

C. M. & H. D. BARTHOLOMEW.
PAPER WRAPPING MACHINE.

No. 529,848.

Patented Nov. 27, 1894.

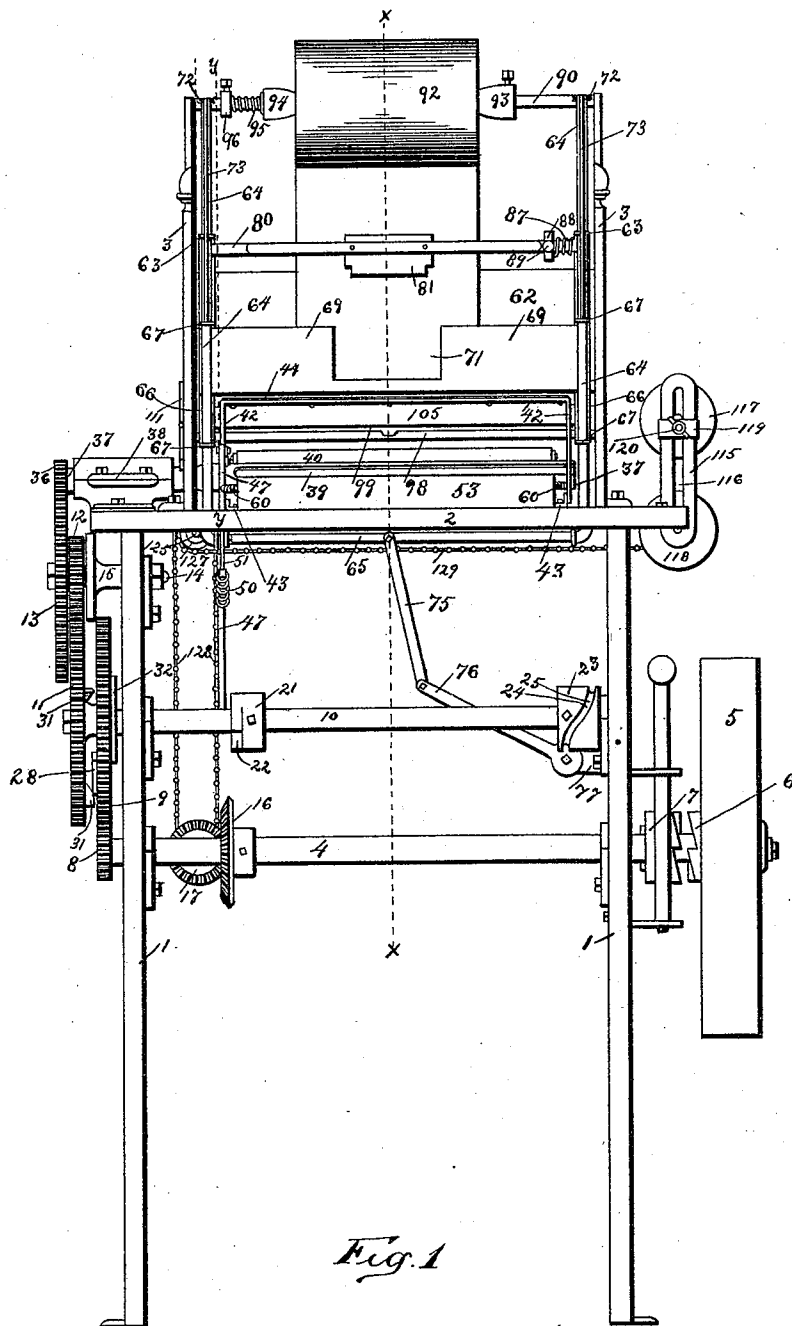


Fig. 1

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A. L. Phelps

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Henry D. Bartholomew
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ATTORNEYS

(No Model.)

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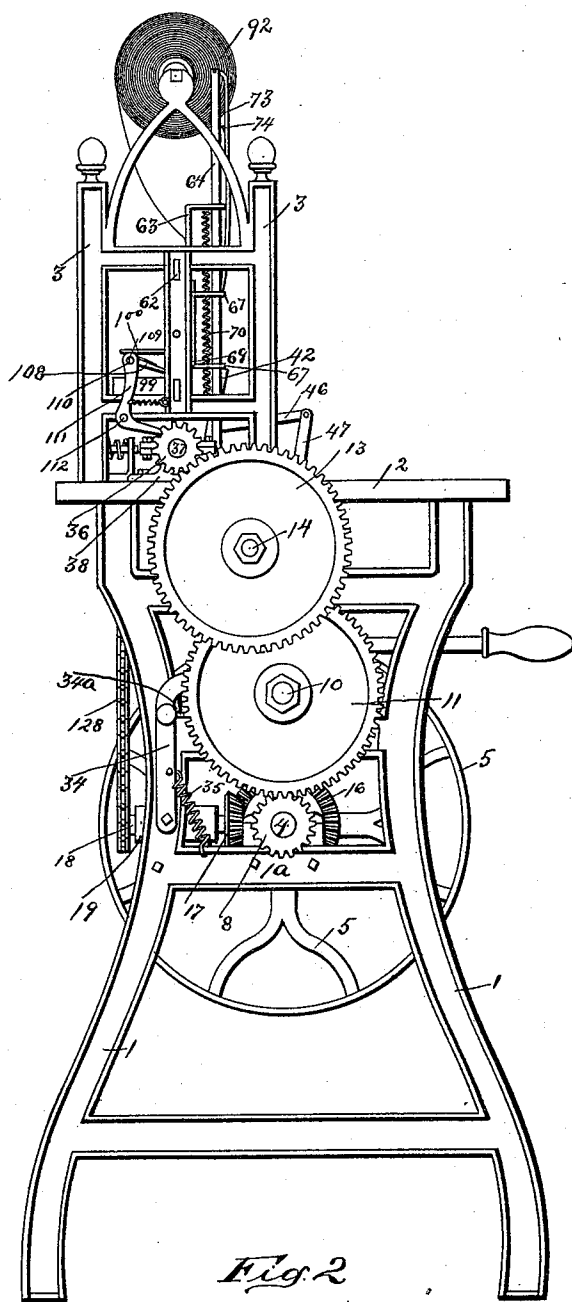


