

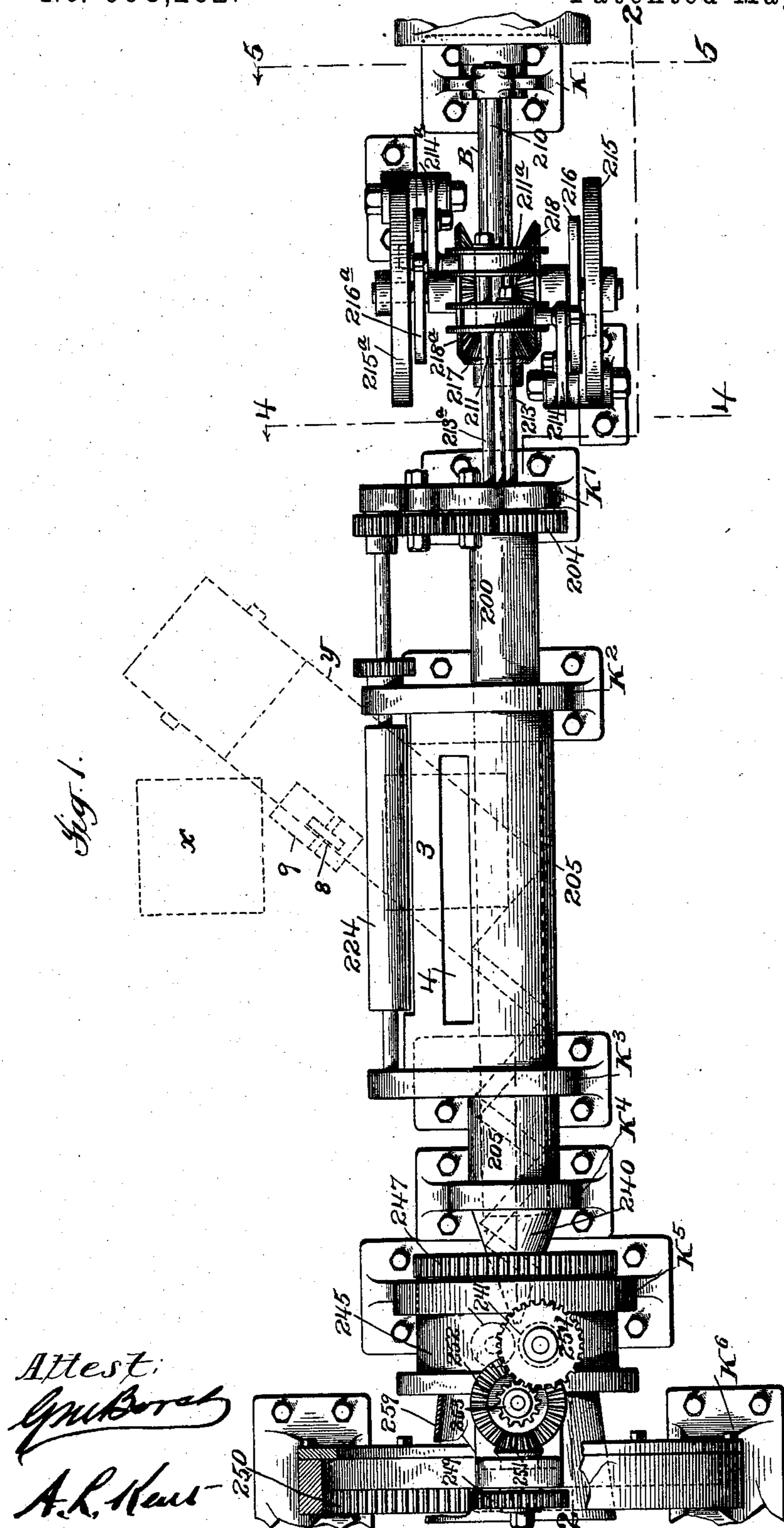
(No Model.)

5 Sheets—Sheet 1.

L. C. CROWELL.  
WRAPPING MACHINE.

No. 603,262.

Patented May 3, 1898.



Attest:  
*G. M. Borch*  
*A. L. Hunt*

Inventor:  
Luther C. Crowell  
By  
*Philip Phelps*  
*Tanger* Attys

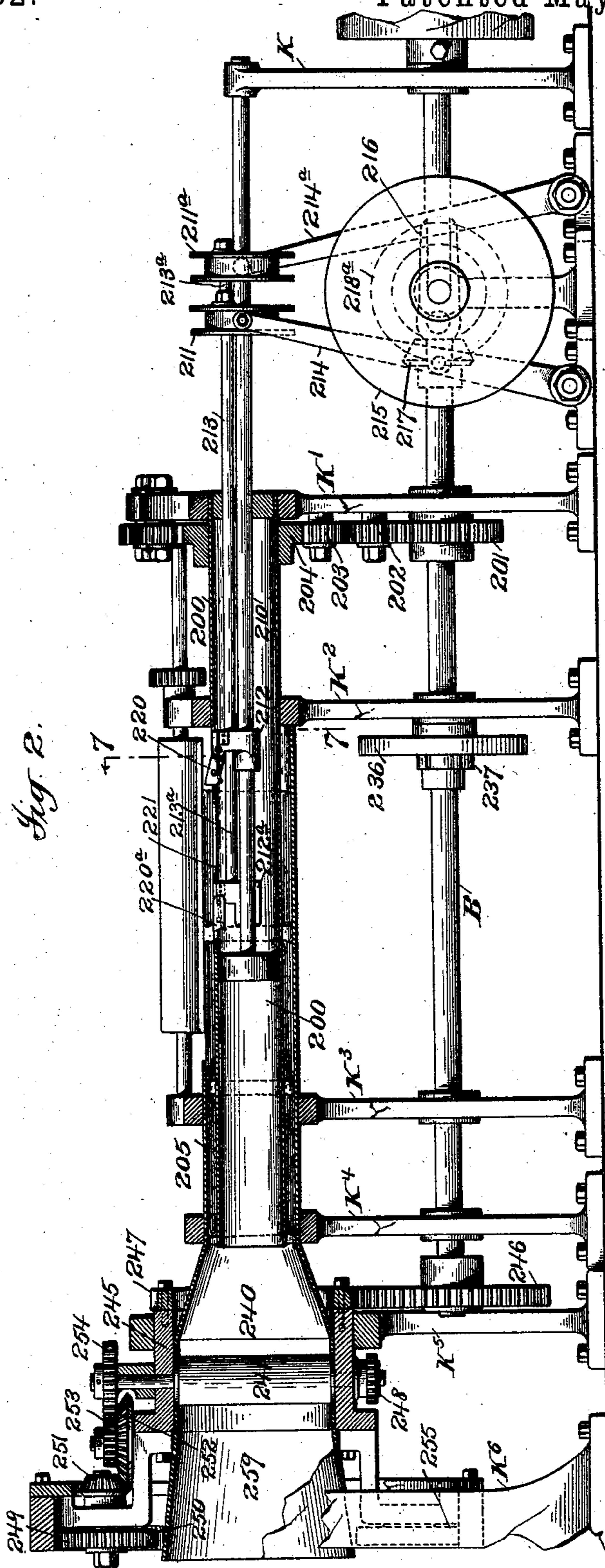
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5 Sheets—Sheet 2.

