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J. ARNOTT, Jr.

MACHINE FOR WRAPPING NEWSPAPERS.

No. 541,145. Patented June 18, 1895.

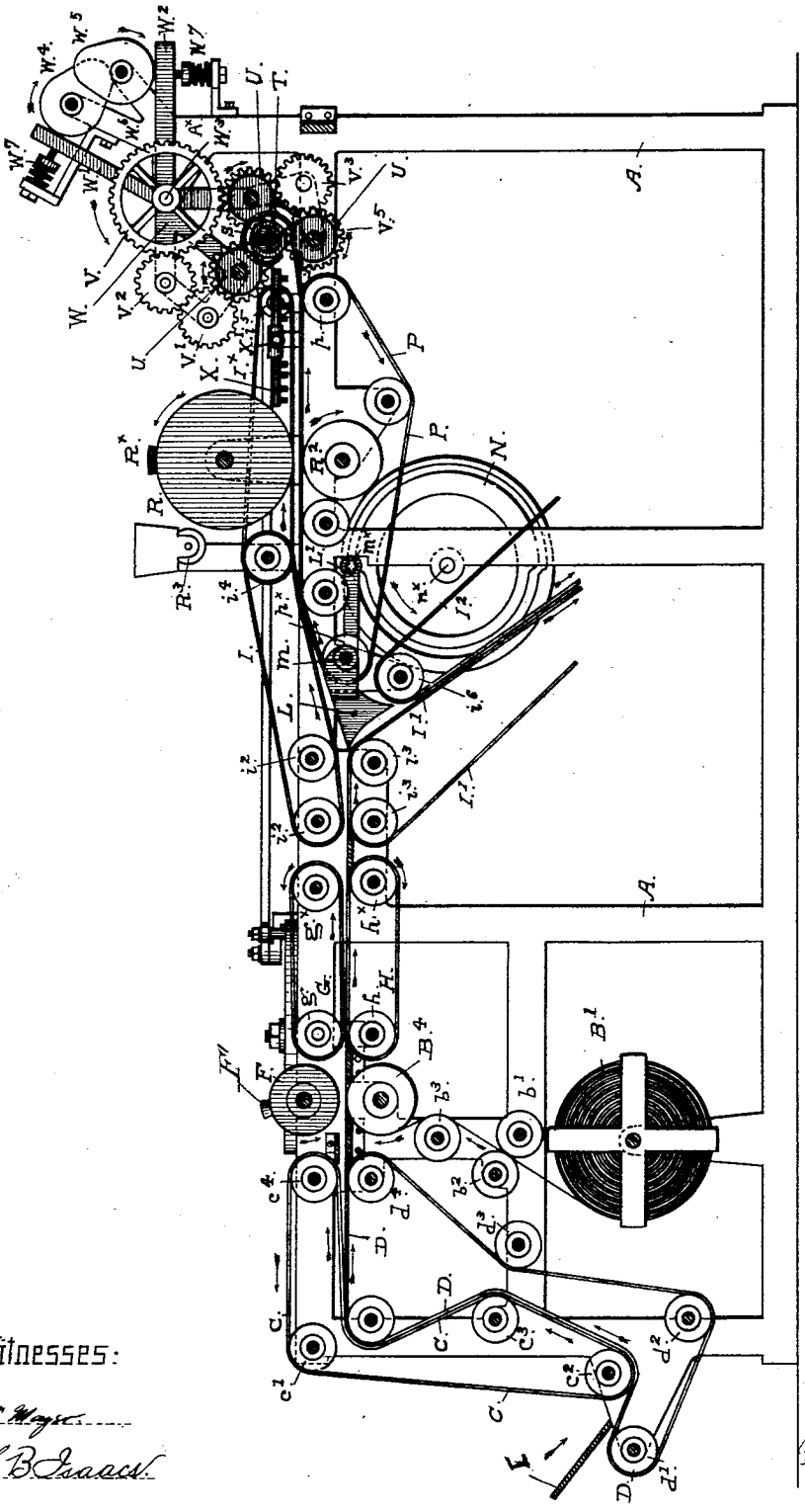

Fig. 1.

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S. B. Isaacs

Inventor:

