

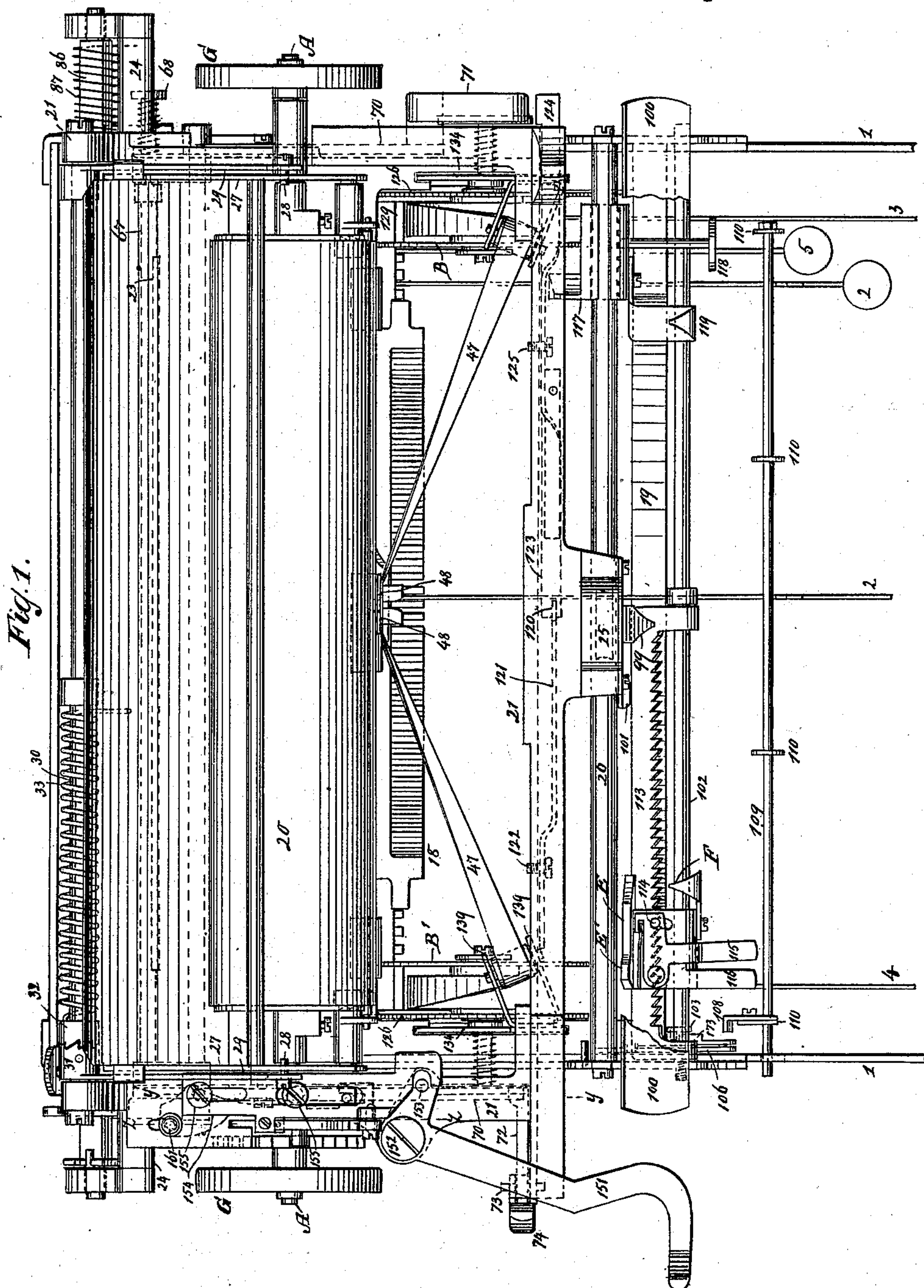
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6 Sheets—Sheet 1.

H. L. & F. X. WAGNER.  
TYPE WRITING MACHINE.

No. 559,345.

Patented Apr. 28, 1896.



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Chas. E. Prentiss.

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*Herman L. Wagner.*

BY

Hand - Hand

**ATTORNEYS.**



(No Model.)

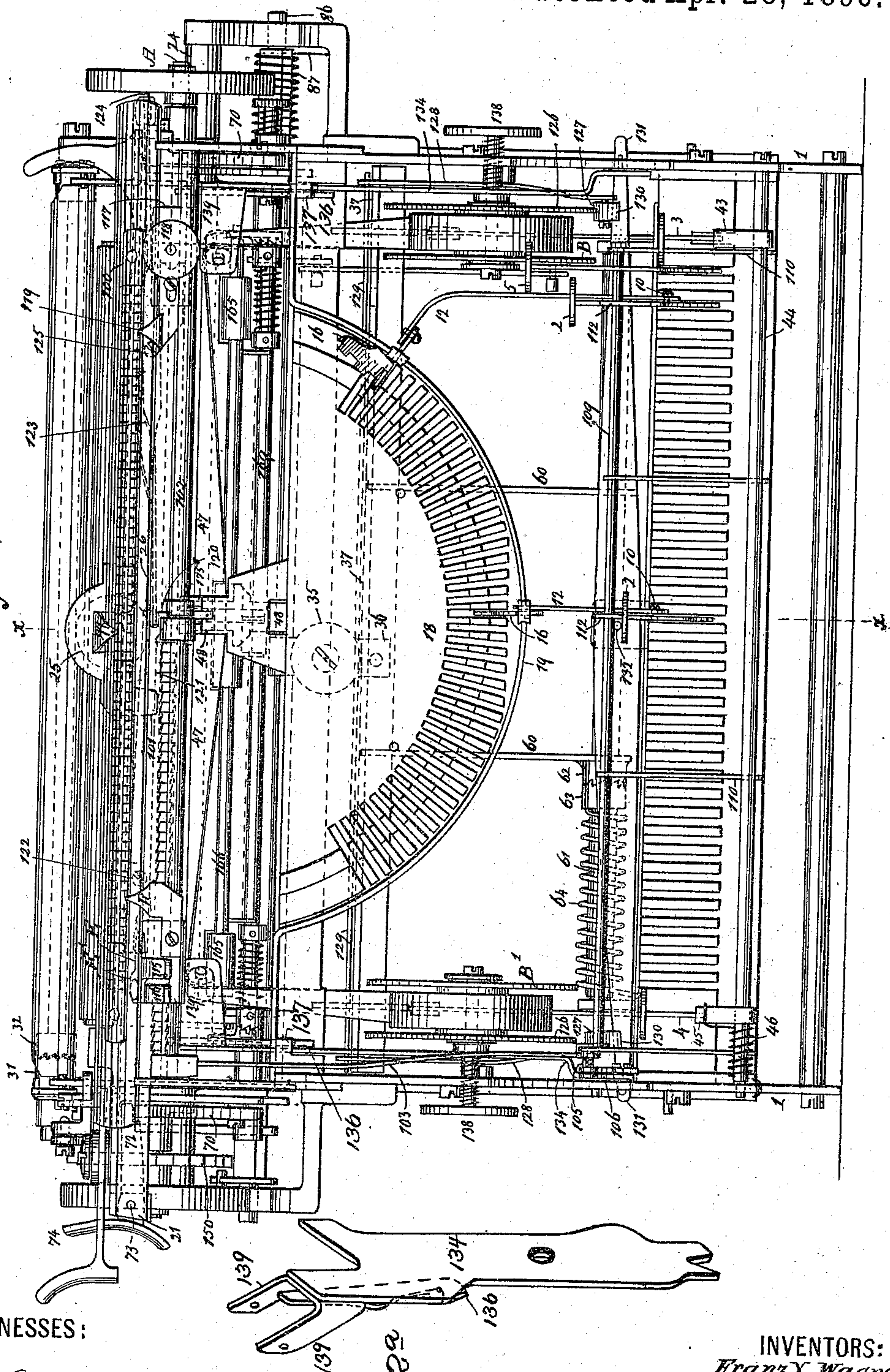
6 Sheets—Sheet 2.

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Fig. 2.



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Fig. 2a

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(No Model.)

