrapper and carry it forward into engagement by the cylinder C and roll N, with the rear end of the wrapper overlapping the top of the paper and with the leading pasted end of the wrapper projecting behind the rear end of the paper. The paper and wrapper are advanced by the feeding-rolls G H from the posi- 110 115 120 125 130

tion shown in Fig. 4 to the cylinder C and roll D and carried by the latter into the position shown in Fig. 5, in which the rear end of the paper is just above the groove 17 and behind the elastic abutment *b*, and the bowls 13 on the blade-shaft are now actuated by the outwardly-curved portion of the cam 14 and the interior pointed cam 15 to cause the blade to project outside the cylinder C and to force the rear end of the paper and wrapper downward against the abutment *b*, the positive movement of the blade being secured, as the bowl passes the point of the cam 15, by the heart-shaped ends 12 and stationary cams 16, as fully described in the patent above referred to. On the further movement of the parts the blade is actuated by the continued rotation of the cylinder C to press the paper firmly against the elastic abutment *b*, and by the continued rotation of the roll D the paper is carried thereby into the grasp of the feeding-rolls D E, as shown in Figs. 6 and 7. The blade operates positively against the paper, causing the elastic abutment *b* to yield until the parts are in a position between those shown in Figs. 6 and 7. As the blade is withdrawn by the operation of the cams, the bowl 13 returning upon the opposite side of the interior cam 15 for the partial rotation of the blade-shaft and consequent reversal of the blade, the elastic abutment *b* follows up the blade *a* for a short distance, so that the paper is held pressed between the abutment and blade until it is in such position that its advance by the rolls D E is positively assured. As the movement of the parts continues the blade is withdrawn and reversed, and the paper is advanced and delivered by the rolls D E, the paper being reversed, so that what was the rear end of the paper as it was advanced by the rolls G H and as it entered the wrapping mechanism now becomes the leading end of the paper. By this reversal of the paper and its advance between the rolls D E it is evident that the pasted end of the wrapper, which projected behind the paper as it was advanced to the wrapping mechanism, will be overlapped upon the layer of wrapper previously upon the paper and will be pressed thereon by the rolls D E as the paper and wrapper are advanced, so that the wrapper will thus be secured upon the paper as the paper is delivered. In the position shown in Fig. 6 the blade is just operating to press the rear end of the paper against the abutment *b* to carry the paper into the grasp of rolls D E, and in the position shown in Fig. 7 the paper and wrapper have been received by these rolls and are being advanced thereby, while the blade is being withdrawn and reversed. On the further operation of the machine it is evident that the parts will be advanced from the position shown in Fig. 7, the blade being carried about by the cylinder in the position shown in dotted lines in said figure and the paper being advanced by

the rolls D E and the pasted end of the wrapper pressed down and secured upon the rear end of the paper and the product delivered in the form shown in Fig. 10. Meanwhile the following wrapper has been advanced and during the next idle rotation of the cylinder C is carried downward into the position shown for the wrapper in Figs. 2 and 4, another paper 4 being meanwhile advanced into the position shown in the same figures for wrapping, and thus the operation of wrapping is continued.

It will be understood that upon the first idle rotation of the cylinder from the position shown in Fig. 7 the blade-shaft is actuated by the bowls and cams to reverse the blade, so that upon the second rotation it is carried forward with the blade in advance, as shown in Figs. 4 to 7, and actuated to carry the next paper into the grasp of rolls D E.

The pasting mechanism in the construction thus far described is simple and efficient, the paste being applied only between the guides, so that there is little danger of the paste being deposited upon the parts of the machine as the wrapper is advanced between the guides to the wrapping mechanism. At a high rate of speed, however, it may be preferable to apply the paste to the wrapper in such a manner as to avoid the carrying of the paste by any loose portion of the wrapper, thus avoiding all danger of the paste being thrown against and deposited upon the guides or other parts of the machine.

