

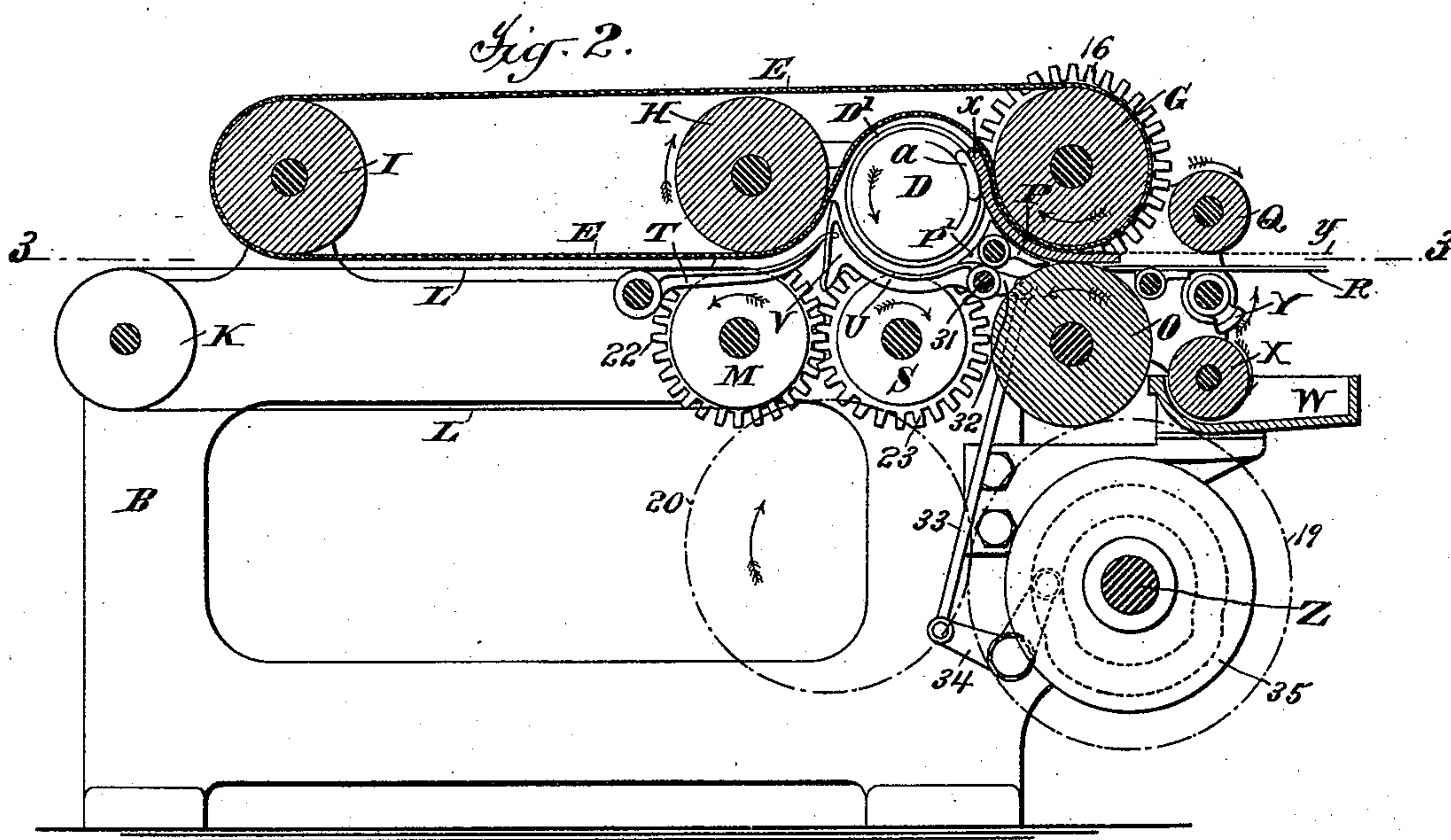
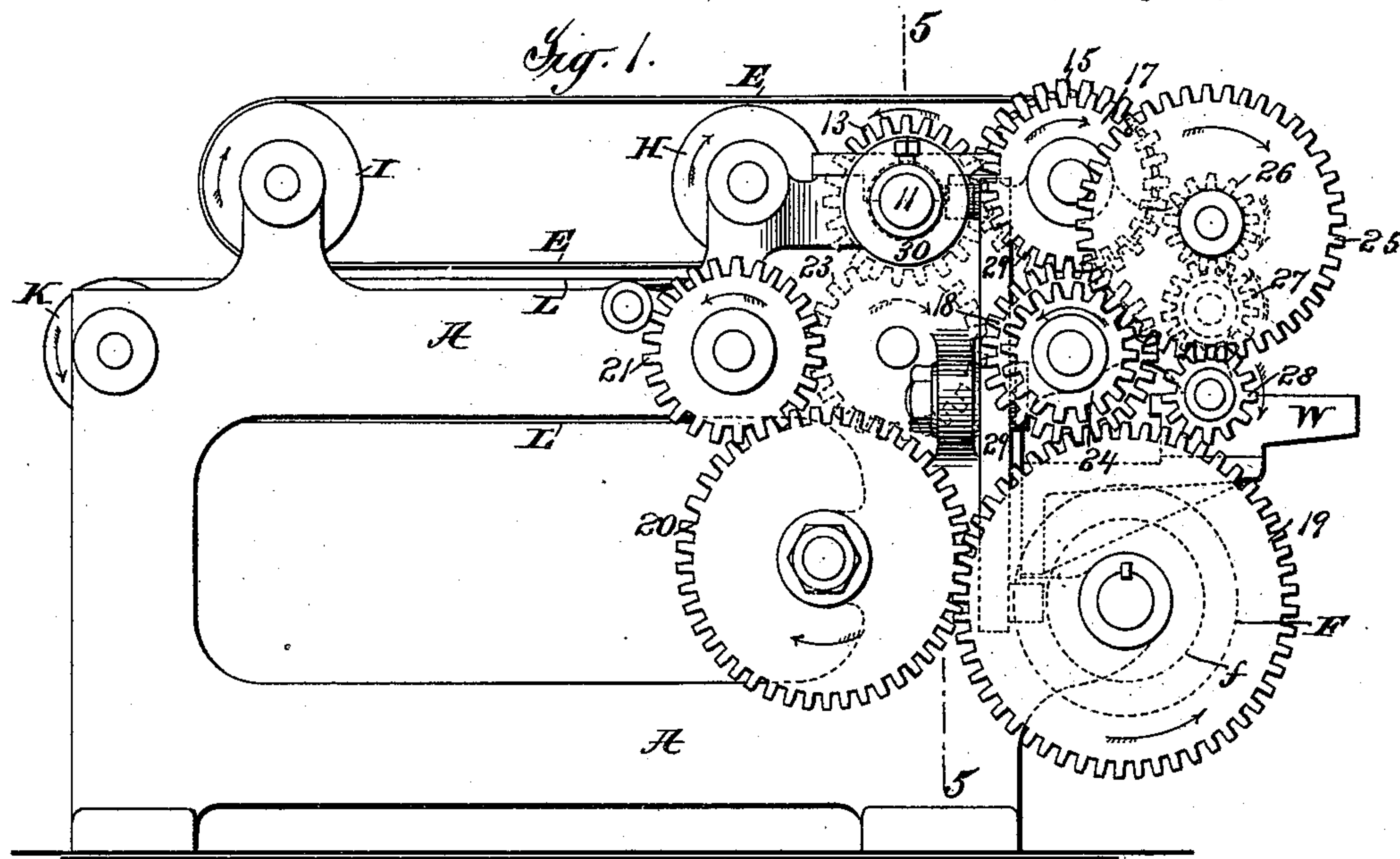
(No Model.)

