May 1, 1923. 1,453,636

P. PACHTER

TIPPING AND WRAPPING MACHINE

Filed Jan. 6, 1919 5 Sheets-Sheet 1

Fig. 1.

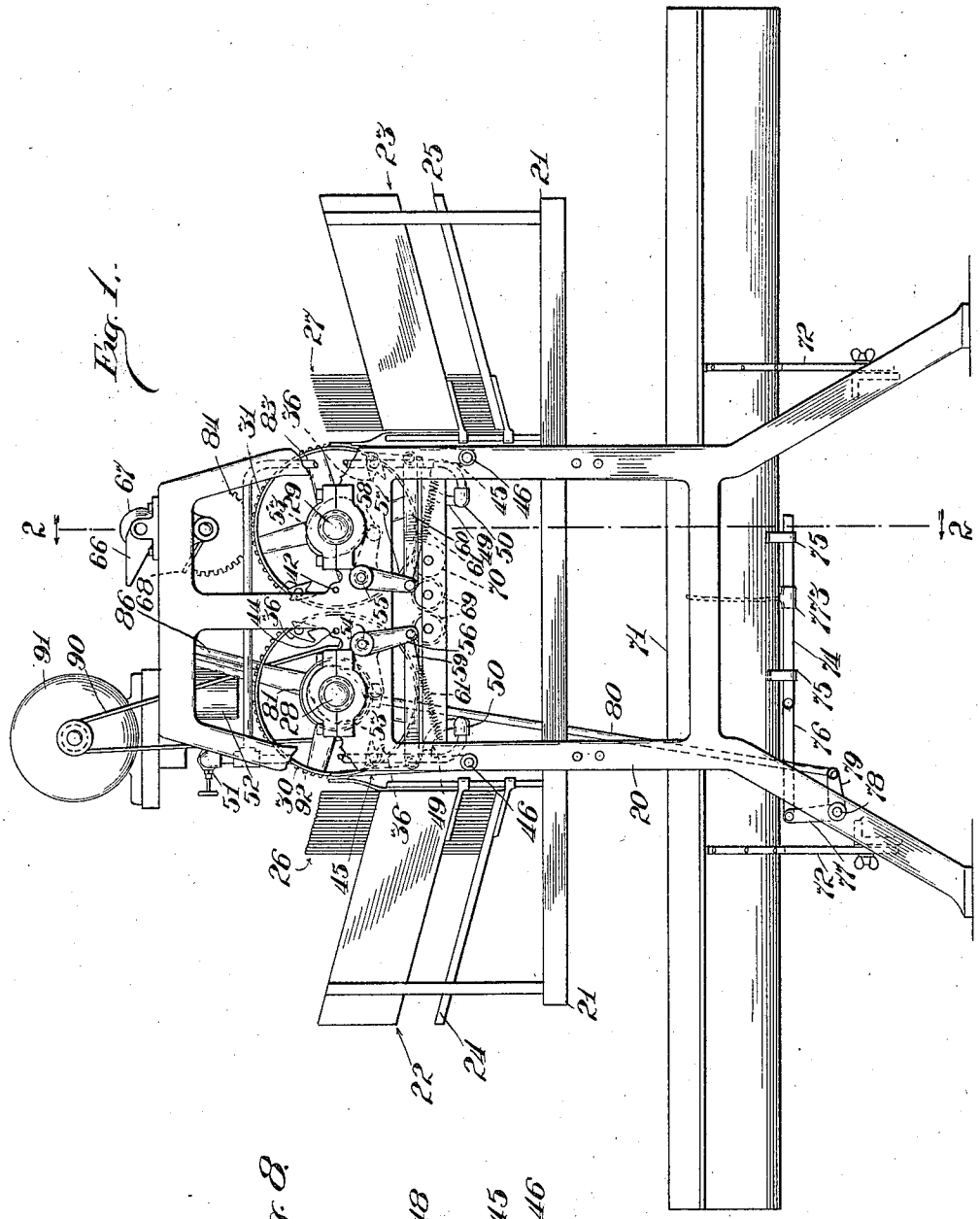
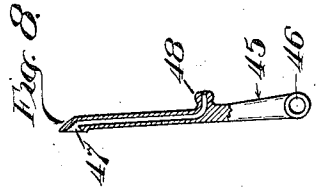


Fig. 8.



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Filed Jan. 6, 1919. 5 Sheets-Sheet 2

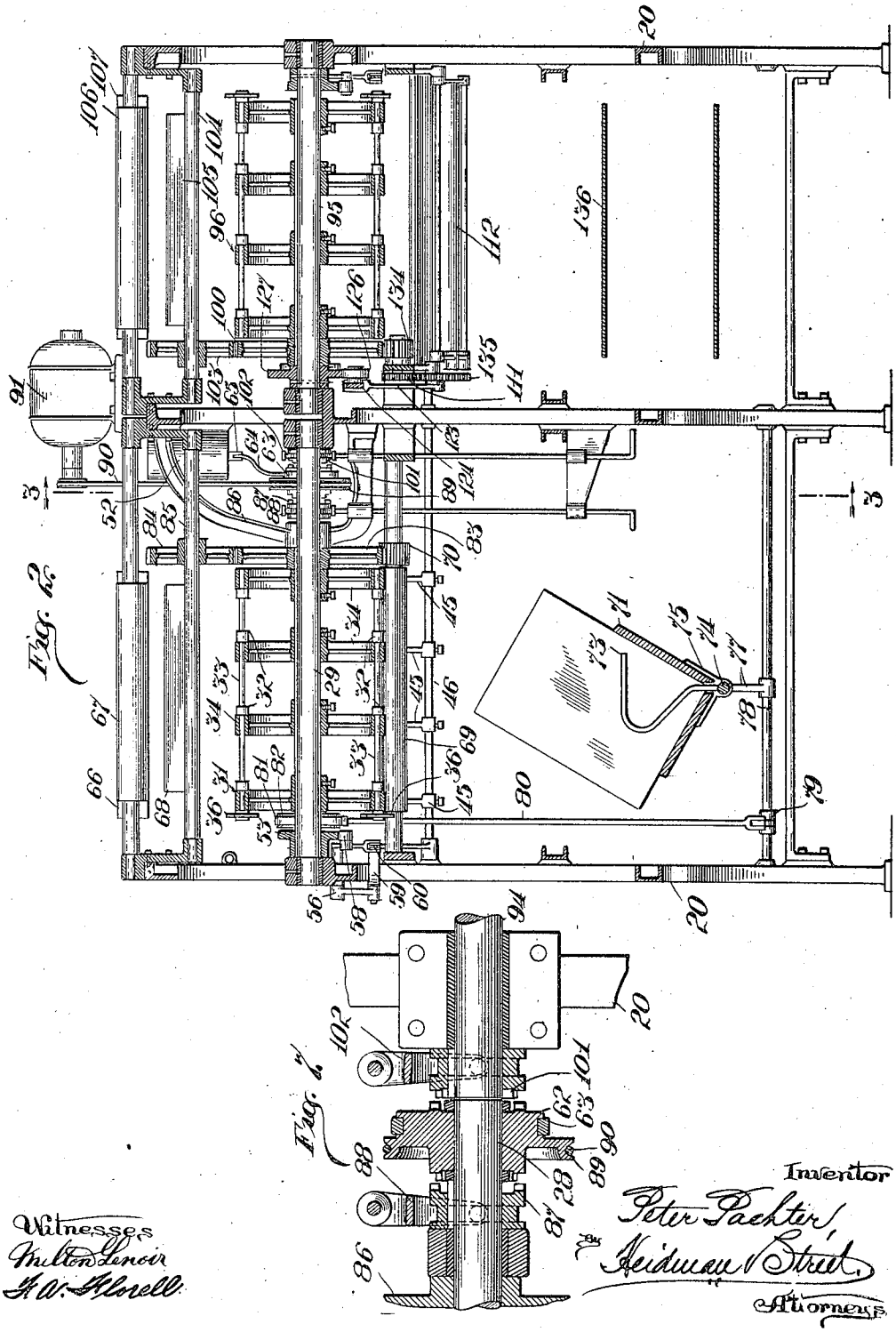


Fig. 2.