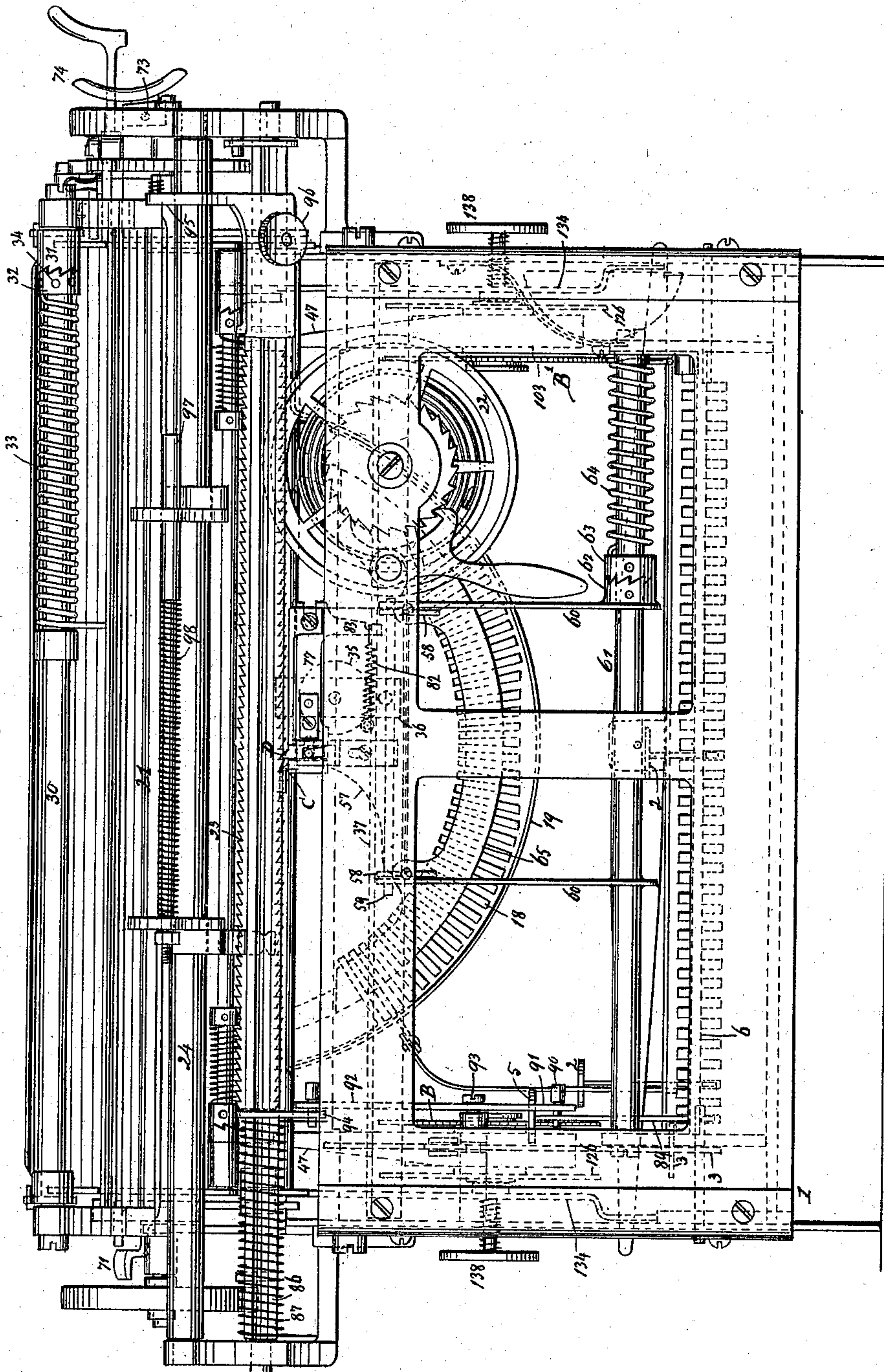
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H. L. & F. X. WAGNER.  
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Fig. 3.



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(No Model.)

6 Sheets—Sheet 4.

H. L. & F. X. WAGNER.  
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Fig. 4.

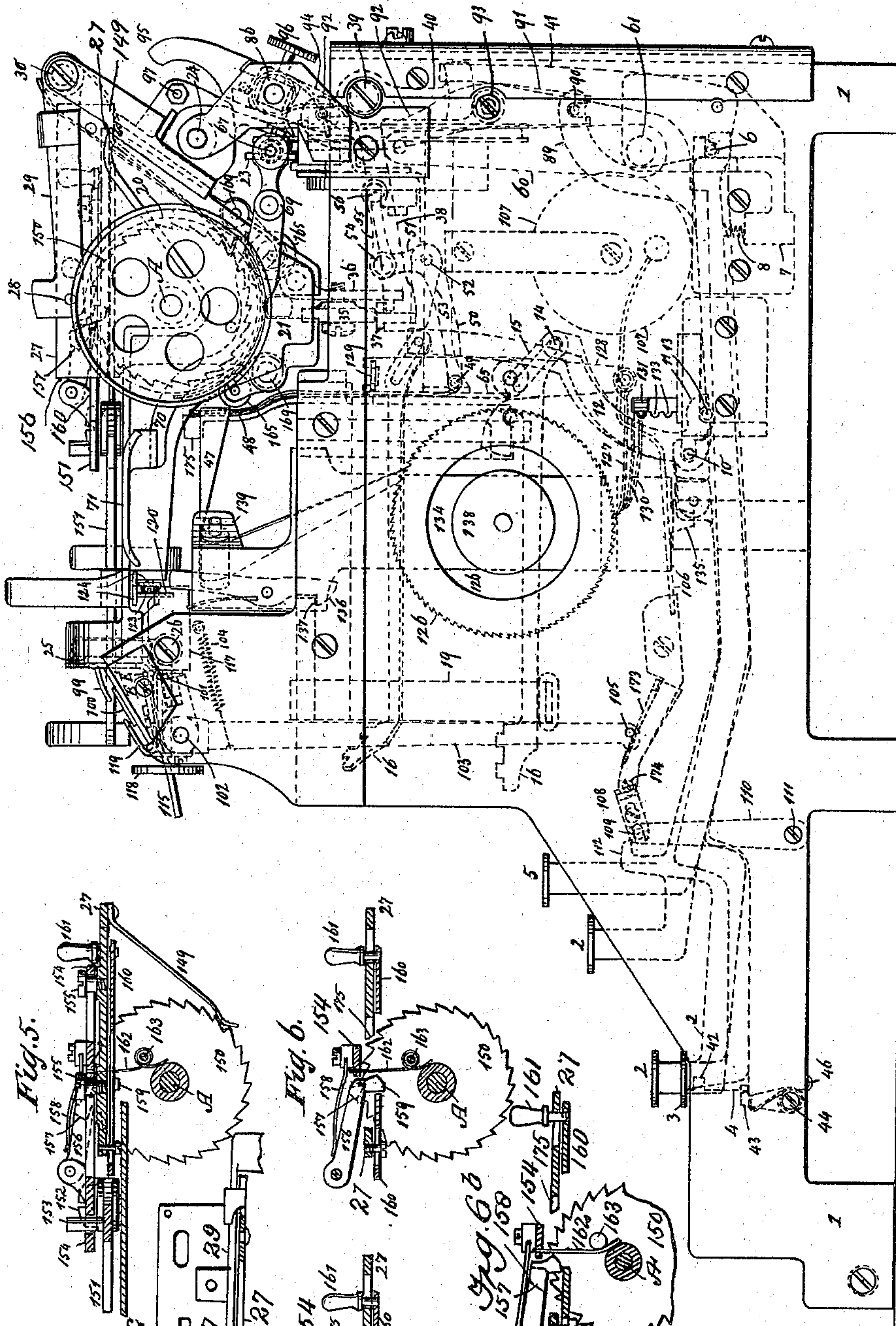


Fig. 5.