Fig. 2

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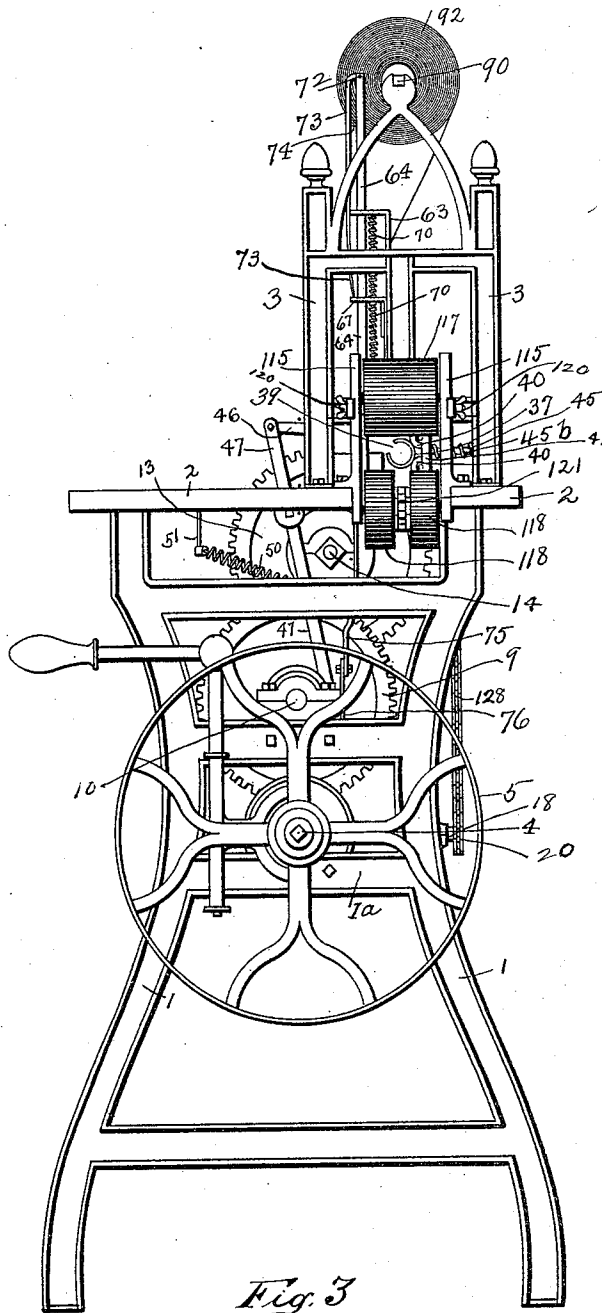


Fig. 3

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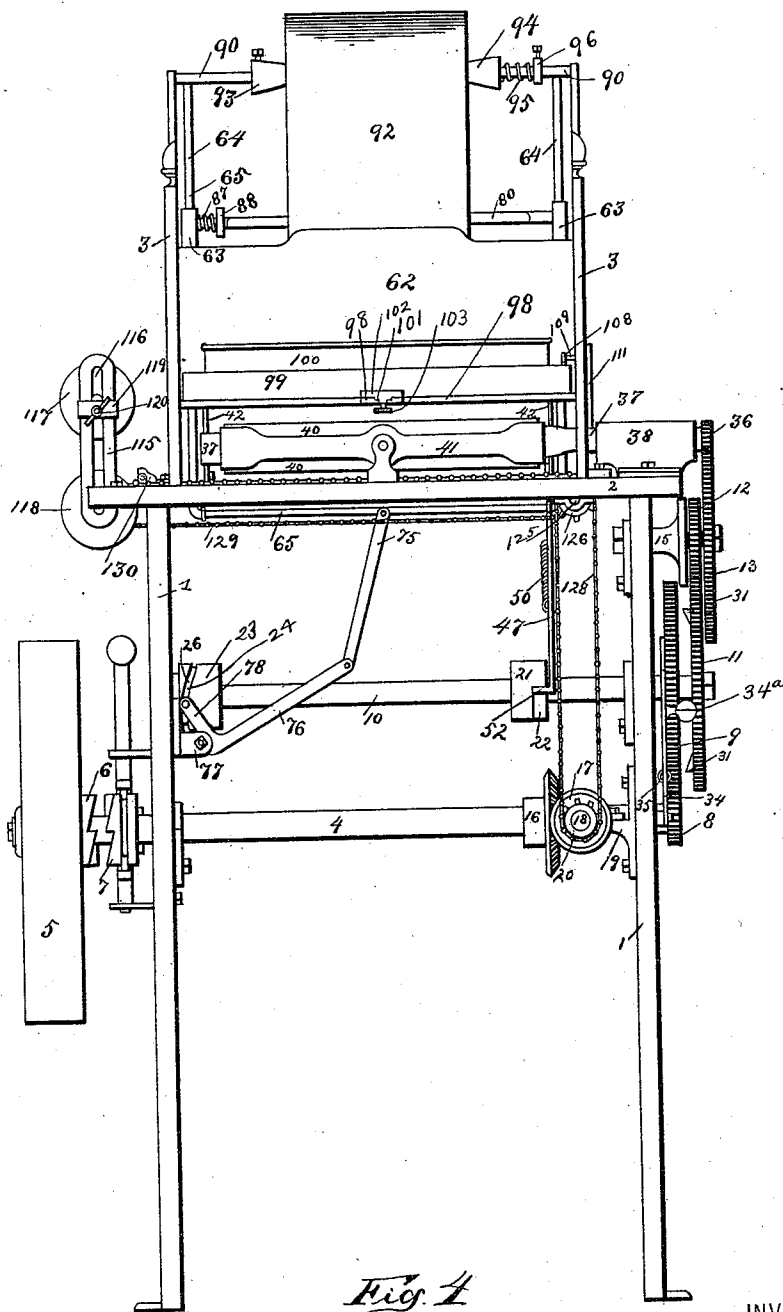