4 Sheets—Sheet 1.

L. C. CROWELL.
NEWSPAPER WRAPPING MACHINE.

No. 522,198.

Patented July 3, 1894.



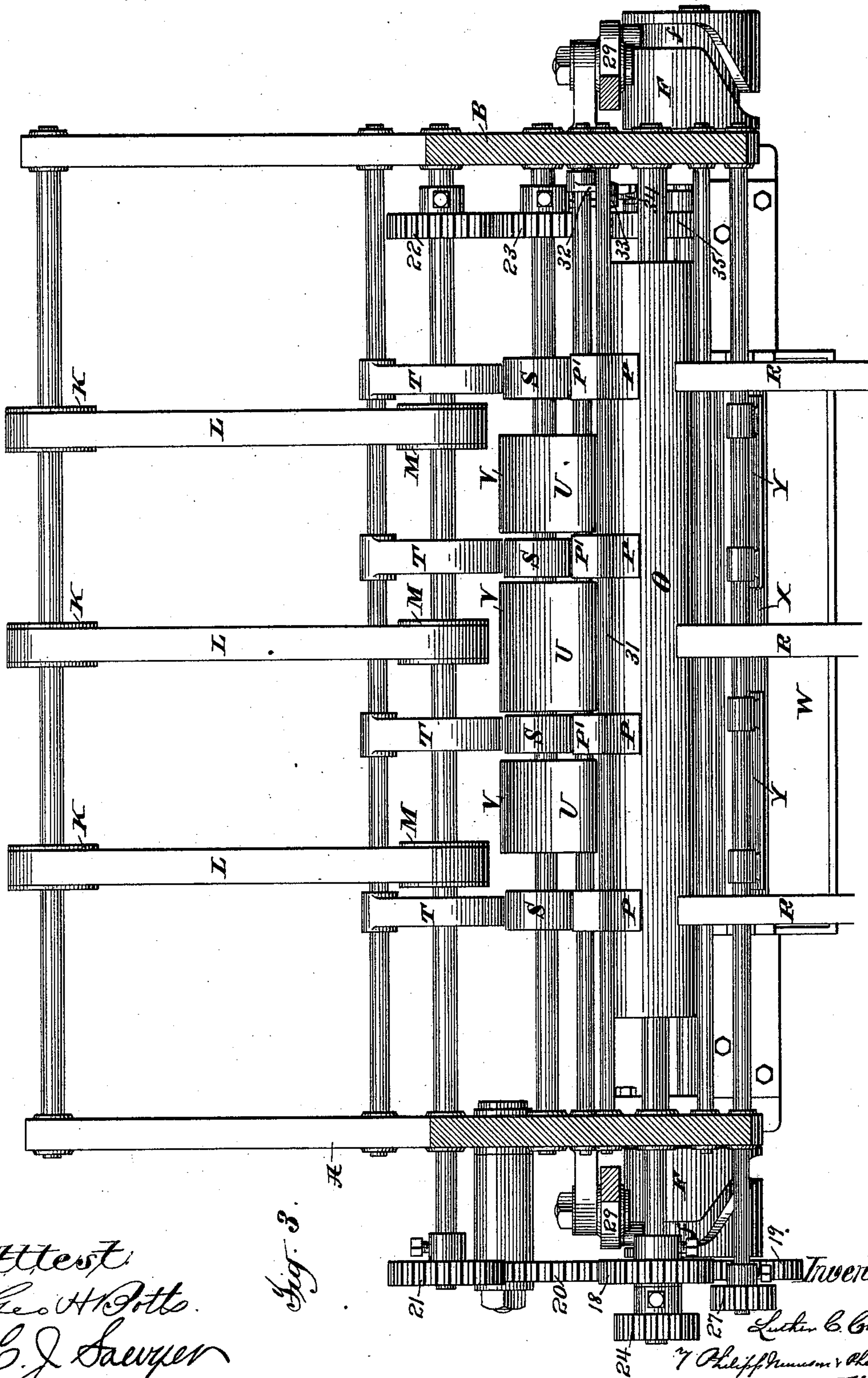
Attest:
Geo. H. Potts.
C. J. Sawyer

Inventor:
Lucas C. Crowell
by
Phelps, Munson & Phelps
Attys

4 Sheets—Sheet 2.

No. 522,198.

Patented July 3, 1894.



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C. J. Sawyer

Fig. 3.

Inventor

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J. J. Munson & Phelps.
Attys

(No Model.)