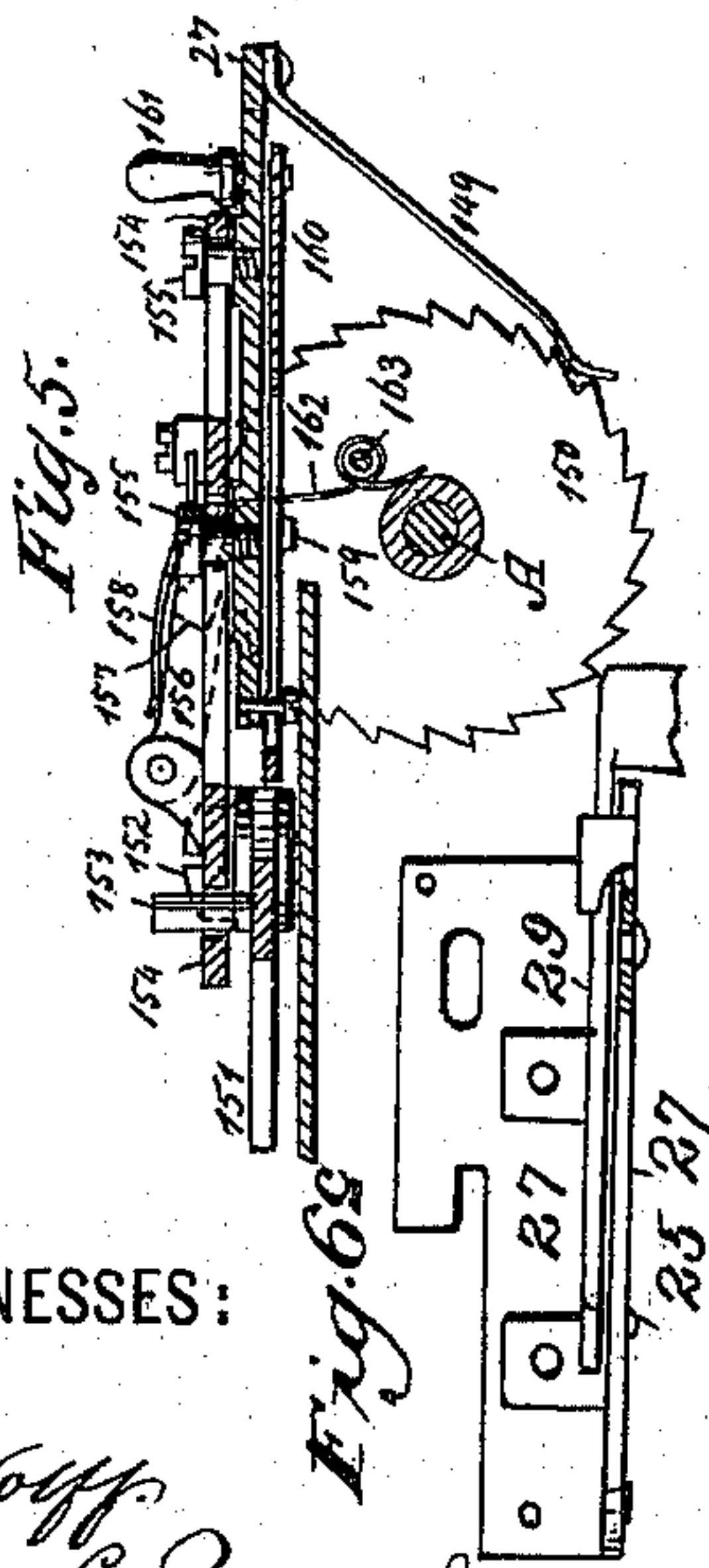
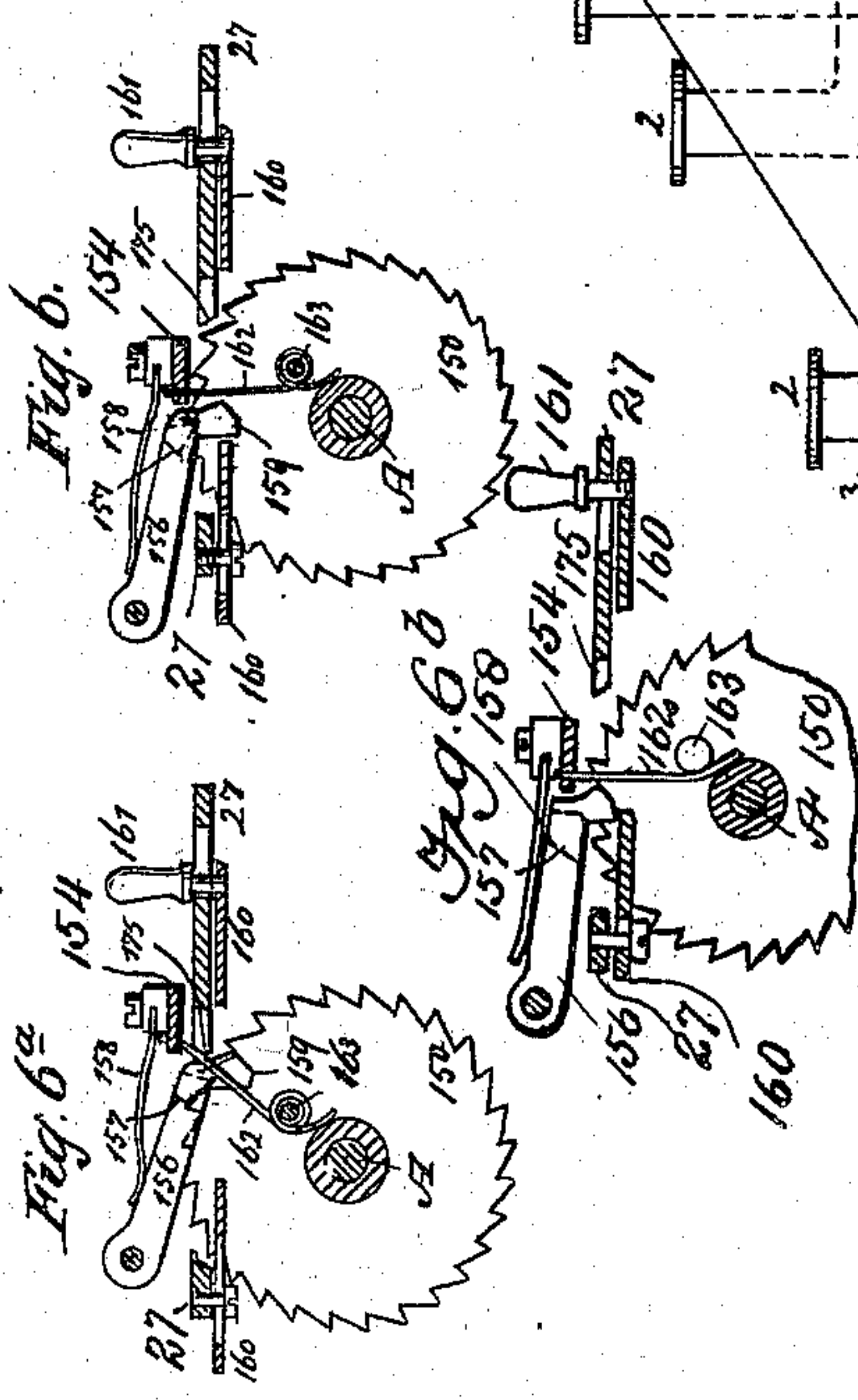


Fig. 6.



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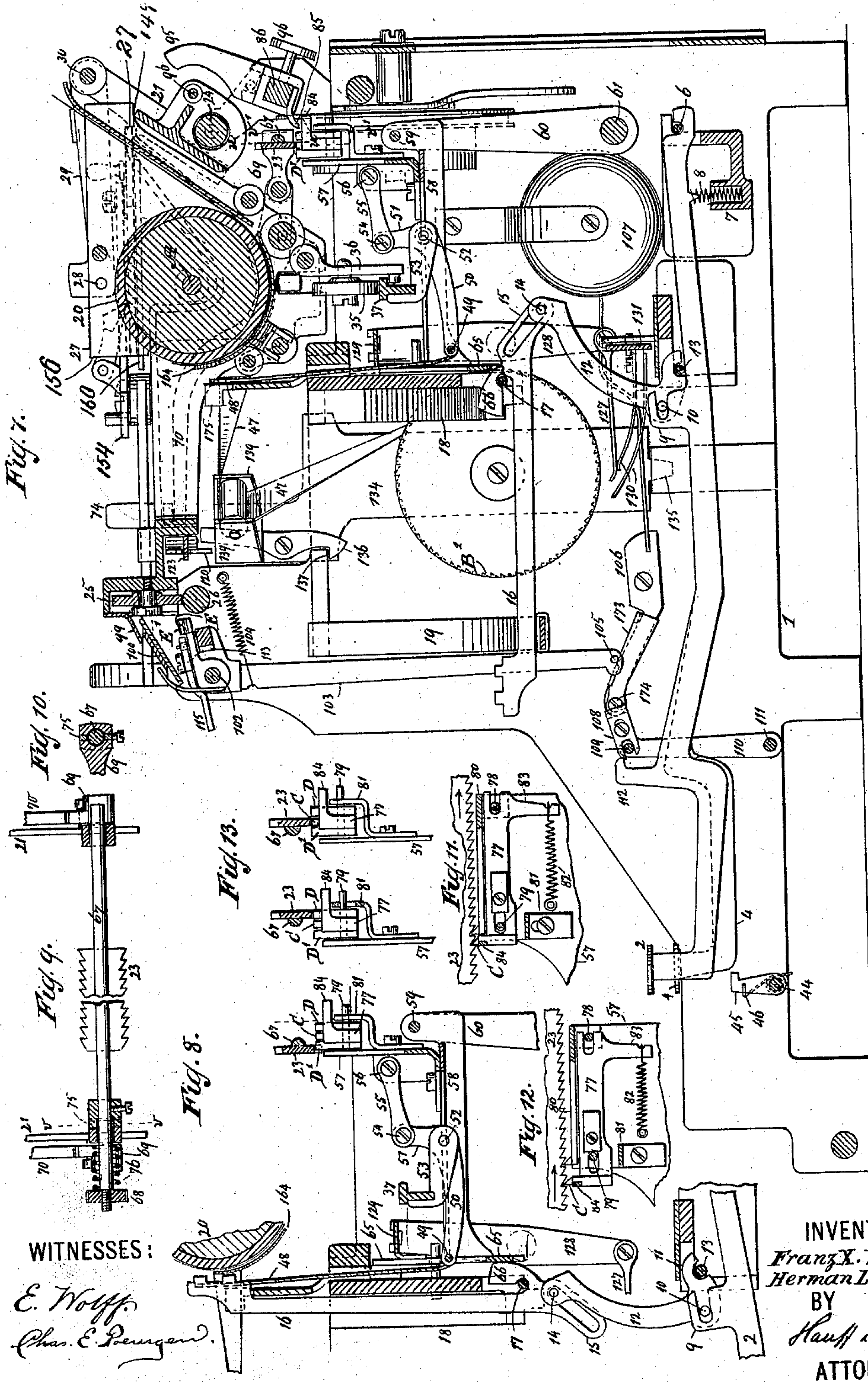
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(No Model.)

