No. 826,998. PATENTED JULY 24, 1906.

T. C. DEXTER.

FOLDING MACHINE.

APPLICATION FILED NOV. 10, 1905.

8 SHEETS—SHEET 1.

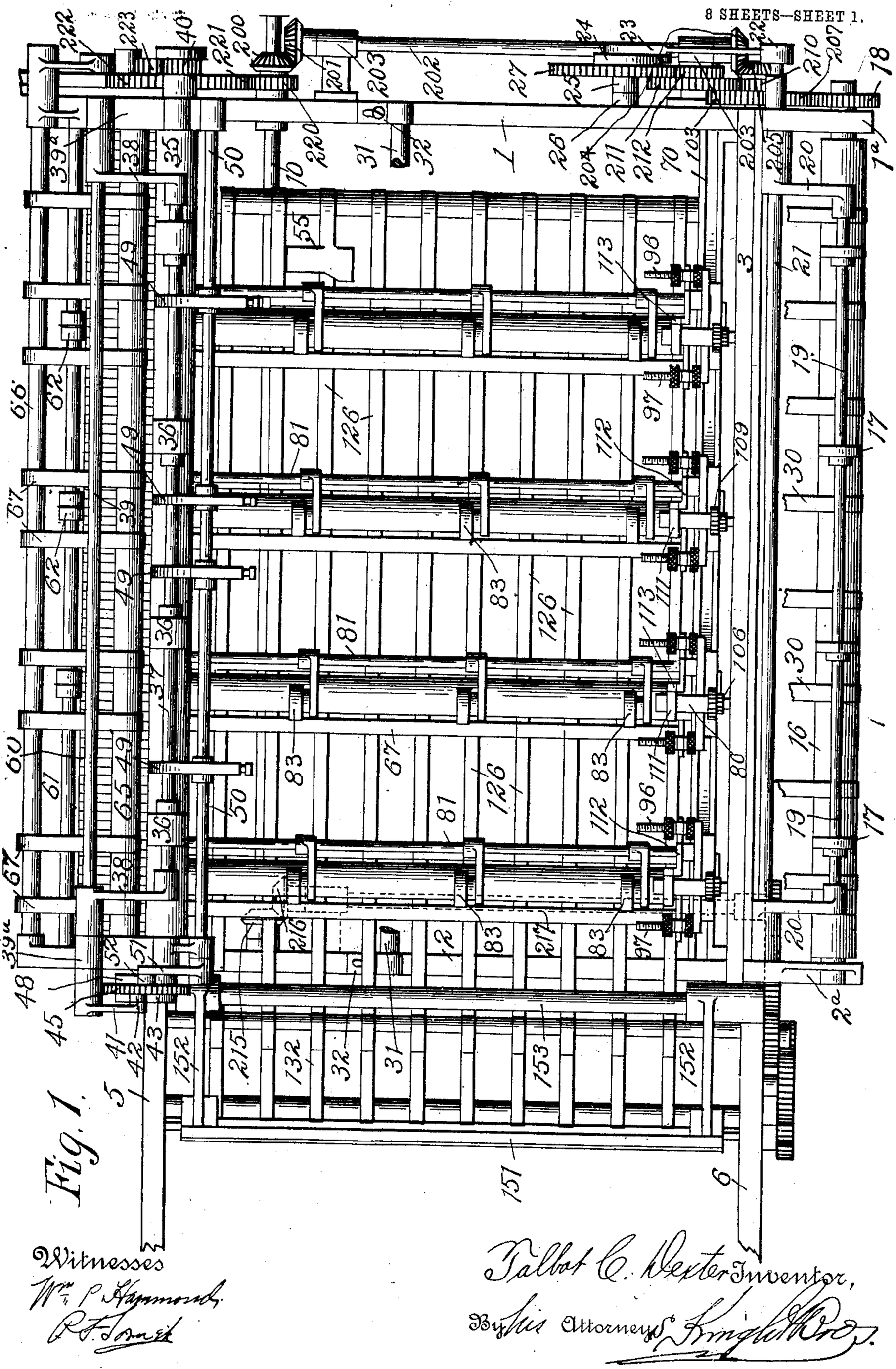

Fig. 1.

Witnesses
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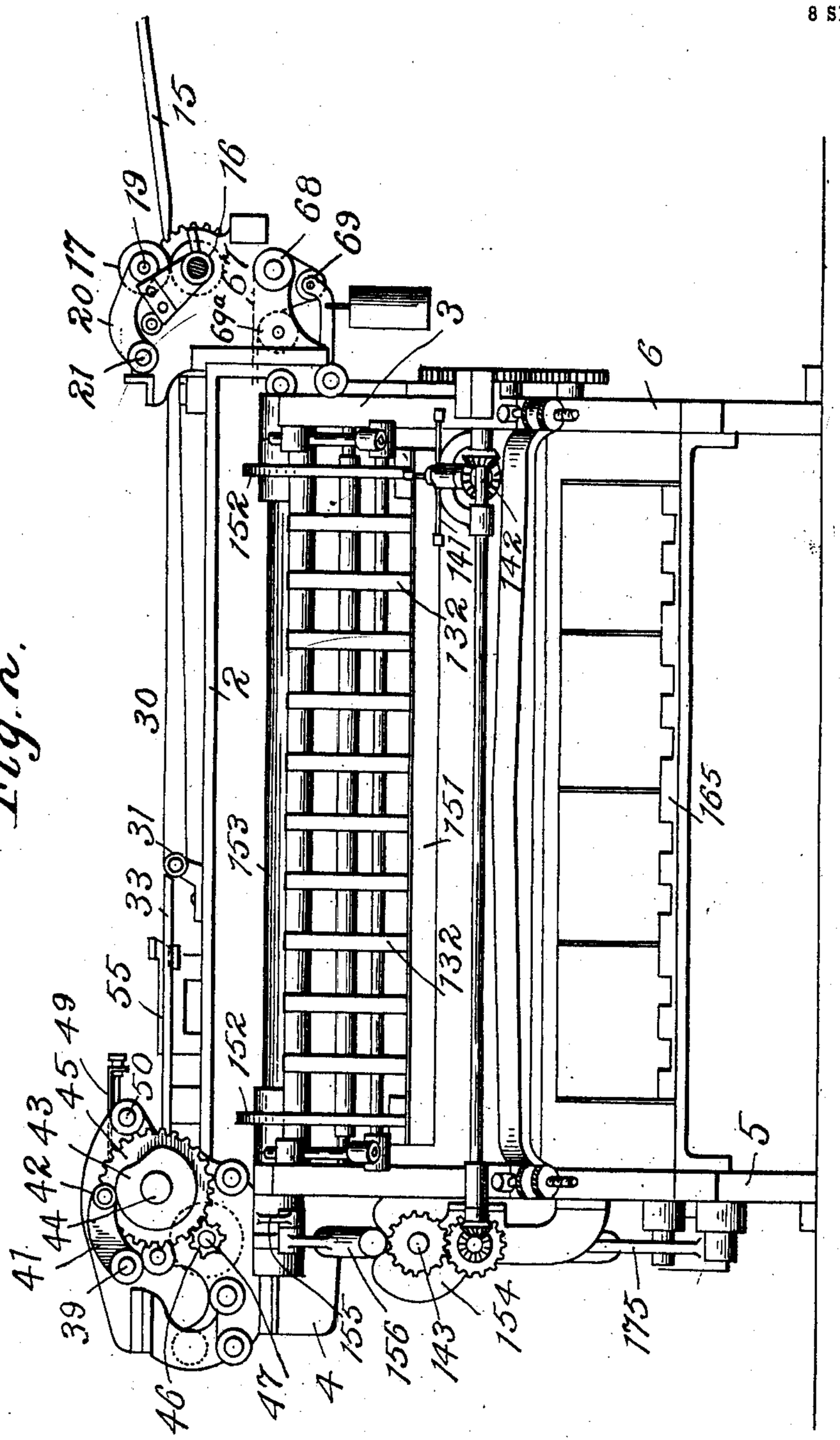
8 SHEETS—SHEET 2.