Fig. 4.

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TIPPING AND WRAPPING MACHINE

Filed Jan. 6, 1919 5 Sheets-Sheet 3

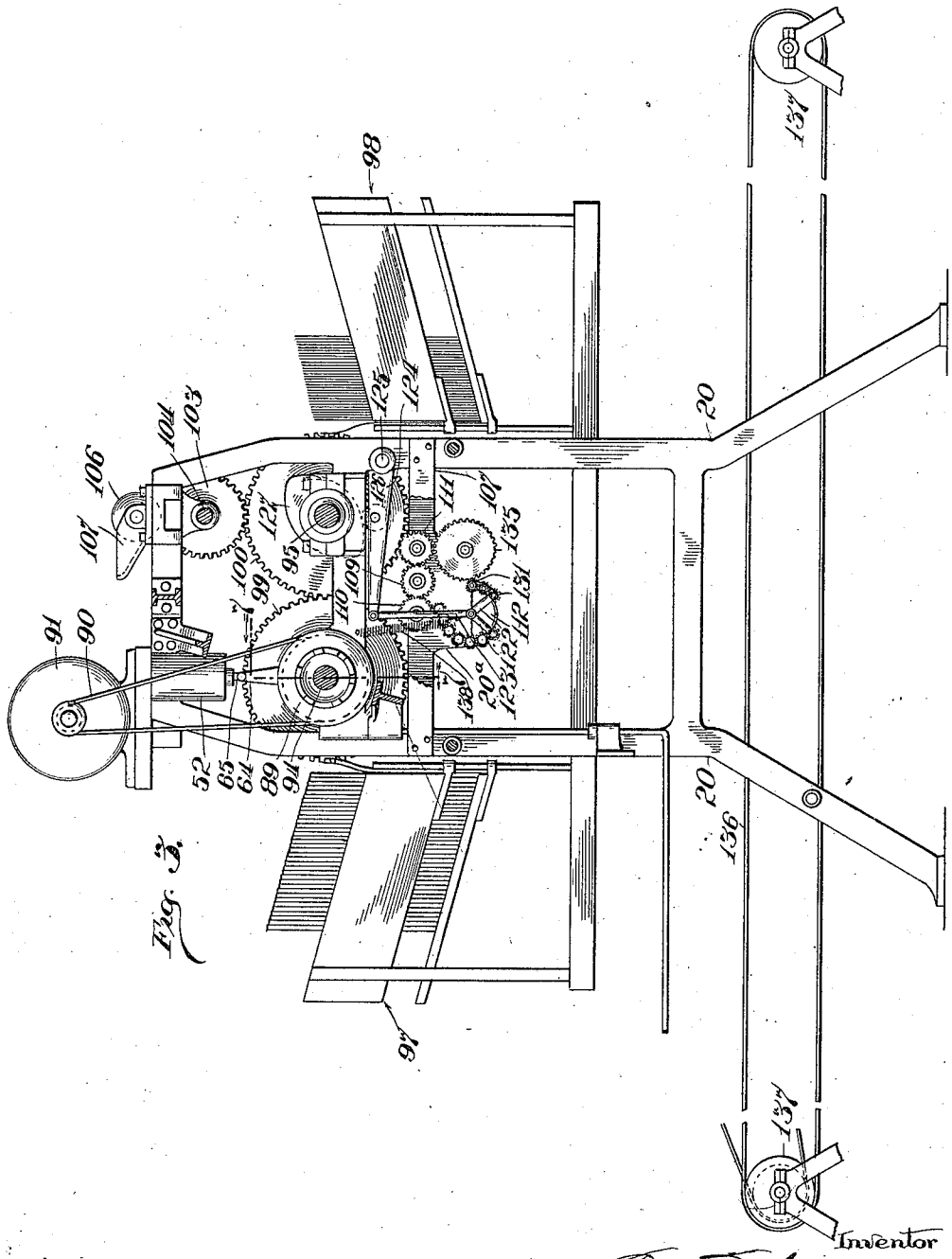


Fig. 3.

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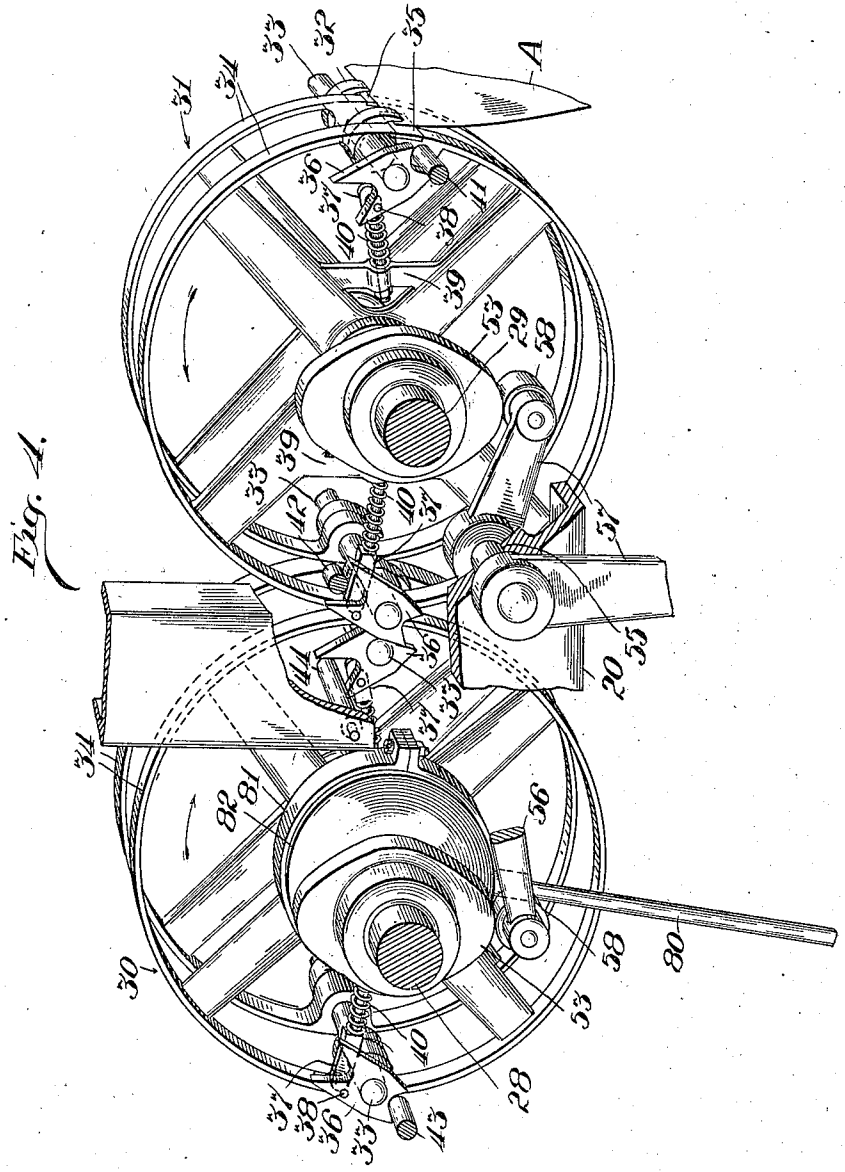
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TIPPING AND WRAPPING MACHINE

Filed Jan. 6, 1919 5 Sheets-Sheet 4



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TIPPING AND WRAPPING MACHINE

Filed Jan. 6, 1919 5 Sheets-Sheet 5

Fig. 5.