6 Sheets—Sheet 6

H. L. & F. X. WAGNER.  
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No. 559,345.

Patented Apr. 28, 1896.

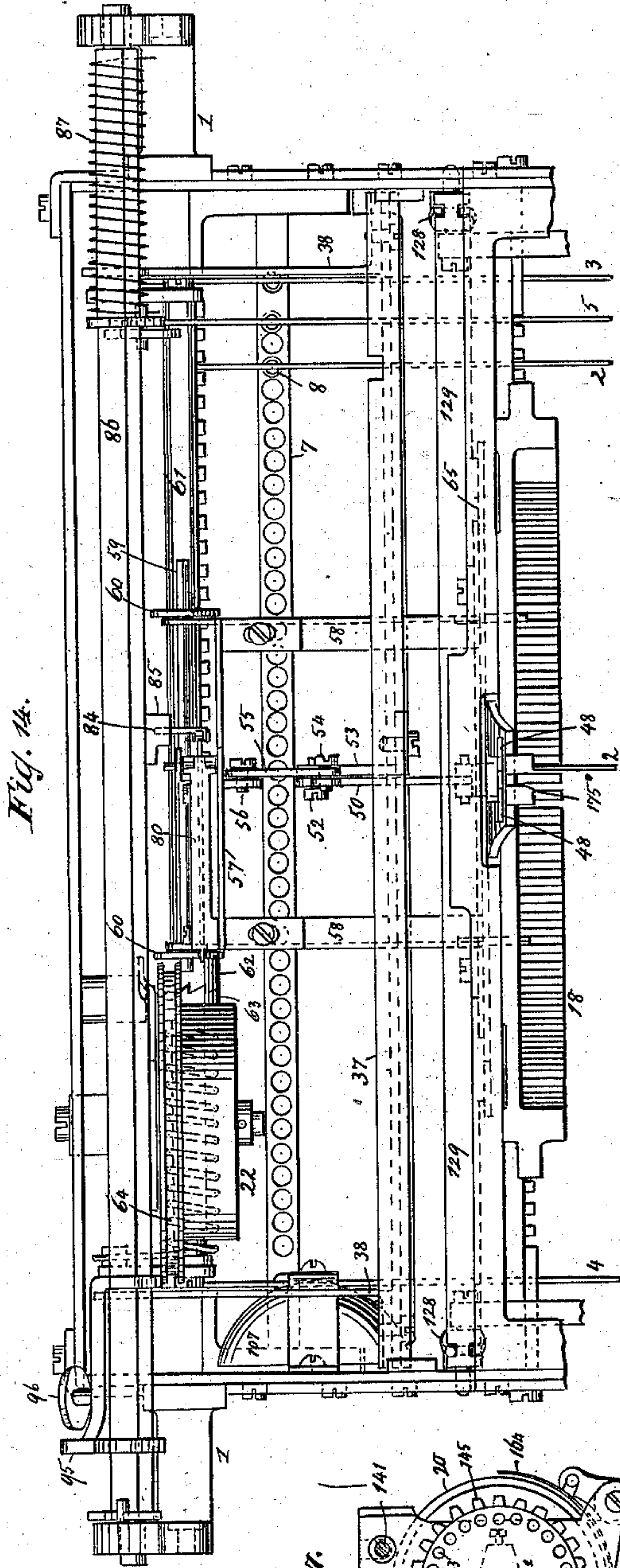


Fig. 14.

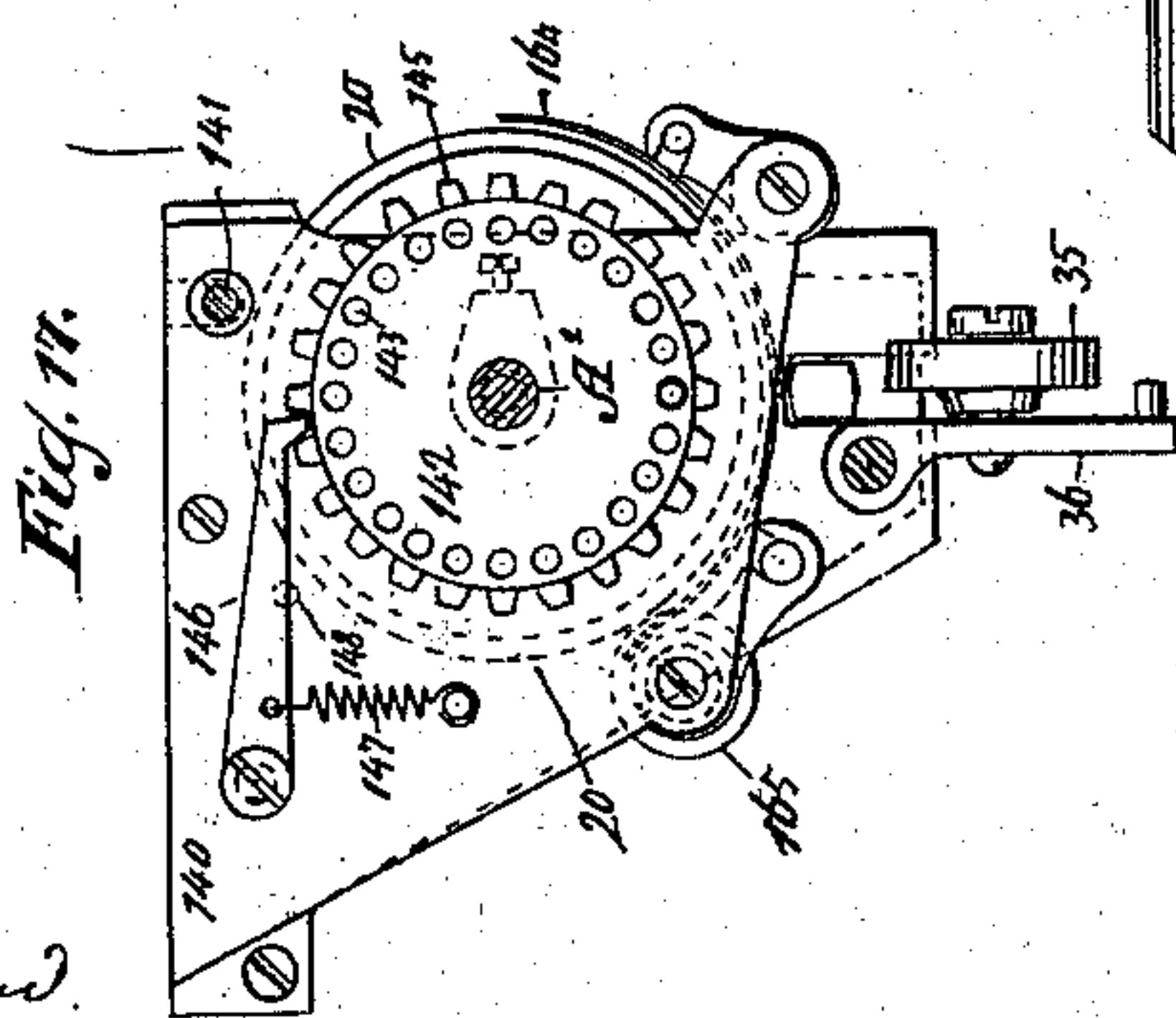
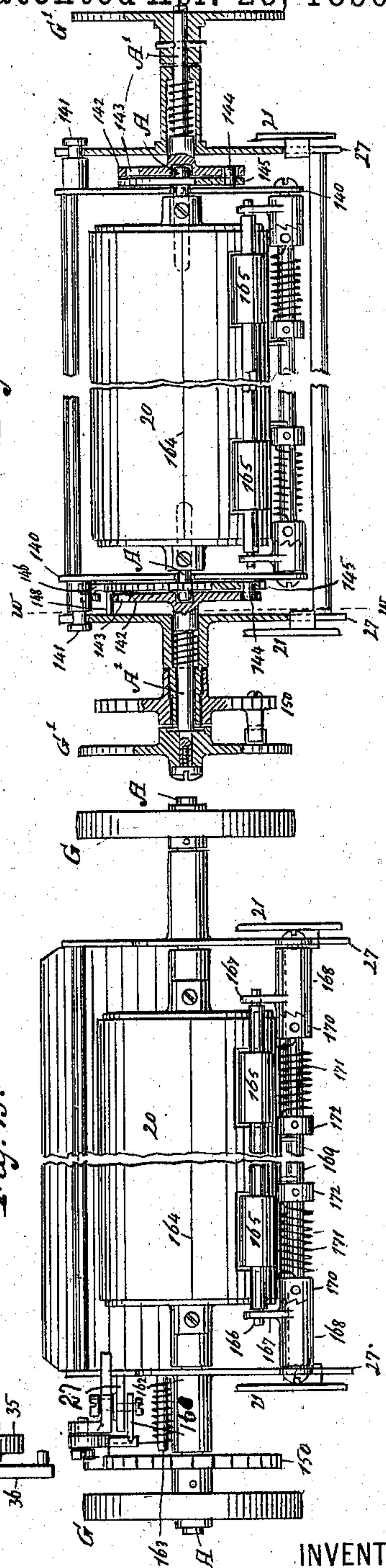


Fig. 17.