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By Smith & Osborn

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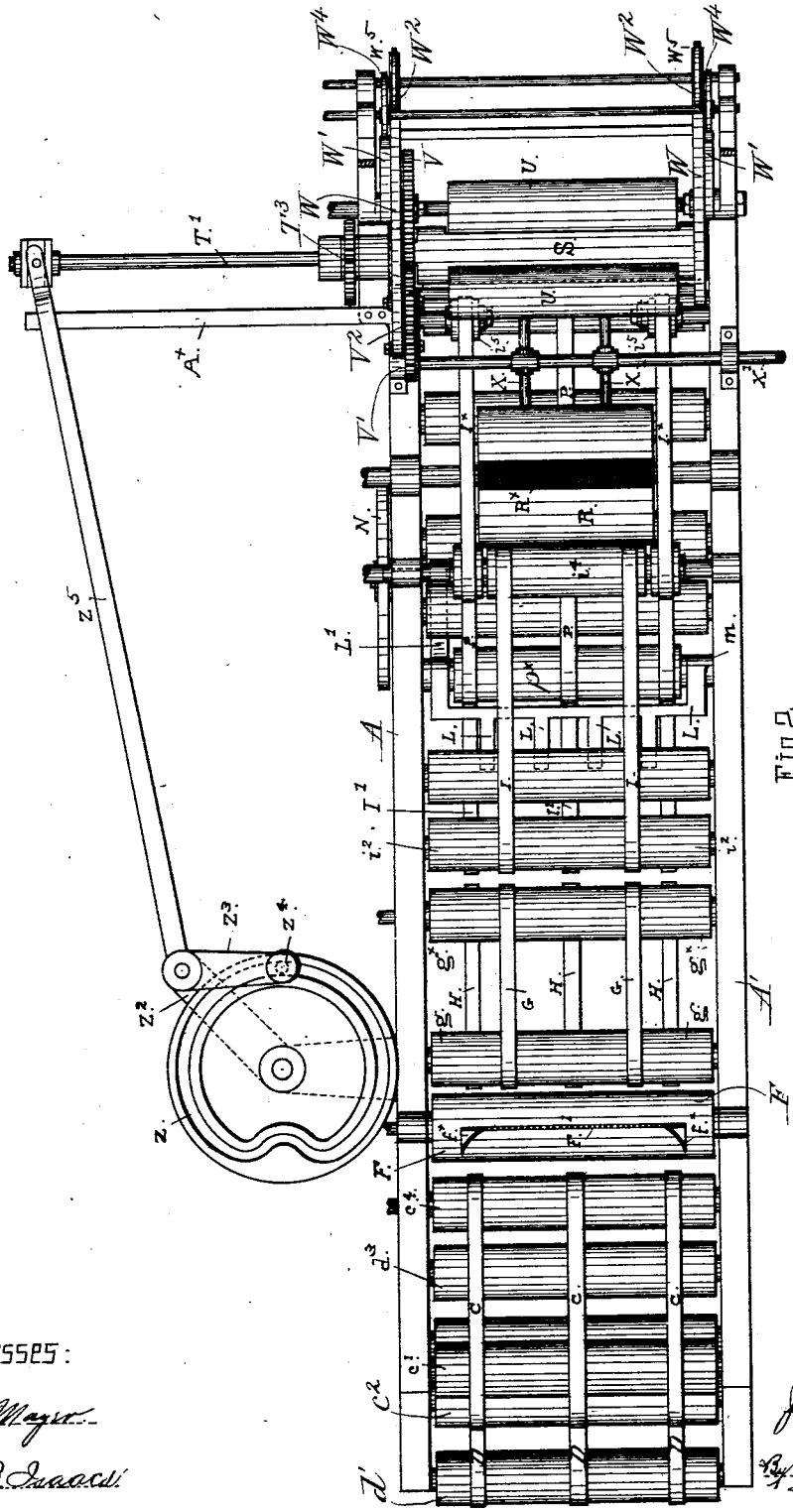

Fig. 2.

Witnesses:

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J. ARNOTT, Jr.

MACHINE FOR WRAPPING NEWSPAPERS.

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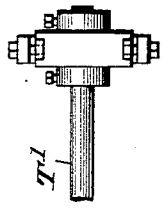

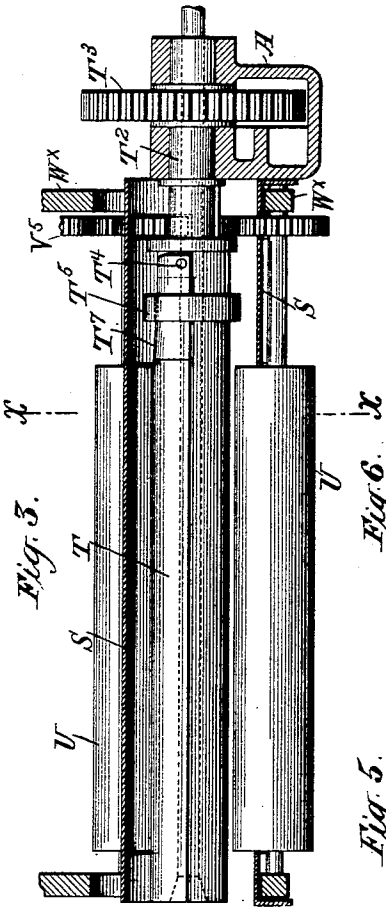

Fig. 3.

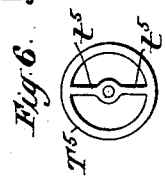

Fig. 6.

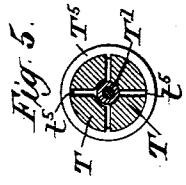

Fig. 5.

Fig. 7.

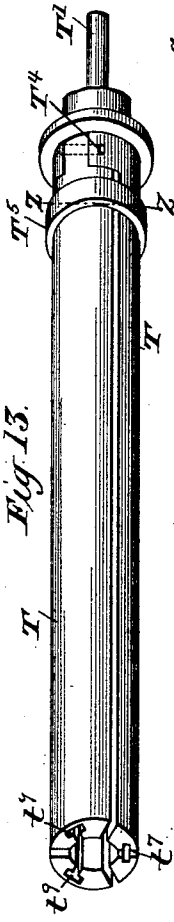

Fig. 13.

Fig. 14a.

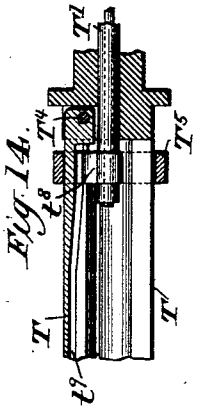

Fig. 14.

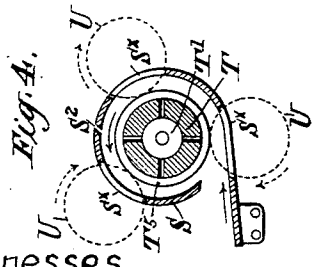

Fig. 4.

Witnesses
C. F. Kehoe.
C. J. Sawyer

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MACHINE FOR WRAPPING NEWSPAPERS.