4 Sheets—Sheet 3.

L. C. CROWELL.
NEWSPAPER WRAPPING MACHINE.

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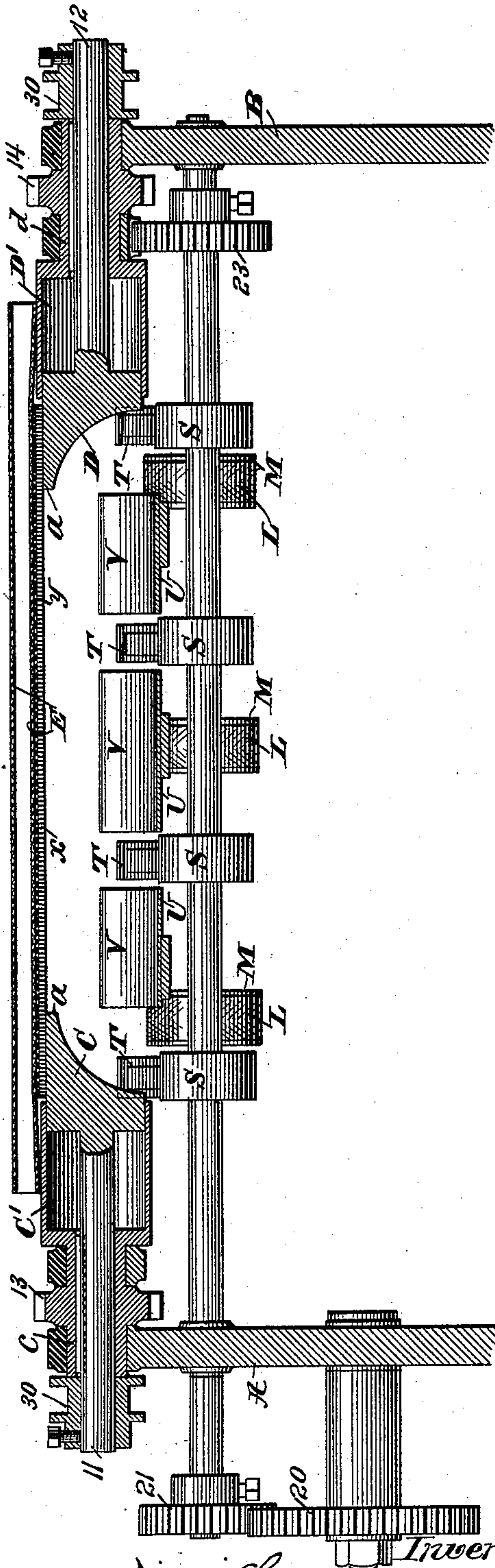
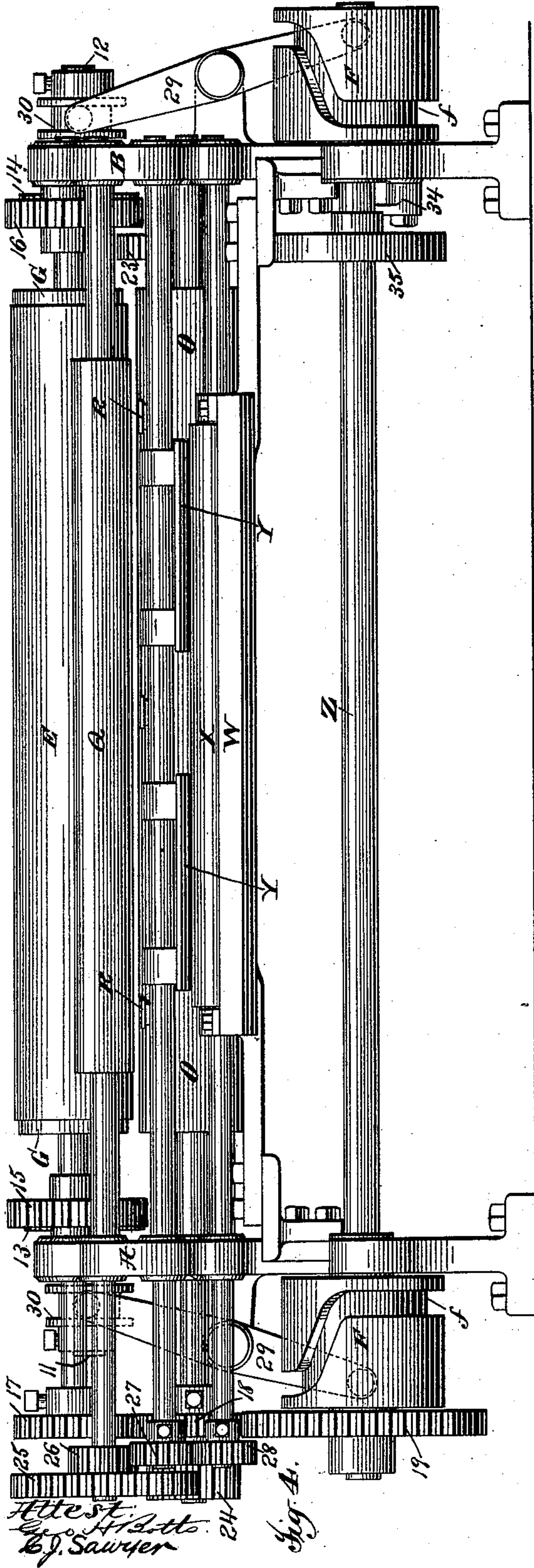