Fig. 16.

Fig. 15.



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# UNITED STATES PATENT OFFICE.

HERMAN L. WAGNER AND FRANZ X. WAGNER, OF NEW YORK, N. Y.; SAID  
HERMAN L. WAGNER ASSIGNOR TO SAID FRANZ X. WAGNER.

## TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 559,345, dated April 28, 1896.

Application filed October 4, 1894. Serial No. 524,910. (No model.)

*To all whom it may concern:*

Be it known that we, HERMAN L. WAGNER and FRANZ X. WAGNER, citizens of the United States, residing at New York, in the county and State of New York, have invented new and useful Improvements in Type-Writing Machines, of which the following is a specification.

The object of this invention is to effect certain improvements in the construction and operation of type-writing machines; and the invention resides in the novel features of construction and operation set forth in the following specification and claims, and illustrated in the annexed drawings, in which—

Figure 1 is a plan view of the machine. Fig. 2 is a front elevation of Fig. 1. Fig. 2<sup>a</sup> is a perspective view of a spool-carrying frame detached from the machine. Fig. 3 is a rear elevation of Fig. 1. Fig. 4 is a side elevation of Fig. 1. Fig. 5 is a section along line *yy*, Fig. 1. Fig. 6 is a section along line *zz*, Fig. 1. Fig. 6<sup>a</sup> shows a different position of parts of Fig. 6. Fig. 6<sup>b</sup> shows the pawl lifted out of engagement with the ratchet. Fig. 6<sup>c</sup> shows a part of the platen-frame and the means for connecting it to the carriage. Fig. 7 is a section along line *xx*, Fig. 2. Fig. 8 shows parts of Fig. 7 in a different position than in Fig. 7. Fig. 9 is a section along line *uu*, Fig. 7. Fig. 10 is a section along line *vv*, Fig. 9. Fig. 11 is a detail view of part of the feed-rack, with adjacent parts sectioned along line *v'v'*, Fig. 7. Fig. 12 is a view like Fig. 11, with parts in a different position. Fig. 13 shows sectional views of the feed-rack in different positions. Fig. 14 is a plan view of the machine with the platen removed. Fig. 15 is a detail elevation of a platen. Fig. 16 is a sectional elevation of a modified arrangement of platen. Fig. 17 is a section along line *ww*, Fig. 16.

The frame 1 of the machine is provided with keys 2 3 4 5, the keys 2, as will presently appear, serving to actuate the type-bars, the keys 3 and 4 shifting the platen for writing with different types of the type-bar, and the key 5 serving to move the dog out of engagement with the feed-rack of the paper-carriage. These keys are fulcrumed at 6, Fig. 7, at the rear of the machine, and a cross-

piece 7 supports restoring-springs 8 for the keys.

The keys 2 have each an eye or hook 9, engaging a pin or projection 10 of a bell-crank lever 11 and 12. These bell-crank levers are fulcrumed at 13, and are each jointed at 14 to the slotted tail 15 of a type-arm 16. These type-arms 16 are fulcrumed at 17, the fulcrum or shaft 17 for the type-arm being bent into approximately semicircular form and supported in a similarly-shaped plate 18, secured to the frame 1. When at rest, the free or type ends of the type-arms are supported by a semicircularly-bent strip 19, secured to the frame 2. When a key 2 is depressed, it actuates its lever 11 12 and type-lever 15 16 to throw the type end with the required type against the platen or roller 20. The roller 20 is carried by the carriage 21, which, as known, is exposed to the influence of a spring drum or actuator 22, Fig. 3, which, in connection with the feed-rack 23, Fig. 7, and the dog to be hereinafter described, gives a step-by-step motion to the carriage. The carriage is hinged at its rear to a bar 24, secured to frame 1, and along which bar the carriage can reciprocate, the front of the carriage having a roller 25 adapted to travel on bar 26, secured to said frame 1.

The carriage platen or roller 20 is not fixedly journaled in the carriage, but said roller is made shiftable independently of the carriage, so that while the carriage remains on its tracks 24 and 26 the roller can be shifted to bring the paper on the roller to the printing-line of one or another of the plurality of type on the type-bar.

The shaft A, Figs. 1, 4, and 7, of the roller 20 is journaled in a frame 27, appropriately called a "platen-frame," and jointed at 28 to arms 29, fixed to the shaft 30, which can turn or swing in suitable bearings on the carriage. To the shaft 30 is fixed a toothed collar 31, Figs. 1 and 3, engaged by a toothed collar 32, mounted loosely on the shaft 30 and exposed to the pressure of a spring 33, coiled loosely about the shaft and braced against a suitable part of carriage 21.

The rotary collar 32 has eyes or perforations 34, Fig. 3, for the engagement of a key or tool



to wind or turn collar 32, to bring spring 33 to the proper tension, this spring tending to turn rod or shaft 30 for swinging arms 29 upward, so as to aid or ease the lift of the platen or roller 20, the tension of this spring 33, however, not being sufficient to enable the spring unaided to lift the roller.

The platen-frame 27 supporting the shaft of the roller has a wheel or disk 35, journaled on an arm 36 depending from said frame, said wheel 35 traveling on the track or bar 37 extending across the machine. Said track 37 is supported on arms 38, Figs. 4 and 14, fixed to a rock-shaft 39, Fig. 4, so that by rocking said shaft 39 the arms 38, with track 37, will be swung to raise or lower wheel 35, with frame 27 and roller 20. To the rock-shaft 39 are fixed arms 40, Fig. 4, engaged by arms 41, one such arm 41 extending from each of the keys 3 and 4, already named, and which keys move independently of one another. The key 4 when depressed will raise track 37, and when said key 4 is then released the track 37 will fall back to its starting-point, while when key 3 is depressed said key will not only raise the track, but will also be automatically locked to hold the track elevated until said key is unlocked. This key 3 has at its front vertical face or edge a notch 42, Fig. 4, into which, on the depression of this key, snaps a detent or lock 43, fixed to rock-shaft 44. To this rock-shaft 44 is fixed a releasing-arm 45, Fig. 7, extending toward the front vertical edge of key 4, said last-named key being so shaped that on the depression of key 4 said edge will press against arm 45 to swing the latter, with shaft 44 and detent 43, into position to release key 3. The key 4 thus serves not only for raising the track 37 with roller 20, but also for unlocking key 3, as required. The rock-shaft 44 is exposed to pressure of spring 46, tending to move detent 43 to locking position.

The ribbon-spools B B' are provided with an ink-ribbon 47 passing by the ribbon-guide 48, which ribbon-guide has its upper portion where the ribbon passes made forked, the type-bar when printing being made to strike between the tines of this fork to move the ribbon toward the roller. As the roller is shifted up or down, the ribbon-guide with the ribbon is similarly shifted to keep the ribbon in proper position relatively to the roller or to the printing-line. This ribbon-guide 48, as seen in Figs. 7 and 8, is jointed at 49 to an arm 50 of lever 50 51, fulcrumed at 52 to an arm 53 rigidly fixed to track 37. As the track 37 rises and falls to shift the paper-roller up or down, said track carries with it the arm 53 and fulcrum 52, so that lever-arm 50, with guide 48, is shifted with the track 37.

The lever-arm 51 is jointed at 54 to link 55, jointed at 56 to the plate or support 57, carrying the feed-dog, to be presently described. As said plate 57 oscillates back and forth to give the feed-dog the well-known reciprocation for permitting the step-by-step feed of the paper-carriage, said plate, by means of

link 55, will oscillate lever 51 50, so that the ribbon-guide 48, which normally rests below the printing-line to expose the latter to view, will, during the printing stroke of the type-bar, be brought up to the printing-line to cause the ribbon to be struck by the printing type-bar. The ribbon-guide 48 thus has two motions, one by means of its connection to track 37 for accompanying the paper-roller as it is shifted and another by means of its connection to the feed-dog support 57 for moving to and from the printing-line.

The feed-dog support 57 is supported on arms 58, Figs. 7, 8, and 14, jointed at 59 to arms 60, fixed to rock-shaft 61. This rock-shaft 61 has a fixed toothed collar 62, engaged by loose toothed collar 63, exposed to pressure of spring 64, so that the tension of the spring tends to move arms 58 forward. These arms 58 are also connected to the universal bar 65, arranged in semicircular form back of the notches of the semicircular or curved plate 18, so that when a type-bar moves to the printing position the projection 66, Figs. 7 and 8, on such type-bar will press back the universal bar 65 against the pressure of spring 64, so as to give arms 58, with support 57, a backward stroke. On the return of the type-bar from the position shown in Fig. 8 to that shown in Fig. 7 the spring 64 will swing shaft 61 to move arm 60 with support 57 forward.