Fig. 2.



Witnesses
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8 SHEETS—SHEET 3.

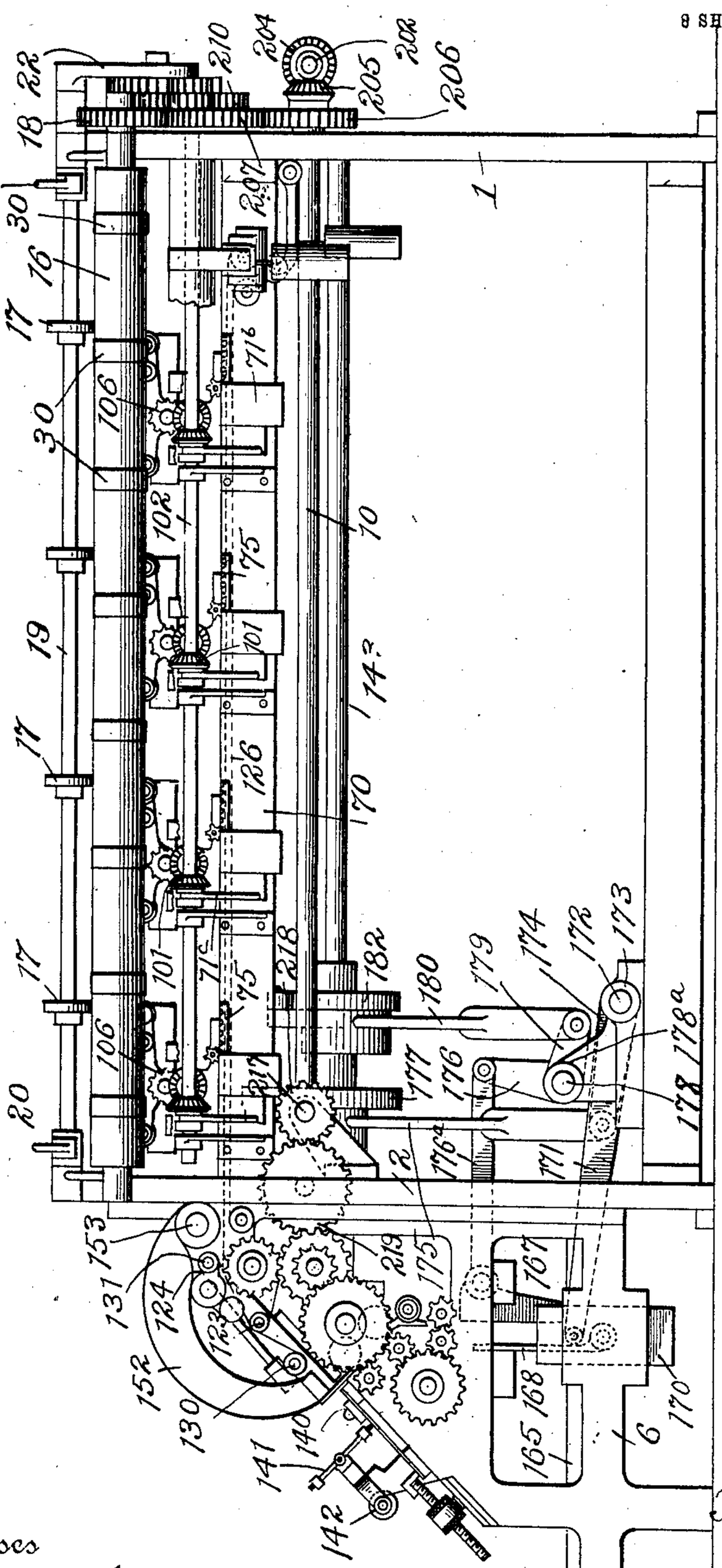

Fig. 3.

Witnesses
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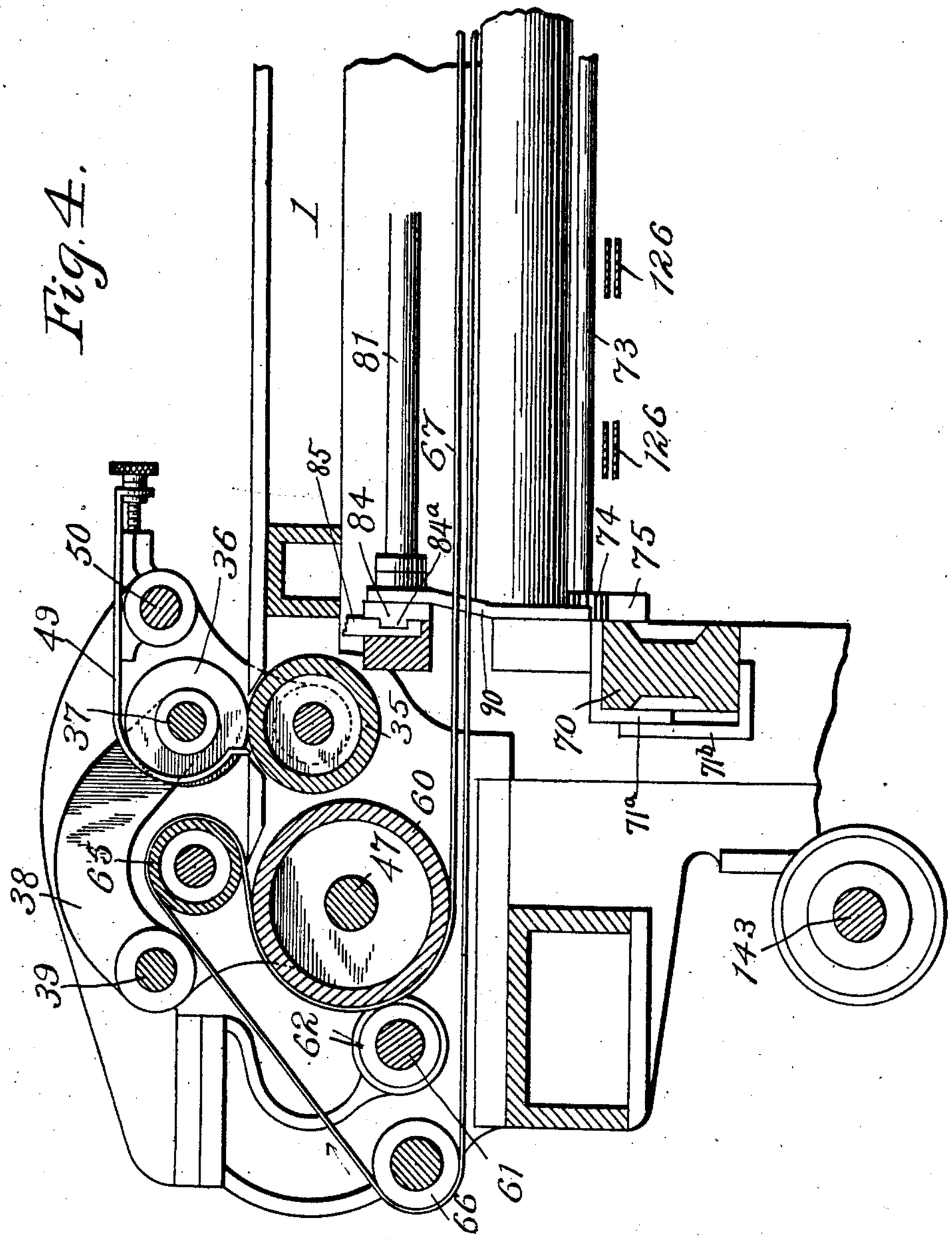
8 SHEETS—SHEET 4.