L. C. CROWELL.  
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No. 603,262.

Patented May 3, 1898.



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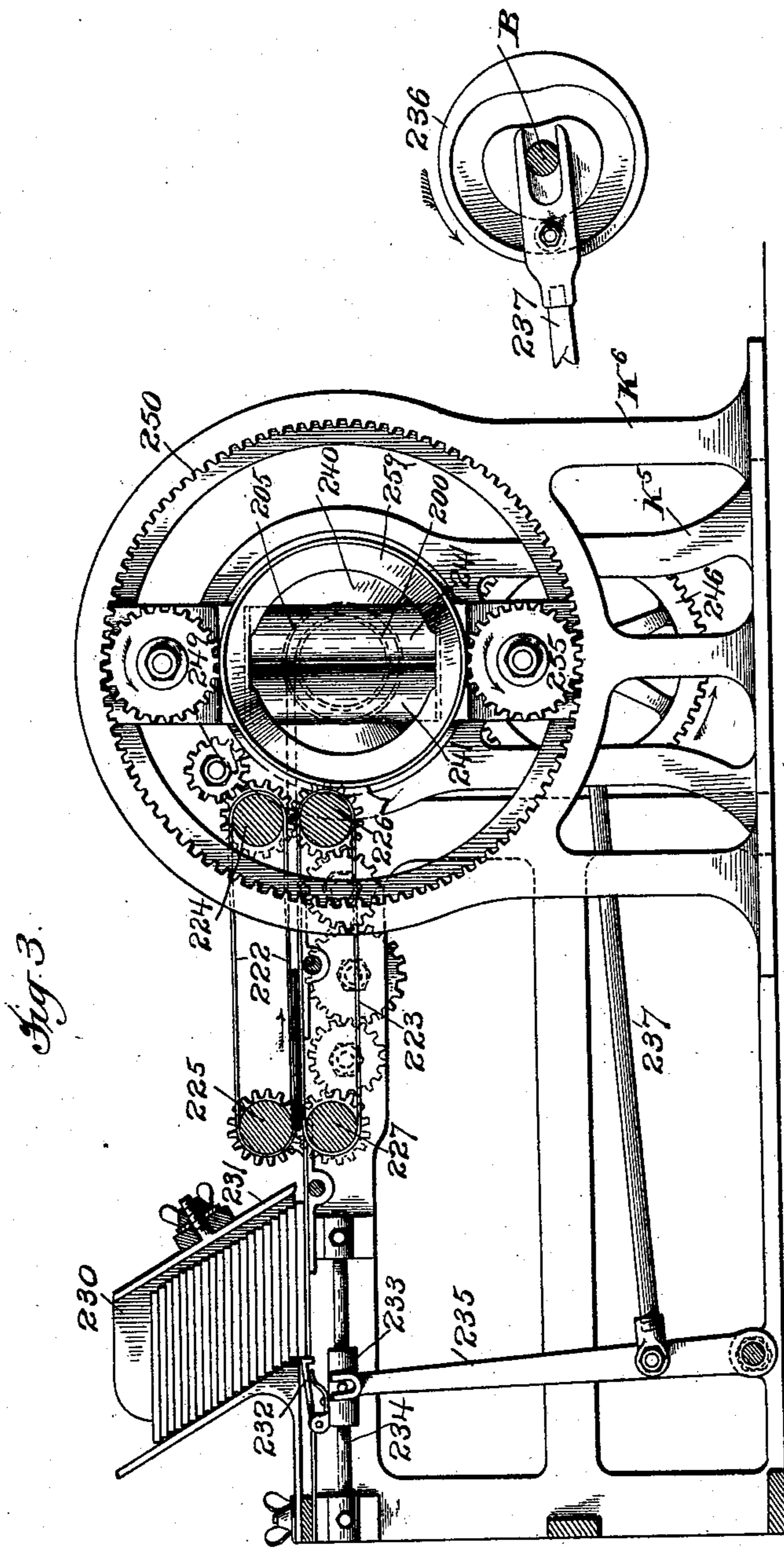
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5 Sheets—Sheet 3.

L. C. CROWELL.  
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No. 603,262.

Patented May 3, 1898.



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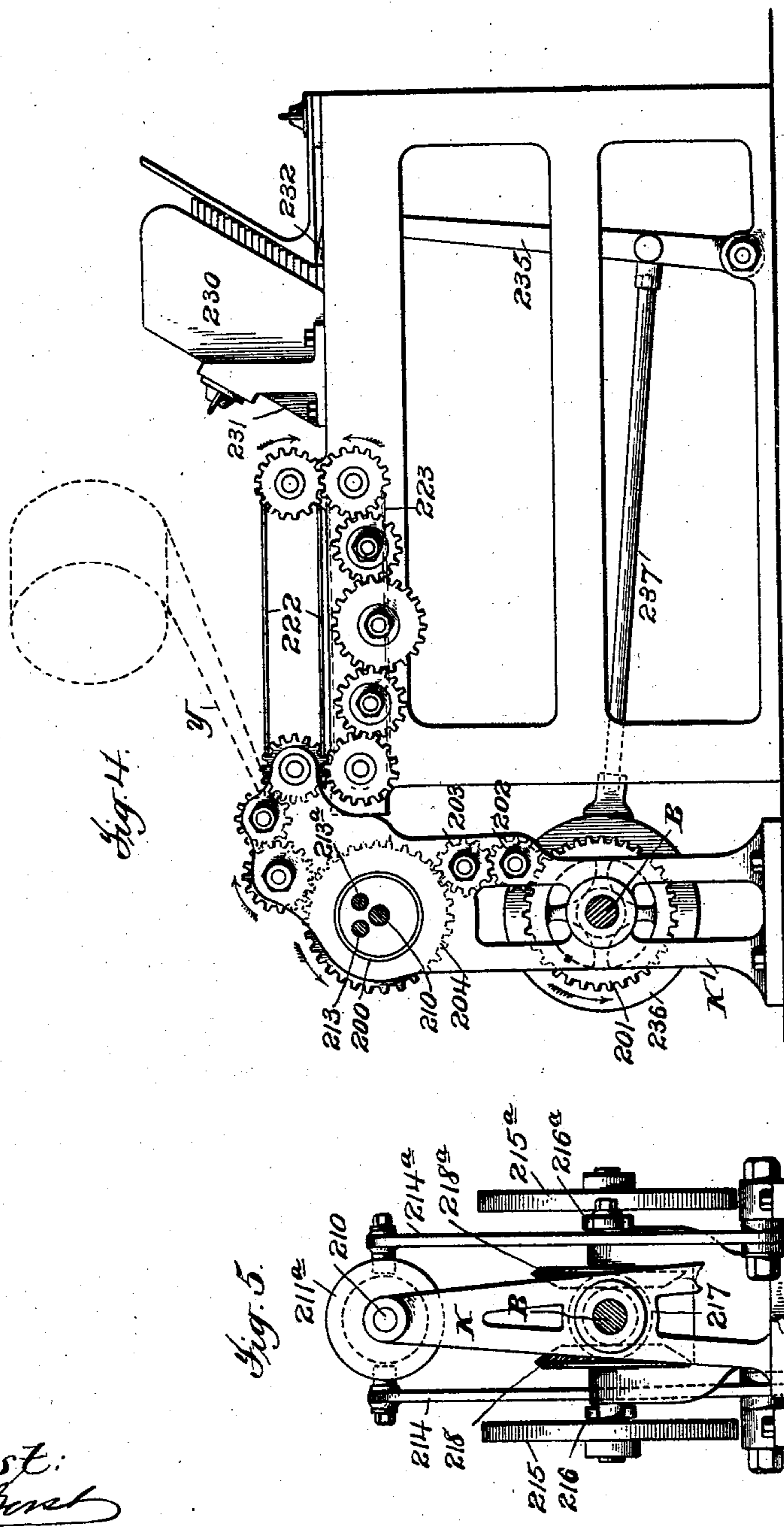
(No Model.)