The feed-dog comprises the teeth C D D', Figs. 7, 8, 11, 12, and 13, the tooth C being slidable, as known, so that when this tooth C is thrown into engagement with the feed-rack 23 the paper-carriage is moved a step by the motor 22, while the teeth D and D' are each non-slidable, so that when either of these teeth D or D' is in engagement with the rack 23 the carriage is held against the action of the motor. As seen, there is a non-slidable tooth on each side of the slidable tooth C. The rack 23, when in the position shown in Figs. 7 and 8, is normally in engagement with the slidable tooth C, Fig. 7, and on a type-arm moving to the printing position, Fig. 8, a non-slidable tooth is brought into engagement with the rack, so that during this printing movement of the type-arm the rack with the carriage remains stationary, the slidable tooth C at the same time being freed to snap back a step, as known. On the return of the type-arm the slidable tooth C again engages the rack, and said tooth C, with rack 23, is now moved a step forward. When the rack 23 has been shifted to the position shown in Fig. 13, said rack is normally in engagement with a non-slidable tooth D, as seen at the left-hand illustration in Fig. 13, and during the printing movement of the type-arm the slidable tooth C is brought into engagement with the rack, as seen at the right hand in Fig. 13, so that during this printing movement the rack, with the carriage, moves a step forward, while during the return movement of the type-arm the non-slidable tooth D is brought back into engagement with the rack, so that the latter now remains sta-



tionary, the slidable tooth C at the same time being freed to snap a step backward. By setting the rack 23 the paper-carriage can thus be made to move a step forward, either during the return stroke or during the printing stroke of the type-arms, as desired. The rack 23 being eccentrically mounted or fixed to rod 67, Figs. 8, 9, and 13, a half-turn of this rod by means of finger-button 68 will shift the rack to the position shown in Fig. 8 or in Fig. 13, as required. The rod 67 has its bearings in a suitable frame 69, supported by arms 70, Figs. 1, 4, and 7, pivoted or fulcrumed to carriage 21, so that a depression of the forward end of either arm 70 will lift the rack out of engagement with the dog. One arm 70 extends forward at one side of the carriage and is provided with a finger-piece or key 71, Fig. 1, for readily depressing the forward end of said arm. The other arm 70 extends forward at the other side of the carriage and terminates under a lever-arm 72, Fig. 1, fulcrumed to the carriage at 73 and provided with a handle or finger-piece 74, Figs. 1 and 3, which when suitably actuated will depress arm 72, with the contiguous arm 70, to lift rack 23 out of action. The rod 67 is not only rotary, but also longitudinally movable in its bearing or frame 69, and said rod has wings or lugs 75, Figs. 9 and 10, fixed to the rod and held by spring 76 in engagement with shoulders or recesses on frame 69. When the rod 67 is moved longitudinally against the action of spring 76, the wings 75 are freed or moved away from the locking-shoulders, so that the rod 67 can be given a half-turn before the wings 75 are again allowed to lock the rod 67 against rotation.

The slidable tooth C, already named, is supported by a slide-arm 77, Figs. 11 and 12, having slots engaging the pivot 78 and pin 79, the pivot 78 being fixed to the support 57 and the pin 79 being secured to the arm 80, straddling the arm 77, said arm 80 being pivoted at 78, but not capable of sliding. Said pin 79 is guided in a slotted arm 81, extending from support 57. The spring 82, braced against support 57, engages the arm 83, depending from slide 77, and said spring not only tends to move slide 77 backward, but also tends to swing said slide, with arm 80, upward to hold the teeth C D D' in engagement with the rack. From slide 77 extends a finger 84 under a finger 85, Fig. 7, fixed to a rock-shaft 86, the spring 87, Fig. 14, of which tends to turn the shaft 86 to hold finger 85 up out of contact with finger 84. When, however, the shaft 86 is rotated so that the finger 85 depresses finger 84 with teeth C D D' to move the latter out of gear with rack 23, the paper-carriage is free to be moved by motor 22. It is thus noticed that the carriage can be freed either by lifting rack 23 out of gear or by depressing the dog-teeth C D D' out of gear. The shaft 86 can be rocked to depress the dog by means of key 5, already noticed, said key having a horn or arm 89,

Figs. 3 and 4, jointed at 90 to lever 91 92, fulcrumed at 93 and engaging arm 94, fixed to rock-shaft 86, so that a depression of key 5 will turn shaft 86 against the action of spring 87. To the rock-shaft 86 is also secured a stop-arm 95, Figs. 3, 7, and 14, which can be adjusted or fixed along the shaft by clamp-screw 96. When the shaft 86 has been rocked against the action of spring 87, the arm 95 has been thrown forward to come into the path of the slide-rod 97, Fig. 3, supported in eyes or ways fixed to carriage 21 and exposed to the pressure of a spring 98, suitably braced against any part of the carriage, and which spring tends to force the rod 97 forward or in the direction in which motor 22 tends to move the carriage. When the shaft 86 has been rocked to free the dog C D D', and the carriage in consequence rushes forward, the sliding rod 97, becoming arrested by stop-arm 95, will cause the carriage 21 to be gradually arrested by the compression of spring 98, so that the carriage will not be excessively jarred.

The carriage 21 is provided, as shown, with an index 99, traveling over scale-plate 100, and said carriage also has a lip 101, Fig. 1, which, when the carriage nears the end of its forward travel, will first press on shoulder E and then on the somewhat higher shoulder E', said shoulders being formed by a step-shaped piece or lug secured to rock-shaft 102, journaled in frame 1. To this rock-shaft 102 is fixed an arm 103, Fig. 7, normally held or swung back by spring 104; but when the carriage has passed far enough forward for its lip 101 to press on shoulder E, the arm 103 has been swung far enough forward for its free end or the pin 105 at said end to have passed over the forward end of bell-hammer lever 106, thus first raising said hammer and then allowing it to drop for sounding bell 107, whereby the approach of the end of a line is announced, as known. Passing to the limit of its forward travel the carriage will bring its lip 101 over the higher shoulder E', so as to rock the shaft 102 for swinging arm 105 farther forward into contact with lip 108, projecting from the locking bar or rod 109, supported on swinging arms 110, carried by shaft 111, supported by frame 1. The bar 109 being thus swung forward by the extreme forward swing of arm 103, said bar 109 will catch or come to rest under the hooks 112, projecting from the type-keys 2, thereby locking said type-keys against further action until by the setting back of the carriage the shoulders E E', with rock-shaft 102 and arm 103, are free to be swung back by spring 104.

The lug or shoulders E E' are adjustable along rock-shaft 102, so that the forward travel of the carriage can be arrested at various points according as said shoulders E E' are set or adjusted. The adjustment of the shoulders E E' can be indicated along the scale-plate by index F, secured to said shoulders. When adjusted, the shoulders can be



held in place by means of the toothed bar 113, Fig. 1, secured to rock-shaft 102, said shoulders having a locking-pin 114, actuated by handle 115, for engaging or disengaging with the rack 113. The handle 116 enables the shoulders when free to be readily slid or moved along shaft 102. The back-set of the carriage can also be determined by a stop 117, Fig. 1, adapted to be adjusted and clamped on track 26 by a jam-screw 118, the position of this stop being indicated by its index 119 along the scale-plate. The carriage has a depending stop 120, Fig. 2, adapted to strike against stop 117 on the carriage being set back. This stop 120 depends from an arm 121, Fig. 1, jointed to the carriage at 122 and engaging at its free end with the arm 123 of lever 123 124, fulcrumed to the carriage at 125. Should it be desired at any time to set the carriage back beyond the point determined by stop 117 without moving said last-named stop the depression of lever-arm 124 will raise stop 120 sufficiently for clearing stop 117, and on releasing lever 123 124 the stop 120 will drop back to engaging position.

The ribbon-spools B B', already named, can be rotated so that the ribbon winds onto either one or another of the spools during the operation of the machine, or, if desired, said spools can be left stationary during such operation. To the shaft of each of said spools is secured a ratchet-wheel 126, Figs. 2 and 4, one or another of which can be engaged by a spring-finger 127, forming pawls. These spring-fingers are each secured to a lever 128, fulcrumed at opposite side plates of frame 1 and connected at their upper ends by a bar 129, connected to universal bar 65. When this universal bar oscillates back and forth, as already noticed, it oscillates levers 128 with the spring-fingers 127. These fingers 127 normally tend to clear the ratchet-wheels 126, but said fingers can alternately be moved to engaging position by spring-fingers 130, located at opposite arms of the lever 131, Fig. 2, centrally fulcrumed at 132. By swinging lever 131 one or another of its arms will be raised, so that either the pawl for the ratchet-wheel of a spool B or that for the ratchet-wheel of spool B' will be pressed into engaging position to rotate its spool as said pawl oscillates with its respective lever 128. The spool rotated by its pawl winding or taking up the ribbon will naturally unwind the ribbon from the other spool, which is meantime left free or loose from its pawl although said last-named pawl oscillates in time with the other pawl. By throwing the lever 131 to an intermediate position the spring-fingers 130 will not be able to press either of pawls 127 to engaging position, so that the spools B B' will both remain at rest even while levers 128 oscillate the pawls 127. The fingers 130 are shown arranged in pairs, one finger of each pair also serving as a detent for its toothed wheel 126. The lever 131 can be locked in its two extreme positions or in its intermediate position by

means of notches 133, Fig. 4, in frame 1. Into one or another of said notches an arm or shoulder of said lever 131 can engage for setting the lever in one of the three named positions.