Fig. 1

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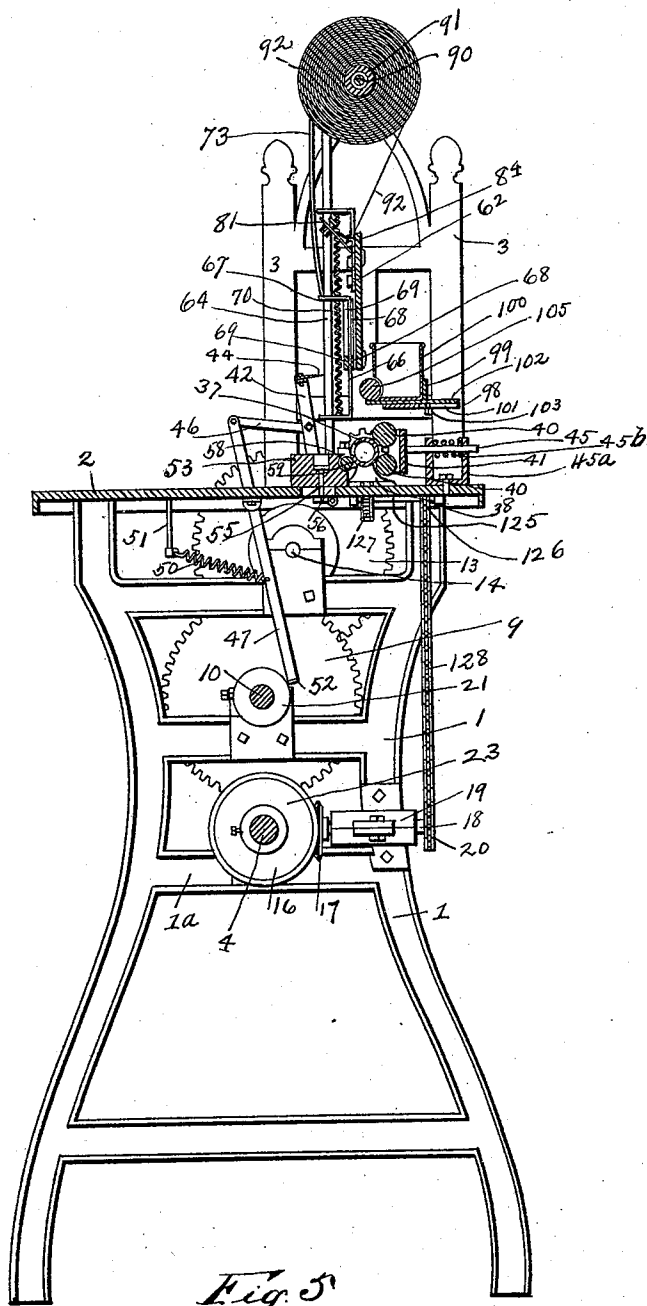


Fig. 5

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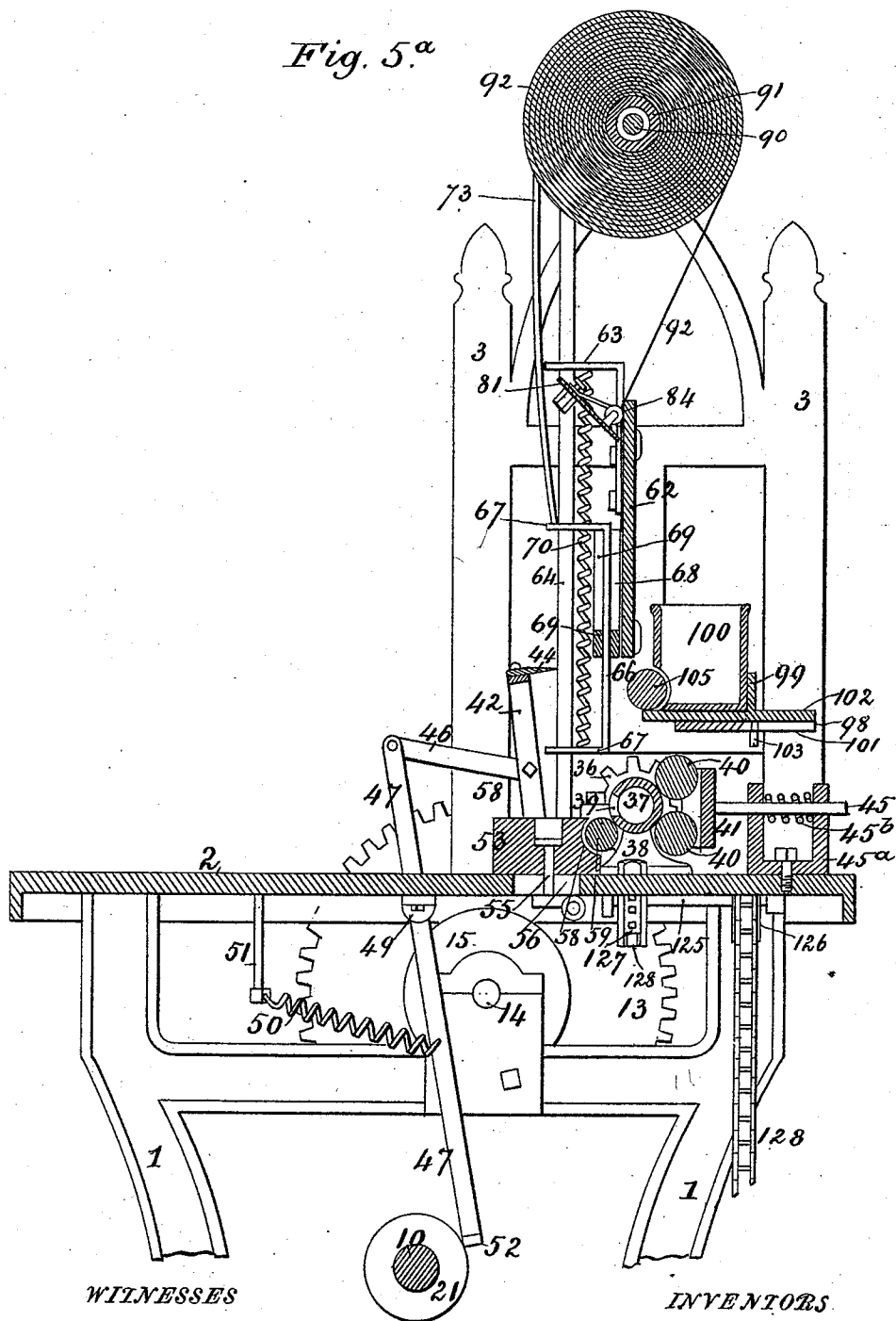
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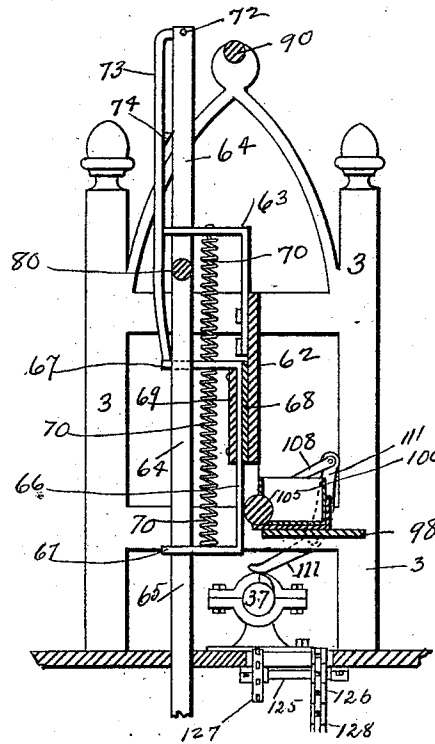


