(No Model.)

6 Sheets—Sheet 1.

J. T. McCOLGAN.

NEWSPAPER WRAPPING MACHINE.

No. 532,688. Patented Jan. 15, 1895.

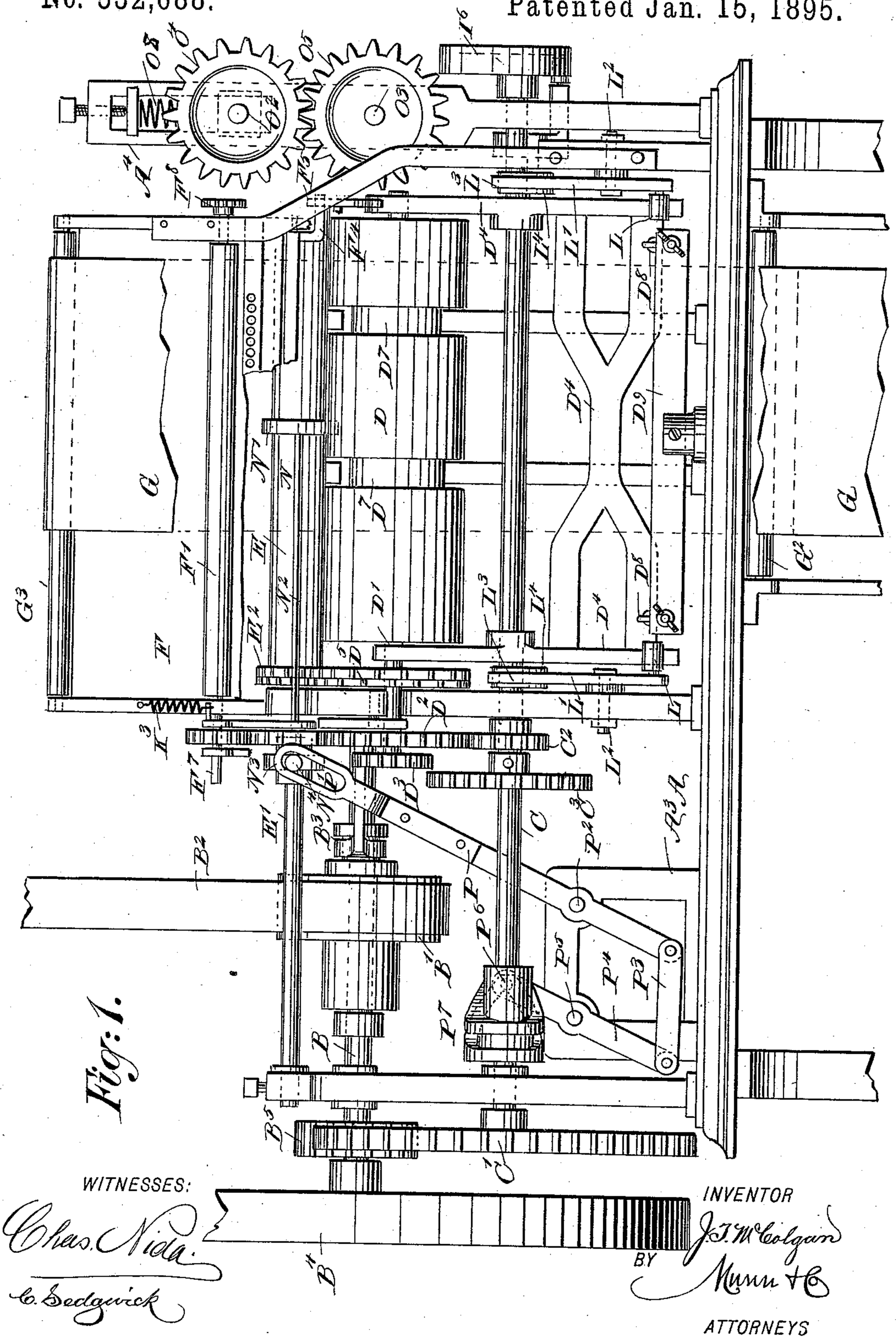

Fig: 1.

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(No Model.) 6 Sheets—Sheet 2.