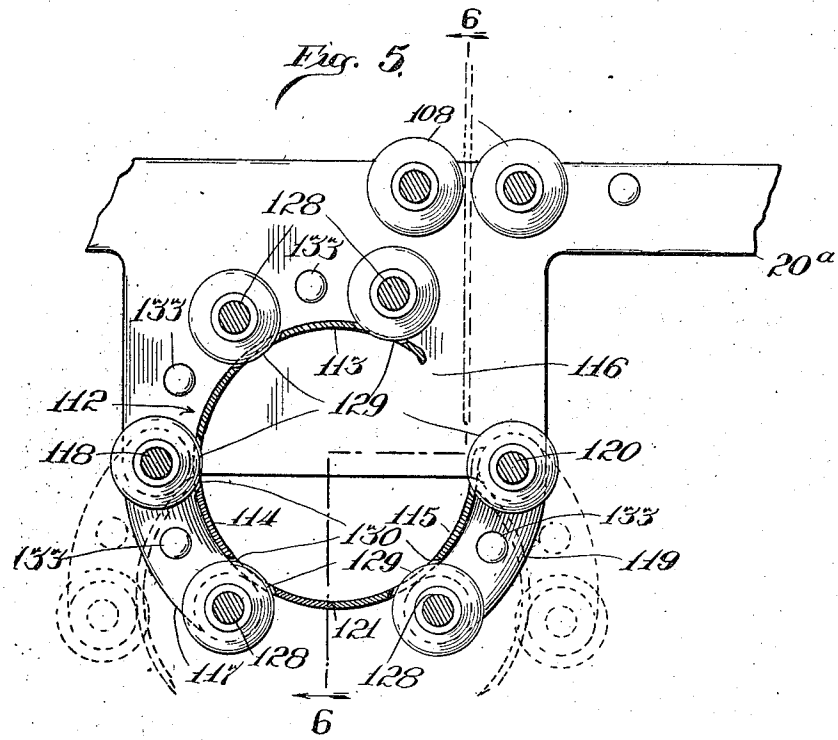
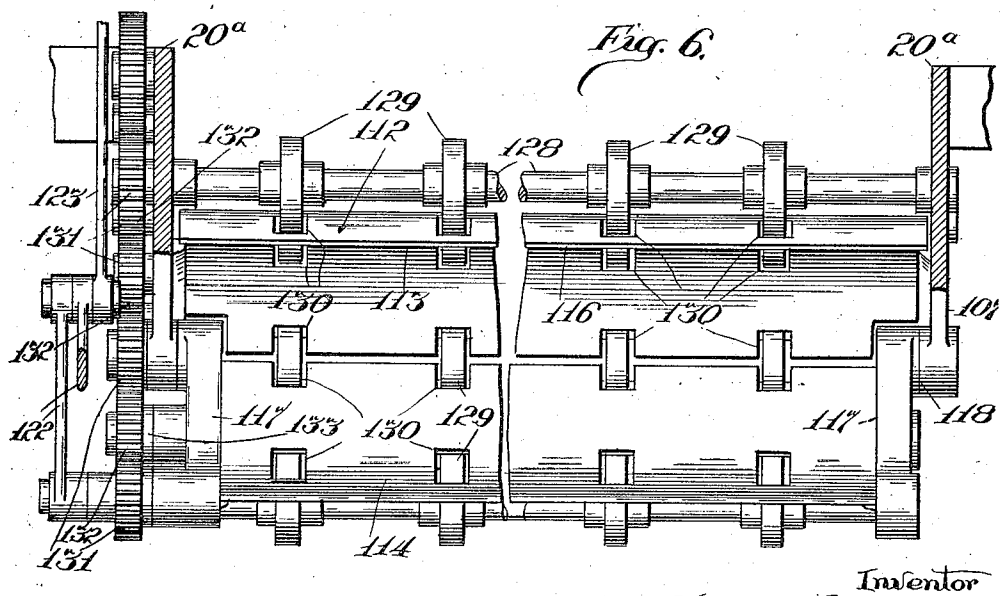


Fig. 6.



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Patented May 1, 1923. 1,453,636

UNITED STATES PATENT OFFICE.

PETER PACHTER, OF CHICAGO, ILLINOIS.

TIPPING AND WRAPPING MACHINE.

Application filed January 6, 1919. Serial No. 269,832.

To all whom it may concern:

Be it known that I, PETER PACHTER, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Tipping and Wrapping Machines, of which the following is a description, reference being had to the accompanying drawings, which form a part of my specification.

My invention relates to a machine for introducing or inserting the inserts or what are known as "tips" on the signatures of a book or pamphlet prior to the binding of the signatures, which are to constitute the book or pamphlet, in the binding machine; the object being to provide a machine whereby the signatures and the "tips" or inserts are automatically brought into proper relation and automatically supplied with adhesive substance; the signatures and the "tips" or inserts being subjected to proper pressure subsequent to being brought into juxtaposition, after which they are discharged into a suitable hopper.

Another object of the invention is to provide a construction whereby pamphlets or magazines will be automatically rolled and wrapped for mailing purposes and automatically discharged; the invention contemplating a construction which may be used as a "tipping" or inserting machine and as a wrapping machine; the wrapping mechanism being adapted to operate in conjunction with the "tipping" or inserting mechanism or separately, as will be more fully comprehended from the following detailed description of the drawings, wherein:—

Figure 1 is a side elevation of the tip-inserting end of my improved machine.

Figure 2 is a vertical sectional view taken on the line 2—2 of Figure 1, looking in the direction of the arrows.

Figure 3 is a vertical sectional view taken on the line 3—3 of Figure 2 looking in the direction of the arrows and disclosing in end elevation the wrapping portion of the machine.

Figure 4 is a detail perspective view of the mechanism whereby the signatures and "tips" or inserts are automatically fed and brought into juxtaposed relation.

Figure 5 is an enlarged detail sectional view of the wrapping mechanism.

Figure 6 is a longitudinal sectional view taken on the line 6—6 of Figure 5 looking in the direction of the arrows.

Figure 7 is a detail view in section on the line 7—7 of Figure 3, showing the ends of the power-imparting and cylinder-carrying shafts.

Figure 8 is a detail view in section of a signature and "tip" feeding member.