Fig. 6

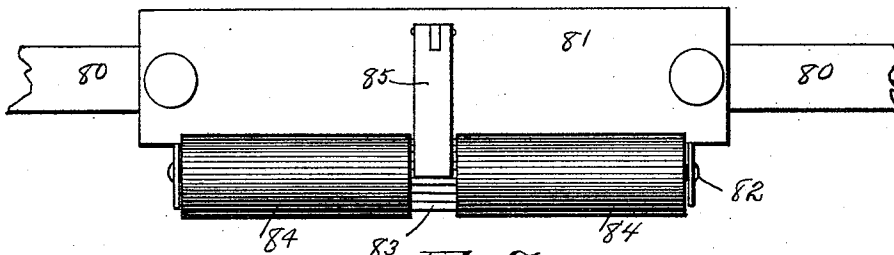


Fig. 7

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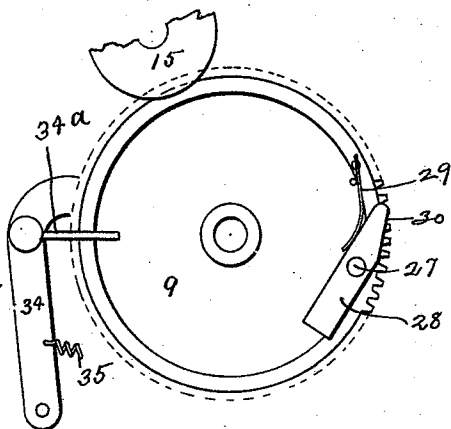