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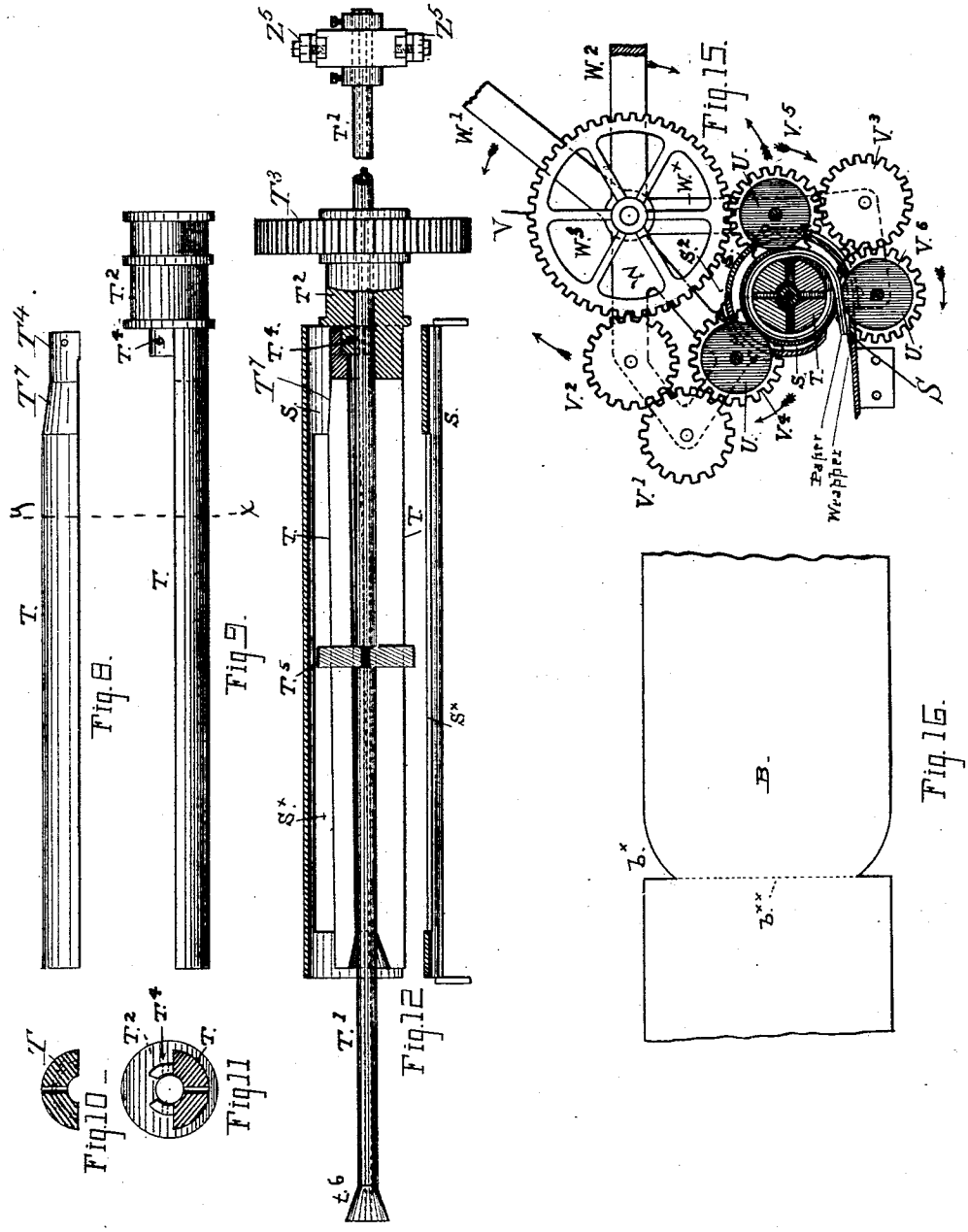

Witnesses:

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William Franklin

Inventor:

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UNITED STATES PATENT OFFICE.

JAMES ARNOTT, JR., OF CAMPTONVILLE, CALIFORNIA, ASSIGNOR TO ROBERT HOE, THEODORE H. MEAD, AND CHARLES W. CARPENTER, OF NEW YORK, N. Y.

MACHINE FOR WRAPPING NEWSPAPERS.

SPECIFICATION forming part of Letters Patent No. 541,145, dated June 18, 1895.

Application filed October 14, 1891. Renewed March 5, 1894. Serial No. 502,438. (No model.)

To all whom it may concern:

Be it known that I, JAMES ARNOTT, Jr., a citizen of the United States, residing at Camptonville, Yuba county, California, have invented certain new and useful Improvements in Machines for Wrapping Newspapers and other Publications, of which the following is a specification.

The object of the present invention is to provide an improved machine of that class used in wrapping newspapers and other publications for mailing and generally known as "newspaper wrapping machines," and especially to provide a simple and efficient wrapping machine by which the papers or other publications may be rolled into compact form for mailing and wrappers applied at a high rate of speed.

The invention consists primarily, therefore, in certain improvements in mechanism by which the papers or other publications are rolled and wrapped, but it embraces, also, certain improvements in feeding devices for the papers and wrappers and in wrapper cutting and pasting mechanisms, a special object of the present invention being to provide an improved automatic machine adapted to take papers from a folding machine or printing press, prepare the wrappers from a continuous strip, and then apply and fix the wrappers ready for mailing.

The invention includes also certain specific constructions and combinations of parts, all of which will be fully described hereinafter.

For a full understanding of the invention, a detailed description of a complete automatic machine embodying all the improvements in their preferred form will now be given in connection with the accompanying drawings forming a part of this specification, and the features forming the invention will then be specifically pointed out in the claims.