5 Sheets—Sheet 4.

L. C. CROWELL.  
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No. 603,262.

Patented May 3, 1898.



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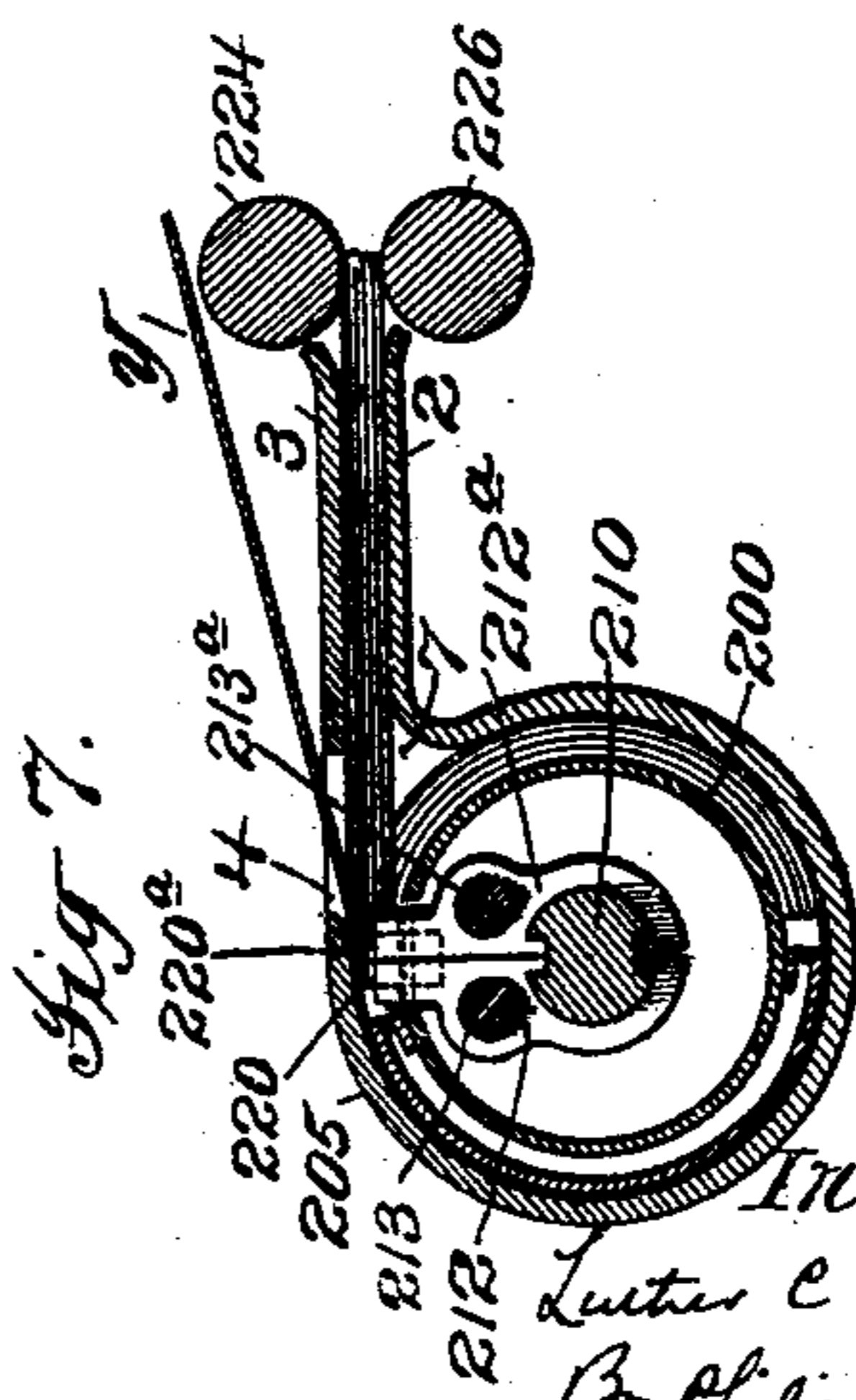
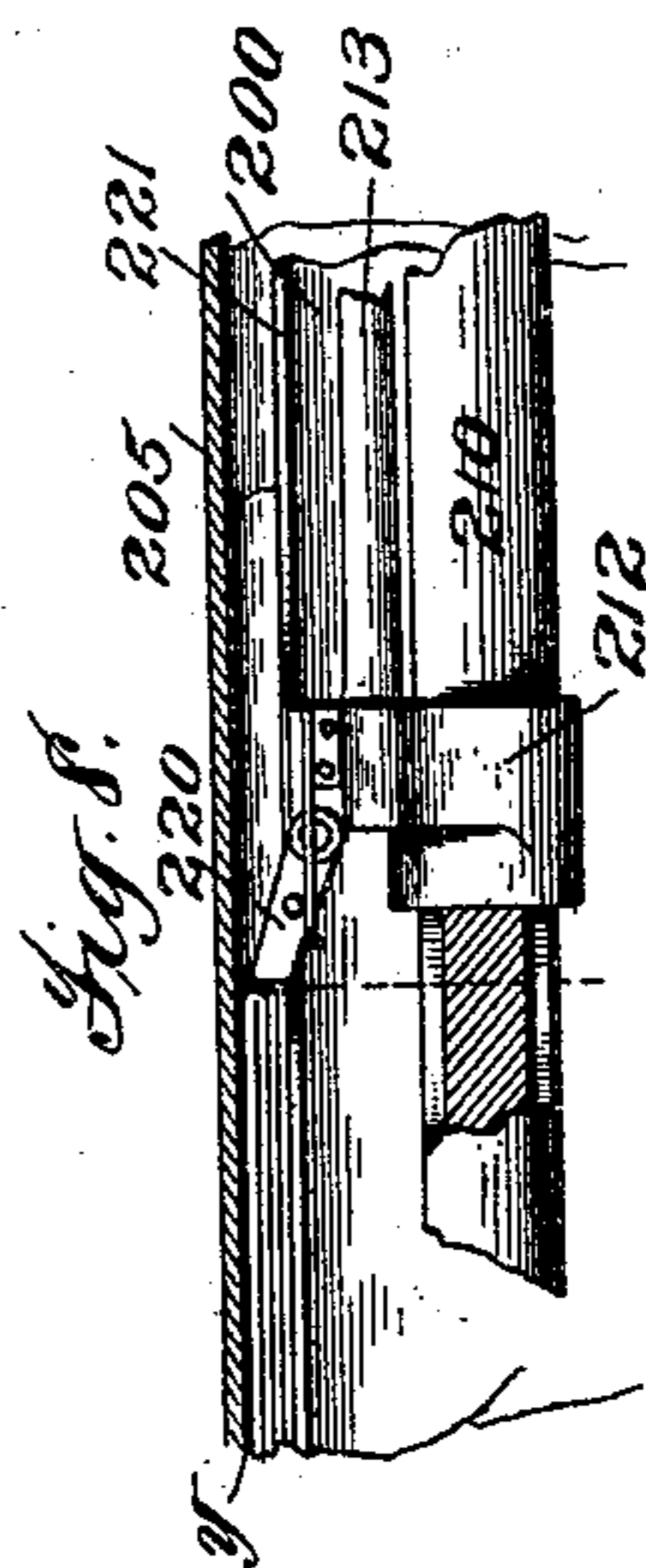
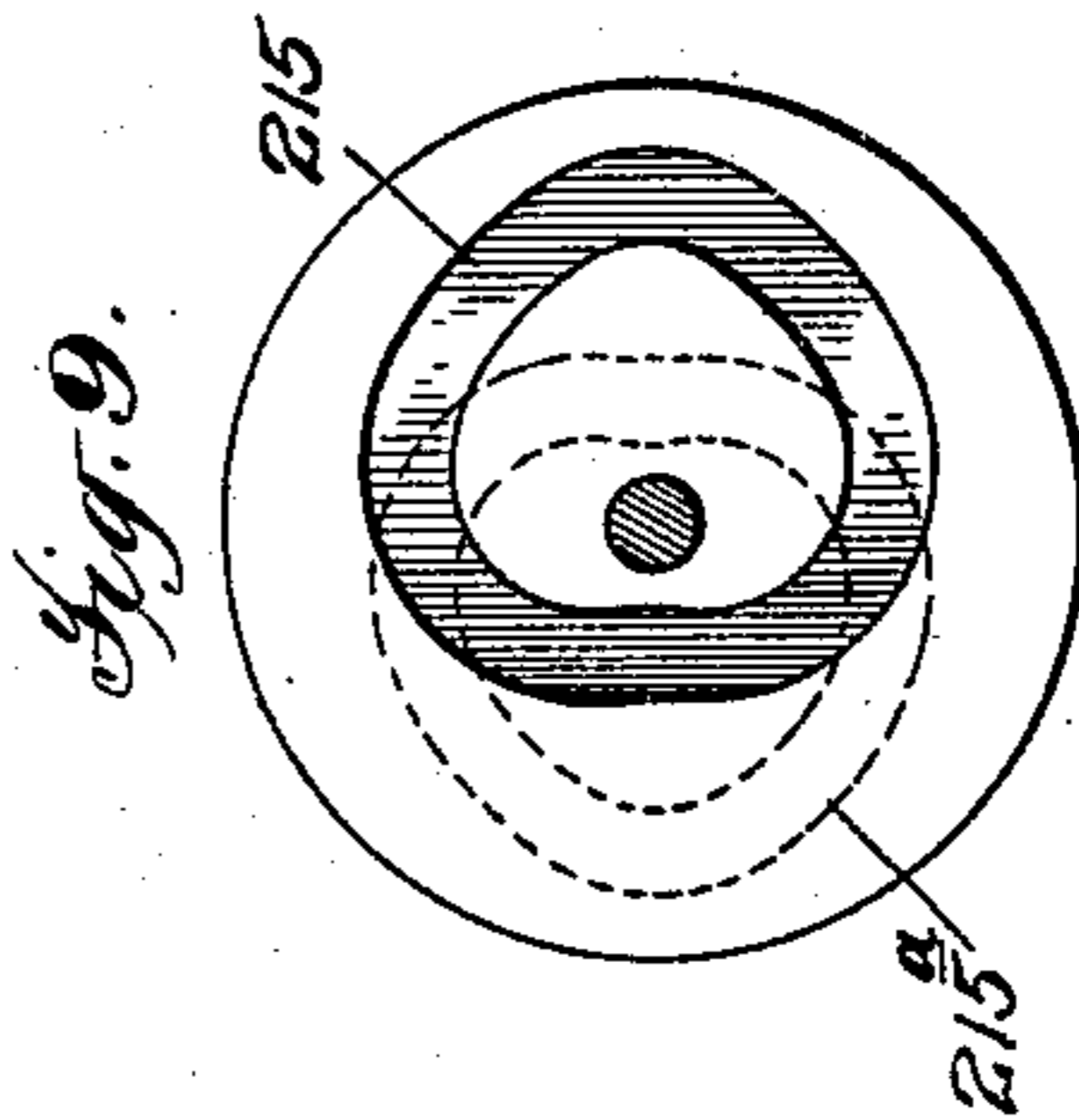
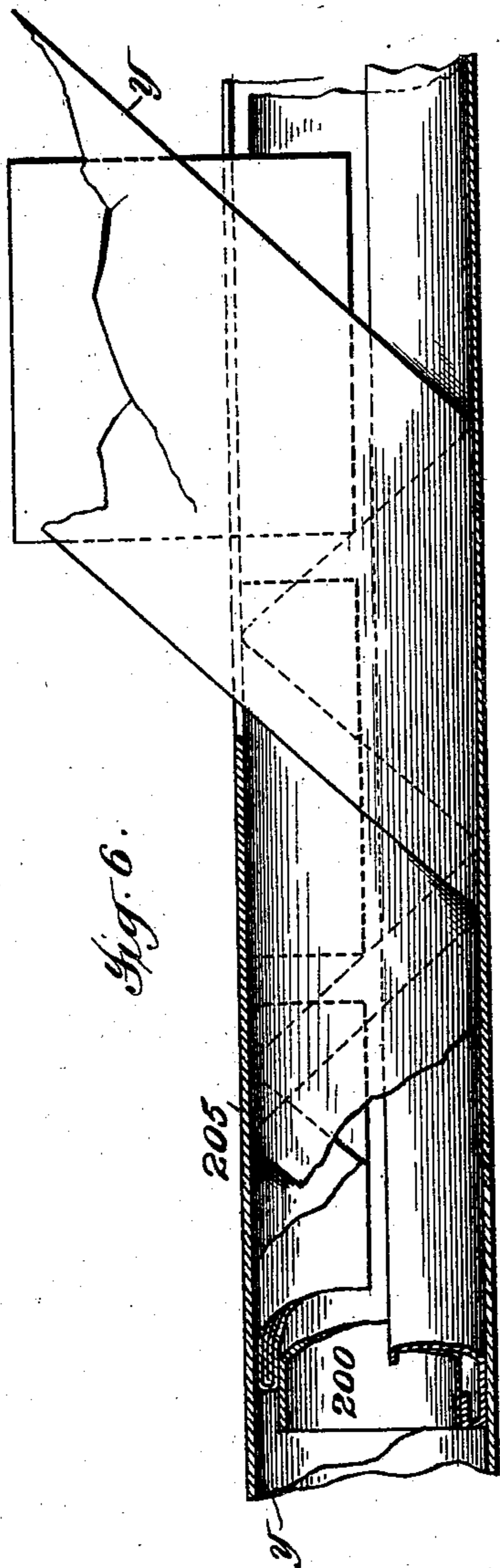