Fig. 8

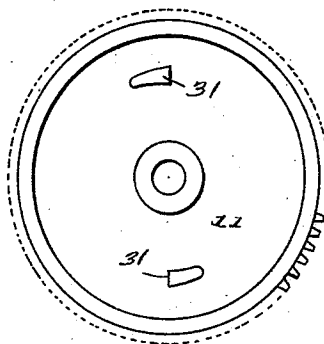


Fig. 9

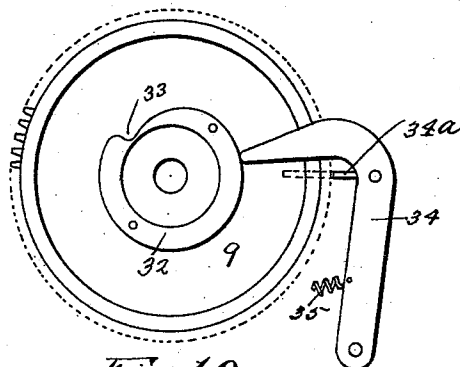


Fig. 10

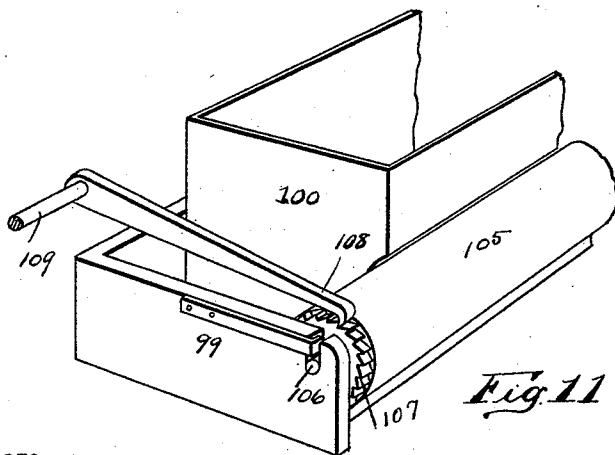


Fig. 11

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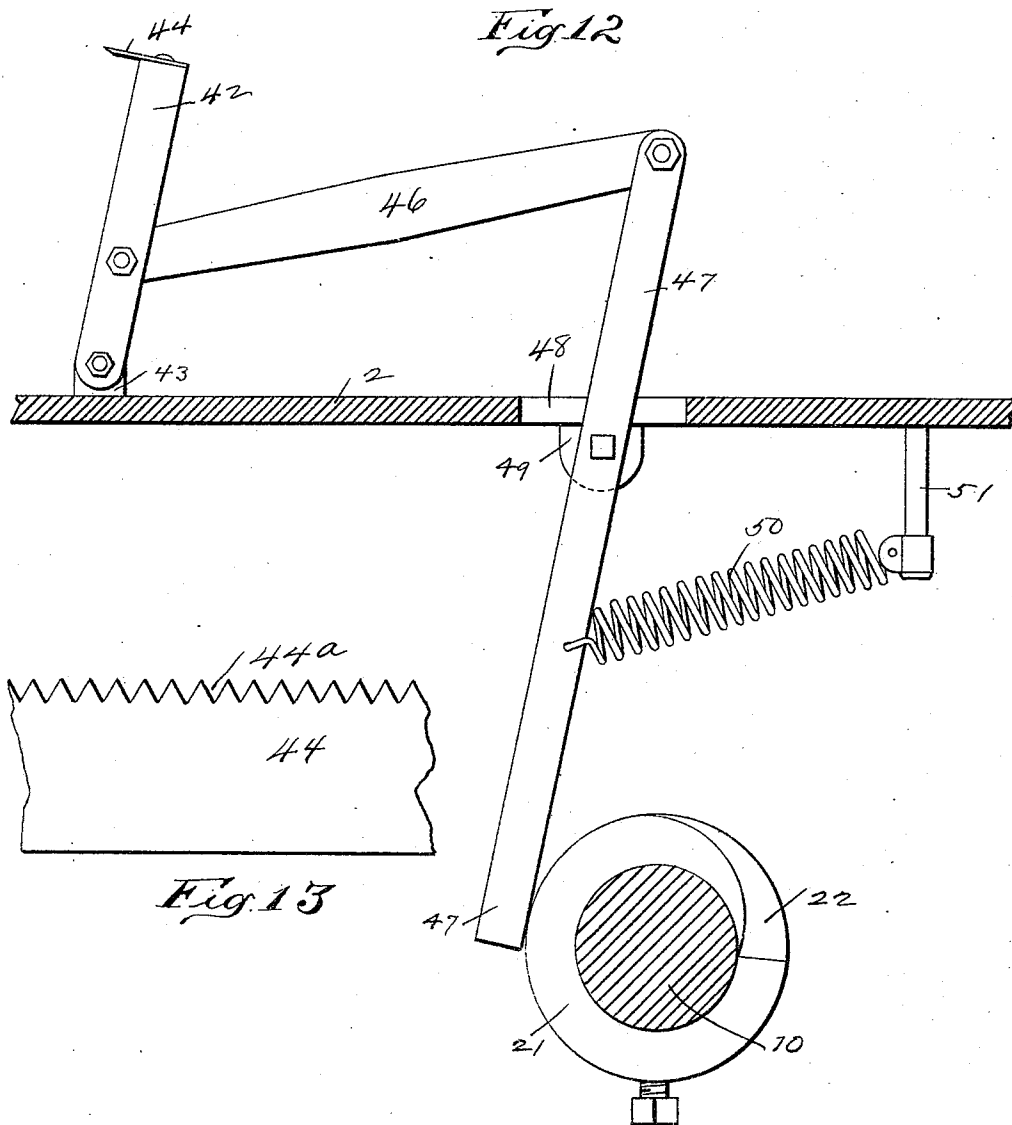
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UNITED STATES PATENT OFFICE.

CASSIUS M. BARTHOLOMEW AND HENRY D. BARTHOLOMEW, OF NEWARK, OHIO.

PAPER-WRAPPING MACHINE.

SPECIFICATION forming part of Letters Patent No. 529,848, dated November 27, 1894.

Application filed September 7, 1893. Serial No. 484,985. (No model.)

To all whom it may concern:

Be it known that we, CASSIUS M. BARTHOLOMEW and HENRY D. BARTHOLOMEW, citizens of the United States, residing at Newark, in the county of Licking and State of Ohio, have invented a certain new and useful Improvement in Paper-Wrapping Machines, of which the following is a specification.

Our invention relates to the improvement of means for wrapping newspapers, pamphlets and other printed matter ready for mailing, and the objects of our invention are to provide a superior machine of this class of such construction and arrangement of parts as to greatly facilitate the effective wrapping and sealing of papers, pamphlets and similar matter in a rapid and convenient manner and to produce improvements in the construction of said machine which will be more specifically pointed out hereinafter. These objects we accomplish in the manner illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation of our improved machine. Fig. 2 is a side elevation of the same. Fig. 3 is a view of the opposite side from that shown in Fig. 2. Fig. 4 is a rear elevation. Fig. 5 is a central vertical section on line *xx* of Fig. 1. Fig. 5^a is a similar section of the upper portion of the machine on a larger scale. Fig. 6 is an enlarged sectional view on line *yy* of Fig. 1. Fig. 7 is a detail view in elevation of the paper feeding mechanism. Fig. 8 is a detail view of the outer face of one of the gear wheels. Fig. 9 is a similar view of one of the gear wheels. Fig. 10 is an inner face view of the wheel shown in Fig. 8. Fig. 11 is a detail view in perspective of a portion of the paste box and paste roll. Fig. 12 is an enlarged detail view of the knife operating mechanism and Fig. 13 is a face view of a portion of the knife blade.

Similar numerals refer to similar parts throughout the several views.

The main frame of our device has the general form of a table of which 1 are the end supporting portions each consisting of two legs connected by suitable cross frame pieces, and a horizontal top portion 2 which connects said end portions. From the table top 2 and near the ends of the latter rise vertically frame standards 3.

4 represents the main shaft of our machine, which as shown in the drawings, is journaled

in and extends between and through the frame portions 1. On one of the outer extending ends of this shaft 4 is mounted loosely a belt wheel 5 which is provided on its inner side with a clutch hub 6, the latter being adapted to interlock with an ordinary clutch ring 7 sliding upon the shaft 4 and keyed to the latter. On the opposite end of the shaft 4 from that on which is mounted the wheel 5 is carried a pinion wheel 8, the latter gearing with a gear wheel 9 above and in vertical alignment with the wheel 8 and mounted upon the outer projecting end of a shaft 10, the latter being above and parallel with the shaft 4. This shaft 10 is also journaled in the end frame portions 1.

On the outer side of the wheel 9 is loosely mounted on the shaft 10 a gear wheel 11, the latter gearing with a pinion wheel 12 loosely mounted on a short horizontal shaft 14 projecting outward from the frame portions 1 in the upper portion of the latter. This pinion wheel 12 is centrally connected with a gear wheel 13 on the outer side thereof and a roller wheel 15 is loosely mounted on said shaft 14 on the inner side of said pinion 12, said roller wheel being of such circumference as to slightly overlap the outer face of the wheel 9.

Upon the shaft 4 toward that end thereof on which is mounted the pinion 8 is carried a bevel gear wheel 16. This wheel 16 gears with a bevel wheel 17 at right angles therewith, said bevel wheel 17 being carried on a short shaft 18 which is mounted in a suitable boxing supported from a bracket 19, the latter being secured to the framework. On the opposite end of the shaft 18 is carried a sprocket wheel 20. Upon the shaft 10 on that side of its center on which is carried the gear wheel 9 is fixed a cam wheel 21, the latter consisting of a disk shaped body, which has formed in its periphery adjacent to one side thereof an involute recess 22. Toward the opposite end of the shaft 10 is mounted thereon a cam wheel 23 in the periphery of which is formed a continuous groove 24. This cam groove 24 crosses the cam wheel substantially in a diagonal path as indicated at 25, thence runs substantially parallel with and adjacent to the outer end of the wheel to connect the ends of said diagonal portions as indicated at 26.