In the drawings, Figure 1 is a longitudinal section taken in a vertical plane and about on the center line between the two side frames of the machine. This view shows several devices and parts that operate on the newspaper from the time it is introduced into the machine until it is discharged in its wrapper at the other end of the machine; but for greater clearness in this view the connecting-gears and driving mechanism to actuate the rollers are omitted. Fig. 2 is a plan or top view of the parts shown in the sectional view, Fig. 1. Fig. 3 is a front view, on an enlarged scale and partly in section, of the parts of the newspaper rolling and wrapping mechanism. Fig. 4 is a cross-section through the core-cylinder and stationary casing at about the line *x x*, Fig. 3. Fig. 5 is a cross-section through the core-cylinder removed from the casing. Fig. 6 is a detail view of the sliding ring removed from the core. Fig. 7 shows the ejector-rod in detail. Figs. 8 and 9 are parts of the core-cylinder in detail. Figs. 10 and 11 are cross-sections of the same parts, taken on the line *x y*. Fig. 12 is a longitudinal section of the core-cylinder and the surrounding stationary casing with the ejector-rod thrown partly out of the cylinder. Fig. 13 is a side view of a modified construction of the core and ejector. Fig. 14 is a longitudinal central section of the same. Fig. 14ª is a cross-section of the same on the line *z* of Fig. 13. Fig. 15 is a vertical transverse section through the wrapping mechanism, showing a paper and its wrapper within the casing in the act of being rolled. Fig. 16 illustrates the manner of cutting and perforating the continuous paper strip for the wrappers.

The machine is composed of the following parts arranged for operation in frames A, A′ that should be of suitable character to support and furnish bearings for the shafts and the various mechanisms necessary to connect and work them: first, a set of endless tape carries on rollers that take the papers on rollers as they come from the folding apparatus of a printing press or a folding machine, and bring them into relation with and flatwise upon a continuous wrapping strip which is supplied from the roll or continuous strip of suitable width; second, a wrapper strip feeding mechanism and flap cutting and perforating device that partially separates from the continuous strip a portion of suitable length for the wrappers; third, a set of endless tapes or carriers having a slower rate of travel by means of which the newspapers are properly laid and spaced on the perforated

wrapper strip; fourth, a wrapper strip separating mechanism consisting of a set of endless tape carriers having an accelerated rate of movement by means of which the wrapper is detached along the line of perforation from the continuous strip; fifth, a pasting device that gums the flap, and, sixth, mechanism that brings the newspaper into compact form and applies and fixes the wrapper around it, and, lastly, a device that discharges the wrapped paper from the machine.

In the stationary side frames A, A′ are provided bearings for a reel B′ to carry a continuous paper strip for wrappers, and also bearings for the rollers b', b^2, b^3, by which the strip is drawn from the reel and is guided and brought to a roller B^4. Over this roller is mounted a roller or large cylinder F furnished with a perforating knife or blade F′. The blade F′ is fixed in the face of the roller F and is toothed, or is otherwise suitably formed, to partially separate the strip for the wrappers by cuts or indentations in the paper. At the ends of this perforating blade are preferably placed V-shaped cutters $f^\times$ shaped to cut out from the sides of the strip the portions $b^\times$, as shown in Fig. 16, to produce rounded or chamfered corners on the flap. Between this point where the cutting and perforating rollers are placed and an inclined chute E at the feeding in end of the frame there is arranged an endless tape carrier formed of tapes C, D, that take the newspapers from the chute and bring them upon the continuous wrapper strip. The tapes of this carrier run upward and then horizontally and are moved and carried by the rollers c', c^2, &c., and d', d^2, &c. Behind the carriers C, D, are two sets of endless tapes, G, H, on rollers g, g, and h, h, that convey the wrapper strip and the newspaper on it from the cutting or perforating devices forward to the next part of the apparatus. The tapes G, H, being directly behind the cutting and perforating rollers F, B^4, receive the continuous wrapper strip and the newspapers lying on it and carry them into another set of tapes I, I′; but as it is necessary to leave intervals of space between the newspapers as they are deposited on the wrapper strip by the tapes C, D, in order to give room between one newspaper and the next for the cutters and perforators to act on the wrapper strip, and especially to provide suitable distance between one line of cutting and perforation and partial separation across the strip and the next line of cut that a wrapper of the required length may be produced, the paper feeding tapes C, D, are driven at a slower rate of speed than the wrapper feeding roller and the carriers G, H. The difference of speed between these two sets of carriers serves to space the newspapers upon the wrapper strip, and to give a strip of the required length to each newspaper for its wrapper independently of the rate of the delivery of the papers to the tapes C, D.

I, I′, are endless tapes on rollers i^2, i^3, located beyond the carriers G, H, but having a slightly accellerated speed over them. This difference in rate of movement should be sufficient to produce a strain or pulling force on the wrapper strip when the leading end of the piece for the wrapper is seized between the carriers I, I′, and while the main portion of the strip is still held between the carriers G, H. By this means the wrapper is separated from the continuous strip at the line of perforations as soon as its forward end is seized by the carriers I, I′.

Tapes G, H, are separated slightly from each other at the end next the carrier I, I′, in order to reduce the holding force on the newspaper and wrapping strip at the end, and in practice the top roller $g^\times$ is set back a short distance from over the lower roller $h^\times$ so that the newspaper and wrapper strip shall not be gripped by the two rollers $g^\times$, $h^\times$, but shall be gripped between the rollers g, h.

A stripe of paste or gum is applied across the flap of the wrapper strip by the pasting device, consisting of the cylinder or large roller R carrying a sponge or brush $R^\times$ charged with the adhesive substance, the circumference of the roller being about equal to the distance between the flaps of the wrappers as they are advanced by the tapes under the roller. The tapes I, $I^\times$ carry along the newspapers and their wrappers between a bed roller R^2 and the pasting cylinder above, and by every revolution of the latter the paster is brought over against the flap-end of the wrapper without touching the newspaper. The tapes $I^\times$, run past the ends of the cylinder R on the rollers i^4, i^5, and the lower tapes P directly under them extend also under the tapes I, and are carried and moved by the roller p, $p^\times$. The tapes I $I^\times$ are carried by the rollers i^2, i^4, i^5, and it will be understood that these tapes may be continuous.