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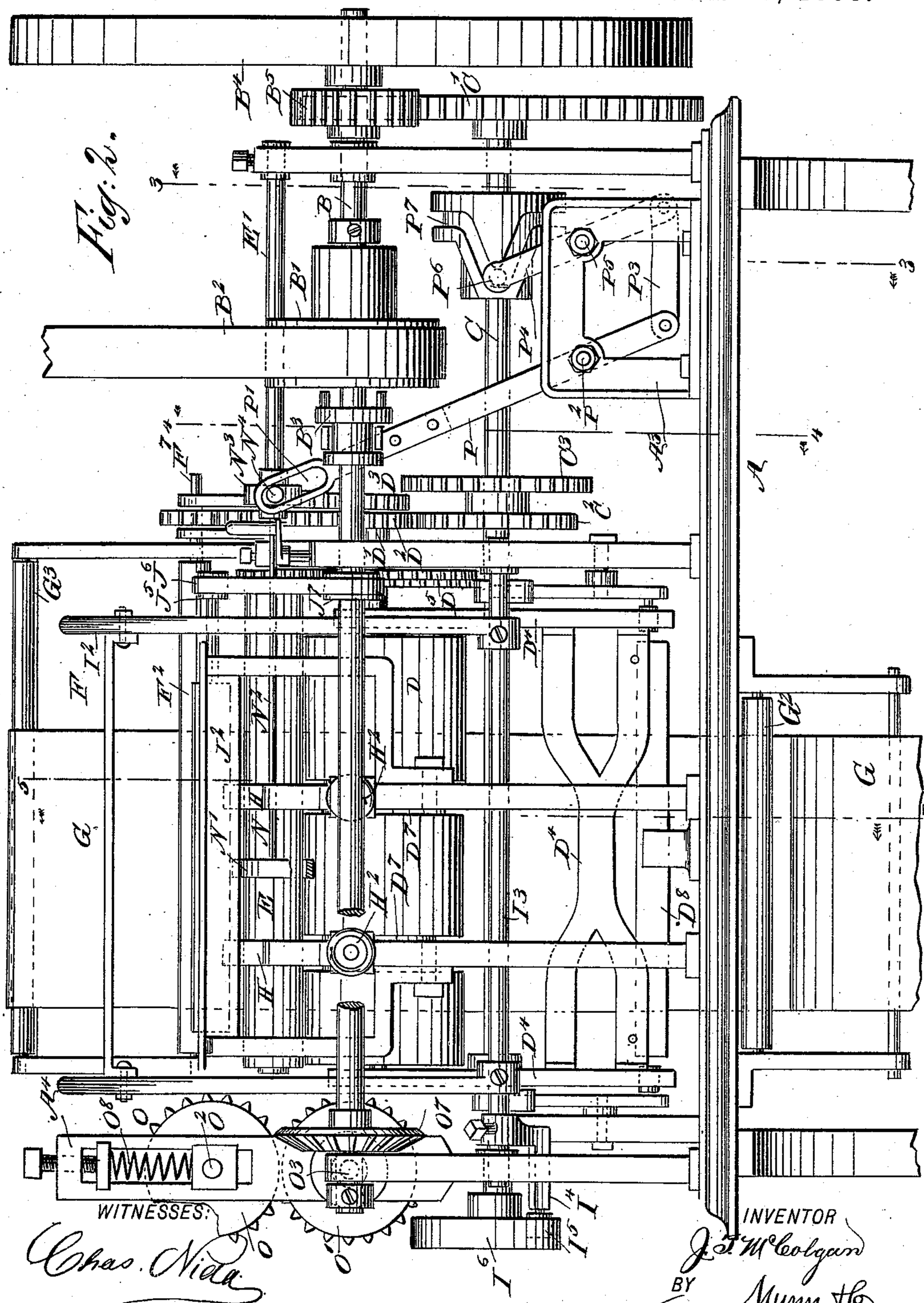
Fig. 2.



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(No Model.) 6 Sheets—Sheet 3.

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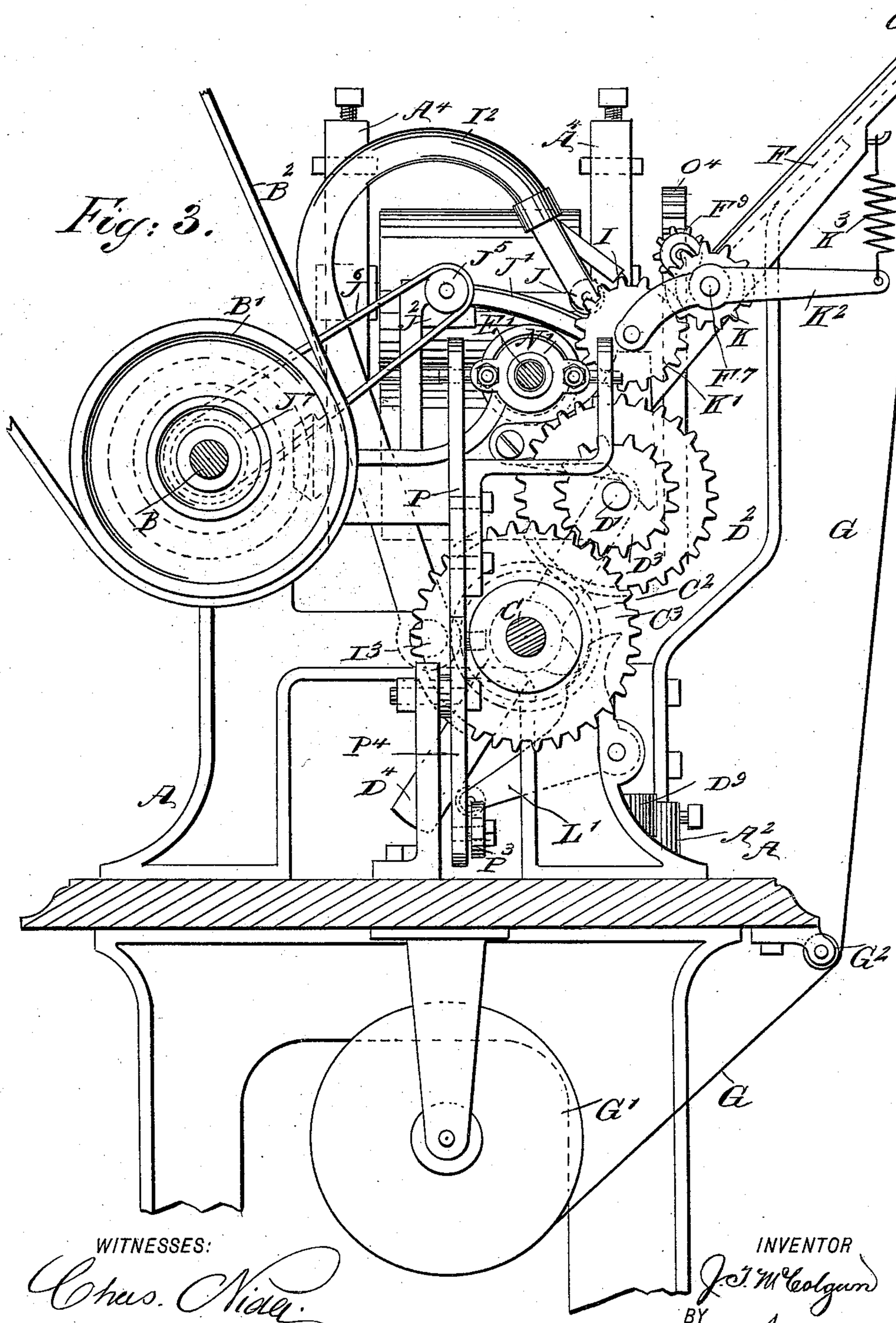
NEWSPAPER WRAPPING MACHINE.