Fig. 4.



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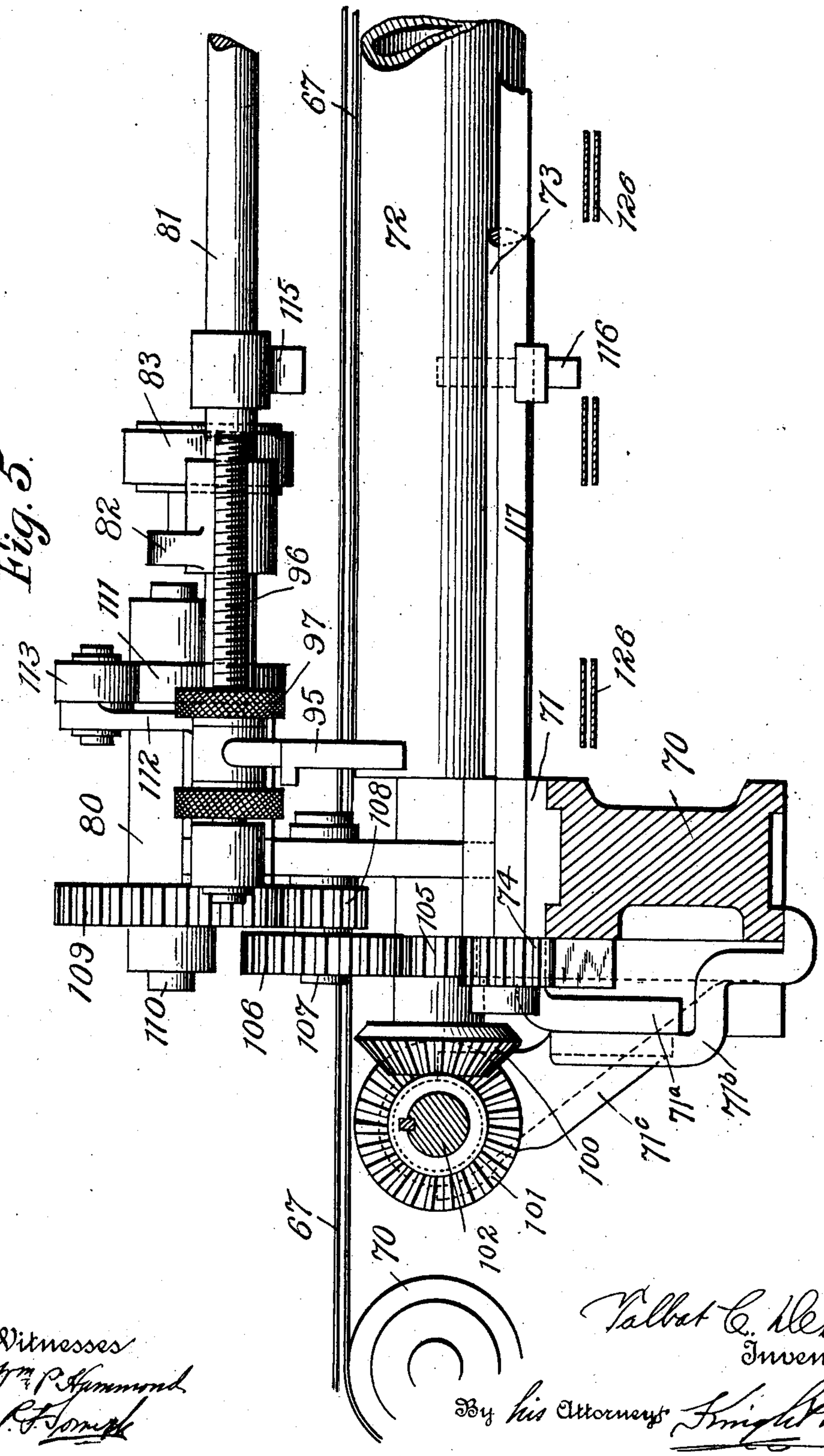
8 SHEETS—SHEET 5.

Fig. 5.



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8 SHEETS—SHEET 6.