The capacity of the machine can be increased by dividing the moving roll of newspapers and wrapper strips at the point they are taken by the carriers I and diverting every alternate one into a set of carrier tapes I′, I^2 which run downward at an angle to a second pasting device and wrapping mechanism situated below or at the end of the frame. These devices are a duplication of the above, and are properly connected to be driven at the same speed. The tapes I′, I^2, of this carrier run in the rollers i^3, i^6, located under the rollers i^2, i^2, $p^\times$, and the switch L placed in the angle between the tapes I and the lower tapes I′ is pivoted at m and on that point is moved alternately up and down by a cam N having a groove in which runs the roller stud $m^\times$ on the end of the arm or lever L′ of the switch. The parts of the switch are shown in Figs. 1 and 2.

While passing through the paster rollers the newspapers and wrappers must be kept together one upon the other in position for the next operation and ordinarily the tapes

$I^{\times}$, P, will prevent the wrapper from adhering to the paster and from being drawn out of place; but it may in some cases be necessary to employ some means to hold down the newspaper against such action. In the present construction I have applied for that purpose the pressure of several jets or blasts of air by means of a pipe X set across the carriers over the wrappers and having a number of nipples or apertures on the under side. A pipe X′ connects this jet-pipe with a pressure blower or accumulator which can be arranged to be worked by the same power that drives the machine.

The paster $R^{\times}$ is formed of a brush or sponge set into the face of the cylinder and supplied with paste or adhesive substance either from a chamber in the cylinder that can be charged from time to time, or the brush is charged from a fountain, as shown in Fig. 1, by a fountain roller R^3 set to touch the brush at every revolution of the cylinder.

The mechanism by which the newspaper is rolled and the cut and gummed wrapper is applied consists of a revolving core T, a set of rollers U, U, placed radially around the core and driven continuously by gearing at uniform speed, with the core and a stationary shield or casing S surrounding the core between the rollers; and by the conjoint action of these parts the newspaper and its wrapper-strip are brought into a tubular form upon the core with the wrapper around the outside, and in such tubular form it is discharged from the mechanism at the end of the operation. In this mechanism the part T forms a core around which the paper and its wrapper are rolled, and the radially placed rollers are geared into one another by a train of gears to run in the same direction and at uniform speed. They are arranged around the core at suitable distances apart to let the paper be drawn in between the rollers and the core T by the revolving motion, so that the paper is carried around the core in this space. The width of this space is determined by the size, or thickness of the newspaper to be wrapped, and in all cases sufficient space is afforded to let the paper and its wrapper pass in smoothly without wrinkling or tearing, but at the same time to give the rollers such degree of grip or pressure upon the paper and wrapper against the core that the rollers will not slip and the paper will be laid and rolled closely and evenly around the core.

The function of the stationary shield or casing is to guide or direct the leading edge of the paper and wrapper properly between the rollers and the core at the beginning of the operation; so that when making the first turn around the core the paper is guided from one roller to the next and is caught properly under each roller, this shield thus forming guides directing the leading ends of the paper and wrapper from one roller to the next. To secure this proper working of the wrapping rollers the casing is slotted or cut away to set over the rollers and form guides which cover the open space between one roller and the other next to it all around the paper wrapping space. Thus the operation of rolling the paper and its wrapper is performed by the positively driven rollers and the core; while the guides formed by the shield operate to properly lead and direct the paper into the space between the rollers and the core. The friction and pressure exerted by the rollers upon the paper when it is entered between them and the core are sufficient to draw it in and carry it around, so that fingers or gripping devices are dispensed with. The core cylinder T, however, is preferably constructed with a movable section or segment, whereby it is contractible in diameter from one end toward the other for the full length of its acting or paper holding surface, in order to let the paper slip off without binding at the end of the wrapping operation, and then before another paper is entered for wrapping the core is restored to the full working diameter again. For this purpose I construct the core T with at least one movable section hinged at T^4 to a head or short cylindrical portion T^2 at the inner end of the core, but free or unattached at the outer end to be movable on that hinge. The part T^2 forms the journal or part on which the core turns in bearings provided in the stationary frame and a spur gear T^3 is fixed on the part T^2 to drive the core.

To contract the core its movable section is drawn in by a sliding ring or collar surrounding the core, and a sliding rod T′ attached to an oscillating lever Z^5 operated by a cam Z and suitable connections to which rod the sliding ring is attached by a hub and radial arms. The lever Z^5 is pivoted near one end thereof to a fixed arm or support Z^3, and has a stud or roller Z^4 on its short end beyond the pivot, which stud or roller runs or works in a cam groove in the cam Z which is properly shaped to throw the rod forward the full length of the core at one point in the complete revolution of the cam, and afterward draw the rod back into position within the core and hold it at rest during the wrapping operation. The sliding ring T^5 is attached to the rod at T^2 by the hub and radial arms t^5 that set at suitable distances apart around the hub in the slots or spaces between the segments or parts composing the core. On the outer end of the rod is fixed an enlarged head of conical form, and the bore of the core at that end is tapered, or chamfered, so that when the head is drawn into the bore it will expand the sections of the core, but when the rod is moved out the conical head is thrown forward out of the bore and the core can be contracted. The sliding ring acting upon the contractible sections of the core cylinder at such time draws them closer together and thus reduces the diameter of the core sufficiently to let the wrapped paper slip smoothly off the cylinder. This contraction of the core is se-

cured by making the outer face of the movable section or sections of the core slightly tapering for a sufficient distance in front of the journal portion T^2 of the core, so that the sliding ring T^5 as it moves over this tapered portion T^7 will act to draw the sections of the core together and thus reduce the diameter of the core. The sliding ring T^5 acts to push the rolled paper and wrapper out of the space between the core and the rollers U, and force it off the end of the core, this ring T^5, therefore, forming an ejector to discharge the wrapped paper from the wrapping mechanism. It will be understood that either one or more fixed, and one or more movable sections of the core may be used, this depending somewhat on the diameter of the core desired.