No. 532,688. Patented Jan. 15, 1895.

Fig: 3.



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NEWSPAPER WRAPPING MACHINE.

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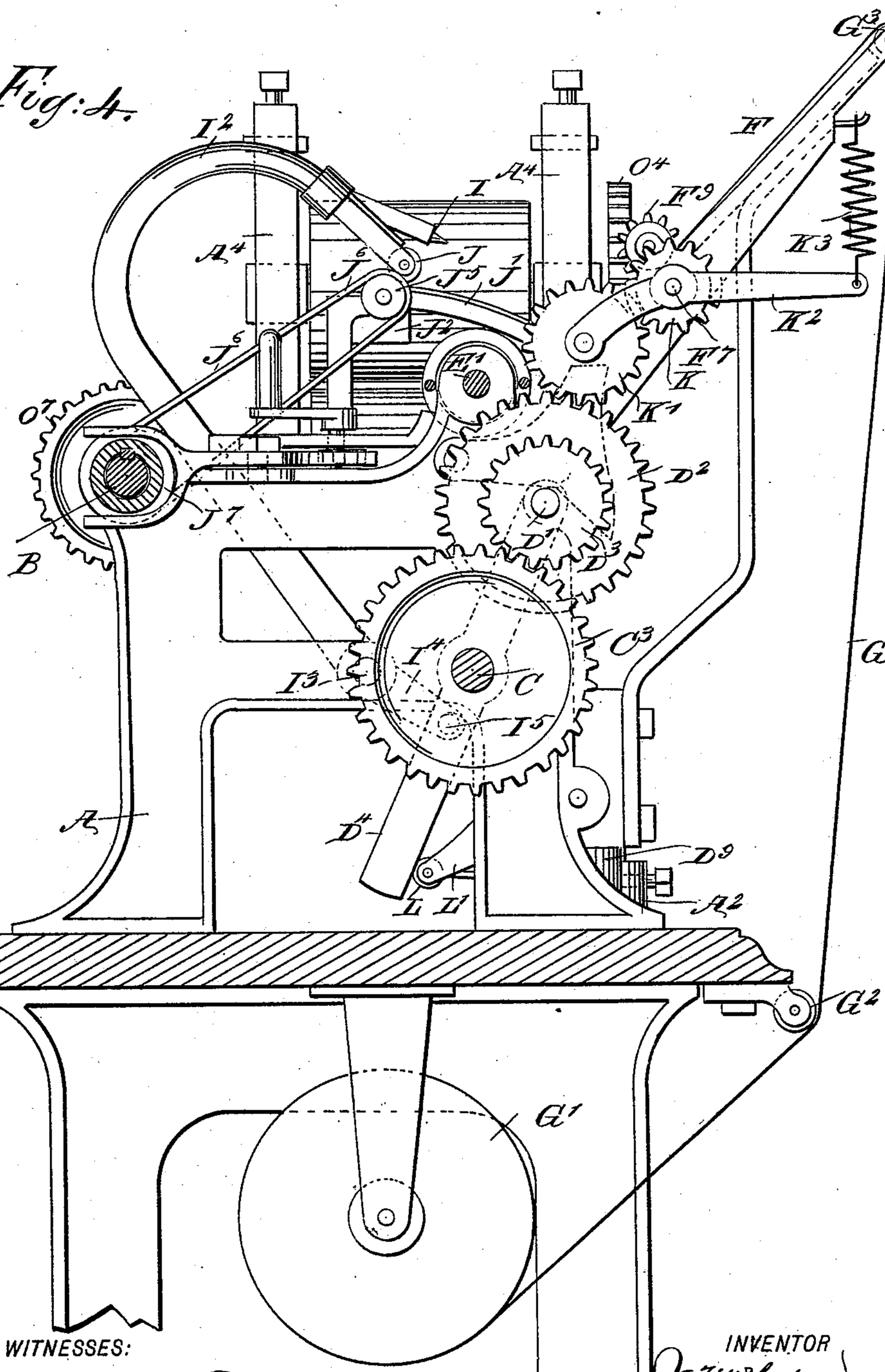
Fig: 4.



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(No Model.) 6 Sheets—Sheet 5.

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NEWSPAPER WRAPPING MACHINE.