In the specification of the invention, I shall first proceed with a description of what has been termed the "tipping" or inserting mechanism whereby the "signatures" and "tips" are brought into proper relation or juxtaposition prior to the delivery of the signatures to suitable binding machinery in which the respective signatures are stapled or otherwise suitably bound together.

In the specific illustration of the invention, it comprises a suitable frame composed of the standards 20, of suitable formation and height and spaced apart, as more clearly shown in Figure 2 so as to support the operating mechanisms later to be described. The frame of the machine is shown provided with transversely disposed members, as at 21, see Figure 1 on opposite ends whereof are supported suitable racks or holding elements 22 and 23; the racks being shown similar in construction and comprising a suitable frame open at the tops and outer ends; the frames being preferably arranged at inclinations, at least so far as the bottoms are concerned, as shown at 24 and 25, thereby inducing the signatures in rack 22 and the "tips" or inserts in rack 23, to slide toward the inner ends of the racks as the signatures and "tips" are successively withdrawn from the racks. The racks 22 and 23 are formed so as to maintain the signatures and "tips" in vertical position or upright on edge as shown in Figure 1; the rack 22 being provided with "signatures" 26 to which the "tips" or inserts 27, contained in rack 23, are to be attached through the operation of the machine.

The cross-members of the frame are provided with suitable bearings for the ends of two rotatable shafts 28 and 29, arranged parallel with each other as shown in Figure 1. Each shaft has a cylinder or drum secured thereto as shown at 30 and 31 in Figure 1; the cylinders being preferably of

somewhat skeleton form and keyed to their respective shafts, as shown in Figure 2; that is, the cylinders are formed with circumferential openings or spaces for the passage and operation of gripper fingers or elements shown at 32, rigidly secured to rotatable rods 33, suitably mounted within the circumferential members 34 of the cylinders 30 and 31; the rods 33 being secured adjacent the perimeters of the cylinders as shown in Figures 2 and 4.

At points coincident with the tips of the grippers 32, namely in the oscillatory paths of the grippers, the circumferential members 34 of the cylinders are formed or provided with laterally extending lugs or projections 35, see Figure 4, adapted to be engaged by the fingers or grippers 32 when the latter are tripped or actuated by means of the tripping mechanism which comprises a tappet member or star-wheel 36, preferably eccentrically mounted on the end of each rotatable rod 33, see Figures 1 and 4. In the particular exemplification, the cylinders 30 and 31 are each provided with a pair of rotatable rods 33 having one or more grippers 32; the rods being arranged at diametrically opposite points, as shown in Figure 4, thus enabling a half revolution of the cylinders to carry and transpose a "signature" or "tip" as the case may be.

The number of grippers and their disposition about the cylinders, it will be understood, may be altered, commensurate with the size of the cylinders and "signatures" and inserts or "tips," as will be readily understood.

The position of the grippers, namely either in gripping or non-gripping position, is maintained by means of a spring-controlled rod 37, which is pivoted at 38, to the tappet member 36, while the other end is freely slidable through an aperture in the web 39 formed integral with a pair of spokes of the cylinders, see Figure 4. The rod 37 is encircled by a suitable spring 40, one end whereof bears against the web 39, while the other end bears against the shouldered end or head of the rod, so that the member 36 will be under constant pressure, and maintain it in adjusted position; the pivotal connection of rod 37 with the member 36 and the mounting of the latter on rod 33, are such that the spring 40 will tend to maintain the tilted position of the element 36 and therefore of the rod 33 on which the grippers 32 are mounted. At suitable points on the frame of the machine, I provide extensions or lugs 41 and 42 which project into the paths of the members 36 so as to engage the latter when the cylinder has rotated a predetermined degree. As is apparent from Figure 4, the lug 41, at the right in said figure, is so arranged that it will be engaged by the teeth or projections on the short end of member 36 during the revolution of the cylinder 31 (it being understood that the cylinder 31 to the right in Figure 4 is adapted to revolve in counter-clockwise direction) causing the member 36 and rod 33 to rotate in such direction as to induce grippers 32 to be moved into closed or gripping position so as to grip the edge of the sheet or "tip" indicated at A in Figure 4.

It is apparent that member 36 may be swung or rotated through the arc of a circle by reason of the sliding relation of rod 37 with web 39; during which operation the spring 40 will be compressed until the end of the rod 37, which is pivoted to member 36, has been moved beyond "dead center," that is into a position tangential to the axis of member 36, when the action of spring 40 will place the member 36, and therefore also grippers 32, under tension, thus causing the grippers 32 to firmly hold the sheet as shown in Figure 4.

The continued rotation of the cylinder 31 (the rotation being in counter-clockwise direction as previously stated) will bring the grippers carrying sheet or insert A, to the diametrically opposite point where the long pointed end of the gripper-controlling member 36 will be engaged by the projection or lug 42. The engagement of member 36 with lug 42 will cause the member 36 to rotate about lug 42 during rotation of the cylinder.

The rotation of member 36 about lug 42 will cause rod 33 to also rotate in a direction which will induce grippers 32 to oscillate out of gripping position and thereby release the sheet A. This position will maintain until the cylinder has revolved a degree sufficient to again bring the advanced end of member 36 into striking engagement with lug 41 and thereby induce a movement of grippers 32 into gripping position and therefore into contact with the edge of another sheet or "insert" as previously described.

The cylinder 30 is substantially identical with the cylinder 31 just described; except, of course, that the cylinder 30 is caused to rotate in the opposite or clockwise direction. This cylinder 30 is also shown provided with a pair of gripper elements disposed at diametrically opposite points; the gripper elements also comprising the tappet members 36 adapted to be actuated by the strikers or lugs 43 and 44. The grippers on the left side of this cylinder 30 have just moved beyond the moment of tripping; namely, the member 36 has just rotated about lug 43, during which rotation of member 36 the grippers were caused to open. In other words, the cylinder 30 in Figure 4 has just been brought to a position where the grippers at the left of cylinder 30 have been recharged with a sheet or "signature," as the

case may be, in a manner similar to cylinder 31 and its grippers shown at the right hand side of the figure.

On the other hand, the grippers on the cylinder 30, which have been brought into juxtaposition with cylinder 31, have been brought to a position where the member 36 has rotated about the lug or striker 44, during which action the grippers were caused to open and release the sheet or signature, at a moment substantially simultaneously with the releasing action of the grippers on the adjacent cylinder 31; that is to say, the grippers, on the two cylinders, which have been brought into juxtaposition through the rotation of the two cylinders, have both been caused to release the sheets carried thereby; the cylinders being so arranged that the sheets carried by both cylinders will be forced into intimate relation with each other.

In the exemplification of the invention as disclosed in Figure 1, the cylinder 30 rotates in clockwise direction and is adapted to receive the sheets or "signatures" which have been stacked in rack 22; while the cylinder 31 rotates in counter-clockwise direction and is adapted to receive the sheets or "tips" which have been stacked in rack 23, with the result that one "signature" and one "tip" will be brought into contact with each other during each half revolution of the two cylinders.

In order to bring the upper edges of a sheet or "signature" and a "tip" or insert into proper position, namely into intimate relation with the respective cylinders where the edges may be grasped by the grippers, I provide means comprising suitable suction members or fingers 45 shown in dotted lines in Figure 1 and in detail in Figure 8. These members or fingers 45 are suitably pivoted, as at 46, on the frame of the machine; and are provided with a minute longitudinal passage which terminates at the free end or tip of the fingers 45 in a flared or cup-shaped orifice 47 which is adapted to extend flush with the adjacent sheet in the racks 22 or 23.