In Figs. 13, 14 and 14^a is shown a modified form of core and ejector rod in which the core is formed of hinged segments, as above described, but the end of the core is not provided with a conical seat, but the sections are provided with longitudinal inclined grooves t^9, and the radial arms t^8 connecting the ejector T^5 to the rod, are provided with tongues and grooves, being so arranged that when the ejector moves toward the free end of the core to deliver the paper, the sections of the core will be drawn together, and the circumference of the core diminished by the movement of the tongues in the inclined grooves, and when the ejector is withdrawn the sections are separated and the core expanded by the same means.

The casing S is formed of two curved sections separated at the point S^2 and shaped to set around and inclose the core, excepting at the bottom or directly beneath the core, where an open slit or space is left for the paper to enter in or be fed into the rollers. The lower section of the casing extends forward from this opening at an angle, and forms an apron as shown in Figs. 4 and 15 and the two curved sections are fixed to two separate bracket pieces W $W^\times$, that are mounted on a rod W^3 at the sides of the main frame and are movable on its center, so that by throwing the bracket pieces on these centers toward or away from each other the parts of the casing will be closed together around the core, or will be spread apart and drawn away from the core according to the direction in which the movement takes place. The wrapping rollers have bearings in these bracket pieces, so that they preserve the same position in the casing at all times, and are set into position for work, or are thrown away from the core to release the wrapped paper by the movement of the bracket-pieces. This movement of the two parts W and W* is produced by face cams W^4, W^5 and th earms W', W^2, that are extensions of the brackets beyond the centers W^3 the ends of the arms being held against the cams by springs W^7 and the cams being mounted in the support W^6.

The rollers U are journaled in the pivoted bracket pieces W, $W^\times$ and are set through openings in the casing S against the core therein, and these rollers U are provided on their ends respectively with gears V^4, V^5, V^6. The gear V^5 meshes directly with the main driving gear V, and gear V^6 is driven from gear V^5 by intermediate V^3, while gear V^4 is driven from the gear V through intermediates V', V^2, all as shown in Fig. 15. It will be observed that by this construction all the rollers U run in the same direction and at the same rate of speed, and are all actuated from the main gear wheel V, on the axis of which the brackets W, $W^\times$ are mounted, so that the rocking of the brackets W, $W^\times$ does not interfere with the mesh of the gears.

The operation of these several parts is as follows: The folded papers as they drop from the folding apparatus of the printing press into the chute E are caught between the tapes C, D, and carried forward to the roller B^4, where they meet and are laid in regular order one behind another upon the continuous paper strip B. In passing under the cutters the strip is cut and perforated across the space between the paper laid upon the said strip. The carriers G, H, which travel at the same rate of speed as the wrapper feeding rollers, then advance the continuous strip and papers together to the detaching rollers and tapes that run at a greater rate of speed than the carriers G, H. At this point the wrapper strips become detached at the line of perforations, and each newspaper is advanced through the pasting device by which the flap is coated with paste. The carriers $I^\times$, P, then advance the paper and its strip to the wrapping apparatus, and in passing through this part of the machine the newspaper and wrapper are rolled suitably around the core cylinder and the flap is pressed down at the same time by the rotatory movement of the core and the rollers. When the paper has been thus rolled and the flap of the wrapper secured, the ejector rod is advanced carrying with it the ring or ejector on the core, and at the same time the core is contracted, as previously described, so as to relieve the interior pressure upon the paper, and the rollers U and the sections of the casing S are separated to relieve the exterior pressure upon the paper, so that the paper is readily moved off the core by the ejector and thus delivered. The wrapped paper having been thus delivered, the movement of the ejector rod is reversed and the ejector withdrawn, and as the ejector reaches its normal position, the core is expanded, as previously described, so that the parts are in position for the reception and rolling of another paper.

It will be understood that the mechanism shown by which the paper and wrapper are rolled together and the wrapper secured, may be used in a machine in which either or both the paper to be wrapped and wrapper are fed to this wrapping mechanism by hand, and a practical machine may thus be constructed especially for wrapping magazines and simi-

lar publications, although an automatic machine employing feeding mechanisms for both the papers to be wrapped and wrappers has been shown.

It will be understood that the feeding mechanisms for the paper and wrapper or either of them may be of any suitable form other than that shown. The rolling and wrapping mechanism shown embodies the features of the invention relating to such mechanism in the preferred form, but it will be understood that I am not to be limited to the details of this construction, but that modifications may be made therein while employing the features of invention defined by the claims.

What I claim is—

1. In a machine for wrapping newspapers and other publications, the combination of a core, feeding rollers arranged about the core and co-acting therewith to wind a paper and wrapper upon the core, and means for delivering the wrapped paper, substantially as described.

2. In a machine for wrapping newspapers and other publications, the combination of a core, feeding rollers arranged about the core and co-acting therewith to wind a paper and wrapper upon the core, guides between the rollers, and means for delivering the wrapped paper, substantially as described.

3. In a machine for wrapping newspapers and other publications, the combination of a core, feeding rollers arranged about the core and co-acting therewith to wind a paper and wrapper upon the core, and an ejector for delivering the wrapped paper longitudinally from the core, substantially as described.