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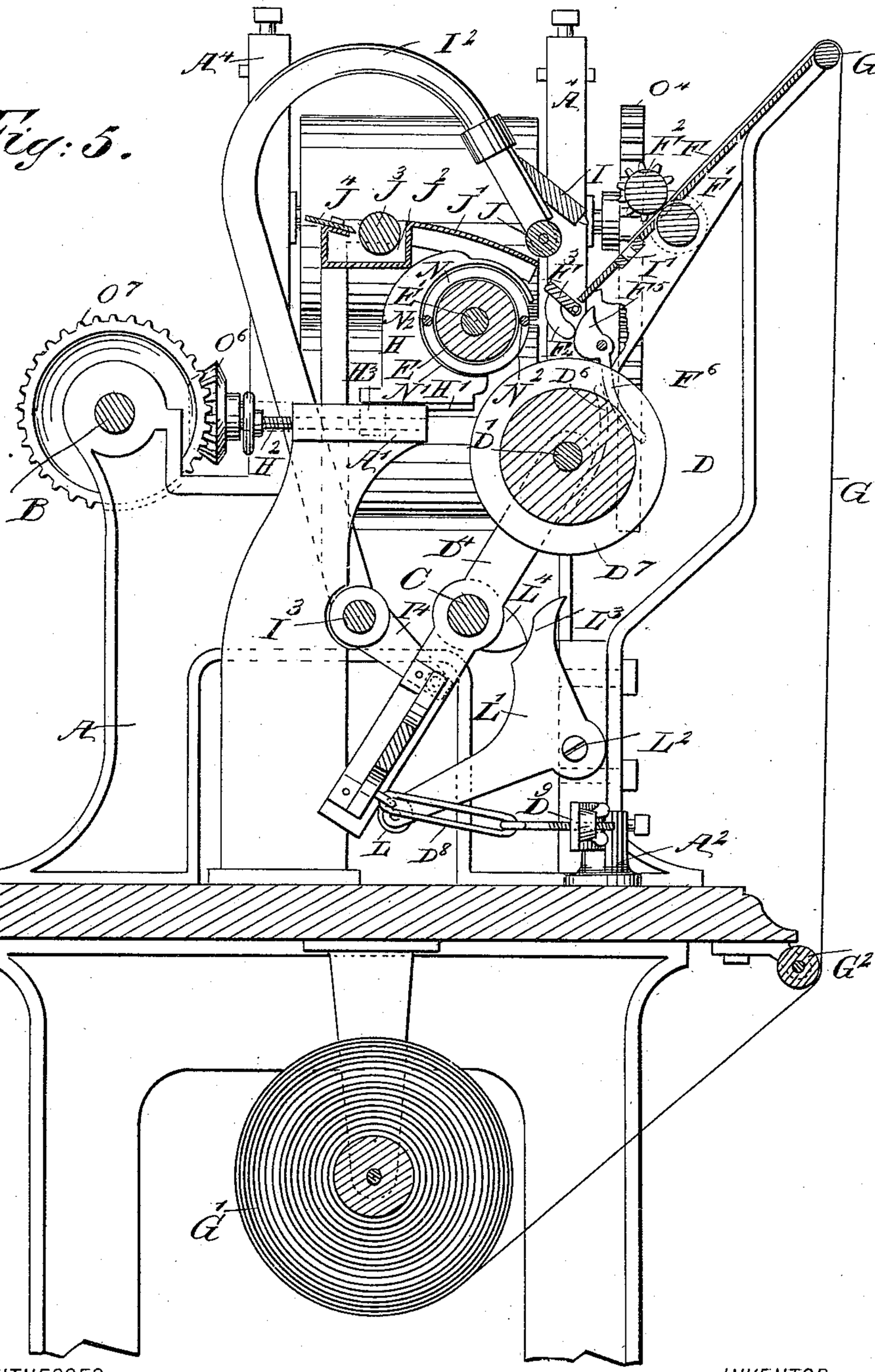
Fig: 5.



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(No Model.) 6 Sheets—Sheet 6.