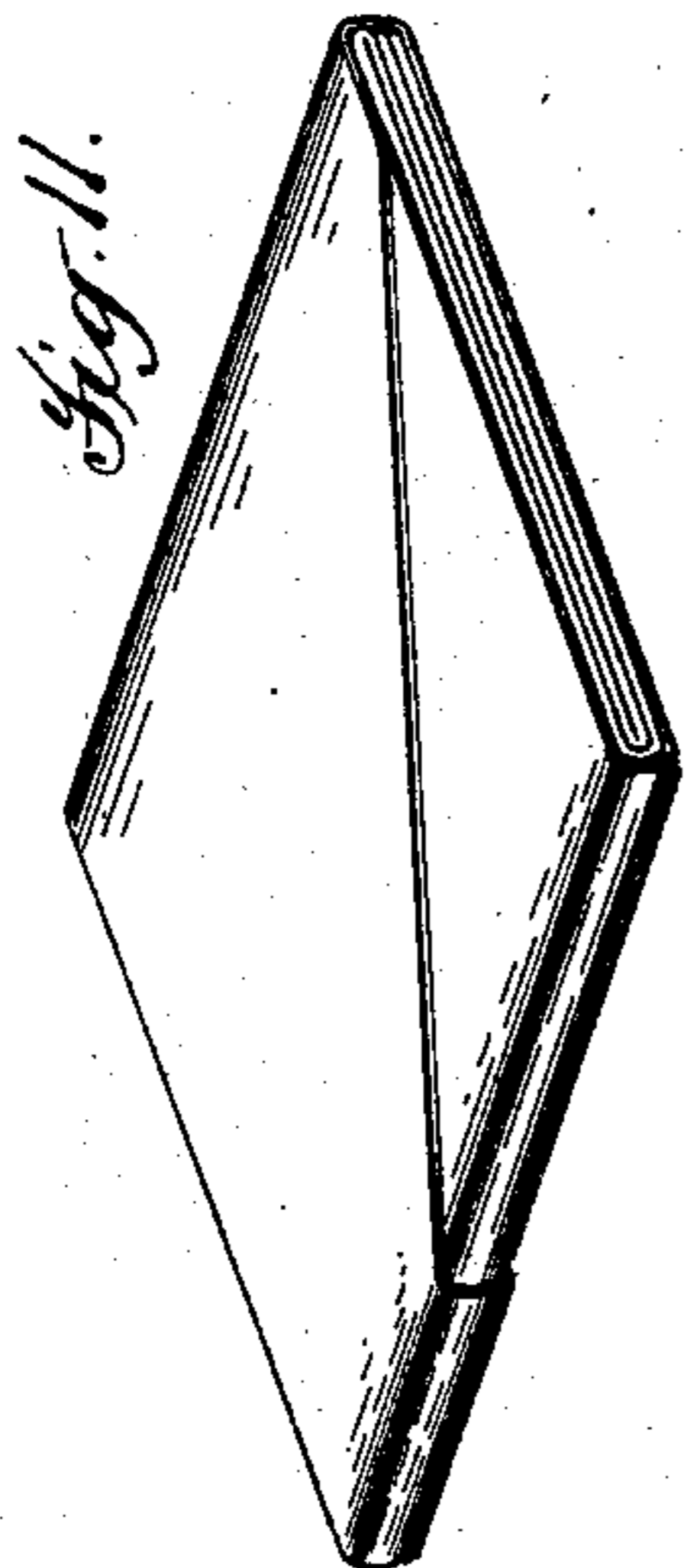
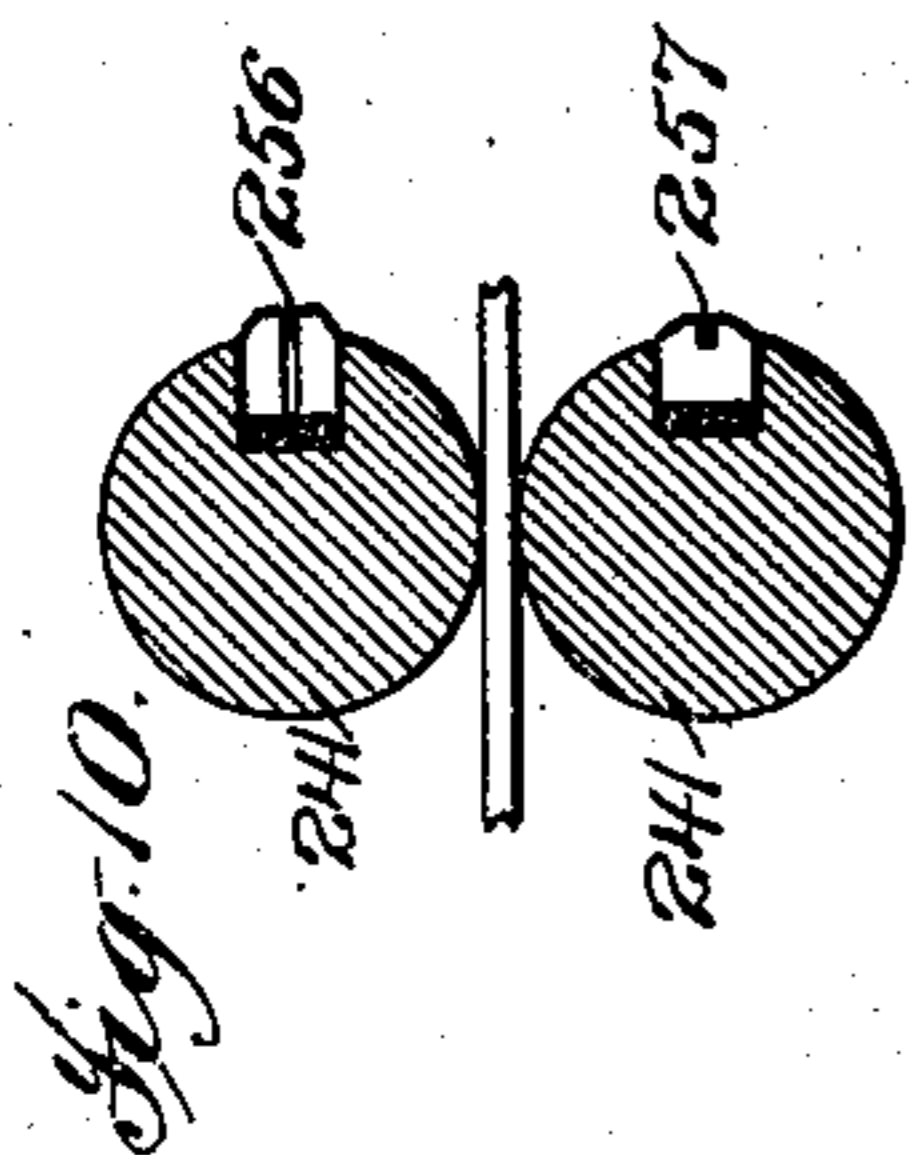
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5 Sheets—Sheet 5.