To the outer face of the wheel 9 adjacent to the toothed periphery thereof is pivotally connected at 27 a clutch block 28, the body of which has a general oblong form and which by pressure of a spring strip 29, one end of which is secured to the outer face of said wheel and the remaining end of which bears against the inner side of said block 28 on one side of its center, is retained within the arc described by said wheel. As indicated at 30 the outer side of the block 28 toward one end thereof is beveled. The wheel 11 has its inner face provided at points oppositely located and on opposite sides of the center thereof with projecting lugs 31. As indicated in the drawings the inner end portion of the block 28 is supported in the path of said lugs 31 for the purpose hereinafter described. On the opposite side of the wheel 9 and about the central opening therein is provided a projecting cam ring 32, the latter having as indicated a notch 33 formed in its periphery.

34 represents an angular stop or brake finger, one arm of which is pivotally connected with the outer side of one of the frame legs and the inwardly extending upper arm of which is in frictional contact with the periphery of the cam ring 32 against which it is held by means of a suitable spring 35, the latter connecting the lower arm of said stop or brake with a cross frame piece 1^a of one of the frame end portions. At the angle of the finger 34 we provide a short inwardly projecting pin 34^a.

36 represents a pinion wheel which gears as shown with the upper side of the wheel 13, said pinion being mounted upon a mandrel 37. This mandrel 37 bears at one end as shown in a suitable boxing 38 supported upon one end of the table top 2. Said mandrel extends inward from the boxing 38 over the table top 2 and terminates at a point near the opposite frame standard 3. That portion of the mandrel which is between said frame standards 3, is as indicated in the drawings, tubular or cylindrical in form, said tubular portion having formed therein a horizontal slotted opening which extends throughout the length thereof and which is indicated at 39. The periphery of the tubular portion of the mandrel is in frictional contact with two parallel rollers 40, which are journaled one above the other upon the forward face of a cross plate 41 which is supported in a horizontal position in rear of said mandrel. This cross plate is pressed toward the mandrel by having extending therefrom a horizontal pin 45, the latter having a sliding bearing in two vertical arms of a bracket 45^a and that portion of said pin 45 which is between the arms of the bracket 45^a being surrounded by a coil spring 45^b, one end of the latter being connected with said pin 45.

42 represents a knife supporting frame which has the form of an elongated staple as shown. The lower ends of these knife arms are pivoted to suitable lugs 43 which rise

from the table top 2 at points in front of the mandrel and adjacent to the standards 3. The upper and longer arm of the knife carrying frame 42 has supported thereon a knife blade 44 which extends throughout the length of said frame arm and the sharpened rear edge of which projects rearwardly over said frame arm in the manner indicated in Figs. 5 and 5^a of the drawings. With one of the vertical arms of the frame 42 is jointly connected an outwardly extending arm 46, with the outer end of which is jointly connected the upper end of a downwardly extending arm or bar 47, the latter passing through a slotted opening 48 in the table top 2 and being fulcrumed in its upper half to a lug 49 which depends from said table top as shown in Fig. 12 of the drawings. The lower portion of the arm 47 is connected by means of a coil spring 50 with a pin or other projection 51 which depends from the under side of the forward portion of said table top. The lower end of the arm 47 is provided with a lateral projecting finger 52 which by combination of the spring 50 is normally pressed into frictional contact with the periphery of the cam 21. As shown in the drawings, the spring 50 also serves to retain the knife carrying frame in an inclined position.

As indicated in Fig. 13 of the drawings the knife blade 44 is preferably provided with a serrated or cutting edge shown at 44^a.

53 represents a tension block which is supported in the manner hereinafter described upon the table top 2 in a position in front of and parallel with the mandrel 37. This block 53 is movably supported upon the table top by means of a bolt 55 which passes downward through said block and thence through a slotted opening 56 in the table top, the lower end of said bolt having a nut thereon which serves to retain the block in contact with the table top plate.

In the forward side of the block 53 adjoining the upper side thereof we provide a semi-circular groove or seat 58 in which is supported a friction roller 59, the latter also having a bearing against the periphery of the mandrel 37. The ends of the block 53 are connected by means of short coil springs 60 with the end arms of the knife frame 42, said springs serving to retain the friction roller 59 in frictional contact with the mandrel 37.

Extending between the frame standards 3 near the center of the width and height of the latter and having its end connected therewith is a vertical plate 62. Extending upward and thence forwardly from the stationary cross plate 62 near each end thereof is an angular guide arm 63, the latter being as shown in the form of an inverted L.

64 represents the vertical arms of a U-shaped frame 65 the lower horizontal arm of which extends as shown beneath the table top 2 while the vertical arms thereof extend upward through said table top on the inner sides of the standards 3. These vertical frame arms

64 pass loosely through the forward end portions of the angle arms 63, the latter forming guides for said vertical frame arms. The frame arms 64 also pass through openings in the forward ends or through hook shaped terminations of upper and lower parallel arms 67 of a frame 66, the vertical arm of the latter connecting the rear ends of said horizontal arms 67. The upper portions of the vertical arms of the frame 66 are connected on opposite sides by parallel transverse plates 68—69. The lower arm 67 of each of the frames 66 is connected with the upper arm of the angle piece 63 by means of a vertical coil spring 70, the latter passing loosely through an opening in the upper arm 67 of said frame 66. As indicated at 71 the central portion and upper side of each of the cross plates 69 and 68 are recessed or cut away for reasons hereinafter specified. To the upper end of each of the frame arms 64 is jointly connected at 72 one end of a trigger rod or arm 73. This trigger rod projects slightly forward from its pivot point and hangs as shown in a position in front of the vertical arm 64 and substantially parallel therewith. Each of the trigger arms 73 is provided on its rear side in its upper portion with an angular lug 74. The lower end of each of the trigger arms 73 normally rests on the outer projecting end of the upper arm 67 of the frame 66. The lower horizontal arm of the frame 65 has fulcrumed to the center of its length, the upper end of a lever arm 75 the lower end of the latter being jointly connected with the upper end of one arm of a bell crank lever 76. This lever 76 is fulcrumed at its angle to a suitable bracket 77 which projects outward from the inner side of one of the frame supports 1, and the remaining arm of said bell crank which is indicated at 78 is provided with an end pin which is adapted to fit and travel within the groove 24 of the cam 23. Between the arms 64 of the frame 65 and in the upper portion thereof is journaled a transverse rod 80, the latter having a squared central portion. On the central portion of this rod 80 and on the rear face thereof is secured the upper portion of a short plate 81, and in rearwardly projecting lugs on the lower side of said plate is journaled a shaft 82, Fig. 7, upon the center of which is carried a notch or ratchet wheel 83. On opposite sides of this ratchet wheel the shaft 82 carries frictional rollers 84 which are preferably covered with or formed of suitable pliable material. As indicated in the drawings, these rollers are adapted to bear against the forward face of the cross plate 62.