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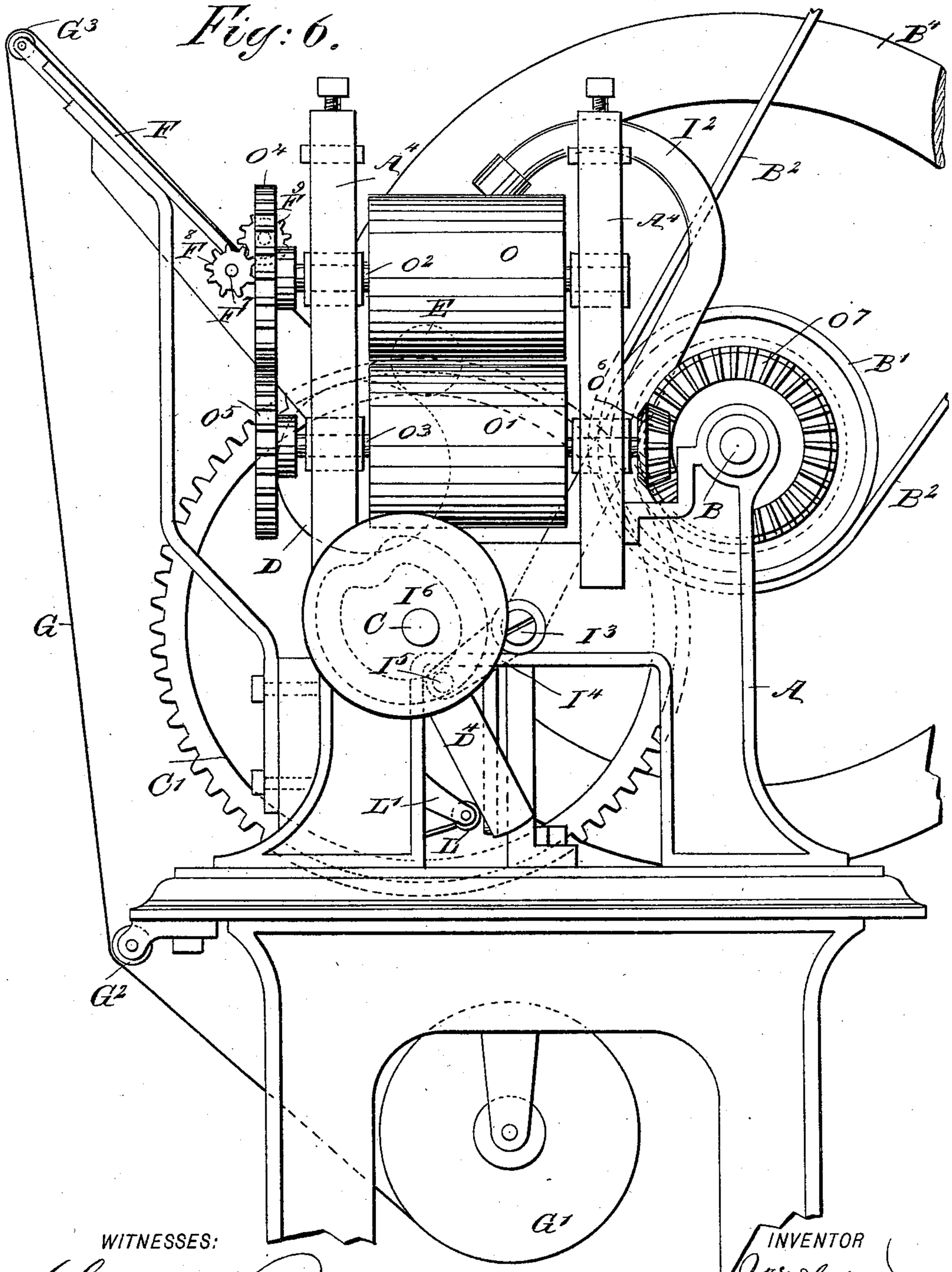
NEWSPAPER WRAPPING MACHINE.

No. 532,688. Patented Jan. 15, 1895.

Fig: 6.



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UNITED STATES PATENT OFFICE.

JAMES TALLEYRAND McCOLGAN, OF NASHVILLE, TENNESSEE.

NEWSPAPER-WRAPPING MACHINE.

SPECIFICATION forming part of Letters Patent No. 532,688, dated January 15, 1895.

Application filed March 19, 1894. Serial No. 504,191. (No model.)

To all whom it may concern:

Be it known that I, JAMES TALLEYRAND MCCOLGAN, of Nashville, in the county of Davidson and State of Tennessee, have invented a new and Improved Paper-Wrapping Machine, of which the following is a full, clear, and exact description.

The invention relates to machines used for wrapping newspapers and other publications, for mailing.

The object of the invention is to provide a new and improved paper wrapping machine, which is comparatively simple and durable in construction and very effective and automatic in operation.

The invention consists principally of an intermittently revolving core on which the paper and wrapper are wound, and a presser cylinder mounted to rotate in conjunction with the said core, and arranged to swing toward and from the said core.

The invention also consists of certain parts and details and combinations of the same, as will be hereinafter described and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a front elevation of the improvement. Fig. 2 is a rear elevation of the same. Fig. 3 is an enlarged cross section of the same on the line 3—3 of Fig. 2. Fig. 4 is a similar view of the same on the line 4—4 of Fig. 2. Fig. 5 is a like view of the same on the line 5—5 of Fig. 2; and Fig. 6 is a rear end elevation of the improvement.

The improved wrapping machine is provided with a suitably constructed frame A, on which is journaled the longitudinally-extending main driving shaft B, carrying a loose pulley B′, connected by belt B^2 with other machinery to impart motion to the machine. This loose pulley B′ is adapted to be connected with or disconnected from the shaft B by a suitable clutch mechanism B^3 under the control of the operator. On the shaft B is also secured a fly-wheel B^4 and a pinion B^5 in mesh with a large gear wheel C′ secured on one end of the cam shaft C, mounted to turn in suitable bearings in the main frame A, and extending longitudinally, similar to the shaft B. This cam shaft C is adapted to rotate the pressure cylinder D which operates in conjunction with the core E having an intermittent rotary motion derived from the said presser cylinder D, which latter is mounted to swing toward and from the said core E, as hereinafter more fully described.

The paper and wrapper are fed between the core E and the presser cylinder D from a feed table F, at the time the said cylinder D is close to the core E, so that the cylinder D and core E revolve in unison and cause the paper and wrapper to be pulled forward between the core and the cylinder to be finally wound on the core, as hereinafter more fully described.

In order to impart a rotary motion to the presser cylinder D from the cam shaft C, I provide a gear wheel C^2 adapted to be secured on the said shaft C and in mesh with a gear wheel D^2 fastened on the shaft D′ on which the presser cylinder D is secured. In order to change the speed of the cylinder D relative to the speed of the shaft C, I may disconnect the gear wheel C^2 from the shaft C to move it out of mesh with the gear wheel D^2, and then fasten a larger gear wheel C^3 on the shaft C and in mesh with a smaller gear wheel D^3 on the shaft D′. In either case the presser cylinder D will be rotated from the shaft C by the corresponding set of gear wheels C^2, D^2, or C^3, D^3.