The longitudinal passage in the finger or member 45 at the opposite end terminates in a nipple or boss 48 on the side of finger 45 at a suitable point intermediate of its ends, as clearly shown in Figure 8. The nipple or boss 48 is adapted to receive the end of a suitable tube as shown in dotted lines at 49 in Figure 1; and this tube 49 at its other end is secured to suitable piping or air-line branch 50, which leads upwardly and is connected to a main line or pipe provided with valve 51; said main line or pipe leading to a suitable suction pump 52, see Figures 1 and 2. As shown in Figure 1, both sides of the machine are provided with a suction "tip" or finger 45, connected by means of branch lines 50, 50 with the suction pump 52.

The suction "tips" or fingers 45, at both sides of the machine are similarly oscillated on their pivot points 46 by the following described mechanism.

The shafts 28 and 29 of cylinders 30 and 31 are each provided with a cam 53, see Figure 4, similarly disposed so as to operate at the same moment. Suitably pivoted on the frame of the machine at the points 54 and 55 are a pair of bell-crank levers 56 and 57 (see Figures 1 and 4); the inner ends whereof are each provided with a roller 58 adapted to ride on the respective cams 53; while the opposite end of the bell-crank lever 56 is pivotally connected with a link 59 which is also pivotally connected with the suction-finger 45 at the left of the machine as illustrated in Figure 1. The other bell-crank lever 57 has one end pivotally connected to a link or rod 60, which in turn is pivotally connected at its opposite end to the suction finger or member 45 pivotally mounted on the right hand side of the machine in Figure 1 and which is adapted to control the sheets mounted in rack 23. The links or rods 59 and 60 each have a spring 61 connected thereto, while the opposite ends of the springs are suitably connected to the frame of the machine or to some stationary element; the springs 61, 61 being adapted to exert a constant pull on their respective links, and therefore also on the bell-crank levers, in a direction which will maintain the inner or roller-supplied ends of the bell-crank levers in constant contact with the cams 53; such action consequently also inducing the links or rods 59 and 60 to force their respective suction fingers or "tips" outward toward the racks 22 and 23, respectively, when the cams 53 have passed beyond the inner or roller-supplied ends of the bell-crank levers.

The cams 53 are so formed and arranged on the shafts 28 and 29 that the bell-crank levers 56 and 57 will be actuated against the action of the springs 61 during each half revolution of the cylinders, at a period in advance of the moment when the grippers of the respective cylinders reach the upper edges of the stacked sheets in the racks 22 and 23. As a vacuum or suction is set up in the fingers or "tips" 45 through the action of pump 52, the inward movement of the free ends of fingers 45, induced by the cam 53, will cause the upper edge of the adjacent sheet in each rack 22 and 23 to be drawn toward the perimeters of the cylinders, as shown in Figure 1, namely into position to be grasped by the grippers on the cylinders. The fingers or "tips" 45 are again forced into contact with the edge of the succeeding sheet through the action of springs 61 after the cams 53 have moved

beyond the inner ends of the bell-crank levers; in other words the fingers or "tips" 45 are forced outwardly into contact with a succeeding sheet at intervals in the rotation of the cylinders when the respective grippers 32 are disposed intermediate of their points of location shown in Figure 4.

One shaft, for example shaft 28, is also shown provided with another cam or eccentric 62 (see Figures 2 and 7) which is surrounded by an eccentric or cam band 63 which is provided with a rod 64 pivotally connected with the piston 65 of pump 52; the cam or eccentric 62 being so formed that the piston 65 in pump 52 will be actuated or given an induction stroke at least twice for each complete revolution of the cylinders, in order that suction may be set up in the fingers 45 at both sides of the machine in advance of the periods when the grippers are brought into position adjacent the upper edges of the stacked sheets in racks 22 and 23.

The frame of the machine at a suitable point, as for example above the cylinder 31 as shown in Figure 1, is provided with a glue or paste receptacle 66, provided with a rotatable roller 67, arranged to receive glue or paste from the receptacle 66. At a point intermediate of roller 67 and the cylinder 31, I rotatably mount a wiper element 68 which is adapted to wipe across or slightly contact with the perimeter of roller 67 and thereby be charged with a small quantity of glue or paste throughout the longitudinal margin thereof. The wiper element 68 is so disposed that the tip or longitudinal edge thereof will also slightly contact with the sheet carried by the cylinder 31; the rotation of element 68 is so timed, relative to the rotation of the cylinder 31, that element 68 will merely contact with one of the longitudinal edges of the sheet carried by the cylinder, so that when said edge of the sheet is brought into contact, through the continued revolution of the cylinders, with the sheet or signature carried by adjacent cylinder 30, the first mentioned sheet on cylinder 31 will be caused to adhere to the sheet carried by cylinder 30.

At a suitable point beneath the point where the two cylinders 30 and 31 are in juxtaposed relation, I provide a pair of compression rollers 69, 69, see Figures 1 and 2. The rollers are rotatably mounted in the frame of the machine; being driven by means of an idler 70 which is disposed intermediate of one of the rollers 69 and the gearing of cylinder 31 for example, see Figure 1. The arrangement of rollers 69, as shown in the drawings, causes the rollers to rotate in opposite directions and the relation of the rollers to each other is such that the signature and "tip" or insert which have been brought into glued contact with each other, will be placed under compression before they are discharged into a receiving hopper or trough shown at 71 in Figures 1 and 2 and disposed transversely of the machine beneath the cylinders 30 and 31 and compression rollers 69.

The trough or hopper 71 consists of a suitable frame having two upwardly diverging sides as shown in Figure 2, so that the discharged "signature" with its "tip" or insert will be held upright; the trough being mounted on the frame of the machine by means of suitable brackets 72, as shown in Figure 1; the brackets being preferably adjustably and removably secured in place, as shown. The trough 71 is provided with a slot disposed lengthwise in the bottom thereof, see Figure 2, for the passage of an upwardly disposed control member or follower 73 whereby the "signatures" and "tips" will be alternately forced toward opposite sides of the trough, to be gathered up by an operator for delivery to the binding machine. The follower or control member 73 is mounted on a rod 74 which is slidingly mounted in brackets 75 secured to the underside of the trough as shown in Figure 1. One end of rod 74 is pivotally connected to a link 76 which in turn is pivotally secured to an arm 77 which is secured against independent rotation on a rotatable shaft 78, suitably mounted in the frame of the machine, see Figures 1 and 2.

The shaft 78 also has a second arm 79 keyed or otherwise secured thereto and disposed in a direction perpendicular to the direction of arm 77, see Figure 1. The free or outer end of arm 79 has a reach rod 80 pivotally secured thereto, while the upper end of the rod 80 is secured to a strap or band 81 (see Figure 4) which is disposed about an eccentric 82 mounted on shaft 28. With this construction, it is apparent that during each revolution of shaft 28, the rod 80, by reason of eccentric strap 81, encircling eccentric 82, is caused to reciprocate; and this reciprocation of rod 80 will cause arm 79 to be oscillated, thereby rocking shaft 78 in a manner which will cause arm 77 to be oscillated so as to induce follower member 73 to be reciprocated through the medium of link 76 and rod 74. With this arrangement and operation, the follower 73 will alternately be moved to opposite sides of the path of the "signatures" which are discharging into the hopper or trough, so that successive "signatures" will be automatically forced to opposite ends of the hopper or trough 71.