85 represents a pawl which is jointly connected at its upper end with the upper portion of the plate 81, and the lower end of which is adapted to engage with the teeth of the ratchet 83.

In order to retain the roller plate 81 in the desired vertical position, we coil about one end of the rod 80 a short spring 87, one end of which is rigidly connected with the adjoining

frame arm 64, and the remaining arm of which is connected with a collar 88, the latter being secured in its position upon the rod 80 by means of set screws 89.

90 represents a transverse reel carrying shaft the squared ends of which are supported in the upper ends of the standards 3. Surrounding this shaft 90 in its central portion is a somewhat larger sleeve 91, the latter serving as a spool upon which is wound a roll of wrapping paper as indicated at 92. Upon the shaft 90 adjacent to one end of the spool 91 is fixed a conical collar 93, the inner and smaller end of which is adapted to bear against one end of the spool 91. Upon the shaft 90 at the opposite end of the spool fits and slides a smaller conical collar 94 the inner end of the latter being held against the end of said spool by means of a coil spring 95 which surrounds said shaft 90 and which bears between said collar 94 and a fixed collar 96 on said shaft.

Extending between the standards 3 in the rear portion thereof is a transverse plate 98. Upon this plate 98 is supported a box shaped frame or seat 99, the latter having its forward side open and supporting therein an oblong paste box 100. The plate 98 is provided with a rearward extension 101 the latter having a central slotted opening therein. This slotted extension of the plate 98 is normally covered by a rearward extension 102 of the box 99.

103 represents a set screw which is adapted to pass upward through the slotted opening 101 and into the back of the plate 102 or downward extension of the latter.

The forward and lower side of the paste box 100 is as indicated in the drawings cut away and within the opening thus formed in said paste box partially projects a roller 105, the end spindles of the latter being as indicated at 106, Fig. 11, journaled in the ends of the frame 99. Upon one end of the paste roller 105 is carried a ratchet wheel 107, with the teeth of which is adapted to engage the inner end of a pawl arm 108. This rearwardly extending pawl arm 108 has its rear end connected with one end of a rod 109 which extends outwardly between the arms of one of the standards 3, and is jointly connected at 110 with the upwardly extending arm of a bell crank 111, the latter being fulcrumed at its angle as indicated at 112 to the outer side of said standards 3. The lower arm of the bell crank 111 is adapted to bear upon the periphery of the mandrel 37 near one end of the latter and in the path of a cam lug 113 which projects from said mandrel and which when in contact with said bell crank is adapted to raise the lower arm of the latter as indicated in Fig. 6 of the drawings.

From that end of the table top 2 near which the open tubular end of the mandrel 37 terminates we cause to project upward two vertical and parallel standards 115, the latter being provided as shown with vertical slotted openings extending throughout the greater

portions of their heights as indicated at 116. Between these slotted standards and having their spindles extending within said slotted openings are journaled one above the other rollers 117 and 118. The lower roller 117 is divided centrally to form two separate sections thereof and between said sections is carried thereby a sprocket wheel 121. The upper roller 118 has its end spindles bearing as indicated in sliding blocks 119, the latter being adjustably supported against the outer side of the standards 115 by means of a suitable or well known form of clamping screw 120.

Immediately beneath the table top and parallel therewith is journaled a short shaft 125, the latter carrying on one end a small sprocket wheel 126 and on its remaining end a sprocket wheel 127. As indicated in the drawings the sprocket wheel 126 is in vertical alignment with the lower sprocket wheel 20 and said sprocket wheels are connected by an endless driving chain 128.

The sprocket wheel 121 and wheel 127 are connected by an endless driving chain 129. As indicated at 130 the horizontal chain 129 has secured to one of its links an outwardly projecting lug, the latter being shown in Fig. 4 of the drawings.

The manner of operating and utilizing my machine is substantially as follows and in order to facilitate the illustration of the operation, we will suppose that the parts of said machine are in the positions shown in the drawings, or in a position to begin the operation of wrapping a newspaper or similar publication.

Rotary motion is contributed to the operating shaft 4 through a belt connection from suitable power to the belt wheel 5. Through the rotation thus imparted to the pinion 8 on said shaft 4, it is evident that motion will be contributed to the gear wheel 9. Owing to the fact that the square end of the block 28 of said gear wheel 9 is in contact with one of the lugs 31 of the wheel 11, it will be seen that a partial rotation will be imparted to said wheel 11. The latter having made a half rotation, it will be seen that the beveled face of the block 28 will have been brought into contact with and subjected to the pressure of the wheel or roller 15; this pressure resulting in so moving the block 28 as to disconnect it from the lug 31. The block 28 having passed the wheel 15 it is evident that the wheel 11 will not be subjected to another half revolution until the squared end of the block 28 has come into contact with the remaining lug 31 of said wheel 11 when the operation above described will be repeated. During the operation or half revolution of the wheel 11 above referred to, it will be seen that motion will be contributed therefrom through the pinion 12 to the gear wheel 13 and through the latter to the pinion 36 and mandrel 37. In practice we preferably so gear

said parts as to result in five revolutions of said mandrel during said half revolution of the wheel 11, although the proportionate number of said revolutions may be made to vary if desired. During the rotation of the wheel 9 it is evident that one end of the spring actuated finger 34 as shown more clearly in Fig. 10 of the drawings, will be in contact with the periphery of the cam 32. This finger 34 is so set with relation to said cam 32 that when one of the lugs 31 is released from contact with the block 28 the inner end of said finger 34 will momentarily bear within the notch 33 of said cam, thus causing a sufficient inward movement of the pin 34^a to result in the latter coming into contact with the recently released lug 31 of the wheel 11 and serving to stop the latter from further movement which might be caused by the momentum previously imparted thereto.