The shaft D′ carrying the presser cylinder D is journaled in a frame D^4, mounted to swing and fulcrumed on the shaft C, so that a swinging motion, given to the frame D^4 in the manner hereinafter more fully described, causes the said presser cylinder D to swing toward or from the core E, without moving the corresponding gear wheels C^2, D^2, or C^3, D^3, out of mesh.

On the shaft D′ is secured a large gear wheel D^5, adapted to move in mesh with a corresponding gear wheel E^2 secured on the core E, the latter being mounted to rotate loosely on a longitudinally extending rod E′ secured in the main frame A. The gear wheel D^5 moves in mesh with the said gear wheel E^2, at the time the presser cylinder D swings toward the core E, so that the rotary motion imparted to the presser cylinder D is transmitted to the core E during the time the paper and wrapper are pulled between the core E

and cylinder D, as previously mentioned; and when the said cylinder D swings away from the core E, the gear wheel D^5 moves out of mesh with the gear wheel E^2, and the said core E stops rotating and remains stationary during the time the cylinder D is in an outermost position. During this time the paper and wrapper around the core E are pushed off from the latter, as hereinafter more fully described.

The wrapping paper G for forming the wrappers, unwinds from a roll of paper G′ supported in the lower part of the main frame A, the paper then passing upward at the front of the machine over a roller G^2 and over a roller G^3 journaled in the upper end of the feed table F, the paper then passing down the inclined top surface of the said table to and between feed rollers F′ and F^2, rotating together and journaled in suitable bearings in the feed table, in such a manner that their opposite surfaces are in a line with the top surface of the feed table F, as will be readily understood by reference to Fig. 5, the said feed roller F′ extending from underneath through a slot in the said table.

During the time the wrapping paper G passes over the upper part of the feed table F, the newspaper to be wrapped, is fed onto this part of the wrapping paper, it being understood that this may be done either by hand or by a suitable automatic feed mechanism. The newspaper on top of the wrapping paper passes between the feed rollers F′ and F^2 downward, and between the cylinder D and core E, being guided or turned upward, so as to wind around the said core by means of the curved guides, H, which partly encircle the core, as shown in Fig. 5. A gravity foot F^3 is pivoted on the lower end of the feed table F and adapted to swing so as to stand either at right angles to the feed table, as shown in Fig. 5, or to swing downward to be in alignment with the feed table. For this purpose the foot F^3 is provided on its under side with an arm F^4 (see Fig. 5) resting on the peripheral surface of a cam F^5 fulcrumed on the main frame A and provided with a tail F^6 adapted to be engaged by an arm D^6 projecting from the frame D^4 carrying the presser cylinder D, so that the swinging of the frame D^4 causes the arm D^6 to impart a swinging motion to the tail F^6 and its cam F^5, so as to permit the foot F^3 to swing downward in alignment with the feed table F, or to cause the said foot F^3 to swing upward into a right angular position to the feed table F, to form a stop or abutment for the downwardly fed wrapper and newspaper. Thus, when the swinging roller, D, is swung outward, as shown in Fig. 5, the cam F^5 is held in position to maintain the foot F^3, in its raised position, so that it arrests the sheet descending on the table, F. On the other hand, when the roller, D, has been swung inward into contact with the core, E, (Fig. 4,) the cam swings backward, and allows the foot, F^3, to fall into alignment with the table, F, so as to form virtually a continuation or elongation of the latter. It is to be understood, however, that the foot, F^3, is only used when newspapers and wrappers are fed by hand, and not when automatic feed-mechanism is employed. As the wrapper and newspaper pass between the cylinder D and the core E they are guided or turned upward so as to wind around the core E, by curved guides H partly encircling the core E, as plainly illustrated in Fig. 5.

The inner surface of each guide H is concentric to the outer surface of the core E, sufficient space being left between the said outer surface of the core and the inner edge of the guide to correspond with the thickness of the paper and wrapper fed bewteen the core and cylinder. Each guide H is held transversely adjustable, and for this purpose is provided on its under side with a guideway H′ fitted to slide in suitable bearings A′ formed on a bracket of the main frame A. A screw H^2, turning in the bearing A′, screws in a lug H^5 projecting downward from the guide H, so that by turning the said screw, the guide can be moved forward or backward in its bearing A′, so as to bring the guide in proper position relative to the core E.

In order to permit the cylinder D to move close to the core E, I form the cylinder with annular grooves D^7 in alignment with the guides H, so that the latter pass into the said grooves at the time the cylinder D moves close up to the core E, to press the wrapping paper and newspaper tightly onto the core to feed it forward into the space between the guides H and core E, so as to cause the papers to wind on the core E. At the time the wrapping paper, with the newspaper on top of it, has been passed between the feed rollers F′ and F^2 and the upper edge of the newspaper is a suitable distance below the said feed rollers, then the lower part of the wrapping paper is detached from the paper G to form the wrapper for this individual newspaper. In order to do this, a cutting knife I is provided, adapted to cut the wrapping paper a short distance above the upper edge of the newspaper, the said knife moving toward the feed table, to cut the wrapping paper, over a knife-block I′, as plainly shown in Fig. 5. The cutting knife I is held on a swinging frame I^2 secured on a shaft I^3 extending longitudinally and mounted to turn in suitable bearings in the sides of the main frame A. On one end of this shaft I^3 is secured an arm I^4 carrying a friction roller I^5 traveling in the groove of a cam I^6 secured on the cam shaft C, as plainly shown in Fig. 2, so that the rotary motion of the shaft C causes the cam I^6 to impart a swinging motion to the arm I^4, so as to rock the shaft I^3, and consequently, the frame I^2 carrying the cutting knife I, to move the latter at the proper time onto the wrapping paper to cut the wrapper from the paper G. On this swinging frame I^2 and below the cutting knife I, is journaled a pasting or gumming