The shaft 29, in the exemplication illustrated, has its ends mounted in suitable bearings arranged on cross-members of the machine-frame, namely at one end of the machine and at the intermediate point or up-

right member of the frame, as shown in Figure 2. In addition to cylinder 31 being keyed to shaft 29, I also show a gear 83 keyed to the shaft at one end of the cylinder (see Figure 2). This gear 83 in turn meshes with a pinion 84 keyed to the shaft 85 on which the wiper element 68 is secured; the shaft 85 having suitable bearings at its ends in the frame of the machine, (see Figure 2). Wiper element 68 is therefore caused to rotate when the "tip" carrying cylinder 31 is rotated.

One end of shaft 28 is mounted in suitable bearings in the frame of the machine, while the other end is supported by a yoke or bracket 86 which is secured to the intermediate members of the frame, as more clearly shown in Figure 2.

The end of shaft 28 which extends through bracket or yoke 86 is provided with a clutch 87 slidably keyed thereon (see Figure 7); the clutch being operated by a suitable control rod 88. The clutch 87 is adapted to provide operative relation between shaft 28 and a pulley 89 which is loosely mounted on shaft 28; the pulley being shown driven by means of belt 90, which in turn is driven by means of motor 91.

Shaft 28 is provided with a gear 92 which meshes with a gear 83 on shaft 29, thus causing positive rotation of shaft 29 and cylinder 31 in a direction opposite to that of shaft 28 and cylinder 30.

Shaft 29 is provided with the gear 83 which meshes with the pinion 84 on wiper element or shaft 85 as previously described; so that the various elements of the "tip" or inserting mechanism of the machine are all driven from the shaft 28 which is driven by motor 91 and belt 90.

The operation of this portion of my improved machine is as follows:—the "signatures" or book-sections to each of which the "tip" or insert is to be applied, are set up on end in the rack 22 as shown in Figure 1; while the "tips" or inserts are set upon edge in the rack 23. The machine may then be set in motion by shifting clutch 87, through the medium of lever 88, in order that power can be transmitted from motor 91 to shaft 28. Rotation of shaft 28 likewise causes shaft 29 and its cylinder 31 to rotate and transmit power to the various correlated mechanisms as previously described. Rotation of shaft 28 induces the air or suction-pump 52 to operate through the medium of eccentric and strap 62—63, thus inducing a suction to be set up through fingers 45; the oscillation of the fingers toward and away from the stacks of "signatures" and "tips" in racks 22 and 23 being induced by the action of springs 61, bell-crank levers 56 and 57 and the respective cams 53 on shafts 28 and 29. As the upper edges of the "signatures" and "tips" are drawn by the fingers 45 toward the perimeters of cylinders 30 and 31, a set of grippers on each cylinder will have been brought into operating position, thus causing a "signature" to be taken by cylinder 30 and a "tip" to be taken by cylinder 31. During the rotation of the cylinders with the "signature" and "tip," respectively, the wiper element 68 has been made to rotate sufficiently to have wiped glue or paste off of roller 67 and applied it to the margin or edge of the "tip" carried by cylinder 31, so that when the "signature," carried by cylinder 30 and the "tip" are brought into juxtaposition through continued rotation of the cylinders, the "tip" will be caused to adhere to the "signature" and with it be made to pass between the compression rollers 69; which are driven from cylinder 31 by means of an idler 70. The "signatures" and "tips" are thus successively brought into contact with each other, and fed into the hopper 71, where they are alternately forced toward opposite ends of the hopper by means of the "follower" element 73 which is operated or made to reciprocate in the hopper by means of the rod 80, eccentric strap 81 disposed about eccentric 82 on shaft 28 and the links or arms 79, 77, 76 and 74 as previously described.

I shall now describe the construction and operation of the other portion of my improved machine, namely the pamphlet rolling and wrapping mechanism and which is illustrated to the right in Figure 2 and shown in Figures 3, 5 and 6.

This part of the machine comprises a pair of shafts 94 and 95, preferably in alignment with shafts 28 and 29, respectively; the end of shaft 94 being shown in Figure 7, while shaft 95 can be seen in Figure 2. The shafts 94 and 95, are both provided with skeleton cylinders identical with cylinders 30 and 31; the cylinder on shaft 95 being visible in Figure 2 at 96. The cylinder 96 on shaft 95 and the cylinder on shaft 94 are both provided with grippers identical with the grippers on cylinders 30 and 31, previously described, so that specific description need not be again given; and these grippers are tripped by similar mechanism and in a similar manner as the grippers 32 on cylinder 31.

The frame of the machine is also provided with racks 97 and 98 containing the pamphlets and wrapper-sheets, respectively, which are set up on edge as shown in Figure 3 and intended to be successively operated upon by the two cylinders; the racks being so arranged that the pamphlets and wrapper sheets will move toward the cylinders as they are being successively withdrawn from the racks.

This end of the machine, like the "tip"

inserting end previously described, is also provided with the suction mechanism previously described, namely suction fingers identical with the finger 45 shown in Figure 8; the fingers to be operated by means of cams and levers arranged as previously described; with the fingers connected by means of suitable tubing with the suction or air-pump 52; the fingers being adapted to contact with the upper edges of the adjacent pamphlets and wrapper sheets and cause them to be drawn toward the respective cylinders as the fingers swing inwardly through the action of the cams and levers previously referred to.

The shafts 94 and 95 are both provided with gears 99 and 100 (see Figure 3) which mesh with each other as shown, so that power may be transmitted from shaft 94 to shaft 95 and thus have the cylinders thereon rotate in unison, but of course, in opposite directions. Shaft 94 is adapted to be placed into operative relation with the power pulley 62 by means of a clutch 101 (see Figure 7) which is operated by the control rod or lever 102 (see Figures 2 and 7). It is apparent from the construction shown in Figure 7 that both the "tip" inserting and the wrapping portions of the machine may be operated at the same time, or they may be separately operated by means of the two clutches 87 and 102.

The gear 100 on shaft 95 is also shown in mesh with a pinion 103 which is secured to a shaft 104 provided with a wiper element or blade 105 which is adapted to touch or sweep the front roller 106, which revolves through a portion of a glue or paste receptacle 107, see Figure 3. The wiper element or blade 105 is also adapted to slightly contact with the wrapper-sheets which are being carried by cylinder 96; the mechanism being so timed that the wiper element or blade 105 with the glue or paste will contact merely with the marginal edge of each wrapper-sheet which is carried by the cylinder.

At a point beneath the cylinders mounted on shafts 94 and 95, the machine is provided with the frame-members 20^a disposed transversely of the machine; the frame members being enlarged or bellied intermediate of their ends, as shown in Figures 3 and 5, to provide bearing for a number of rollers of the rolling or wrapping mechanism now to be described.

At a point in alignment with the downwardly fed pamphlets and wrapper-sheets that are being discharged in juxtaposition by the cylinders, are a pair of compression rollers 108, 108, see Figure 5, between which the pamphlet and wrapper-sheet are forced to pass, as shown in dotted lines in Figure 5.

The rollers 108 are driven by means of pinions 109 and 110, secured to the end of each roller; while pinion 109 in turn meshes with an idler 111, see Figures 2 and 3; the rollers being caused to rotate in opposite directions the same as the cylinders above.