Fig. 5.
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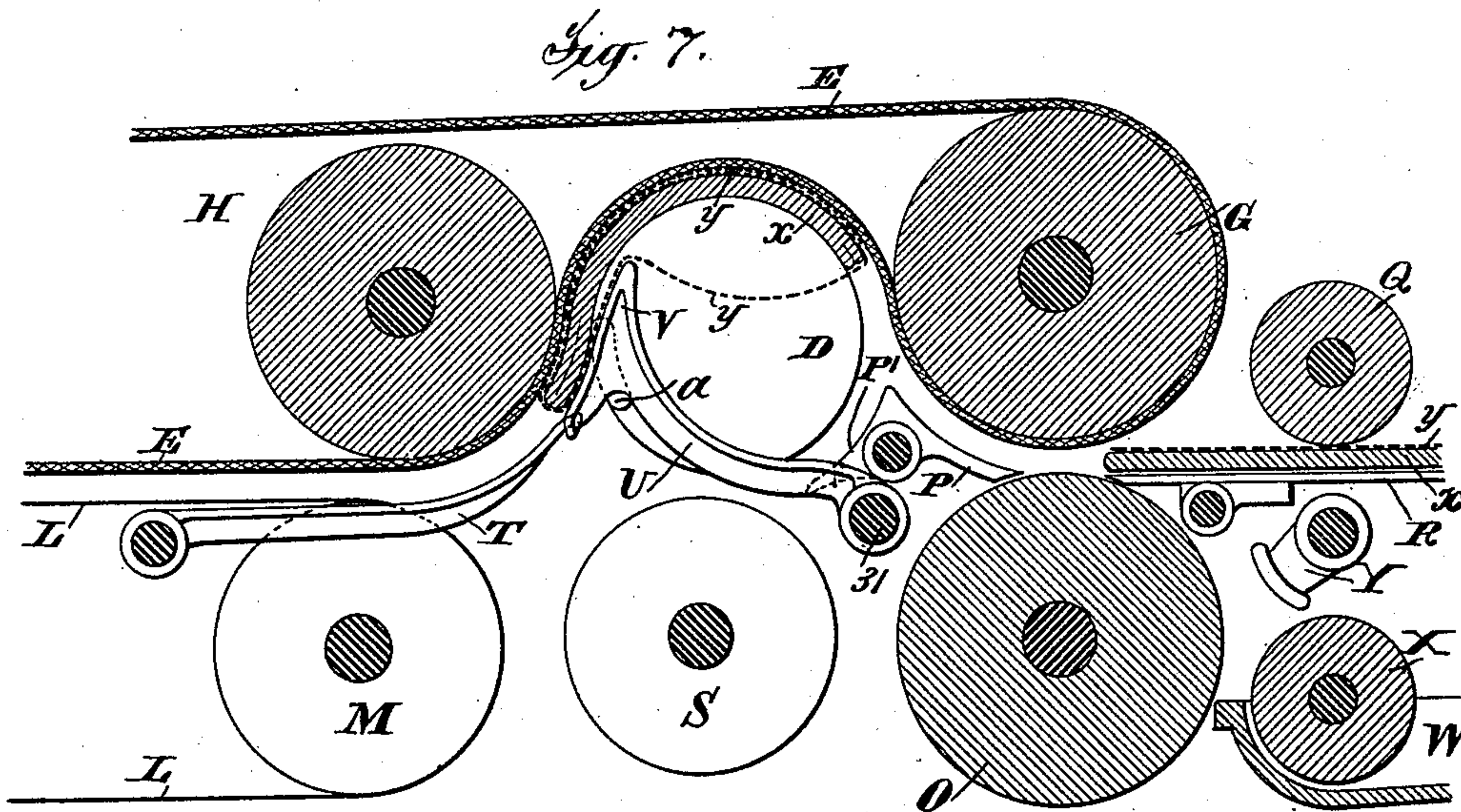
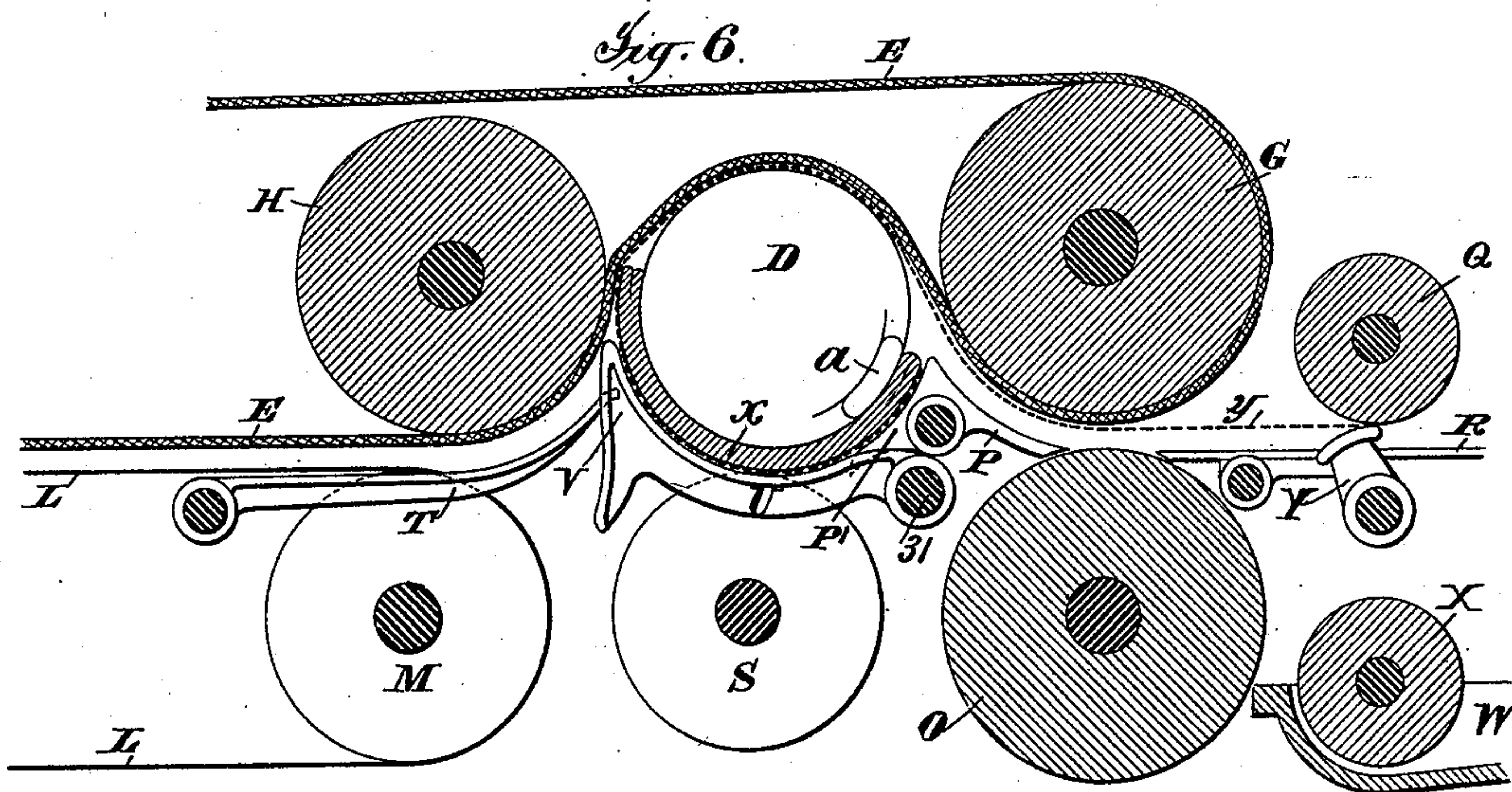
(No Model.)