roller J adapted to apply the gum or paste to the wrapper near the upper edge. This pasting or gumming roller J is adapted to travel over a paste table J′ made segmental, with the center at the shaft I^3, the said roller being adapted to travel over this table J′ onto a supply roller J^3 mounted to turn in a paste-box J^2 arranged at the forward end of the table J′. A scraper J^4 removes the surplus paste on the roller J^3, the latter rotating in the said box J^2 continually, its motion being derived from the main driving shaft B by providing the outer end of the shaft of the said roller with a pulley J^5 over which passes a belt J^6 also passing over a pulley J^7 fastened on the said main driving shaft B, as plainly shown in Figs. 2, 3 and 4. The cutting knife I cuts the paper at the time the paste roller J moves in contact with the upper edge of the paper a short distance above the upper edge of the newspaper. Thus, when the paper and wrapper pass between the presser cylinder D and core E to be wound on the latter, then the extra gummed length of the wrapper passes over the ungummed end, thus uniting the two ends of the wrapper with the newspaper contained in the wrapper. It is expressly understood that the paper G with the newspaper is fed by the rollers F′ and F^2 to the cylinder D and the core E, and after that, the wrapper is cut off by the cutting mechanism I, and is gummed by the roller J, and then the newspaper and wrapper are fed forward by the presser cylinder D and core E rotating in unison.

The feed rollers F′ and F^2 are geared together, and for this purpose the shaft F^7 of the lower feed roller F′ carries a gear wheel F^8, in mesh with a gear wheel F^9 secured on the shaft of the top roller F^2. See Fig. 6. The shaft F^7 of the roller F′ receives an intermittent rotary motion from the gear wheel D^2 of the shaft D′, and for this purpose I provide the said shaft F^7 with a pinion K in mesh with an intermediate gear wheel K′ adapted to be engaged by the gear wheel D^2 at the time the presser cylinder D swings toward the core E. This intermediate gear wheel K′ is journaled on an arm K^2 fulcrumed loosely on the shaft F^7 and pressed on, at its outer end, by a spring K^3, as plainly shown in Figs. 3 and 4. The spring K^3 is held on the feed table F and serves to move the forward end of the said arm K^2 downward to carry the gear wheel K′ in such a position to be readily engaged by the advancing or forwardly swinging gear wheel D^2.

In order to impart the necessary swinging motion to the presser cylinder D, as previously mentioned, I provide two friction rollers L journaled on arms L′ fulcrumed at L^2 on opposite sides of the main frame A, the said arms being provided at their upper ends with the cam surfaces L^3 adapted to be engaged by cams L^4 secured on the cam shaft C, so that on each revolution of the shaft C, the said cams L^4 press on the cam surfaces L^3 to impart a swinging motion to the arms L′, whereby the friction rollers L press on the lower ends of the frame D^4 to cause the latter to swing to move the cylinder D outward away from the core E.

The lower end of the frame D^4 is connected by links D^8 with a flat spring D^9 secured at its middle on a post A^2 forming part of the main frame A. The spring D^9 serves to press the lower end of the frame D^4 by the links D^8, to hold the presser cylinder D normally at its innermost position close to the core E, so that when the presser cylinder D is swung outward by the action of the cams L^4 on the arms L′, the spring D^9 is extended, and as soon as the cams L^4 leave the cam surfaces L^3 of the arms L′, then the spring D^9 causes a return movement of the frame D^4 to move the presser cylinder D toward the core E, as previously described. When the presser cylinder D is moving away from the core E and the latter comes to a standstill after the newspaper and wrapper are wound around the said core, as previously described, and the ends of the wrapper are gummed together, then a pushing mechanism N takes hold of one end of the said wrapped paper to push it off the core E to move the said paper between two rollers O and O′, so as to flatten the cylindrical form of the wrapped paper. This pushing device N is constructed as follows: A ring N′ surrounds the core E and is held on two longitudinally extending rods N^2 attached to a crosshead N^3 fitted to slide loosely on the fixed shaft E′ carrying the core E. The crosshead N^3 is provided with the trunnions N^4 engaged by the slotted end P′ of a lever P, fulcrumed at P^2 on a bracket A^3 forming part of the main frame A. The lower end of this lever P is pivotally connected by a link P^3 with the lower end of a lever P^4, fulcrumed at P^5 on the said bracket A^3, the upper end of the said lever P^4 carrying a pin P^6 engaged by a cam groove on a cam P^7 secured on the cam shaft C. The cam P^7 holds the ring N′ by the intermediate mechanism described, on one end of the core E during the time the wrapper and paper is wound on the core E, and when the latter is at a standstill, as previously described, then the said cam P^7 on the further rotation of the cam shaft C causes the lever P^4 to swing so as to impart a similar movement to the lever P which by its connection with the cross head N^3 and the rods N^2 and ring N′ causes the latter to slide forward on the core E to push the wrapped newspaper longitudinally of the core and between the flattening rollers O and O′ to press the said paper and its wrapper into a flat shape. As soon as the wrapped paper is pushed off the core E the cam P^7 causes a return movement of the ring N′ so that the latter stands at one end of the core during the next operation of coiling the paper and wrapper around the core E.