At a point beneath the pressure rollers 108, I provide a sectional cylinder 112, which is composed of a permanent section or segment 113, suitably secured to the cross-members 20^a of the machine frame, and two movable sections or segments 114 and 115; while a portion of the cylinder at a point beneath the compression rollers 108 is left open at 116 see Figure 5, adapted for the entrance of the pamphlet and wrapper-sheet. The section 114 is provided at its ends with end members 117, see Figure 6, the upper end whereof is pivoted at 118 to the cross-member or frame 20^a, so as to permit the section 114 to swing outwardly into the position shown in dotted lines in Figure 5. The section 115 is similar to section 114, being also provided with end members 119, which, like members 117 of section 114, are pivoted at the upper ends at 120 to the frame-members 20^a, so as to permit section 115 also to swing outwardly away from section 114 into the position shown in dotted lines in Figure 5. The free edges of the movable sections 114 and 115 are preferably beveled so as to provide a smooth joint at the meeting edges as shown at 121 in Figure 5.

The movable or swinging sections 114 and 115 are controlled by the two short links 122, see Fgiure 3 which are pivotally secured to the sections 114 and 115, respectively, while the other ends are pivotally secured to an end of a rod 123, the other end whereof is pivoted to the end of a lever 124. The lever 124 is pivoted at 125 to the frame of the machine so as to be free to swing through a vertically disposed arc.

At a point intermediate of its ends and on the side toward cylinder 96, the lever 124 is provided with a roller 126, see Figures 2 and 3; and roller 126 is adapted to be acted upon by a cam 127 which is secured to shaft 95. As shaft 95 with cam 127 is rotated, the cam 127 will strike roller 126 and thus force lever 124 downwardly, causing rod 123 to force links 122 downwardly and induce them to spread apart at their lower ends, thereby forcing the sections 114 and 115 of the sectional cylinder apart into the position shown in dotted lines in Figure 5, namely so as to open the cylinder and allow the contents to drop out.

At points circumferentially disposed about the cylinder, the frame of the machine and the end members 117 are provided with rotatably mounted shafts 128; all of which are provided with a plurality of friction rollers 129. The respective sections 113, 114 and 115 of the cylinder, at points coincident with the friction rollers, are provided

with slots or openings 130 through which the peripheries of the friction rollers 129 are disposed; the rollers 129 being preferably of rubber or other friction inducing material.

The ends of shafts 128 are provided with pinions 131, which mesh with idlers 132, which are rotatably mounted at the points 133 in Figure 5. The pinion 131 at the top of the cylinder, adjacent the opening 116, is shown in mesh with pinion 110, of pressure roller 108, so that power is transmitted to the pinions 131 on the shafts 128 disposed about the left side of the cylinder,—as viewed in Figures 3 and 5,—through the medium of the gear 100 on shaft 95 which meshes with a pinion 134 secured to the stub-shaft on which idler 111 is secured;—idler 111, pinions 109, 110 and the intermeshing pinions and idlers 131 and 132, thus causing all of the friction rollers 129 to revolve, that are carried by cylinder sections 113 and 114.

In order to transmit power to the friction rollers carried by cylinder-section 115, I provide an idler 135, suitably mounted on a portion of the cross-member 20^a of the frame. This idler 135 is arranged in mesh with idler 111 (see Figure 3) and also with the pinion 131 secured to the shaft 128 at the upper pivotal point of cylinder-section 115 and by means of an intervening idler 132 to the pinion 131 on the shaft 128 at the lower end of end member 119 of cylinder-section 115.

As is apparent from the construction, the pamphlet and wrapper-sheet (the latter having one of its marginal edges supplied with glue or paste by wiper 105) are jointly fed, by their respective cylinders, in proper relation to pressure rollers 108, which in turn cause them to pass down, as shown in dotted lines in Figure 5, into contact with the inner surface of cylinder-section 115. With the cylinders and pressure-rollers in operation, the various friction rollers 129 will also be rotated at a requisite speed, so that the combined pamphlet and wrapper-sheet coming into contact with the friction rollers 129, will be caused to follow the inner circular surface of the sectional cylinder and thereby rolled into tubular form with the wrapper-sheet on the outside. In practice, the wrapper-sheet may be made of slightly greater width than the pamphlet so as to have a small portion of the wrapper-sheet extend beyond the pamphlet when the latter, with the wrapper-sheet has been rolled into tube-form; and the extended edge of the wrapper-sheet having been previously supplied with glue or paste by wiper element 105, will therefore be made to adhere to the portion of the sheet with which it is brought into overlapping relation.

The mechanism is so geared and timed that by the time the pamphlet and wrapper-sheet have been completely rolled, the cam 127 will act on the roller carried by lever 124, causing the latter to oscillate, forcing rod 123 downwardly and thereby cause the cylinder-sections 114 and 115 to separate so as to allow the completely rolled and wrapped pamphlet to drop out.

At a point beneath the wrapping mechanism, I provide suitable receiving mechanism, which is shown in the nature of an endless belt 136, disposed transversely of the machine and caused to rotate about suitable rollers 137 which may be driven by any suitable mechanism at the desired speed. As the wrapped pamphlets or magazines are discharged from the wrapping-cylinder they drop onto belt or carrier 136 and are conveyed to the side of the machine where they may be readily gathered up, or allowed to fall into any suitable receptacle, preparatory to being addressed and mailed.

The lever 124 and therefore also wrapping cylinder-sections 114 and 115 are returned to normal and closed positions by means of a suitable spring 138, whereby lever 124, or rather roller 126 carried thereby is maintained in constant contact with the cam 127 on shaft 95, so that as the eccentric portion of the cam 127 has passed the roller 126, the lever 124 will be in its raised or normal position shown in Figure 3.

As is evident from the construction shown and described, the "tip" inserting and wrapping mechanisms of the machine may be operated at the same time by throwing both clutches 87 and 101 into mesh with pulley 62 at the same time; or either mechanism may be separately operated, as required, by merely throwing the requisite clutch into position.

I have shown and described what I believe to be the simplest and best exemplification of my invention, but alterations may be made in certain details of the invention without, however, departing from the spirit of my invention.

What I claim is:

1. In a machine of the class described, a plurality of sheet-gripping members fixed to adjacently positioned cylinders, geared to rotate in opposite directions and place a pair of sheets into juxtaposition between the two cylinders, means whereby the sheets are automatically brought into the path of said gripping members and means whereby adhesive is applied to a portion of the sheets.

2. In a machine of the class described, a plurality of continuously moving sheet gripping members adapted to simultaneously bring a pair of sheets from separate racks, into juxtaposition, means whereby said gripping members are automatically tripped into gripping and releasing positions, section means whereby sheets are brought into the path of said gripping mem-

bers and means whereby adhesive material is applied to the sheets from one rack while they are being carried by the gripping members, means adapted to receive the juxtaposed sheets and place same under pressure to unite the two juxtaposed sheets.

3. A machine of the class described, comprising cylinders geared to rotate in unison toward each other, gripper elements on the cylinders to engage the edges of the sheets, sheet holding racks arranged adjacent the cylinders on opposite sides adapted to hold the sheets in a vertical position, suction means mounted intermediate of the racks and said cylinders whereby the adjacent sheets are singly and successively drawn toward said cylinders and into the paths of the gripper elements, means for actuating the gripper elements to engage the sheets when they are drawn to the cylinders and means for releasing the grippers when the cylinders have rotated to a position for combining the sheets, means adapted to apply adhesive substance to the sheets and means arranged beneath discharging points of the cylinders whereby the superposed, glued sheets discharged by the cylinders are placed under pressure.