L. C. CROWELL.  
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No. 603,262.

Patented May 3, 1898.



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# UNITED STATES PATENT OFFICE.

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

## WRAPPING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 603,262, dated May 3, 1898.

Application filed August 4, 1897. Serial No. 647,039. (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 Wrapping-Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to machines of that class employed in wrapping newspapers and other publications or similar articles and more particularly to machines whereby a succession of independent papers or other articles to be wrapped are advanced and enveloped in wrappers wound spirally about the successive papers as they are longitudinally advanced, the edges of successive layers or windings of wrapper overlapping and being secured by a line of paste applied by suitable pasting devices to one edge of the wrapper. A continuous wrapper-web is preferably employed to form a continuous spirally-wound wrapper-tube about the papers, which is afterward severed at or near the junction between successive papers and the wrapped papers delivered separately from the machine.

In a machine constructed to embody the invention in the preferred form the papers are advanced in succession longitudinally on a core by a pusher or pushers moving longitudinally of the core, and a continuous wrapper-web is wound spirally about the papers as they are advanced along the core to form a continuous spirally-wound wrapper-tube inclosing the core and papers. The core is preferably a rotating core, so that the papers as they are advanced longitudinally of the core will also be rotated, so that the wrapper-web, being guided to the core at an angle, will be drawn forward by engagement with the papers on the core, and thereby wound spirally about the core and papers. I preferably employ a pusher rotating with the core and reciprocated longitudinally of the core to advance a paper by engagement with the rear end thereof and then to return to engage and advance another paper and preferably spring-pressed and mounted so that on its return movement it may be depressed by engage-

ment with the paper which is being fed onto the core, so as not to project outside of the surface of the core. I preferably employ two such pushers, reciprocating alternately, one returning as the other advances, so that they will advance alternate papers.

The core is preferably cylindrical and of such a size that its circumference is about equal to twice the width of the papers to be wrapped, "width" being used as meaning the dimension of the paper circumferentially of the core. The wrapper-tube formed about the paper and core, the paper being bent about the core, will thus be of such size that the wrapped papers may be flattened out in the wrapper-tube after leaving the core, and the wrapper when the papers are thus flattened will fit snugly about the papers.

The papers are fed onto the core by suitable mechanism, preferably transversely to the axis of the core and preferably in time, so that successive papers shall take the same relative position circumferentially of the core, the papers being thus advanced on the core in line, and the wrapper-tube and inclosed papers after leaving the core are preferably advanced through suitable guides rotating with the core, whereby the papers are flattened and the flattened papers and wrapper-tube then preferably guided between feeding and cutting rolls, also rotating with the core, whereby the flattened wrapper-tube is severed between the papers, successive papers being thus delivered completely wrapped and separated one from another. Means rotating with the paper-rotating devices of a wrapping mechanism for flattening a wrapper and inclosed paper as they are advanced from the paper-rotating devices form a feature of the invention and may be used with other forms of wrapping mechanism.

A full understanding of the invention can best be given by a detailed description of a preferred construction embodying the various features of the invention, and such a description will now be given in connection with the accompanying drawings, showing such a preferred construction, and the features forming the invention will then be specifically pointed out in the claims.

In said drawings, Figure 1 is a plan view of such a machine, the paper-feeding and wrapper supporting and guiding devices being, however, merely indicated by dotted lines.

Fig. 2 is a longitudinal section on line 2 of Fig. 1. Fig. 3 is an end view from the left in Fig. 1, but showing the paper-feeding devices. Fig. 4 is a view taken on line 4 of Fig. 1, also showing the paper-feeding devices.

Fig. 5 is a view taken on line 5 of Fig. 1. Fig. 6 is a detail showing the position of the papers and wrapper-tube as they are associated and advanced about the core and inside the casing surrounding the core. Fig. 7 is a section taken on line 7 of Fig. 2. Fig. 8 is a detail of the means for advancing the papers lengthwise of the core. Fig. 9 is a detail of the cams for operating the pushers for advancing the papers. Fig. 10 is a detail showing a cross-section of the cutting and feeding rolls for severing the wrapper-tube between successive papers. Fig. 11 shows one of the completely wrapped and severed papers as delivered from the machine.

Referring to the drawings, 200 is the core, about which the papers are bent and longitudinally advanced for receiving the wrapper-web, this core being in the form of a hollow cylinder mounted at one end to rotate in standards  $K'$   $K^2$  and rotated by a gear 201 on the main driving-shaft B through intermediates 202 203, the intermediate 203 meshing with a gear 204, fast on the core. Beyond the standard  $K^2$  the core is surrounded by a cylindrical shell 205, supported by standards  $K^3$   $K^4$ .

Extending from the end of the core and centrally of the core beyond the standard  $K'$  is a rod or spindle 210, having its outer end journaled in a standard K, and which rod 210 carries two flanged spools 211 211<sup>a</sup>, rotating therewith, but free to slide independently thereon. Inside the core are two sliding blocks 212 212<sup>a</sup>, mounted, preferably, on ways or guides formed by an inwardly-extending portion of the rod 210, this portion of the rod being formed with a groove, as shown in Fig. 7, to support the sliding blocks 212 212<sup>a</sup>, one on either side, as shown. The sliding blocks 212 212<sup>a</sup> are connected to the sliding spools 211 211<sup>a</sup> by rods 213 and 213<sup>a</sup>, respectively. The spools 211 211<sup>a</sup> are reciprocated on the rod 210 to move the blocks 212 212<sup>a</sup> alternately backward and forward in the core by means of rocking arms 214 and 214<sup>a</sup>, carrying pins extending between the flanges of the respective spools and rocked by cam-grooves carried by cam-disks 215 215<sup>a</sup>, respectively, through pitmen 216 216<sup>a</sup>, pivoted to said rocking arms and having forked guiding ends extending over the studs carrying said cam-disks and bowls extending into said cam-grooves. The cam-disks 215 215<sup>a</sup> are rotated from a beveled gear 217 on the driving-shaft B, said gear taking into beveled gears 218 and 218<sup>a</sup> on the studs carrying said cam-disks, respectively. The cam-grooves in said cam-disks

are formed so that the movements of the sliding blocks 212 212<sup>a</sup> will alternate, one returning while the other advances.