In Figs. 8 and 9 I have shown a simple construction for applying the paste to the first layer of wrapper upon the paper, in which the paste-fountain 34, paste-fountain roll L, and paster 33 are mounted in the rear of cylinder C, and the paster 33 is arranged to apply paste to the surface of the cylinder in such position as to be delivered by the cylinder upon the proper part of the wrapper upon the paper as the paper and wrapper are advanced by the cylinder C and roll D for wrapping. In this construction the pasting mechanism is driven directly from the shaft of cylinder C, and the parts are preferably so timed that the paster makes one revolution to two of the cylinder C, so as to apply paste only upon the second operative rotation of the latter, thus avoiding all interference of the paste with the wrapper. In this construction the shaft of cylinder C carries a small gear 53, which meshes with a large gear 54 on the shaft of the paster 33, and the paster and fountain-roll L are geared together by a pair of gears 55. The operation of the machine with this form of pasting mechanism is identical with that previously described, except that the paste is applied upon the surface of cylinder C at each second revolution as the cylinder advances with the blade in position for the wrapping operation, as shown in Fig. 8, and the paste is applied upon the proper portion of the wrapper upon the paper by

pressure between the cylinder and roll D as the two advance the paper during the operation of wrapping.

While I have shown the blade-cylinder C as provided with a single-edged blade, so that papers are wrapped only at each second rotation of the cylinder, it will be understood that the cylinder may be provided with a two-edged blade similar to that shown in the patent above referred to and papers wrapped at each rotation of the cylinder, the relative speed of the wrapping and feeding mechanisms being adjusted accordingly. It will be found, however, that a single-edged blade operating at each second revolution of the cylinder may well be run rapidly enough for the rate of speed at which it will be necessary or desirable to run the wrapping and paper-feeding mechanisms. While I have shown only two arrangements of pasting mechanism, it will be understood that the paste may be applied to the loose wrapper or to the wrapper upon the paper at any other point in the operation of the machine and by various other forms of mechanism.

The construction shown provides a very simple machine by which thick papers and pamphlets may be wrapped at a very high speed; but it will be understood that the construction of the parts cooperating with the wrapping mechanism proper may be varied widely, and the wrapper and paper feeding mechanisms and guides are shown as the special construction of wrapper and paper feeding mechanisms only for the purpose of illustrating a complete machine, and that the wrapping mechanism may be combined with any other suitable form of mechanism for advancing the wrapper and paper to form an independent wrapping or folding and wrapping machine, or that the wrapping mechanism may be combined with many of the ordinary forms of folding and delivering mechanisms now in use in folding-machines or printing-presses, so that a paper may be printed, folded, delivered, and wrapped by a single machine, the wrapping mechanism herein shown being of sufficient capacity to be applicable to the most rapid web-printing presses.

The special features of the roll D, cooperating with the blade *a*, are of general application in constructions employing a folding or guiding blade and cooperating receiving-roll and in themselves form parts of the present invention independently of the special class of machine in which used, and are thus claimed.

While I have described my invention as applied in wrapping newspapers and other publications, for which the machine shown is especially adapted, it will be understood that my invention is not to be thus limited, but that this machine may be embodied in machines especially adapted for such use.

What I claim is—

1. The combination of feeding devices constructed and arranged to advance a paper with

a wrapper overlapping the leading end of the paper and projecting behind the paper sufficiently to overlap upon the layer of wrapper on the paper for pasting, pressing and feeding devices, a blade constructed and arranged to coact with said devices to engage the rear end of the paper and transfer it without folding from the feeding to the pressing devices and simultaneously fold the wrapper over the end of the paper, and means for actuating said blade, substantially as described.

2. The combination of feeding devices constructed and arranged to advance a paper with a wrapper overlapping the leading end of the paper and projecting behind the paper sufficiently to overlap upon the layer of wrapper on the paper for pasting, pasting devices for applying paste to the wrapper, pressing and feeding devices, a blade constructed and arranged to coact with said devices to engage the rear end of the paper and transfer it without folding from the feeding to the pressing devices and simultaneously fold the wrapper over the end of the paper, and means for actuating said blade, substantially as described.

3. The combination with paper-feeding mechanism, of wrapper-feeding mechanism by which a wrapper is advanced transversely to and into the line of movement of the paper, feeding devices by which the paper and wrapper are received from the feeding mechanism with the wrapper overlapping the leading end of the paper and projecting behind the paper sufficiently to overlap upon the layer of wrapper on the paper for pasting, pressing and feeding devices, a blade constructed and arranged to coact with said devices to engage the rear end of the paper and transfer it without folding from the feeding to the pressing devices and simultaneously fold the wrapper over the end of the paper, and means for actuating said blade, substantially as described.