4. In a machine for wrapping newspapers and other publications, the combination of a core, feeding rollers arranged about the core and co-acting therewith to wind a paper and wrapper upon the core, and an ejector moving longitudinally of the core, substantially as described.

5. In a machine for wrapping newspapers and other publications, the combination with a core, of feeding rollers arranged about the core and co-acting therewith to wind a paper and wrapper upon the core, and means for delivering the wrapped paper and withdrawing the rollers from the core for the delivery of the paper, substantially as described.

6. In a machine for wrapping newspapers and other publications, the combination with a core, of feeding rollers arranged about the core and co-acting therewith to wind a paper and wrapper upon the core, guides between the rollers, and means for delivering the wrapped paper and withdrawing the rollers from the core for the delivery of the paper, substantially as described.

7. In a machine for wrapping newspapers and other publications, the combination with a core, of feeding rollers arranged about the core and co-acting therewith to wind a paper and wrapper upon the core, guides between the rollers, and means for delivering the wrapped paper and withdrawing the rollers and guides from the core for the delivery of the paper, substantially as described.

8. In a machine for wrapping newspapers and other publications, the combination with a core, of feeding rollers arranged about said core and co-acting therewith to wind a paper and wrapper upon the core, an ejector for delivering the wrapped paper, and means for withdrawing said rollers from the core for the delivery of the paper, substantially as described.

9. In a machine for wrapping newspapers and other publications, the combination with a core, of feeding rollers arranged about said core and co-acting therewith to wind a paper and wrapper upon the core, an ejector moving longitudinally of the core for delivering the wrapped paper, and means for withdrawing said rollers from the core for the delivery of the paper, substantially as described.

10. In a machine for wrapping newspapers and other publications, the combination with a core, of feeding rollers arranged about said core and co-acting therewith to wind a paper and wrapper upon the core, guides between the rollers, an ejector moving longitudinally of the core for delivering the wrapped paper, and means for withdrawing said rollers and guides from the core for the delivery of the paper, substantially as described.

11. In a machine for wrapping newspapers and other publications, the combination with a core, of feeding rollers arranged about said core and co-acting therewith to wind a paper and wrapper upon the core, and a slotted casing about the core within which the rollers project, and means for delivering the wrapped paper, substantially as described.

12. In a machine for wrapping newspapers and other publications, the combination with a core, of feeding rollers arranged about said core and co-acting therewith to wind a paper and wrapper upon the core, a slotted divided casing about the core within which the rollers project, means for delivering the wrapped paper, and means for removing the rollers from the core and separating the sections of the casing for the delivery of the paper, substantially as described.

13. In a machine for wrapping newspapers and other publications, the combination with a core, of feeding devices for winding a paper and wrapper upon the core, guides about the core, means for delivering the wrapped paper longitudinally of the core, and means for withdrawing the guides from the core for the delivery of the paper, substantially as described.

14. In a machine for wrapping newspapers and other publications, the combination with a core, of feeding devices for winding a paper and wrapper upon the core, a divided casing about the core, means for delivering the wrapped paper longitudinally of the core, and means for separating the sections of the casing for the delivery of the paper, substantially as described.

15. In a machine for wrapping newspapers and other publications, the combination of an expansible core, feeding rollers arranged about said core and co-acting therewith to wind a paper and wrapper upon the core, means for delivering the wrapped paper longitudinally of the core, and means for expanding and contracting the core, substantially as described.

16. In a machine for wrapping newspapers and other publications, the combination of an expansible core, feeding rollers arranged about said core and co-acting therewith to wind a paper and wrapper upon the core, an ejector moving longitudinally of the core, and means for expanding and contracting the core, substantially as described.

17. In a machine for wrapping newspapers and other publications, the combination of an expansible core, feeding rollers arranged about said core and co-acting therewith to wind a paper and wrapper upon the core, an ejector moving longitudinally of the core, and means for expanding and contracting the core by the ejector, substantially as described.

18. In a machine for wrapping newspapers and other publications, the combination of an expansible core, feeding rollers arranged about said core and co-acting therewith to wind a paper and wrapper upon the core, an ejector moving longitudinally of the core, means for withdrawing the rollers from the core for the delivery of the paper, and means for expanding and contracting the core, substantially as described.

19. In a machine for wrapping newspapers and other publications, the combination of an expansible core, feeding rollers arranged about said core and co-acting therewith to wind a paper and wrapper upon the core, guides about the core an ejector moving longitudinally of the core, means for withdrawing the rollers and guides from the core for the delivery of the paper, and means for expanding and contracting the core, substantially as described.

20. In a machine for wrapping newspapers and other publications, the combination of an expansible core, means for winding a paper and wrapper upon the core, guides about the core, means for delivering the wrapped paper longitudinally of the core, means for removing the guides from the core for the delivery of the paper, and means for expanding and contracting the core, substantially as described.

21. The combination with paper and wrapper feeding and wrapper pasting mechanism, of a core, feeding rollers arranged about the core and co-acting therewith to wind a paper and wrapper upon the core, and means for delivering the wrapped paper, substantially as described.

22. The combination with paper and wrapper feeding and wrapper pasting mechanism, of a core, feeding rollers arranged about the core and co-acting therewith to wind a paper and wrapper upon the core, guides between the rollers, and means for delivering the wrapped paper, substantially as described.

23. The combination with paper and wrapper feeding and wrapper pasting mechanism, of a core, feeding rollers arranged about the core and co-acting therewith to wind a paper and wrapper upon the core, and means for delivering the wrapped paper and withdrawing the rollers from the core for the delivery of the paper, substantially as described.

24. The combination with paper and wrapper feeding and wrapper pasting mechanism, of a core, feeding rollers arranged about the core and co-acting therewith to wind a paper and wrapper upon the core, guides between the rollers, and means for delivering the wrapped paper and withdrawing the rollers and guides from the core for the delivery of the paper, substantially as described.