The spools B B' have their shafts mounted in plates 134, Figs. 4 and 7, having legs 135 adapted to slip into suitable pockets or seats on frame 1, said plates being provided with spring-catches 136, adapted to lock under shoulders 137 on said frame. By moving catches 136 to releasing position the plates 134, with the ribbon-spools, can be pulled up out of place to be removed from the machine. The shafts of the spools have finger-buttons 138, Figs. 2 and 4, projecting through suitable holes in frame 1, so as to be within reach for turning the spools by hand. The plates or supports 134 carry the bearings 139 for the rollers over which the ink-ribbon is guided to the already-named ribbon-guide 48.

The paper roller or platen 20 is shown in Figs. 1 and 15 with its shaft A extending through platen-frame 27. If this roller is to be made readily removable from frame 27, its shaft A is not allowed to extend through frame 27, but, as seen in Fig. 16, said shaft A, stopping short of platen-frame 27, is supported in a supplemental platen-frame 140, having lugs or projections 141, adapted to sit or drop into suitable seats on platen-frame 27. The platen-frame 27 has at each side short shafts A', pressed inward or toward one another by springs. To each shaft A' is fixed a disk 142, having a central aperture into which can sit the ends of shaft A, said disk also having an eccentric eye or eyes 143, adapted to be engaged by an eccentric-pin 144 on plate or disk 145, one such disk 145 being fixed to each end of shaft A. The shafts A A' being thus locked together the rotation of hand-wheels G' or of one of said wheels will rotate platen 20 in Fig. 16 the same as when one of the wheels G, Fig. 15, fixed to shaft A, is rotated. By spreading or pulling apart the shafts A', Fig. 16, the shaft A, with its disks 145, is freed from disks 142, so that the supplemental platen-frame 140, with platen 20, can be readily lifted out of platen-frame 27, leaving the latter connected to the carriage by the pivots or screws 28. Should it be desired to remove the frame 27, it is simply necessary to unscrew the pivots 28, by which said frame 27 is jointed to the swinging arms 29.

When the roller of Figs. 16 and 17 is removed from the frame 27, said roller is locked against rotation by the detent 146, Fig. 17, being moved by spring 147 into engagement with teeth on one of the disks 145. Should said roller with partly-completed writing thereabout be removed from the machine, said writing with the roller will thus be locked, so that the writing can continue on without derangement when the roller is dropped back into its place in frame 27. Dropping the roller into its place in frame 27 will unlock



the detent 146, as a stud 148 projects from frame 27 at such a height that when the roller-frame 140 is down in its place in frame 27 said detent 146 rests on said stud or release 148, so as to be held up away from the teeth on the adjacent disk 145, leaving said disk, with roller 20, free to rotate.

The hand-wheels G or G' enable the roller 20 to be turned either back or forward, as the detent or spring 149, Fig. 5, has its engaging or free end so rounded that it locks the ratchet-wheel 150, Figs. 5, 15, and 16, on shaft A or on a shaft A' against accidental rotation, but not against its being turned either way by wheels G or G'. The wheel 150 can also be turned for feeding the paper forward during writing by means of the horizontally-swinging lever 151, Figs. 1 and 5, fulcrumed at 152 to carriage 21 and having a pin 153 engaging or slipping into the hooked end of slide 154, suitably slotted, so as to be guided while sliding by pins 155 on frame 27. On this slide swings a pawl 156, having a tooth 157, and pressed by spring 158 toward ratchet 150. As the slide 154 moves back, its pawl-tooth 157 engages ratchet 150 to rotate the latter, with roller 20, forward, while on the return of the slide the tooth 157 rides over ratchet 150 without engaging the latter. The tooth 157 in its reciprocations can be made to rotate the ratchet 150 the space of one tooth or of two teeth, as desired. From the tooth 157 of the pawl 156 depends a lip 159, Fig. 6, into a slot in a slide 160, capable of being set back or forward by button 161. In the position of parts shown in Fig. 6 the lip 159 is down in the slot in slide 160, so that on the back stroke of pawl 156 its tooth 157 will at once engage wheel 150 to rotate the latter during the entire back stroke of the pawl. If, however, slide 160 is moved back, its unslotted forward portion will lift lip 159 to raise tooth 157 out of engaging position, so that the latter will not engage wheel 150 until after the pawl 156 has moved some distance back, this partially-lost backward motion of the pawl resulting in a diminished rotation of wheel 150.

In Fig. 6<sup>b</sup> the slide 160 is shown moved back and the pawl 156 out of engagement with the ratchet 150, in which position of parts the platen is free to be turned either forward or backward.

The lever 151, as already noticed, when oscillated will reciprocate slide 154, and the slide 154 when free is moved forward by a spring 162, Figs. 5, 6, and 15, suitably supported by a pin 163 on frame 27 and braced against shaft A.

About the roller 20 extends a guard-plate 164, which, as seen in Fig. 8, extends forward close to the printing-line, so as to hold the sheet for writing close to its bottom edge. Through slots or openings in this guard-plate extend the rollers 165, Figs. 4 and 15, their shafts 166 being supported by arms 167, extending from toothed collars 168, loosely

mounted on shafts 169, fixed in frame 27. The toothed collars 168 are engaged by loose toothed collars 170 exposed to the tension of springs 171, braced against collars 172, fixed to shafts 169. The tension of the springs 171 is such that the collars 168, with arms 167, press the rollers 165 against the roller 20 to keep a sheet smoothed about the roller while being written on. The winding or turning of collars 170 will regulate the spring-tension.

With reference to the actuation of the bell-hammer lever by the arm 103, Figs. 1, 4, and 7, it may be noted that said arm in its forward swing actuates the hammer-lever, but does not actuate the latter when returning, said arm when swinging forward pressing on the inclined lip 173, which is pivoted to the hammer-lever at 174, so as to be incapable of yielding downward without the hammer-lever when the arm 103 presses on this lip 173 in its forward stroke. Said lip, however, can yield upward independently of the hammer-lever, so that the arm 103 on its return swing in passing under the inclined lip 173 will lift the latter independently of the hammer-lever, said lip, after the arm 103 has passed back, dropping or swinging down to rest on the hammer-lever 106, so that the next forward stroke of the arm 103 will again depress lip 173 with lever 106.

As the type-arms are pivoted near one end and have their short arms pivoted to the longer arms of the crank-levers 11 12, said crank-levers being fulcrumed at the ends of their shorter arms and being pivoted at their angles to the keys 2, the parts are in position to cause a slight depression of the key to effect a long and swift stroke or sweep of the type end of the type-arm, so as to obtain a clear and perfect impression. As the crank-levers 11 12 are pivoted directly to the type-arms and to the keys, the construction is made simple, and unnecessary parts with liability of loss or disorder are avoided.

In front of the movable ribbon-guide 48 is fixed a guide or fork 175', between the tines of which the type end of the bar is properly guided at the moment of printing or striking.

The stop 95, Figs. 3 and 7, when set by its screw 96 so as to arrest the carriage at a certain distance before the extreme end of its possible travel, can be practically utilized for certain kinds of writing—as, for example, in making out a bill where a column of figures has to be placed at or near the right-hand edge of the sheet—the stop 95, when brought into action by the releasing rock motion of the shaft 86, serving to arrest the carriage each time at the point where the figures on successive lines have to be started to fall into the required column.

The lip 159, Fig. 6, of pawl 156, already named, when said pawl is in its backward position, will abut or nearly abut against an edge of frame 27, so that said pawl is prevented by the contact of lip 159 with the edge 175, Fig. 6<sup>a</sup>, of frame 27 from lifting or jump-



ing out of engagement with wheel 150, thereby locking said wheel when the pawl has reached the end of its back stroke, the wheel 150, with the platen, being thus prevented from rotating  
5 by accident or by its own impetus beyond the required degree.

What we claim as new, and desire to secure by Letters Patent, is—

1. A type-writing machine comprising a  
10 frame 1 provided with bars 24 and 26 fixed respectively to the rear and to the front of the frame, a carriage-frame 21 having at its rear portion eyes made to clasp and slide on said rear bar; said carriage-frame being extended  
15 forward to rest on said front bar, a platen-frame set loosely into the carriage-frame so as to be inclosed therein, links jointed to said platen-frame, and a spring-pressed rock-shaft  
20 mounted longitudinally at the back of the carriage-frame and to which said links are secured, substantially as described.

2. A carriage, combined with a platen or paper roller, swinging arms connected to said roller, a shaft for said arms, a lifting-spring  
25 for the roller coiled about said shaft, and a finger-key made to coöperate with the spring for lifting the roller, substantially as described.

3. A carriage, combined with a paper-roller,  
30 swinging arms connected to said roller, a shaft to which said arms are fixed, a spring coiled about the shaft, a toothed collar loosely mounted on the shaft and engaged by the spring, and a second toothed collar fixed to  
35 the shaft and engaged by the loose collar substantially as described.

4. A carriage, combined with a paper-roller, swinging arms connected to said roller, a shaft  
40 to which said arms are fixed a spring coiled about the shaft, a toothed collar loosely mounted on the shaft and engaged by the spring, and a second toothed collar fixed to the shaft and engaged by the loose collar, said  
45 loose collar being adapted for the engagement of a key for rotating said loose collar to wind the spring substantially as described.