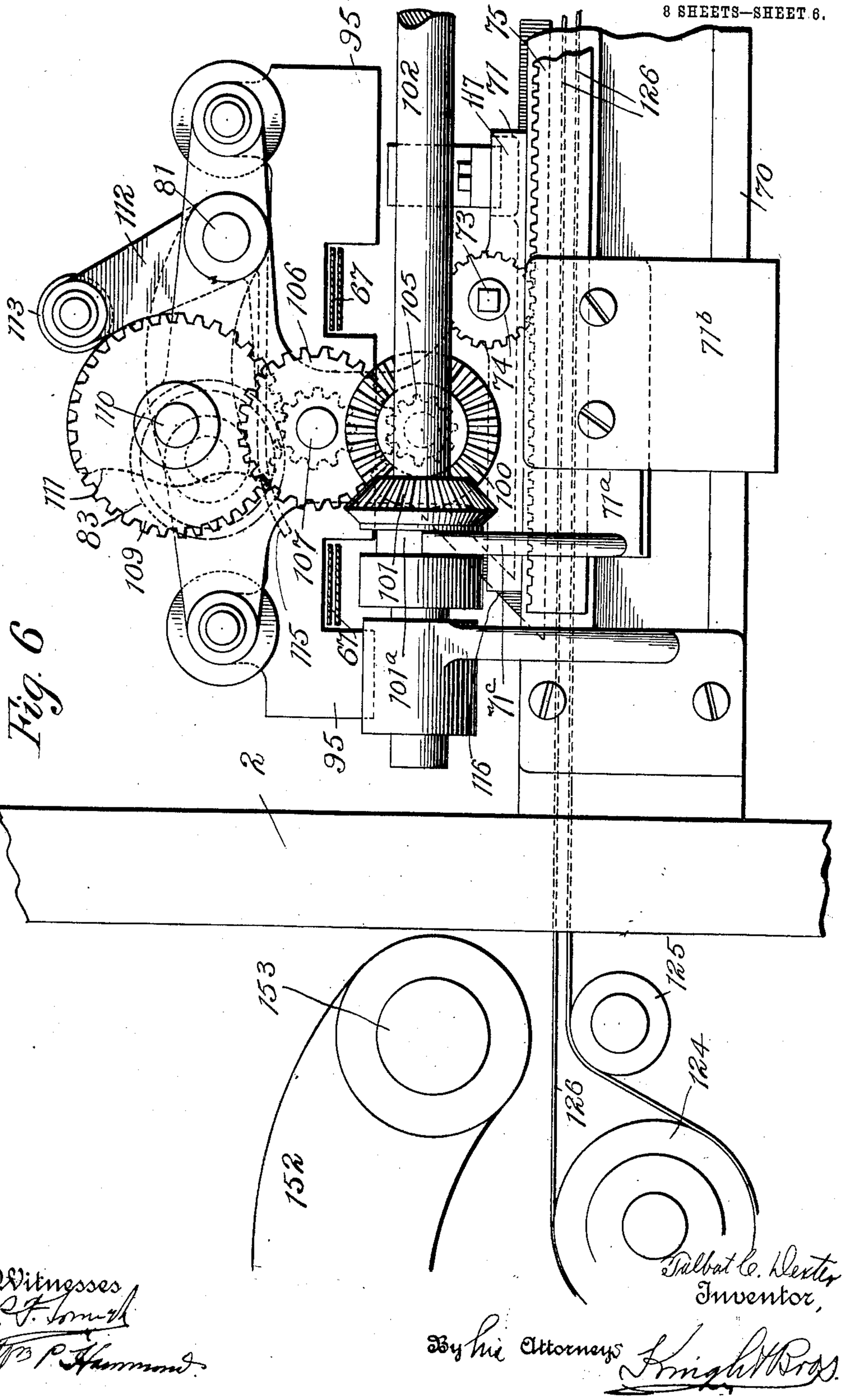

Fig. 6.

Witnesses
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8 SHEETS—SHEET 7.

Fig. 7.

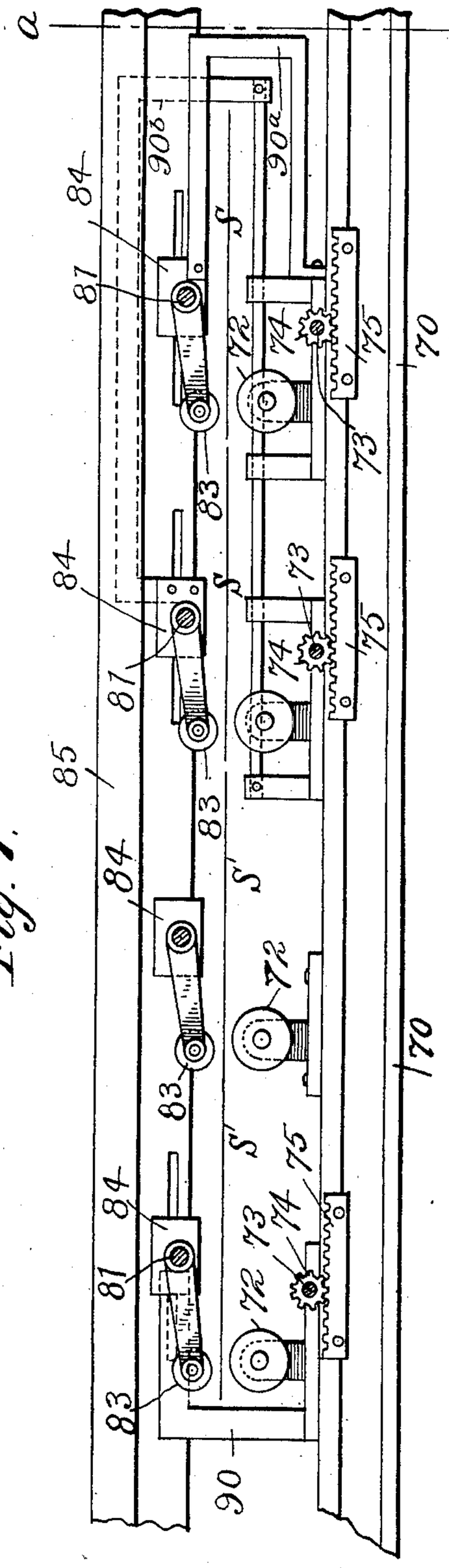
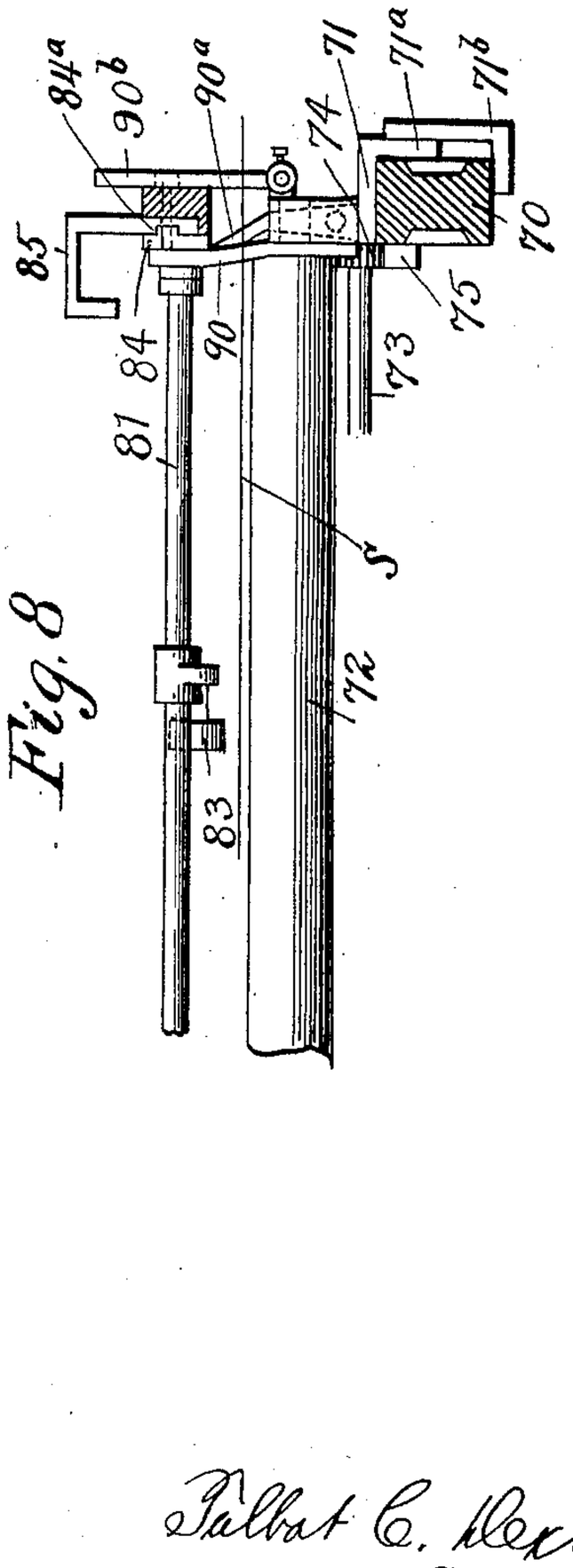