4. The combination with paper-feeding mechanism, of wrapper-feeding mechanism by which a wrapper is advanced transversely to and into the line of movement of the paper, feeding devices by which the paper and wrapper are received from the feeding mechanism with the wrapper overlapping the leading end of the paper and projecting behind the paper sufficiently to overlap upon the layer of wrapper on the paper for pasting, pasting devices for applying paste to the wrapper, pressing and feeding devices, a blade constructed and arranged to coact with said devices to engage the rear end of the paper and transfer it without folding from the feeding to the pressing devices and simultaneously fold the wrapper over the end of the paper, and means for actuating said blade, substantially as described.

5. The combination with paper-feeding mechanism, of wrapper-feeding mechanism by which a wrapper is advanced transversely to and into the line of movement of the paper, feeding devices by which the paper and wrapper are received from the feeding mechanism with the wrapper overlapping the leading end

of the paper and projecting behind the paper sufficiently to overlap upon the layer of wrapper on the paper for pasting, pasting devices for applying paste to the layer of wrapper on the paper, pressing and feeding devices, a blade constructed and arranged to coact with said devices to engage the rear end of the paper and transfer it without folding from the feeding to the pressing devices and simultaneously fold the wrapper over the end of the paper, and means for actuating said blade, substantially as described.

6. The combination with a blade-cylinder, of a feeding-roll coöperating with the cylinder to advance a paper with a wrapper overlapping the leading end of the paper and projecting behind the paper sufficiently to overlap upon the layer of wrapper on the paper for pasting, a roll forming with said feeding-roll a pair of pressing and feeding rolls, said blade being constructed and arranged to coact with said pressing and feeding rolls to engage the rear end of the paper and transfer it without folding from the cylinder and feeding-roll to the pair of pressing and feeding rolls and simultaneously fold the end of the wrapper over the paper, and means for actuating said blade, substantially as described.

7. The combination with a blade-cylinder and its blade and actuating devices therefor, of a feeding-roll coöperating with said cylinder to advance a paper and provided with an abutment which coacts with the blade to grasp the paper, and a roll forming with said feeding-roll a pair of pressing and feeding rolls to which the paper is transferred, substantially as described.

8. The combination with a blade-cylinder and its blade and actuating devices therefor, of a feeding-roll coöperating with said cylinder to advance a paper and provided with a yielding abutment which coacts with the blade to grasp the paper, and a roll forming with said feeding-roll a pair of pressing and feeding rolls to which the paper is transferred, substantially as described.

9. The combination with blade-roll C having blade *a* and actuating devices therefor, of roll D having yielding abutment *b*, coacting with the blade *a* to grasp the paper, substantially as described.

10. The combination with paper and wrapper feeding mechanism and pasting devices for the wrapper, of a blade-cylinder and actuating devices for said blade, a feeding-roll coöperating with said cylinder to form a pair of feeding-rolls to which the paper and wrapper

are fed with the wrapper overlapping the leading end of the paper sufficiently to overlap upon the layer of wrapper on the paper for pasting, said roll being provided with an abutment which coacts with the blade to grasp the paper, and a roll forming with said feeding-roll a pair of pressing and feeding rolls to which the paper and wrapper are transferred, substantially as described.

11. The combination with paper and wrapper feeding mechanism, of pasting devices for the wrapper, blade-roll C having blade *a*, roll D coöperating with roll C to form a pair of feeding-rolls to which the paper and wrapper are fed with the wrapper overlapping the leading end of the paper sufficiently to overlap upon the layer of wrapper on the paper for pasting, said roll D having a recess receiving the end of the paper and an abutment which coacts with the blade to grasp the paper within said recess, and roll E forming with the roll D a pair of pressing and feeding rolls to which the paper is transferred, substantially as described.

12. The combination with a feeding-roll provided with an abutment, of a blade coacting with the abutment to grasp the paper, and a roll forming with said feeding-roll a pair of feeding-rolls to which the paper is transferred by the blade, substantially as described.

13. The combination with a feeding-roll provided with a recess, one wall of which forms an abutment, of a blade coacting with said abutment to grasp the paper, and a roll forming with said feeding-roll a pair of feeding-rolls to which the paper is transferred by the blade, substantially as described.

14. The combination with a feeding-roll having a recess adapted to receive the end of the paper, of means for feeding the end of the paper opposite the recess with the wrapper extending beyond the end of the paper, a blade acting to press the end of the paper into the recess with the wrapper overlapping it and without folding the paper, and a roll forming with said paper-feeding roll a pair of feeding-rolls advancing the paper by gripping action between their surfaces, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

LUTHER C. CROWELL.

Witnesses:

T. F. KEHOE,
C. J. SAWYER.