5. A carriage and a vertically-movable paper-roller, combined with fixed ribbon-spools and with a ribbon-guide made vertically mov-  
50 able with the platen, substantially as described.

6. A carriage and a track or way for the carriage, combined with a paper-roller made shiftable independently of the carriage, a  
55 shiftable track or way for the platen, and a ribbon-guide connected to the shiftable track so as to be moved by the latter substantially as described.

7. A carriage and actuating mechanism sub-  
60 stantially as described for the carriage, combined with a paper-roller made removable from the carriage, a lock for the paper-roller, a removable frame carrying the lock and a release carried by the carriage for freeing the  
65 lock as the paper-roller is inserted into the carriage substantially as described.

8. A carriage and actuating mechanism sub-

stantially as described for the carriage, com-  
bined with a paper-roller made removable from the carriage, said paper-roller having a  
70 shaft and eccentrically-located catches or studs, and said carriage being provided with rotary shafts having catches or recesses adapted to engage the paper-roller shaft and catches, one of said rotary shafts being made  
75 movable so as to engage and release the platen substantially as described.

9. A carriage-frame, combined with a shift-  
able platen-frame 27 supported by the car-  
riage-frame, a supplemental platen-frame 140, 80  
a platen or paper roller carried by the supplemental platen-frame, supporting-studs 141  
15 for the supplementary platen-frame made to rest loosely on the platen-frame, and jour-  
nals for the platen made to extend through 85  
the supplemental platen-frame, said platen-frame being provided with shafts adapted to engage the platen-journals, one of the shafts  
being endwise movable for detachably lock-  
ing the supplemental platen-frame to the 90  
platen-frame substantially as described.

10. A platen combined with smoothing-roll-  
ers, supporting-arms for the rollers, toothed  
collars for supporting the arms, a fixed shaft  
for the collars, and spring-pressed toothed 95  
collars loosely mounted on the shaft and made to engage the arm-supporting collars, said  
spring-pressed collars being rotatable inde-  
pendently of the arm-supporting collars for  
adjusting the tension of the springs, substan- 100  
tially as described.

11. A platen and a type-bar, combined with  
a ribbon-guide a lever and link made to ac-  
tuate the ribbon-guide, a movable support to  
which the link is connected, and a key for 105  
actuating the type-bar and the support, a universal bar, and arms for connecting the  
universal bar and the support, said type-bar  
being detached from said support and pro-  
vided with a projection or heel adapted to 110  
strike and actuate the universal bar with the  
arms and support toward the end of the print-  
ing movement of the type-bar, substantially  
as described.

12. A platen and a type-bar, combined with 115  
a ribbon-guide, a lever and link made to ac-  
tuate the ribbon-guide, a movable support to  
which the link is connected, a key for actu-  
ating the type-bar and the support, and a ver-  
tically-movable track for the platen, said le- 120  
ver being connected to said track so as to be  
actuated by the movement of the latter sub-  
stantially as described.

13. A platen and a shiftable feed-rack  
therefor, combined with a dog comprising a 125  
central slidable tooth and lateral non-sliding  
teeth, vibrating arms made to carry said  
teeth, a pivot common to said arms, and a  
connecting-pin for causing said arms to vi-  
brate in unison, the arm of the slidable tooth 130  
being slotted to slide on said pivot and pin,  
substantially as described.

14. A platen and a feed-rack therefor, com-  
bined with a dog for the rack, an actuating-



support on which the dog is movably mounted, a finger adapted to engage the dog for moving the same out of engagement with the rack, a rock-shaft fixed against the movement of the platen and rack and on which the finger is mounted, an actuating lever or arm for the shaft, and a key for engaging the lever substantially as described.

15. A platen and a feed-rack therefor, combined with a dog for the rack, an actuating-support on which the dog is movably mounted, a finger adapted to engage the dog for moving the same out of engagement with the rack, a fixed rock-shaft on which the finger is mounted, an actuating lever or arm for the shaft, and a key for engaging the lever, said shaft being provided with a stop for arresting the platen substantially as described.

16. A platen and a feed-rack therefor, combined with a dog for the rack, an actuating-support on which the dog is movably mounted, a finger adapted to engage the dog for moving the same out of engagement with the rack, a fixed rock-shaft on which the finger is mounted, an actuating lever or arm for the shaft, and a key for engaging the lever, said shaft being provided with a stop for arresting the platen, and said platen being provided with a spring-actuated or yielding rod or projection to engage the stop substantially as described.

17. A paper-carriage and an actuating-key provided with a catch or shoulder located at the forward or power-receiving portion of the key, combined with a forwardly-oscillating bar adapted to engage or lock said catch, a forwardly-oscillating actuating-arm for said bar normally free from said bar, and an actuating-shoulder for said arm, said carriage being provided with a lip adapted to engage said actuating-shoulder to actuate said arm substantially as described.

18. A paper-carriage and an actuating-key, combined with a bar adapted to engage or lock the key, a swinging arm having its free end placed in proximity to and normally out of contact with the bar, a bell-hammer placed in advance of the bar in the path of the free end of the arm, and a lip on the carriage for actuating the arm so as to make its free end successively strike the bell-hammer and the bar, substantially as described.

19. A paper-carriage and an actuating-key, combined with a bar adapted to engage or lock the key, an actuating-arm for the bar, a rock-shaft for said arm, a shoulder on said rock-shaft, said carriage being provided with a lip adapted to engage the shoulder for actuating the shaft, and a bell-hammer provided with an inclined movable projection along which the arm rides in its forward stroke to actuate the bell-hammer, said arm on its return stroke being made to pass under or lift the projection independently of the bell-hammer substantially as described.

20. A paper-carriage and an actuating-key, combined with a bar adapted to engage or lock the key, an actuating-arm for the bar, a rock-

shaft for said arm, a shoulder on said rock-shaft, a lip on the carriage for engaging the shoulder, and a bell-hammer actuated by said arm, said shoulder being step-shaped so as to be intermittently actuated by the carriage-lip for separately actuating the bell-hammer and the locking-bar substantially as described.

21. The combination with a key provided with an upwardly-extending and rearwardly-open hook rigidly fixed to the key, of a pivoted type-arm and a crank-lever pivoted to said arm, said crank-lever having a pivot-pin onto which the rearwardly-open hook is adapted to slide or engage as the key is inserted or slid into position, substantially as described.

22. The combination with keys, of type-arms pivoted a short distance from one end, and crank-levers fulcrumed at one arm and having the other arm pivoted to short arms of the type-arms, and being pivoted at their angles to the keys substantially as described.

23. The combination with keys, of type-arms pivoted a short distance from one end, and crank-levers having arms of unequal lengths, said crank-levers being fulcrumed at the ends of their shorter arms, and having their longer arms pivoted to the type-arms and being pivoted at their angles to the keys substantially as described.

24. A carriage and a feed-rack for the carriage, combined with a dog having teeth for the alternate engagement of the rack, a bar for actuating the dog, a pivoted type-arm having a shoulder at said pivot for actuating the bar, and an actuating-key for the type-arm said shoulder being made narrow or contracted at said pivot and expanding or wedge-shaped toward its free end substantially as described.

25. A platen-frame a track 26 for the front portion of the carriage and a stop adjustably mounted on the track, in combination with a carriage-frame having a front rail provided with a stop-arm hinged to said front rail of the carriage and made to extend longitudinally along the same and normally in position to engage the stop on the track, and a lever fulcrumed to the front rail of the carriage and made to extend longitudinally along the same and engaging the free end of the stop-arm for moving the latter to releasing position, substantially as described.

26. A suitably-actuated type-arm provided with a plurality of type, in combination with a vertically-movable platen, oppositely-located keys for moving said platen, a lock for one of said keys, said lock having a releasing-arm actuated by another of said keys and a rock-shaft to opposite end portions of which said lock and releasing-arm are fixed substantially as described.

27. A platen and a feed-rack combined with a dog for the rack, a universal bar for actuating the dog, a series of type-arms with keys for actuating the universal bar, restoring-arms placed to the rear of the universal bar,



a rock-shaft to which the restoring-arms are connected, a restoring-spring connected to the rock-shaft, and links made to connect the universal bar and the restoring-arms, said  
5 dog being supported on said links between the universal bar and the restoring-arms substantially as described.

28. A frame provided with a suitably-actuated platen and type-bar, combined with rib-  
10 bon-spools having frames provided with lips and releasable detents, said first-named frame being provided with seats and shoulders for the engagement of the lips and detents substantially as described.

15 29. A frame provided with a suitably-actuated platen and type-bar, combined with rib-

bon-spools having frames provided with lips and releasable detents, said first-named frame being provided with seats and shoulders for the engagement of the lips and detents, and  
20 actuating buttons or handles for the spools, said frame being perforated for the access or passage of said handle substantially as described.

In testimony whereof we have hereunto set  
our hands in the presence of two subscribing  
witnesses.

HERMAN L. WAGNER.  
FRANZ X. WAGNER.

Witnesses:

WM. C. HAUFF,  
E. F. KASTENHUBER.