4. A machine of the class described, comprising cylinders geared to rotate in unison toward each other, gripper elements carried by each cylinder adapted to engage the edges of the sheets to be operated on and hold the same on the outer surface of the cylinder, means whereby gripper elements are actuated at predetermined points in the rotation of the cylinders, sheet holding racks arranged adjacent the cylinders and adapted to hold the sheets in a vertical position, suction means mounted intermediate of the racks and cylinders whereby adjacent sheets are successively drawn into the paths of the gripper elements, suction inducing means arranged in communication with suction means and operated in unison with the cylinders.

5. A machine of the class described, comprising correlated cylinders arranged to rotate toward each other, spring controlled gripper elements carried by said cylinders, and adapted to engage the edge of the material to be carried by the cylinders, material holding racks mounted on opposite sides of the machine in proximity to the cylinders holding the sheets in a vertical position, suction means mounted intermediate of the racks and the cylinders and adapted to draw the adjacent material or sheets into paths of the gripper elements, trip rods fixed in contacting relation with the gripper elements whereby they are actuated in the rotation of the cylinders and means operated in unison with one of said cylinders whereby the material carried by said cylinder will be supplied with adhesive material.

6. A machine of the class described, comprising cylinders and geared to rotate in unison, gripper elements carried by each cylinder to engage the edges of the sheets to be operated on and hold the same on the cylinders, means whereby the gripper elements are actuated at predetermined moments in the rotation of the cylinders, sheet-holding racks arranged adjacent the cylinders on opposite sides of the machine, suction means oscillatingly mounted intermediate of the racks and said cylinders whereby adjacent sheets are successively drawn into the paths of the gripper elements on the cylinders, means intermediate of the axis of one of the cylinders and one of said suction means whereby the latter is oscillated at predetermined moments, suction-inducing means arranged in communication with said oscillatingly mounted suction means, means intermediate of the suction inducing means and the axis of one of said cylinders whereby the suction-inducing means is actuated at predetermined moments in the rotation of the cylinders, and means arranged to operate in unison with the cylinders and apply adhesive material to the sheets carried by one of the cylinders at predetermined moments in the rotation of the cylinders.

7. A machine of the class described, comprising cylinders arranged in pairs, and adapted to rotate toward each other, gripper elements mounted on the cylinders so as to extend to and overlap the outer surface of the cylinders and operable to engage the edges of the sheets to be operated on, sheet-holding racks for holding the sheets in a vertical position, oscillatingly mounted suction means intermediate of the racks and the cylinders adapted to draw the adjacent sheets singly and successively toward the cylinders, means intermediate of the cylinders and the oscillatingly mounted means whereby the latter are oscillated at predetermined intervals in the rotation of the cylinders, adhesive material applying means arranged in juxtaposition to one cylinder of each pair and timed with said cylinders so as to apply adhesive material to a predetermined portion of the sheets carried by said last mentioned cylinders, and means whereby the gripper elements are tripped to engage and release the sheets at prearranged moments in the rotation of the cylinders.

8. A machine of the class described, comprising correlated cylinders arranged to rotate toward each other, gripper elements carried by said cylinders and adapted to extend through the perimeters of the cylinders and adapted to engage the edge of the material to be carried by the cylinders, material-holding racks mounted on opposite sides of the

machine in proximity to the cylinders adapted to hold the sheets in a vertical position, suction means oscillatingly mounted intermediate of the racks and the cylinders and adapted to draw the adjacent material or sheets from each rack into the paths of the gripper elements, means whereby said suction means are intermittently oscillated toward and away from the cylinders, means whereby the gripper elements are actuated at predetermined intervals in the rotation of the cylinders, and means arranged to operate in unison with one of said cylinders whereby the material carried by said cylinder will be supplied with adhesive material at a predetermined point.

9. A machine of the class described, comprising cylinders arranged in parallel juxtaposition and geared to rotate toward each other, spring-controlled gripper elements pivotally mounted on each cylinder at predetermined points and adapted to extend through the perimeters of the cylinders so as to engage the edges of the sheets to be operated on and hold the latter on said cylinders, tripping mechanism adapted to affect said gripper elements at predetermined moments in the rotation of the cylinders, sheet-holding means arranged adjacent the cylinders, means, timed with the cylinders, adapted to draw the adjacent sheets into the paths of the grippers when the cylinders have rotated a predetermined degree, adhesive applying means disposed above the cylinders and geared thereto so as to apply adhesive material at a predetermined point on the sheets carried by one of the cylinders, and means, controllable from the axis of one of the cylinders, whereby the second mentioned means are affected.

10. In a machine of the class described, a plurality of continuously moving sheet-gripping means mounted on correlated cylinders adapted to simultaneously bring a pair of sheets, from separate piles, into juxtaposition, means whereby said gripping means are automatically tripped at predetermined and successive moments into gripping and releasing positions, to engage and disengage the sheets, means whereby the sheets are brought into the path of said gripping means when the latter are tripped into gripping position, and means whereby adhesive material is applied at a predetermined point on one of the sheets while same is being carried by the gripping means and means for uniting the sheets when they are released at a position intermediate of the cylinders.

11. In a machine of the class described, continuously moving sheet-gripping elements arranged to move toward one another so as to bring the respective sheets carried thereby into juxtaposition, means timed with said elements whereby a single sheet is automatically brought into the path of the respective elements when the latter reach predetermined points in their path of movement, means timed with said elements whereby adhesive material is applied at a predetermined point on the sheets carried by one of said elements, and means adapted to receive the juxtaposed sheets and place same under pressure.

12. In a machine of the class described, two series of continuously moving sheet-gripping elements, the two series being arranged to move toward one another so as to bring sheets from separate stacks into juxtaposition, pneumatic means timed with said elements whereby a single sheet from each stack is automatically brought into the path of the adjacent series of gripping elements when the elements reach predetermined points in their travel, means timed with said gripping elements whereby the pneumatic action of the last mentioned means is induced and controlled, and means timed with one of said series of gripping elements whereby adhesive material is applied at a predetermined point on the sheets carried by the gripper elements of one of said series.

13. In a machine of the class described, a pair of cylinders provided with sheet-gripping elements, the cylinders being arranged parallel in juxtaposition and adapted to rotate toward each other, means, timed with one of said cylinders, adapted to apply adhesive material at predetermined points on the sheets carried thereby, and means disposed at predetermined points whereby the gripping elements of the cylinders are successively moved into and out of gripping position and means intermediate of the cylinders for combining the sheets.

14. In a machine of the class described, cylinders arranged in parallel juxtaposition and adapted to rotate toward one another, each cylinder being provided with sheet-holding means at predetermined points, means whereby said sheet-holding means are affected when the cylinders reach predetermined points in their rotation to engage and release the sheets, and means timed with one of said cylinders whereby adhesive material is applied at a predetermined point on the sheets carried by said cylinder and means mounted intermediate of the cylinders for uniting the sheets.

PETER PACHTER.

Witnesses:
GEORGE HEIDMAN,
F. A. FLORELL.