4 Sheets—Sheet 4.

L. C. CROWELL.
NEWSPAPER WRAPPING MACHINE.

No. 522,198.

Patented July 3, 1894.



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

Inventor:
Luther C. Crowell
by
Philip Drummond & Phelps
Attys

UNITED STATES PATENT OFFICE.

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

NEWSPAPER-WRAPPING MACHINE.

SPECIFICATION forming part of Letters Patent No. 522,198, dated July 3, 1894.

Application filed October 7, 1893. Serial No. 487,503. (No model.)

To all whom it may concern:

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

The object of the present invention is to provide an improved 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 of high capacity.

The present invention relates to a machine in which the paper and wrapper are rolled together into cylindrical form by feeding devices co-acting with a core inside the paper and the core withdrawn independently of the feeding devices to deliver the paper.

In the preferred form of the embodiment of my invention, the core is made in two parts, which are withdrawn in opposite directions for the delivery of the wrapped paper, and the paper is delivered flat by leading off the paper and wrapper by their leading ends with the rear end of the wrapper overlapping upon the first layer of wrapper on the paper, so as to be pasted down and secured by suitable pressing devices, a suitable switch operating between the two parts of the core being used to guide the paper from the core, and the core preferably being so constructed as to allow a wrapper of substantially the width of the paper to be used.

Any suitable feeding devices may be used with the core, but I preferably use a single broad belt extending over both portions of the core, and acting not only as the feeding device co-acting with the core to roll the paper, but also to aid in feeding the paper in delivering the latter from the core, so that a constant pressure is kept upon the paper in its passage from the core, and until the paste is fully set.

The length of the paper is preferably substantially one-half the periphery of the core, and the wrapper of sufficient length to ex-

tend completely about the paper on the core, and overlap upon the first layer of wrapper on the paper sufficiently for pasting. With the paper of this length, the leading ends of the paper and wrapper are taken by the core simultaneously, and the paper and wrapper are rolled upon the core during one rotation of the latter, and upon the second rotation are guided from the core by the switch, the part of the wrapper not supported by the paper being carried in so as to lie against the paper, and the rear end of the wrapper overlapping the first layer of wrapper upon the paper is pressed down by the pressing and delivery devices so as to be pasted by paste previously applied, either to the rear end of the wrapper, or to the first layer of wrapper upon the paper, the wrapped paper thus being delivered as a flat product.

In delivering the paper and wrapper from the core I preferably employ a switch which allows the paper and wrapper to pass with the core in its first rotation, and is shifted on the second rotation into position to guide the paper and wrapper from the core and into the grasp of the pressing and delivery devices, by which the pasted wrapper is secured. The papers may be previously folded to the desired size by folding devices provided in the machine, or the papers may be folded previously, and the wrapping mechanism form an independent machine which may be fed by hand or suitable feeding devices. Thus the wrapping mechanism may be combined with the delivery mechanism of a printing press, or with a folding machine of any of the common forms, wrapper feeding and pasting mechanisms being added so that the folded paper is automatically wrapped and delivered, or wrapper and paper feeding devices of any suitable form may be combined with the wrapping mechanism to form an independent paper or pamphlet wrapping machine.

In the accompanying drawings forming a part of this specification, I have shown an independent wrapping machine embodying my invention in its preferred form, the paper and wrapper being fed to the wrapping mechanism by feeding rolls, and the pasting mechanism being arranged to apply paste to the

rear end of the wrapper as it passes to the wrapping mechanism, and a full description of this machine will now be given in connection with the drawings, and the features forming the invention specifically pointed out in the claims.

In the drawings:—Figure 1 is a side elevation of the gear side of the machine. Fig. 2 is a central vertical section. Fig. 3 is a horizontal section on the line 3 of Fig. 2. Fig. 4 is a front elevation, that is, looking to the left in Fig. 1. Fig. 5 is a vertical section on the line 5 of Fig. 1, looking to the left. Figs. 6 and 7 are partial views on an enlarged scale similar to Fig. 2, but showing the wrapping machine in different positions during the operation of wrapping.

The frame of the machine may be of any suitable form to support the operating parts. As shown, it consists of two side frames A, B, in which all the parts of the machine are supported.

The core upon which the paper and wrapper are wound consists of two short cylinders C, D, carried by shafts 11, 12, mounted in the opposite end frames A, B and in the upper part of the machine, the cylinders extending within the frame so as to engage the paper at its opposite side edges. The cylinders C, D, are preferably cut away at their inner ends as shown so as to leave only a small portion projecting opposite the paper, these projections forming the parts co-acting with the feeding devices in feeding the paper, this cutting away of the cylinders permitting a wrapper of the same width as the paper to be used, as fully explained hereinafter.

The cylinders C, D, forming the core are inclosed within sleeves C', D', having hubs c, d, splined to the shafts 11, 12, so that the shafts 11, 12 rotate with the sleeves C', D', while at the same time the cylinders C, D, and shafts 11, 12, are free to move longitudinally in the sleeves so as to project therefrom for seizing the paper during wrapping, and to be withdrawn within the sleeves for the release of the wrapped paper for delivery.

With the cylinders C, D, and sleeves C', D', coacts a belt E extending partially about the cylinders from the side on which the paper is received, this belt being of sufficient width to extend between and over the sleeves C', D'. This belt E is driven from a roll G, mounted in the frames A, B, above the core, and is led rearward over the latter, and then under a roll H mounted in the frame, outward from the wrapping mechanism to the rear of the machine, and under a roll I returning thence above the wrapping mechanism directly to roll G, the length of the belt between the rolls H, I, being sufficient to provide for the holding of the paper in form and with the wrapper under pressure until the paste has set. The roll I forms one of the delivery rolls of the machine, the belt E thus acting as a feeding belt in combination with the core to roll the paper and wrapper and forming also one

set of the delivery belts by which the wrapped paper is delivered, the other set consisting of a series of short belts L extending about the second delivery roll or series of belt rolls K and driven from belt rolls M below roll H. The roll G co-acts with a roll O mounted in the frame A, B below it to form a pair of feeding rolls by which the leading ends of the paper and wrapper are received and advanced over guides P to the core. These guides P guide the paper from the rolls G, O, to the wrapping mechanism for the first rotation and integral therewith are a second series of guides P' extending rearward and curved concentrically with the core which serve to guide the leading ends of the paper and wrapper back to the belts E on the first rotation of the core. It will be understood, however, that separate guides may be used for these two purposes, if desired.