The sliding blocks 212 212<sup>a</sup> carry pivoted and spring-pressed pushing-fingers 220 220<sup>a</sup> for the purpose of engaging the papers and advancing them longitudinally of the core, these fingers when in their operative position extending outside the core through a slot 221 in the core and being formed so as to be readily pressed inward even with or below the surface of the core.

The casing 205 is cut away to form an opening 7, through which the wrappers and the papers to be wrapped are advanced to the core. The wrappers  $y$ , which in the machine shown are wound about the papers as a continuous or unbroken web to form a continuous wrapper-tube about the papers on the core, are guided through the opening 7 to the space between the core and the casing at an angle from a web-roll supported in any suitable manner, so that as the core rotates the wrapper will be wound spirally about the core. As the wrapper-web advances to the core it receives a line of paste at one edge from a paste-roll 8, rotating in a fountain 9. The papers  $x$  are advanced successively to the core by suitable means, preferably transversely to the axis of the core, and their forward edges entered between the core and the wrapper-web, as shown in Fig. 7. The papers are conveniently advanced to the core by feeding-tapes 222 223 turning on rolls 224 225 and 226 227, respectively, said rolls being mounted with their axes parallel with the axis of the core 200, so that the papers will be advanced in a direction at right angles to the axis of the core. Then by the rotation of the core the papers will be bent about the core inside the casing and inside the wrapper.

The feeding-rolls 224 226 are positioned so that the back edge of the paper will leave the feeding-tapes directly after the front edge is gripped between the wrapper and the core. Guides 2 and 3 are preferably provided to guide the papers between the tapes 222 223 and the opening 7 in the casing, the guide 3 having an opening 4 for the wrapper. The front edge of the paper having been thus entered between the wrapper and the core and the rear edge having advanced beyond the rolls 222 223, the rear end of the paper will be engaged by one of the fingers 220 220<sup>a</sup> and advanced longitudinally of the core, the rotation of the core continuing as the paper is thus advanced longitudinally about it. The pushers 220 220<sup>a</sup> advance the papers longitudinally of the core at such speed that as the core completes a rotation from the position at which a paper has been fed to the core that paper will have been advanced so as to carry its rear end beyond the line of feed of the papers to the core, so as to permit of the succeeding paper being fed onto the core. Then as the core begins a second rotation the succeeding paper will be fed onto the core and its rear end en-

gaged by the other of the pushers 220 220<sup>a</sup>, which then advances it longitudinally of the core, as in the case of the preceding paper, the pushers thus acting each to advance alternate papers. The papers being thus advanced longitudinally of the core at the same time that they rotate with the core will be caused to follow a spiral path about the axis of the core, and the wrapper-web will by engagement with the papers be drawn in and wound spirally about the papers and the core to form a continuous spirally-wound wrapper-tube inclosing the papers and the core, the edges of the wrapper overlapping and being secured by the paste at one edge of the wrapper.

Any suitable means may be provided for advancing the papers successively to the feeding-tapes 222 223. I preferably provide for this purpose a holder 230 for receiving a pile of papers and having its front side 231 raised so as to permit the bottom paper to be advanced from the pile to the feeding-tapes. The bottom papers are thus advanced successively by means of a pusher finger or fingers 232, carried by a block 233, sliding on guiding-rods 234 and reciprocated by a rocking arm 235, which is rocked from a cam-groove in a cam-disk 236 on the driving-shaft B through a pitman 237, having a forked guiding end extending over the shaft and carrying a bowl extending into the cam-groove.

The core preferably carries on the portion over which the papers do not extend a plate or block 238, extending concentrically part way about the core and of about the thickness of the papers, so as to support the wrapper-web on the part of the core over which the papers do not extend, so that the wrapper-web will be drawn onto the core at a substantially uniform speed.

As the wrapper-tube and inclosed papers advance beyond the end of the core and the casing they pass between rotating guides 240, by which they are flattened and guided between a pair of feeding and pressing rolls 241. The rolls 241 are mounted in a rotary frame 245, which also carries the guides 240 and which is mounted in standards K<sup>5</sup> K<sup>6</sup> and rotated in time with the core from a gear 246 on the main driving-shaft B, which meshes with a gear 247, carried by said frame. The rolls carry intermeshing gears 248 and are driven by means of a gear 249, journaled in said frame and moving in engagement with a circular rack 250, formed on or carried by the standard K<sup>6</sup>, the stud carrying the gear 249 carrying also a beveled gear 251, meshing with a beveled gear 252, fast to which is a spur-gear 253, which meshes with a gear 254 on the shaft of one of the rolls 241. The frame 245 also carries a gear 255, similar to the gear 249 and positioned diametrically opposite to said gear 249, so that these two gears form a bearing for one end of the frame 245 in the standard K<sup>6</sup>.

For the purpose of severing the wrapper-tube between the successive papers the feed-

ing-rolls 241 are preferably also cutting-rolls, one of said rolls being provided, as shown in Fig. 10, with a cutting-blade 256, and the other of said rolls being provided with a contacting spring-seated slotted bar 257, as usual. The successive papers are thus delivered from the rolls 241 completely wrapped and flattened and separated one from another. A flaring delivery-mouth 259 is preferably carried by the rotary frame 245 to receive the wrapped papers from the rolls 241 and to deliver them to a suitable receptacle or as may be desired.

The operation of the machine as a whole will be clearly understood from the foregoing description and need not be further explained.

It will be understood that I am not to be limited to the construction shown in the drawings as embodying the various features of the invention in the preferred form and to which the foregoing description has been mainly confined, but that the invention includes such changes and modifications in the construction shown as are within the claims.

The term "paper" is used in the claims to include all articles for wrapping to which the invention may be found applicable.

What I claim is—

1. The combination of a core, a reciprocating member for advancing a paper longitudinally on the core, and means for winding a wrapper about the core and the paper on the core to form a spirally-wound wrapper-tube inclosing the core and the paper thereon, substantially as described.

2. The combination of a rotating core, a reciprocating member rotating with the core for advancing a paper longitudinally on the core, and means for guiding a wrapper to the core at an angle to form a spirally-wound wrapper-tube about the core and the paper thereon, substantially as described.

3. The combination of a rotating core, means for feeding papers successively to the core transversely to the axis of the core, a reciprocating member rotating with the core for advancing the papers longitudinally on the core, and means for guiding a succession of wrappers to the core at an angle to spirally wind the wrappers about the core and the papers thereon, substantially as described.

4. The combination of a core, a pusher moving longitudinally of the core to advance a paper on the core, and means for winding a wrapper about the core and the paper to form a spirally-wound wrapper-tube about the core and the paper thereon, substantially as described.