25. The combination with paper and wrapper feeding and wrapper pasting mechanism, of a core, feeding rollers arranged about said core and co-acting therewith to wind a paper and wrapper upon the core, a slotted divided casing about the core within which the rollers project, means for delivering the wrapped paper, and means for removing the rollers from the core and separating the sections of the casing for the delivery of the paper, substantially as described.

26. The combination with paper and wrapper feeding and wrapper pasting mechanism, of an expansible core, feeding rollers arranged about said core and co-acting therewith to wind a paper and wrapper upon the core, an ejector moving longitudinally of the core, and means for expanding and contracting the core, substantially as described.

27. The combination with paper and wrapper feeding and wrapper pasting mechanism, of an expansible core, means for winding a paper and wrapper upon the core, guides about the core, means for delivering the wrapped paper longitudinally of the core, means for removing the guides from the core for the delivery of the paper, and means for expanding and contracting the core, substantially as described.

28. The combination with a hollow expansible core, of an ejector on said core carried by a rod within said core, one or more of the members being provided with inclined surfaces by engagement of which the core is expanded and contracted, substantially as described.

29. The combination with a hollow expansible core formed of segments hinged at one end, of a rod within said core engaging the segments by inclined surfaces, an ejector carried by said rod and moving on the core, and means for actuating said rod and ejector, substantially as described.

30. The combination with a hollow expansible core formed of segments, of a rod within said core engaging the outer end of the segments by inclined surfaces when the rod is

drawn into the core, whereby the core is expanded, an ejector carried by said rod and moving on the core, and means for actuating said rod and ejector, substantially as described.

31. The combination with a hollow expansible core formed of segments, of a rod within said core engaging the outer end of the segments by inclined surfaces when the rod is drawn into the core, whereby the core is expanded, an ejector on the core carried by said rod and engaging inclined surfaces on the core, whereby the latter is contracted as the ejector is actuated to deliver a paper, and means for actuating said rod and ejector, substantially as described.

32. The combination with a hollow expansible core formed of segments and having a tapered seat or recess at its outer end, of a rod in said core having a conical head, an ejector secured to said rod and moving on the core, and means for actuating said rod and core, substantially as described.

33. In combination with the cylindrical core having one or more movable segments or sections capable of transverse movement for contracting the core, the radially placed wrapping rollers, the stationary guides between the rollers for guiding the leading edges of the paper and wrapper, the sliding ring on said core, and means for moving said sliding ring longitudinally over the core to discharge the wrapped paper from between the core and the rollers, substantially as described.

34. A hollow rolling core composed of a fixed segment or section, and one or more movable segments or sections hinged at one end and capable of lateral movement at the free end, a longitudinally movable rod within the core, a conical head on the outer end of the rod adapted to spread the movable segment or segments of the core when the head is drawn into the core and to allow them to close when the head is moved out of the core, and a sliding ring upon the exterior surface of the core connected to said rod and closing said segments or sections to contract the core when the rod is moved outward from the core, substantially as described.

35. The combination of cutting mechanism for partially separating a continuous strip into lengths suitable for a wrapper, a wrapper strip reel and means for delivering a continuous strip therefrom to the cutting mechanism and for conveying the partially separated wrapper strip therefrom, carriers for feeding the papers to and laying them upon said wrapper strip flatwise at proper intervals apart, a plurality of carriers for carrying said papers and wrappers and feeding them into the wrapping mechanism having an accelerated movement over the carriers from which they receive the papers and wrapper strips, the switch for guiding the strips and newspapers between the different carriers alternately, and mechanism for operating said switch, substantially as specified.

36. The combination of cutting mechanism for partially separating a continuous wrapper strip into lengths suitable for a wrapper, a wrapping strip reel and means for delivering a continuous strip therefrom to the said cutting mechanism and for conveying the partially separated wrapper strips therefrom, carriers for feeding the papers to and laying them upon said wrapper strip flatwise at proper intervals apart, and carriers for carrying said papers and wrappers and feeding them into the wrapping mechanism having an accelerated movement over the carriers from which they receive the papers and wrapper strips for the purpose of detaching each partially separated wrapper from the continuous strip, substantially as set forth.

37. The combination of a wrapper perforating mechanism and carriers for removing the wrapper strip therefrom, the tapes C, D, for delivering the papers upon the wrapper strip, carrying tapes G, H, the carriers I, I′, for separating the wrapper strip into proper lengths, the carriers $I^{\times}$ I^{2} and P, the switch for guiding the wrappers and papers between I′, I^{2}, and I, P, alternately, and mechanism for operating said switch, all constructed and arranged as and for the purpose set forth.

38. The combination with the core T, of the rollers U, guides S, pivoted supports W carrying said rollers and guides, means for driving said rollers, and means for rocking said supports to carry the rollers and guides toward and from the core, substantially as described.

39. The combination with the expansible core T, of the rollers U, movable supports carrying said rollers, means for driving said rollers, an ejector and means for moving said ejector longitudinally of the core, means for moving said supports to carry the rollers toward and from the core, and means for expanding and contracting the core, substantially as described.

40. The combination with the rollers U, of the pivoted supports W carrying said rollers, means for driving said rollers, and cams W^{4}, W^{5} rocking said supports to separate said rollers, substantially as described.

41. The combination with the rollers U and guides S, of the pivoted supports W carrying said rollers and guides, means for driving said rollers, and cams W^{4}, W^{5} rocking said supports to separate said rollers and guides, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand and seal.

JAMES ARNOTT, JR. [L. S.]

Witnesses:

CHAS. E. KELLY,

EDWARD E. OSBORN.