On the opposite side of the core from the belt E, is mounted a series of rolls or disks S which engage the paper during a part of its first rotation, and aid the belt E and core in securing its proper rotation, and these disks extend inside and between a series of guides U which, curved about the line of movement of the paper opposite the belt E, are carried by a rock shaft and at their rear end carry the switch V, the switch being thus mounted so as to swing in a vertical plane. The guides U act to guide the leading ends of the paper and wrapper while it is out of the immediate control of the belt E, and extend in the line of movement of the paper to the rear end of the guides P', so that the paper and wrapper are positively guided thereby, and held gripped by the projection a during the entire rotation of the core, and the wrapper held pressed against the paper.

The switch V is actuated by rock shaft 31 on which the guides U carrying the switch are mounted, so as to throw the switch from the position shown in Fig. 6 in which the paper and wrapper are guided about the core from the roll H to the disks S and guides P' during the first wrapping rotation of the core, to the position shown in Fig. 7 in which the leading ends of the paper and wrapper are guided off to the delivery belts during the second or delivery rotation of the core.

The switch V consists preferably of a series of fingers forming guides for the paper and wrapper, and a second series of guiding fingers T extending rearward from and between the fingers forming the switch V are preferably used, so as to secure a complete continuous guide when the switch is in the position shown in Fig. 7, and lying within the circumference of, but extending rearward of the belt rolls M so that this guiding may be continued until the paper is securely grasped between the belts E and L. It will be understood, however, that a continuous plate may be used in place of the fingers forming the switch V, and that other suitable means may be used for securing the proper guiding of

the paper in delivery. The construction shown, however, is simple and efficient, and will be found well adapted for the purpose.

The paste may be applied to the rear end of the wrapper prior to the wrapping operation, or in the machine at any suitable time. In the construction shown, the paste is applied to the rear end of the wrapper before the latter reaches the wrapping mechanism, and for this purpose a paste fountain W and fountain roll X are provided, by which paste is supplied to a rotating paster Y mounted in position and arranged to apply paste to the wrapper against a roll Q, which roll co-acts also with a series of guides R to aid in advancing the paper to the rolls G and O, as shown in Fig. 7. The paster Y is constructed to apply paste only to the portions of the wrapper between the guides P, so that the pasted portion of the wrapper will pass forward out of engagement therewith, but will be brought into contact with the wrapper as the leading ends of the paper and wrapper pass the guides P on the second rotation of the core.

The operating parts of the machine are driven from the main driving shaft Z by the following connections:—The hubs *c*, *d* of the sleeves C', D', are provided with gears 13, 14, which engage respectively gears 15, 16 carried by the shaft of roll G, and the core is thus driven. The roll G carries, also, at one end outside the gear 15 a gear 17 which engages a gear 18 on the shaft of roll O, and the roll O is driven from the main driving shaft Z by gear 19 on the main driving shaft engaging gear 18. As will be seen, the gears are so timed that the cylinders C, D, and sleeves C', D' are rotated twice to each rotation of the main driving shaft Z, and the belt E driven by roll G moves at the same rate of speed as the cylinders C, D. The belt rolls M and belts L are driven from the main driving shaft Z by gear 19, intermediate 20 and gear 21 on the shaft of roll M, and this shaft in turn drives the shafts of rolls S by gears 22, 23 at the opposite side of the machine from the gears 20, 21. A uniform speed is thus secured for all the parts co-acting with the paper in advancing and delivering the paper.

The shaft of roll O carries outside gear 18 a small gear 24 which engages a larger gear 25 on the shaft of roll Q, so that the surface speed of the roll Q is the same as that of the roll G, and the paster Y is driven by a small gear 26 on the shaft of roll Q engaging a gear 27 on the shaft of the paster, and gear 27 in turn drives the fountain roll X through gear 28.

The cylinders C, D are moved longitudinally by the following means:—The main driving shaft Z carries at its opposite ends cams F provided with cam grooves *f* in which run bowls carried by levers 29 pivoted on the frame, and at their opposite ends provided with bowls running in grooved collars 30 carried by shafts 11, 12, so that as the cams F rotate with the driving shaft Z, the cylinders

C, D, are advanced and retracted in proper time for the receipt and delivery of the paper. The switch V is carried by the rock shaft 31 mounted in the side frames A, B, and carrying inside the frame B a crank arm 32 connected by a pitman 33 with a bell crank lever 34 pivoted on the frame B, the other arm of which lever carries a bowl which rides in a cam groove in a disk 35 carried by the main driving shaft Z inside the frame, so that the switch is thus moved positively by the cam in both directions.

The operation of the machine will be understood from a brief general description in connection with the drawings and the detailed description of the parts above given. As shown in the main views the paper *x* and wrapper *y* have been received by the belt roll G and feeding roll O, and advanced thereby over the guides P to the core, and the paper and wrapper have been gripped between the belts and the projections *a* of the two cylinders C, D, forming the core, the paper and wrapper being of such width as to overlap upon the two parts of the core. On the first rotation of the core the switch V is held in the position shown in Figs. 1, and 6, and the paper and wrapper are wound about the core, passing inside the switch, and being guided during this rotation by the switch and guides U, P', and at the end of the first rotation the parts are in the position shown in Fig. 6, the paster, as shown, having just applied paste to the flap of the wrapper, although it will be understood that the time of applying paste will depend upon the length of the wrapper used, which may be varied to some extent. Upon the second rotation of the core, the leading end of the paper and wrapper is carried about in the same path as upon the first rotation until it reaches the roll H, but as the second rotation of the core continues, and the leading end of the paper approaches the switch V, the switch is shifted by the connections previously described and thrown inward into the position shown in Fig. 7, so that it operates to guide the leading end of the paper and wrapper from the core out between the roll H and guides T, so as to be gripped between the rolls H, M and belts E, L, and thus carried rearward and delivered. As the leading end of the paper and wrapper is thus led from the core, the loose portion of the wrapper is carried inward onto the inner surface of the paper, as shown in dotted lines in Fig. 7; the special form of the core cut away at its ends to the projection *a* permitting the switch to throw the wrapper in without tearing the edges and the wrapper to be drawn off the core during the withdrawal of the two parts C, D, which is commenced simultaneously with the movement of the switch V, and as the flap of the wrapper passes to the core, the cylinders C, D, are fully withdrawn, and the wrapper left free, although of the same width as the paper. As the paper and wrapper are advanced between the de-

livery belts E, L, the rear end of the wrapper is pasted down upon the layer of wrapper upon the paper and the paper delivered in flat form between the rolls I, K, the pasted portion of the wrapper being pressed down a sufficient length of time by the delivery belts and rolls, so that the wrapper is firmly secured upon the paper.