Fig. 8



Witnesses
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R. F. Smith.

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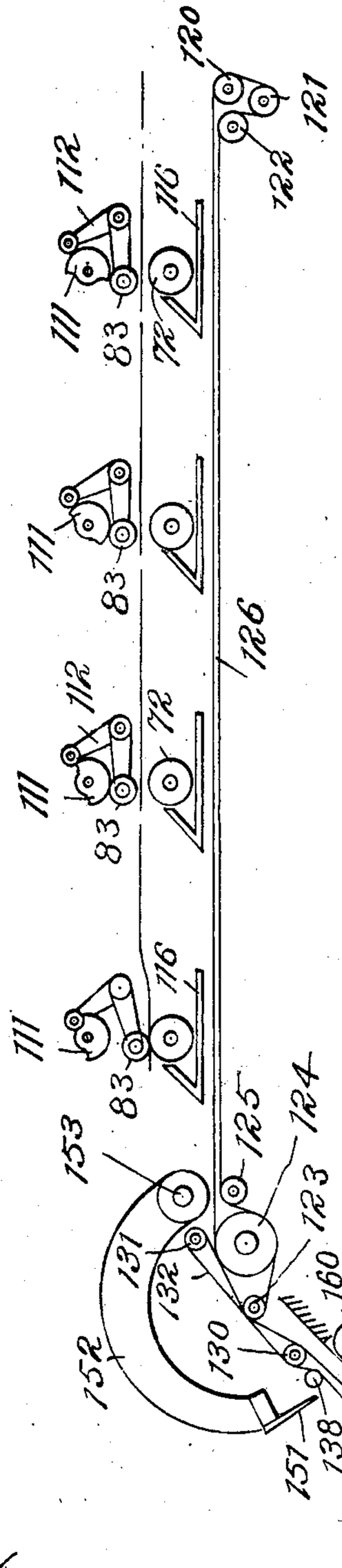
APPLICATION FILED NOV. 10, 1905.

8 SHEETS—SHEET 8.

Fig. 9.



Witnesses
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R. F. Somerville.

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Inventor

By his Attorneys Knight Bros.

UNITED STATES PATENT OFFICE.

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FOLDING-MACHINE.

No. 826,998. Specification of Letters Patent. Patented July 24, 1906.

Application filed November 10, 1905. Serial No. 286,765.

To all whom it may concern:

Be it known that I, TALBOT C. DEXTER, a citizen of the United States, residing at Pearl River, in the county of Rockland and State of New York, have invented certain new and useful Improvements in Folding-Machines, of which the following is a specification.

My improved folding-machine is designed to fold and deliver sixteen-page cut signatures. Any desired number of such signatures may be delivered simultaneously. In the preferred construction of the machine four completely-cut signatures are delivered at once.

In the operation of the preferred construction of my improved folding-machine the sheet is passed in at one end by any of the ordinary sheet-folding devices and properly positioned in the machine by the usual registering means. The sheet then passes around a cutting-cylinder and is divided longitudinally into four strips or sheet-sections, which are arrested by suitable gages in position to be acted upon by four independent sheet-deflecting drop-roller mechanisms, which successively deflect the said strips or sheet-sections to an assembling-conveyer, which carries the strips or sheet-sections to the folding-gage and assembles them. Each strip or sheet-section is individually registered as it reaches the folding-gage, and immediately after this registration the folding mechanism folds the assemblage of sheets longitudinally and passes the same to the final-cutting devices, which sever the folded assemblage of strips or sheet-sections into four cut signatures of sixteen pages each. The signatures are delivered to the ordinary packing-boxes in the manner now commonly used.

In order that my invention may be fully understood, I will first describe the same with reference to the accompanying drawings and afterward point out the novelty more particularly in the annexed claims.

In said drawings, Figure 1 is a general plan view of my improved folding-machine, some of the parts (which are well known in folding machinery) being omitted for the sake of clearness. Fig. 2 is a side elevation of the same, showing the delivery side of the machine. Fig. 3 is a front elevation of the same looking in at the feeding-in end of the machine and showing the delivery at the left-hand side. Fig. 4 is an enlarged detail longitudinal sectional view of part of the machine looking from left to right and showing the sheet-controlling and main cutting mechanism. Fig. 5 is an enlarged detail longitudinal sectional elevation of part of the machine looking from right to left of the machine, showing part of one of the sheet-deflecting drop-roller mechanisms. Fig. 6 is an enlarged detail elevation of the same mechanism looking from the front of the machine. Fig. 7 is a detail sectional elevation looking from the front of the machine, showing the yoke connections between the lower feed-roller supports and the drop-roller supports at the leading-in end of the series of sheet-deflecting drop-roller mechanisms and the means for adjusting their relative position. Fig. 8 is a detail sectional view taken on the line *a a* of Fig. 7 looking from right to left. Fig. 9 is a diagrammatic view illustrating the relation and operation of the sheet-deflecting drop-roller mechanisms and the assembling and final-fold mechanisms.

My improved folding mechanism may be built up upon any suitable framework, such as shown in the accompanying drawings, which consists, essentially, of the side frames 1 and 2, the front and back frames 3 and 4, and the auxiliary bracket-frames 5 and 6, projecting from side frame 2 and supporting the folding and assembling mechanisms and packing-boxes. These frame-pieces are all rigidly secured together and properly braced by tie-bolts and auxiliary frame-bars to constitute a firm structure.

10 is the main power-shaft of the machine, suitably journaled in side frames 1 and 2 and provided with any suitable means, (not shown,) such as fast and loose pulley mechanism, for driving it. All of the operative parts of the machine are driven from the power-shaft 10 through the mechanism which will hereinafter be described.