Before imparting the previously described movement to the various parts, the newspaper to be rolled and wrapped is flattened to a squared or flattened form and one edge of said flattened paper is inserted within the slotted opening 39 of the mandrel 37.

The rotation imparted as above described to the wheel 9 and consequently to the shaft 10 and its cam wheels 21 and 23 results in the pin of the bell cranks 76—78 shifting into the diagonal portion of the cam groove which in turn results in the downward movement of the lever arms 75—76, and in a consequent downward movement of the frame 65 with which said arm 75 is connected.

Prior to the operation of the machine the free end of the paper roll 92 is threaded downward between the plates 68 and 69 the pressure or friction rollers 84 serving to press the wrapping paper strip against the forward face of the plate 62. The downward movement above described as imparted to the frame 65 results through the contact of the depending arm 73 with the frame arm 67 in forcing the frame 66 downward. This downward movement of the arms 64 of the frame 65 also results in carrying downward the shaft 80 and its roller carrying plate 81. Owing to the fact that the paper strip is clamped between said rollers 84 and the plate 62 and that the engagement of the pawl 85 with the ratchet teeth 83 prevents the rotation of said rollers, it will be seen that the paper will be pulled downward by the downward movement of said rollers. It will be seen that the downward movement above described of the frame 66 will result in the guide plates 68—69 moving downward with the paper.

When the frame 65 has descended sufficiently to result in the contact of the lug 74 of the depending arm 73 with the outwardly projecting end of the frame 63, it will be seen that said arm 73 will be forced upward by said contact and thereby disengage from the upper arm 67 of the guide frame 66 thus allowing said guide frame through the tension

of the spring 70 to spring upward to its upper position. Meanwhile the rollers 84 have descended sufficiently to feed one end of the paper strip into the fold of the newspaper which is being rolled about the mandrel by the revolution of the latter. By this time the pin of the bell crank lever 78 is assuming its former position in the cam groove 24 with the result that the frame 65 is driven upward to the position shown in the drawings, said frame carrying with it the roller plate 81. During this upward movement of said roller plate, it will be seen that the rollers 84 will travel backward in the direction of the pawl 85 and thus roll against the paper strip without moving the latter. A sufficient length of the paper strip or wrapping paper having been thus drawn downward and rolled about the newspaper which is wound upon the mandrel, resulting in completely inclosing said newspaper about its central portion, the arm 47 will have traveled about the periphery of the cam wheel 21 and will have dropped into the depression 22 thereof, this movement of said arm 47 resulting in conjunction with the spring 50 in throwing the knife frame 42 inward and causing its blade 44 to come into contact with and sever the paper strip. This inward cutting movement of the knife blade also results by contact with the paper strip in forcing the latter against the paste roll 105, which results in the severed end of the strip taking up sufficient paste from said roll to securely paste said edge to the body of the wrapper when the pasted edge reaches the latter. This paste roll is kept in motion by movement of the pawl 108, the latter receiving sufficient impetus at each elevation of the lower arm of the bell crank 111 which is caused by contact with the mandrel lug 113 to engage with a new notch of the ratchet wheel 107.

The spring actuated friction or pressure rollers 40 and 59 serve not only to press the wrapping paper in close contact with the newspaper upon the mandrel, but also serve to press the paste carrying end of said wrapper sufficiently close to the body of the wrapper as to cause the desired adherence. By this time the wheel 11 has completed its first half revolution and for the reasons hereinbefore described has ceased to revolve, thus resulting in a stoppage of the rotation of the mandrel. By this time the lug carrying chain 129 has traveled to such position that said lug 130 comes into contact with one end of the wrapped paper which is upon the mandrel, and through the continued movement of said chain and its lug, the paper so wrapped is driven outward through the open end of said mandrel and between the rollers 117 and 118, and by the rotation of the latter is assisted in its outward movement to a suitable place of deposit. It will be observed that the wrapped and pasted paper thus delivered may be flattened or subjected to any desired pressure by adjusting the roller 117 to the desired height

between the slotted standards 150. The mandrel being thus clear of the newspaper or other similar roll, the operation of the various parts is repeated in the manner above described.

It is evident that we may attach to the herein described machine any well known or desirable form of addressing mechanism by means of which the address may be pasted or printed upon the wrapped paper.

From the construction and operation which we have described, it is evident that the papers may be wrapped and pasted in a rapid and effective manner and that the parts of our machine are of such construction and relative arrangement as to admit of their operation in a positive manner and with but slight labor on the part of the operator.

Having now fully described our invention, what we claim, and desire to secure by Letters Patent, is—

1. The combination with a main frame and a slotted rotary mandrel adapted to receive the edge of a paper to be wrapped, of a wrapping paper roll mounted on said main frame, a vertical reciprocating frame, guide plates carried thereby between which said wrapping paper passes, a roller carrying shaft mounted in a reciprocating frame 65, rollers 84 carried thereby, the latter rotating in but one direction and bearing against said wrapping paper and means for automatically separating said wrapping paper into lengths, substantially as specified.

2. The combination with the main frame, a rotary slotted mandrel mounted therein and adapted to receive the edge of a paper, a wrapping paper roll mounted in said main frame and means for feeding the same into folds of a paper on said mandrel, of an endless belt or chain traveling adjacent to said mandrel, and a lug carried on said belt adapted to move the rolled and wrapped paper off said mandrel longitudinally by contact with one end thereof substantially as specified.

3. The combination with a main frame, a rotary slotted mandrel mounted therein and mechanism for stopping the rotation of said mandrel at regular intervals, of a wrapping paper roll mounted in said main frame, means for feeding said wrapping paper on to said mandrel, an endless belt traveling adjacent to said mandrel and a lug on said belt adapted to force a rolled paper off said mandrel, substantially as specified.

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Witnesses as to the signature of Henry D. Bartholomew:

GEORGE P. WEBB,

CHAS. H. FOLLETT.