In the preferred construction shown, the length of the paper is substantially one-half the periphery of the core, so that the portion of the wrapper not supported by the paper is substantially the length of the paper, and is simply carried inward against the paper in delivery. While this construction is preferred, however, it will be understood that a longer paper may be wrapped, the withdrawal of the core permitting the paper also to be doubled in against itself, as it is led off the switch V, the special form of the core permitting the paper to be thus led off while the core is being withdrawn, or a longer paper may be wrapped without employing the core of special form, provided the grip of the delivery devices be loose enough to allow the wrapper to slip as the paper is straightened out, so as to draw up the rear end of the wrapper sufficiently to afford the wrapper to extend about the flattened paper. It will be found preferable, however, to use a paper of a length substantially half the circumference of the core, as shown, and the machine shown is especially adapted for such use. The core need not be cut away at the edges as shown, if the wrapper is of a width less than the distance between the two parts of the core, or even with a wrapper somewhat wider than this distance, if the parts of the core are withdrawn at such a time as to enable the loose parts of the wrapper to be carried inward by the point of the switch as the paper is led off, but the construction shown will be found more efficient.

It will be understood that many modifications may be made in the construction shown by those skilled in the art without departing from the invention.

While the invention has been described as applied to wrapping newspapers and other publications, it will be understood that the machine may be applied to wrapping other articles which can be rolled into cylindrical form, and that such uses are within the invention, and the term "paper" is used in the claims to include such other articles.

I do not claim herein the combination with a core, of feeding devices or belts co-acting therewith to advance a paper and wrapper and wind them upon the core by pressure between the feeding devices and core, and means for delivering the wrapped paper from the core, or such a construction in which the paper is delivered by withdrawing the core, as these subjects-matter are included in my Patent No. 508,567, dated November 14, 1893

I do not claim herein the method of wrapping newspapers and other publications,

which consists in rolling the paper and wrapper into cylindrical form with the circumference greater than the length of the paper, leading off the paper and wrapper from the rolling space by their leading ends with the rear end of the wrapper overlapping upon the first layer of wrapper upon the paper and pressing down the overlapping portion of the wrapper for pasting, nor such a method employing a core upon which the paper and wrapper are rolled, nor the combination with a core of less length than the width of the paper to be wrapped, of means for winding a paper and wrapper upon the core, and devices by which the paper and wrapper are led from the core with the rear end of the wrapper overlapping the first layer of wrapper upon the paper, and the overlapping portion of the wrapper pressed down for pasting, nor such a combination employing a core having a periphery greater than the length of the paper, as these and other subordinate subjects-matter are included in another application Serial No. 422,191, filed February 20, 1892.

What is claimed is—

1. The combination with a core, of feeding devices co-acting therewith to advance a paper and wrapper and roll them into cylindrical form, and means for withdrawing the core from the paper and feeding devices and delivering the wrapped paper from the wrapping space, substantially as described.
2. The combination with a rotating core, of feeding devices co-acting therewith to advance a paper and wrapper and roll them into cylindrical form, and means for withdrawing the core from the paper and feeding devices and delivering the wrapped paper from the wrapping space, substantially as described.
3. The combination with a rotating core, of a belt moving with said core and co-acting therewith to advance a paper and wrapper and wind them upon the core, and means for withdrawing the core from the paper and belt and delivering the wrapped paper from the wrapping space, substantially as described.
4. The combination with a rotating core, of a belt moving with said core and co-acting therewith to advance a paper and wrapper and roll them into cylindrical form, and means for withdrawing the core from the paper and belt and delivering the wrapped paper from the wrapping space, substantially as described.
5. The combination with a rotating core, of a belt moving with said core and co-acting therewith to advance a paper and wrapper and roll them into cylindrical form, means for withdrawing the core from the paper and belt, and devices by which the paper and wrapper are led from the core by their leading ends with the rear end of the wrapper overlapping the first layer of wrapper upon the paper, and the overlapping portion of the wrapper pressed down for pasting, substantially as described.

6. The combination with a rotating core, of a belt moving with said core and co-acting therewith to advance a paper and wrapper and roll them into cylindrical form, and a switch operating to guide the leading ends of the paper and wrapper in a circular path during the first rotation of the core and to guide the leading ends of the paper and wrapper from the core on the second rotation, and means for withdrawing the core from the paper and belt for the delivery of the paper, substantially as described.

7. The combination with a core formed in two parts arranged to engage the paper at opposite sides and mounted to move longitudinally, of feeding devices co-acting therewith to advance a paper and wrapper and roll them into cylindrical form, and means for withdrawing the two parts of the core from the paper and feeding devices in opposite directions and delivering the wrapped paper from the wrapping space, substantially as described.

8. The combination with a rotating core formed in two parts arranged to engage the paper at opposite sides and mounted to move longitudinally, of feeding devices co-acting therewith to advance a paper and wrapper and roll them into cylindrical form, and means for withdrawing the two parts of the core from the paper and feeding devices in opposite directions and delivering the wrapped paper from the wrapping space, substantially as described.

9. The combination with a rotating core formed in two parts arranged to engage the paper at opposite sides and mounted to move longitudinally, of a belt moving with said core and co-acting therewith to advance a paper and wrapper and wind them upon the core, and means for withdrawing the two parts of the core from the paper and feeding devices in opposite directions and delivering the wrapped paper from the wrapping space, substantially as described.

10. The combination with a rotating core formed in two parts arranged to engage the paper at opposite sides and mounted to move longitudinally, of a belt moving with said core and co-acting therewith to advance a paper and wrapper and roll them into cylindrical form, and means for withdrawing the two parts of the core from the paper and belt in opposite directions and delivering the wrapped paper from the wrapping space, substantially as described.