5. The combination of a rotating core, a pusher rotating with the core and moving longitudinally thereof to advance a paper on the core, and means for guiding a wrapper to the core to form a spirally-wound wrapper-tube about the core and the paper thereon, substantially as described.

6. The combination of a rotating core, means for feeding papers successively to the

core, a pusher rotating with the core and moving longitudinally thereof to advance the papers on the core, means for guiding a continuous wrapper-web to the core at an angle to form a continuous spirally-wound wrapper-tube about the core and the papers thereon, and means for severing the wrapper-tube at or near the junction between successive papers, substantially as described.

7. The combination of a rotating core, means for feeding papers successively to the core transversely to the axis of the core, a reciprocating pusher rotating with the core and engaging the successive papers to advance them longitudinally on the core, means for guiding a succession of wrappers to the core to spirally wind the wrappers about the core and the papers thereon, substantially as described.

8. The combination of a rotating core, means for feeding papers successively to the core transversely to the axis of the core, a reciprocating pusher rotating with the core and engaging successive papers to advance them longitudinally on the core, means for guiding a continuous wrapper-web to the core at an angle to form a continuous spirally-wound wrapper-tube about the core and the papers thereon, feeding devices engaging the wrapper-tube beyond the wrapping-point, and means for severing the wrapper-tube at or near the junction between successive papers, substantially as described.

9. The combination of a rotating core, a reciprocating pusher carried by the core and spring-pressed to project outside the core, means for reciprocating said pusher to advance successive papers longitudinally on the core, and means for guiding a succession of wrappers to the core at an angle to spirally wind the wrappers about the core and the papers thereon, substantially as described.

10. The combination of means for supporting a succession of independent papers as they are longitudinally advanced, means for feeding the papers successively to said supporting means, a pusher engaging successive papers to advance them longitudinally, and means for winding a succession of wrappers spirally about the papers as they are advanced, substantially as described.

11. The combination of a rotating core, pushers 220, 220<sup>a</sup> mounted within the core and spring-pressed to project outside the core, means for reciprocating said pushers alternately longitudinally of the core to advance alternate papers longitudinally on the core, means for guiding a succession of wrappers to the core at an angle to spirally wind the wrappers about the core and the papers thereon, substantially as described.

12. The combination of a rotating core, means for feeding papers successively to the core transversely to the axis of the core, pushers 220, 220<sup>a</sup> mounted within the core and spring-pressed to extend outside the core, means for reciprocating said pushers alter-

nately longitudinally of the core to advance alternate papers longitudinally on the core, means for guiding a succession of wrappers to the core at an angle to spirally wind the wrappers about the core and the papers thereon, substantially as described.

13. The combination of a rotating core, spring-pressed pushers 220, 220<sup>a</sup> mounted to reciprocate within the core and extending outside the core, operating-rods 213, 213<sup>a</sup> for reciprocating said pushers extending beyond the core, and means for reciprocating said rods alternately, substantially as described.

14. The combination of a rotating core, a casing extending about the core, means for advancing papers successively to the core through an opening in the casing, a reciprocating pusher rotating with the core and engaging the successive papers to advance them longitudinally on the core inside the casing, and means for guiding a succession of wrappers to the core at an angle through an opening in the casing to spirally wind the wrappers about the core and the papers thereon, substantially as described.

15. The combination of a rotating core, a casing extending about the core, means for advancing papers successively to the core through an opening in the casing, a reciprocating pusher rotating with the core and engaging the successive papers to advance them longitudinally on the core inside the casing, means for guiding a continuous wrapper-web to the core at an angle through an opening in the casing to form a continuous spirally-wound wrapper-tube about the core and the papers thereon, feeding devices engaging the wrapper-tube beyond the wrapping-point, and means for severing the wrapper-tube at or near the junction between successive papers, substantially as described.

16. The combination of a core, means for advancing a paper longitudinally on the core, means for winding a wrapper about the core and the paper to form a spirally-wound wrapper-tube inclosing the core and the paper thereon, and means for flattening the wrapper-tube and inclosed paper as they are advanced from the core, substantially as described.

17. The combination of a rotating core, means for advancing a paper longitudinally on the core, means for guiding a wrapper to the core at an angle to form a spirally-wound wrapper-tube about the core and the paper thereon, and guides rotating with the core for flattening the wrapper-tube and inclosed paper as they are advanced from the core, substantially as described.

18. The combination of a core, means for advancing a succession of independent papers longitudinally on the core in line, means for winding a continuous wrapper-web spirally about the core and the papers on the core to form a continuous spirally-wound wrapper-tube inclosing the core and the papers thereon, means for flattening the wrap-

per-tube and inclosed papers as they are advanced from the core, and means for severing the flattened wrapper-tube between successive papers, substantially as described.

19. The combination of a rotating core, means for advancing a succession of independent papers longitudinally on the core in line as it rotates, means for guiding a continuous wrapper-web to the core at an angle to form a continuous spirally-wound wrapper-tube about the core and the papers thereon, means for flattening the wrapper-tube and inclosed papers as they are advanced from the core, and means for severing the flattened wrapper-tube between successive papers, substantially as described.

20. The combination of a rotating core, means for advancing a succession of independent papers longitudinally on the core in line as it rotates, means for guiding a continuous wrapper-web to the core at an angle to form a continuous spirally-wound wrapper-tube about the core and the papers thereon, guides rotating with the core for flattening the wrapper-tube and inclosed papers as they are advanced from the core, and a cutting-blade rotating with said guides for severing the flattened wrapper-tube between successive papers, substantially as described.

21. The combination of a rotating core, means for advancing a succession of independent papers longitudinally on the core in line as it rotates, means for guiding a continuous wrapper-web to the core to form a continuous spirally-wound wrapper-tube about the core and the papers thereon, guides rotating with the core for flattening the wrapper-tube and inclosed papers as they are advanced from the core, and feeding and cutting rolls rotating with said guides for ad-

vancing the flattened wrapper-tube and inclosed papers and severing the wrapper-tube between successive papers, substantially as described.

22. The combination of the rotating core 200, casing 205, means for advancing a succession of independent papers longitudinally on the core inside the casing, means for guiding a continuous wrapper-web to the core to form a continuous spirally-wound wrapper-tube about the core and the papers thereon, feeding and cutting rolls 241 rotating with the core, and means for flattening the wrapper-tube and inclosed papers as they are advanced from the core to the cutting-rolls, substantially as described.

23. The combination of means for supporting and rotating a paper, means for applying a wrapper about the paper to form a wrapper-tube inclosing the paper, means for advancing the wrapped paper longitudinally, and means rotating with the paper-rotating means for flattening the wrapper-tube and inclosed paper, substantially as described.

24. The combination of a rotating core, means for applying a wrapper about the core and a paper thereon to form a wrapper-tube inclosing the paper and core, means for advancing the wrapped paper longitudinally from the core, and means rotating with the core for flattening the wrapper-tube and inclosed paper, substantially as described.

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

LUTHER C. CROWELL.

Witnesses:

NATHANIEL ATWOOD,  
THOMAS KEMP.