The rollers O and O′ operate in conjunction with each other and for this purpose their

shafts O^2 and O^3 respectively are provided with gear wheels O^4 and O^5 respectively, in mesh with each other, as plainly shown in Fig. 1. The outer end of the shaft O^3 carries a bevel pinion O^6 in mesh with a bevel gear wheel O^7 secured on the main driving shaft B so that the rotary motion of the latter transmits a like motion to the roller O′ and the latter, by the gear wheels O^5 and O^4 rotates the roller O. The lower roller O′ has its shaft O^3 journaled in stationary bearings, while the bearings for the upper roller O are fitted to slide vertically in suitable guideways A^4 forming part of the main frame A. Springs O^8 press on the said bearings to hold the roller O firmly in contact with the paper passed between the rollers O and O′ so as to properly flatten the same.

The operation is as follows: When the main driving shaft B is rotated then an intermittent rotary motion is given to the core E, and a continuous rotary motion is given to the presser cylinder D. An intermittent motion is also given to the feed rollers F′ and F^2 which causes the wrapping paper G to move downward over the feed table F, and at this time a newspaper or other publication to be wrapped is fed onto the lower end of this wrapping paper on the feed table F, so that both the wrapping paper and the newspaper pass between the cylinder D and the core E which now rotate together so as to pull the two papers forward and to cause the papers to coil around the core E owing to the action of the guides H encircling part of the core E. At the time the two papers are passed between the cylinder D and core E and the upper end of the newspaper has passed the lower end of the feed table F, then the cutting mechanism I cuts off the wrapper from the paper G, and at the same time, the gumming roller J applies paste or gum onto the free end of the wrapper so that on the further drawing in of the newspaper and wrapper the gummed end of the wrapper will overlap the other end, thus fastening the wrapper around the paper. As soon as this has been done, the presser cylinder D is caused to swing outward by the action of the cams L^4 on the arms L′, as previously described, whereby the gear wheels D^5 and E^2 are thrown out of mesh and likewise the gearing connected with the rollers F′ and F^2, so that the core E, as well as the said rollers F′, F^2 remain at a standstill for the time being. At this time the pushing device N is actuated from the cam P^7 so that the ring N′ slides forward on the core E to push the wrapped newspaper off the core E and between the rollers O and O′, so that the wrapped paper is flattened, it being understood that the said rollers O and O′ completely draw the wrapped paper between them, as the rollers have a continuous rotary motion derived from the main driving shaft B. As soon as the pushing device N has returned to its normal position the pressure cylinder D swings inward toward the core E, so that the latter is again rotated and a like motion is given to the rollers F′ and F^2 to again feed the paper G downward over the feed table F to form a new wrapper below the said rollers F′ and F^2 to receive the newspaper to be wrapped. The above described operation is then repeated. Pasters bearing the address may be attached to the paper G previous to forming the wrappers, or the said pasters may be attached to the wrappers after the finished product leaves the rollers O and O′.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. In a paper wrapping machine, the combination with a cylindrical rotatable core, of a swinging presser cylinder, gears connected with the said core and cylinder which are adapted to mesh when the latter are brought together, and means for imparting constant rotation to the cylinder gears and thereby intermittent rotation to the core gear, as shown and described.

2. In a paper wrapping machine, the combination with the rotatable core and inclined feed-table, of a foot hinged at the lower edge of the latter, a pivoted cam adapted to act on said foot and having a tail, or arm, as specified, and the rotatable pressing roller having an attachment for acting on said cam, whereby, when the roller is swung outward, the foot is raised to serve as a stop, and when the roller is swung inward it is lowered into alignment with the table, as shown and described.

3. In a paper wrapping machine, the combination with an intermittently revolving core, a presser cylinder mounted to rotate in conjunction with the said core, and adapted to swing toward and from the core, of a feed table adapted to guide the paper and wrapper between the said core and cylinder, and a foot pivoted on the lower end of the said feed table and adapted to be swung at right angles to the table or in alignment with the same, as set forth.

4. In a paper wrapping machine, the combination with an intermittently revolving core, a presser cylinder mounted to rotate in conjunction with the said core, and adapted to swing toward and from the core, of a feed table adapted to guide the paper and wrapper between the said core and cylinder, a cutting mechanism, a paste supply roller, and a swinging frame carrying the said cutting mechanism and supply roller to move the latter in contact with the wrapping paper, substantially as shown and described.

5. A paper wrapping machine provided with an intermittently revolving core, guides partly encircling the said core and adapted to wind the paper around the said core, and a rotatable presser cylinder having annular grooves adapted to be engaged by the said guides at the time the presser cylinder moves toward the said core, substantially as shown and described.

6. In a paper wrapping machine, the combination with the rotatable core and presser cylinder, of a feed-table, which is inclined downward toward the same, and a foot, pivoted at the lower end of said table and adapted to be placed at a right angle or in alignment therewith, as shown and described.

7. In a paper wrapping machine, the combination with an intermittently revolving core, of the pushing device hereinbefore described for pushing the paper off the said core at the time the latter is at a standstill, the said pushing device comprising a ring fitted loosely on the said core, rods carrying the said ring and arranged exterior to the core and attached to a cross head, the lever mechanism connected with the said cross head, and a revolving cam for actuating the said lever mechanism to impart a sliding motion to the said ring at the time the said core is at a standstill, substantially as shown and described.

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