11. The combination with a rotating core formed in two parts arranged to engage the paper at opposite sides and mounted to move longitudinally, of a belt moving with said core and co-acting therewith to advance a paper and wrapper and roll them into cylindrical form, means for withdrawing the two parts of the core from the paper and belt in opposite directions, and devices by which the paper and wrapper are led from the core by their

leading ends with the rear end of the wrapper overlapping the first layer of wrapper upon the paper, and the overlapping portion of the wrapper pressed down for pasting, substantially as described.

12. The combination with a rotating core formed in two parts arranged to engage the paper at opposite sides and mounted to move longitudinally, of a belt moving with said core and co-acting therewith to advance a paper and wrapper and roll them into cylindrical form, and a switch operating to guide the leading ends of the paper and wrapper in a circular path during the first rotation of the core and to guide the leading ends of the paper and wrapper from the core on the second rotation, and means for withdrawing the two parts of the core from the paper and belt in opposite directions for the delivery of the paper, substantially as described.

13. The combination with a rotating core formed of two cylinders arranged to engage the paper at opposite sides, and cut away at their inner ends to form inwardly extending projections, of a belt co-acting with said projections to seize the paper and wrapper and roll them into cylindrical form, devices by which the paper and wrapper are led from the core with the rear end of the wrapper overlapping the first layer of wrapper upon the paper and the overlapping portion of the wrapper pressed down for pasting, and means for withdrawing the two cylinders from the paper and belt in opposite directions, substantially as described.

14. The combination with a rotating core formed in two parts arranged to engage the paper at opposite sides, of a belt co-acting with said core to roll the paper and wrapper into cylindrical form, feeding and pressing devices by which the paper and wrapper are delivered from the core and the wrapper pressed down upon the paper for pasting, a switch co-acting with suitable guides to guide the leading ends of the paper and wrapper in a circular path during the first rotation of the core and to guide the leading ends of the paper and wrapper from the core to the feeding and pressing devices on the second rotation of the core, and means for withdrawing two parts of the core from the paper and belt, substantially as described.

15. The combination with a rotating core formed in two parts arranged to engage the paper at opposite sides, of a belt co-acting with said core to roll the paper and wrapper into cylindrical form, feeding and pressing devices by which the paper and wrapper are delivered from the core and the wrapper pressed down upon the paper for pasting, a switch co-acting with suitable guides to guide the leading ends of the paper and wrapper in a circular path during the first rotation of the core and to guide the leading ends of the paper and wrapper from the core to the feeding and pressing devices on the second rotation of the

core, means for withdrawing the two parts of the core from the paper and belt, and wrapper pasting mechanism, substantially as described.

5 16. The combination with the rotating cylinders C, D, and belt E, of means for moving said cylinders longitudinally in opposite directions, pressing and delivery devices, switch V, and means for throwing said switch inward
10 ward between the cylinders on their second rotation, substantially as described.

17. The combination with the rotating cylinders C, D, cut away at their inner ends to form projections *a*, of means for moving said
15 cylinders longitudinally in opposite directions, pressing and delivery devices, switch V, and means for throwing said switch inward between the cylinders on their second rotation and returning it to position, substantially
20 as described.

18. The combination with the rotating cylinders C, D, and belt E, of guides U on the opposite side of the cylinders from the belt, switch V, and means for actuating said switch,
25 substantially as described.

19. The combination with the rotating cylinders C, D, and belt E, of rolls S and guides U on the opposite side of the cylinders from the belt, switch V, and means for actuating
30 said switch, substantially as described.

20. The combination with the rotating cylinders C, D, and belt E, of guides U on the opposite side of the cylinder from the belt, rolls G, H about which belt E passes, roll M
35 opposite said roll H, switch V, and means for actuating said switch, substantially as described.

21. The combination with the rotating cylinders C, D, and belt E, of guides U on the
40 opposite side of the cylinder from the belt, rolls G, H, I, about which belt E passes, roll M and delivery belts L co-acting with the delivery part of said belt E, switch V, and means for actuating said switch, substantially as de-
45 scribed.

22. The combination with the rotating cylinders C, D, and belt E, of guides U on the opposite side of the cylinder from the belt, rolls G, H, I, about which belt E passes, roll
50 M and delivery belts L co-acting with the delivery part of said belt E, switch V, means for actuating said switch and guide T between said switch and belts L, substantially as described.

23. The combination with the rotating cylinders C, D, of the rotating sleeves C', D' inclosing said cylinders and rotating therewith, belt E on said sleeves, means for moving said
60 cylinders longitudinally in said sleeves and in opposite directions, switch V, and means

for actuating said switch, substantially as described.

24. The combination with the rotating cylinders C, D, of sleeves C', D' inclosing said cylinders and rotating therewith, means for
65 moving said cylinders C, D longitudinally in said sleeves and in opposite directions, belt E on said sleeves, guides on the opposite sides of the cylinders from the belt E, switch V, and means for actuating said switch, substan-
70 tially as described.

25. The combination with the rotating cylinders C, D, of sleeves C', D' inclosing said cylinders and having hubs *c*, *d* in which the cylinders C, D are splined, means for moving
75 said cylinders C, D longitudinally in opposite directions, belt E on said sleeves, rolls S and guides on the opposite side of the cylinder from the belt E, switch V, and means for actuating said switch, substantially as described.
80

26. The combination with the rotating cylinders C, D of sleeves C', D' inclosing said cylinders and rotating therewith, means for moving said cylinders C, D longitudinally in
85 said sleeves and in opposite directions, belt E on said sleeves co-acting with the cylinders and forming one of the delivery belts, guides on the opposite side of the cylinders from the belt E, switch V and means for actuating said switch, roll H, and delivery belts L co-acting
90 with the delivery part of belt E, substantially as described.

27. The combination with the rotating cylinders C, D, of sleeves C', D' inclosing said cylinders and rotating therewith, means for
95 moving said cylinders C, D longitudinally in said sleeves and in opposite directions, belt E on said sleeves co-acting with the cylinders and forming one of the delivery belts, guides on the opposite side of the cylinders from the belt E, switch V and means for actuating said switch, roll H, delivery belts L co-acting with the delivery part of belt E, and guides T between said switch and belt, substantially as
100 described.
105

28. The combination with the rotating cylinders C, D, of the rotating sleeves C', D' inclosing said cylinders and rotating therewith, belt E on said sleeves and means for moving
110 said cylinders longitudinally in said sleeves and in opposite directions, substantially as described.

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

LUTHER C. CROWELL.

Witnesses:

P. F. KEHOE,
C. J. SAWYER.