The sheets to be cut and folded into completely-cut signatures are fed successively by hand or by automatic feeding machinery from the feed-table 15 (shown in Fig. 2) to the usual feeding-in drop-roller mechanism, consisting of the lower constantly-rotating feed-roller 16 and the upper drop-roller 17. The lower roller 16 is journaled at its opposite ends in the forwardly-projecting bracket extensions

1ª and 2ª of the side frames 1 and 2, the journal-shaft of the roller projecting beyond the bracket extension 1ª to support a gear-wheel 18, which is keyed to it. The drop-rollers 17 are mounted upon a shaft 19, journaled in the forwardly-projecting rock-arms 20, keyed to a rock-shaft 21. This rock-shaft 21 is journaled in the brackets 1ª and 2ª and carries at one end a rock-arm 22, connected with a pitman 23, which is actuated by a cam 24, mounted upon a short shaft 25, which is journaled in the side frame 1 at 26. The short shaft 25 also carries a gear-wheel 27, by which the cam 24 is constantly rotated through gearing hereinafter referred to.

A series of tapes 30 pass around the roller 16 and around the smaller tape-roller 31, journaled in the brackets 32, adjustably mounted upon the side frames 1 and 2, as shown in Figs. 1 and 2.

33 represents a series of sheet-supporting slats leading from the tapes 30 to a second drop-roller mechanism consisting of the lower feed-rollers 35, journaled in the side frames 1 and 2, and the upper drop-rollers 36, mounted upon the shaft 37, journaled in the rock-arms 38, secured to rock-shaft 39, which is journaled in the side frames of the machine at 39ª. The under roller 35 of this second drop-roller mechanism has secured to its shaft a gear 40, by which it is constantly rotated through gearing hereinafter explained. The rock-shaft 39 of the drop-roller has keyed to its projecting end at the left a rock-arm 41, carrying an antifriction-roller 42, which runs in peripheral contact with a cam 43, keyed to a short shaft 44, journaled in the side frame 2. This short shaft 44 also carries a large gear 45, meshing with a smaller gear 46, keyed to the projecting end of shaft 47 of the circumferentially-grooved cutter-roll 60, hereinafter referred to. A second cam 48 is also mounted upon the short shaft 44 for controlling the drop-gages 49, which are adjustably mounted upon a rock-shaft 50, journaled in the side frames of the machine and carrying at one end a rock-arm 51, having an antifriction-roller 52, which runs in peripheral contact with the said cam 48. The drop-gages 49 arrest the sheet with its leading edge upon the feed-roller 35 just prior to the operation of the drop-roller mechanism 35 36 to straighten the sheet and give time for the side registry of the sheet by any suitable side-registry mechanism, such as indicated at 55. This side-registering mechanism may be of any suitable construction; but I prefer to employ the mechanism covered by Patent No. 759,972, granted to me May 17, 1904.

Parallel with and adjacent to the lower feed-roller 35 is mounted a large circumferentially-grooved cutter-cylinder 60, whose shaft 47, above referred to, is journaled in the side frames 1 and 2 of the machine.

61 is a cutter-shaft extending parallel with the cylinder 60 and also journaled in the side frames of the machine. This shaft 61 carries a plurality of adjustably-mounted circular cutters 62, each one of which is adapted to project into and operates in one of the grooves of cutter-cylinder 60, the sheets being cut into strips as they pass between the cylinder 60 and circular cutters 62. The cylinder 60 is circumferentially grooved at intervals throughout its length, so that the circular cutters 62 can be adjusted upon their shaft to coöperate with any of the grooves, so as to cut the sheet into strips of any desired width.

65 and 66 are tape-rollers journaled in the side frames of the machine above and in the rear of the cylinder 60.

67 represents a second series of conveyer-tapes which pass over the tape-rollers 66 and 65 and half around the cutter-cylinder 60 upon opposite sides of the cutters 62, said tapes 67 also passing around a tape-roller 68, journaled in the forward end of the machine beneath feed-roller 16, and then around the tightening-rollers 69 and idler-rollers 69ª back to the first-mentioned tape-roller 66. These conveyer-tapes 67 constitute a second conveyer for passing the sheets through the cutting mechanism just described and returning them in a plane beneath and parallel with the first conveyer-tapes 30 into position for the operation of the sheet-deflecting drop-roller mechanisms, which will now be described.

Beneath the plane of the conveyer-tapes 67, adjacent to and parallel with the front and rear frames of the machine, I provide the track-bars 70, which extend transversely of the machine. Track-bars 70 are grooved longitudinally to receive the sliding blocks 71, in which are journaled the under feed-rollers 72. The feed-rollers 72 extend longitudinally of the machine between the track-bars 70 and constitute, with the blocks 71, adjustable carriages, each pair of blocks 71 being also connected by a small rotary shaft 73, on the opposite ends of which are mounted pinions 74, which mesh with short rack-bars 75, secured to the front faces of the track-bars 70. One end of each shaft 73 is squared, as shown in Fig. 6, to receive a wrench or key by which the shafts can be rotated to shift the carriages in either direction upon the track-bars. Each block 71 has a downwardly-projecting flange 71ª, to which is secured an angle-plate 71ᵇ, which engages the under edge of the track-bar for confining the block upon the bar.

The blocks 71 at the forward end of the machine have upwardly-projecting brackets 80, in which are journaled the forward ends of rock-shafts 81, carrying rock-arms 82, on which are journaled drop-rollers 83. The rear ends of the rock-shafts 81 are journaled in blocks 84, all but one of which are adjustably

mounted upon the frame-bar 85, said bar 85 being slotted longitudinally to receive ribs or flanges 84ª, which project from the rear sides of the blocks 84. The bar 85 extends parallel to the rear track-bar 70 and is spaced therefrom to support the rock-shafts 81 horizontal and allow free passage of the sheet-section from cutter-cylinder 60 on tapes 67.

The second carriage from the left-hand side of the machine, as shown in Figs. 1, 7, and 9, is preferably stationary, and the other carriages are adjustable transversely of the machine with relation to the stationary carriage. At the front of the machine the supports for the drop-roller rock-shafts are directly connected with the sliding blocks 71 of the carriages, since there is no necessity for separating these parts in view of the fact that the leading ends of the strips or sheet-sections are arrested by the gages mounted upon said forward ends of the carriages. The rear ends of the carriages, however, are differently constructed, so as to separate the supports for the drop-roller rock-shafts and the supports for the under feed-rollers to allow the strips or sheet-sections to pass freely between the lower feed-rollers and the drop-rollers, as just referred to. It is on this account that the rear ends of the drop-roller rock-shafts are mounted in blocks which are supported upon the rail 85. At the same time it is necessary to simultaneously adjust each set of drop-rollers with its under feed-roller, and to properly effect this adjustment both ends of each drop-roller rock-shaft must move exactly in unison with both ends of the corresponding under feed-roller. To accomplish this, I have adopted the arrangement shown in Figs. 7 and 8, in which the supporting-block 84 of each drop-roller shaft is connected with the carriage of its under feed-roller by means of an angular rod or yoke 90, 90ª, or 90ᵇ, each of which is extended to one side beyond the path of the strips or sheet-sections, so as not to interfere with their free passage through the machine. With this arrangement it will be observed that any drop-roller mechanism can be accurately adjusted as a whole by rotating its shaft 73. At the forward end of each carriage is an adjustable gage 95, which is supported upon the carriage-bracket 80 by means of adjusting-screws 96, held in the desired adjusted position by thumb-nuts 97.

Each under feed-roller 72 has keyed to its projecting shaft or journal a bevel-gear 100, which is in constant mesh with a similar gear 101, splined to a shaft 102, extended transversely of the machine. A forked arm 71ᶜ extends from block 71 and engages groove 101ª of gear 101 to cause the gear 101 to move upon its shaft when the drop-roller carriage is adjusted. The shaft 102 has keyed to its outer end at the right of the machine a gear-wheel 103, through which it is driven by mechanism hereinafter described. The shaft of each under feed-roller 72 is also provided with a pinion 105, meshing with a larger gear 106, keyed to a short shaft 107, journaled in the bracket 80 of the carriage. This shaft 107 also carries a pinion 108, which meshes with a gear 109, keyed to a short shaft 110, also journaled in the bracket 80 and carrying at its inner end a cam 111. The drop-roller rock-shaft 81 is provided at its forward end with a rock-arm 112, carrying an antifriction-roller 113, which runs in peripheral contact with the cam 111. By this means the drop-rollers are operated. 115 represents sheet-deflecting fingers, also mounted upon the rock-shaft 81 adjacent the drop-rollers 83.

116 represents inclined guide-fingers secured to a cross-bar 117 in the same vertical planes as the deflecting-fingers 115, their purpose being to guide the sheet-sections down to the plane of the third set of conveyer-tapes, which will now be explained.

120 is a tape-roller journaled in the front and rear frames 3 and 4 of the machine and extending longitudinally of the machine adjacent to its right-hand side.

121 represents the belt-tighteners, and 122 represents idler-pulleys. At the left-hand side of the machine are arranged the knurled roller 123 and large tape-roller 124 and the idler-roller 125, all of which extend longitudinally of the machine.

126 represents the third set of conveyer-tapes extended around the rollers 120 121 122 123 124 125. These tapes 126 constitute the final assembling-conveyer upon which the strips or sheet-sections are deposited successively by the sheet-deflecting drop-roller mechanism above described.

130 and 131 are tape-rollers.

132 represents guide-tapes which pass around rollers 130 and 131 and knurled roller 123 for confining the sheet-sections in the proper path in engagement with tapes 126, so as to assist the knurled roller in depressing the rear edge of each sheet-section to insure the overlapping of the successive sheet-sections in assembling them one upon another.

135 is a plate or support upon which the sheets are assembled in readiness for the final registry and folding operations.

136 is the folding end gage.

137 and 138 are belt-pulleys, and 139 represents tapes passing around the pulleys 130, 131, 137, and 138 and knurled roller 123 to properly confine the sheet-sections upon the folding table or support, so as to prevent the said sheet-sections from curling up or rebounding as they are fed into place.

140 is the folding side gage.

141 is a rotating final side registry provided with four rubber-tipped registering fingers to successively engage the four sheet-sections upon the folding-table. This final registry device is operated through suitable

gearing, with an auxiliary shaft 142 geared with the main cam-shaft 143 of the machine, as shown in Fig. 3.

The table or support 135 is provided with the usual longitudinal slot (not shown) to receive the folding-knife 151, which is mounted upon the rock-arms 152, projecting from the rock-shaft 153. This rock-shaft 153 is operated by cam 154 through the medium of a rock-arm 155 and link 156. The knife 151 strikes the assemblage of sheet-sections through the table-slot into the bight of the folding-rollers 160, which are journaled beneath the table 135. The folded assemblage of sheet-sections then passes through the compression-rollers 161 and cutting-rollers 162, by which it is cut into four completely-cut signatures, which are dropped into the four parallel packing-boxes 165, extending horizontally at right angles to the machine at the left.

The packing-boxes 165 are supported upon an auxiliary frame bolted to the main frame of the machine, and each packing-box is provided with the usual yielding abutment, (not shown,) against which the signatures are packed by the horizontally-reciprocating packing-fingers 167 and coöperating vertically-reciprocating retaining-fingers 168.

Retaining-fingers 168 are mounted upon the vertical slide 170, suitably mounted in the frame, which slide is actuated by rock-arm 171, projecting from a rock-shaft 172, journaled in the machine-frame at 173 and connected, through the rock-arm 174, with a link 175, which is moved in one direction by a spring (not shown) and in the other direction by cam 177, keyed to the cam-shaft 143 of the machine. The horizontally-reciprocating packer-fingers 167 are mounted upon horizontal slides connected, through links 176[a] and rock-arms 176, with the rock-shaft 178, journaled in the bracket 178[a]. This rock-shaft 178 is connected, through rock-arm 179, with link 180, which is moved in one direction by a spring (not shown) and in the opposite direction by the cam 182, keyed to the cam-shaft 143 of the machine.

The mechanism for driving the several operative parts of my improved machine will now be pointed out.

Keyed to the main power-shaft 10, adjacent its right-hand end, is a bevel-gear 200, which meshes with a similar gear 201, keyed to a counter-shaft 202, which extends longitudinally of the machine along the right-hand side and is journaled in the bracket-bearings 203. This counter-shaft 202 has on its forward end a bevel-gear 204, which meshes with a similar bevel-gear 205, which is secured to a gear-wheel 206, (see Fig. 3,) the bevel-gear 205 and gear-wheel 206 being suitably journaled upon a stud or bearing projecting from the side frame 1 of the machine. The gear 206 meshes with and drives the gear 103 upon shaft 102, from which the sheet-deflecting drop-roller mechanisms are operated. The gear 103 also meshes with the intermediate gear 207, which in turn meshes with the gear 18 on the shaft of feed-roller 16, above referred to. Keyed to the shaft 102 outside of gear 103 is a similar gear 210, which drives the gear 27 through intermediate gears 211 and 212 for operating the first drop-roller 17.

Returning to the power-shaft 10, it will be observed that adjacent to its left-hand end in the interior of the machine it is provided with a bevel-gear 215, which meshes with a similar bevel-gear 216, keyed to the rear end of counter-shaft 217, extending longitudinally of the machine and provided at its forward end with a gear-wheel 218, meshing with intermediate gear 219, from which the large feed-roller 124, folding-rollers 160, compression-rollers 161, and cutting-rollers 162 are all driven, the arrangement of the gears being shown clearly in Fig. 3. Power-shaft 10 also carries adjacent to its right-hand end a small gear-wheel 220, which meshes with and drives the large gear-wheel 221 upon the right-hand end of cam-shaft 143, above referred to. This gear 221 meshes with and drives the gear 222, keyed to the shaft 47 of the cutter-cylinder 60, above referred to. The gear 222 also drives the cutter-shaft 61 through a gear which is not shown. A smaller gear 223 is also keyed to the shaft 47 of the cutter-cylinder 60 and meshes with the gear 40 upon the lower feed-roller 35. The tape-roller 66 has keyed to its outer end a gear (not shown) which is driven by an intermediate gear (not shown) meshing with the large gear 221 just referred to.

The operation of my improved machine may be briefly described as follows: The printed sheets which are to be cut and folded into completely-cut signatures for a book, pamphlet, or magazine are fed successively by hand or by automatic machinery from the feed-table 15 through the drop-roller mechanism 16 17, which feeds the sheets to the first conveyer-tapes 30. The sheets are arrested by the front gages 49, and the side-registry mechanism 55 positions them in the usual manner. Immediately after the registry of the sheet the second drop-roller mechanism 35 36 comes into play to pass the sheet to the cutter-cylinder 60 and the second conveyer-tapes 67, with the result that the sheet is carried half-way around the cylinder 60 and cut into four strips or sheet-sections, which are carried against the gages 95 of the sheet-deflecting drop-roller mechanisms 72 83 115. Immediately after the arrest of the sheets by the gages 95 the drop-roller mechanisms just referred to come into play to feed off the strips or sheet-sections S laterally, the said mechanisms operating successively to deflect the sheet-sections onto the third or

final conveyer-tapes 126, which carry them to the final assembling, folding, and delivery mechanisms. In Fig. 9 the successive action of the sheet-deflecting drop-roller mechanisms is illustrated, the controlling-cams of the several sets of drop-rollers being shown in progressive relative positions. The sheet-sections S pass separately over the knurled roller 123, which quickly depresses the rear edge of each sheet-section, so as to insure the leading edge of the succeeding section overlapping the preceding section. The four sheet-sections are arrested by the final-fold gage 136 and successively registered by the rotating side register 141. Immediately following this action the folding-knife 151 operates to strike the assemblage of sheet-sections into the bight of the folding-rollers 160, the fold being made longitudinally of the length of the sections. The sections are in this way folded one within another and are passed through compression and cutting rollers, by the action of the latter of which the folded sections are separated into four completely-cut signatures, which are delivered in the packing-boxes by the mechanism described.

Completely-cut signatures with any number of pages within reason may be produced with my improved folding-machine by simply increasing or decreasing the number of cutters and deflecting drop-roller mechanisms and relatively adjusting these parts to operate upon the sheet-sections of the desired size.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. In a machine of the character described, the combination of sheet-conveying means, with cutting mechanism arranged to cut the sheet into a plurality of sheet-sections parallel with the direction of travel of the sheet, means for conveying the sheet-sections transversely and assembling them, an end gage against which the sheet-sections are assembled, side-registering means for individually registering the sheet-sections as they reach the end gage, means for folding longitudinally the assemblage of sheet-sections, and means for transversely cutting the folded assemblage of sheet-sections into completely-cut signatures.

2. In a machine of the character described, the combination of sheet-conveying means, with cutting mechanism arranged to cut the sheet into a plurality of sheet-sections parallel with the direction of travel of the sheet, means for conveying the sheet-sections transversely and assembling them, means for longitudinally folding the assemblage of sheet-sections, and means for cutting the folded assemblage into completely-cut signatures.

3. In a machine of the character described, the combination of sheet-conveying means arranged to convey a sheet forward in one plane and back in another, sheet-slitting means operating in the path of the sheet to cut it into strips or sections parallel with its direction of travel, assembling conveying means arranged to convey the sheet-sections transversely and assemble them, folding means adapted to longitudinally fold the assemblage of sheet-sections, and cutting means adapted to cut the folded assemblage into completely-cut signatures.

4. In a machine of the character described, the combination of the first and second sheet-conveyers arranged in parallel planes and adapted to act successively upon a sheet to carry it forward in one plane and back in a lower plane, sheet-slitting means arranged in the path of the sheet to cut it into sections, a third sheet-conveyer extending transversely of the first and second conveyers and adapted to convey and assemble the sheet-sections, means for transversely transferring the sheet-sections from the second to the third conveyer, means for folding the assemblage of sheet-sections, and means for cutting the folded assemblage into signatures.

5. In a machine of the character described, the combination of a cutting-cylinder and circular cutter coöperating therewith, the first sheet-conveyer leading to the cutting-cylinder, the second sheet-conveyer leading from the cutting-cylinder, the assembling-conveyer extending transversely to the second conveyer, sheet-deflecting transferring means arranged to transfer sheet-sections laterally from the second conveyer to the assemblage-conveyer, a folding mechanism, and a final cutting mechanism.

6. In a machine of the character described, the combination of suitable sheet-conveying means, with sheet-cutting mechanism arranged in the path of the sheets and including a plurality of independently-adjustable cutting devices adjustable transversely of the path of the sheets, assembling means operating transversely of the conveying means to assemble sheet-sections, a plurality of sheet-deflecting transferring mechanisms independently adjustable transversely of the sheet-conveying means and adapted to transfer sheet-sections from the conveying means to the assembling means, means for folding an assemblage of sheet-sections, and means for cutting the folded assemblage into completely-cut signatures.

7. In a machine of the character described, the combination of sheet-slitting means adapted to cut a sheet into a plurality of sheet-sections, a sheet-conveyer leading toward the sheet-slitting means, gages adapted to arrest the sheet before it reaches the slitting means, sheet-registering means adapted to register the sheet when it is arrested by said gages, drop-roller feed mechanism adapted to pass the sheet to the slitting

means, a second conveyer leading away from the slitting means, an assembling-conveyer, sheet-deflecting transferring means adapted to transfer sheet-sections from the second conveyer to the assembling-conveyer, and means for folding and cutting the assemblage of sheet-sections into completely-cut signatures.

8. In a machine of the character described, the combination of sheet-conveying means, sheet-slitting means arranged to cut a traveling sheet into longitudinal strips, sheet-assembling means operating at right angles to the conveying means, a series of drop-roller transfer mechanisms arranged to transfer sheet-strips from the conveying means to the assembling means, means for collecting the sheet-strips in an assemblage, and means for folding and cutting the assemblages into completely-cut signatures.

9. In a machine of the character described, the combination of sheet-conveying means, sheet-slitting means arranged in the path of the sheets, sheet-assembling means operating at right angles to the conveying means, a series of drop-roller transfer mechanisms arranged to transfer sheet-sections from the conveyer to the assembling means, yokes connecting the upper and lower slide-blocks of the drop-roller mechanisms at the receiving edges of the drop-roller mechanisms, said yokes extending beyond the path of sheets, means for adjusting the drop-roller mechanisms, and folding and final-cutting mechanisms.

TALBOT C. DEXTER.

Witnesses:
A. C. HAMMOND,
GEO. S. LEETCH.