

H. S. McCORMACK.
TYPE WRITING MACHINE.
APPLICATION FILED JUNE 18, 1908.

943,445.

Patented Dec. 14, 1909.

4 SHEETS—SHEET 1.

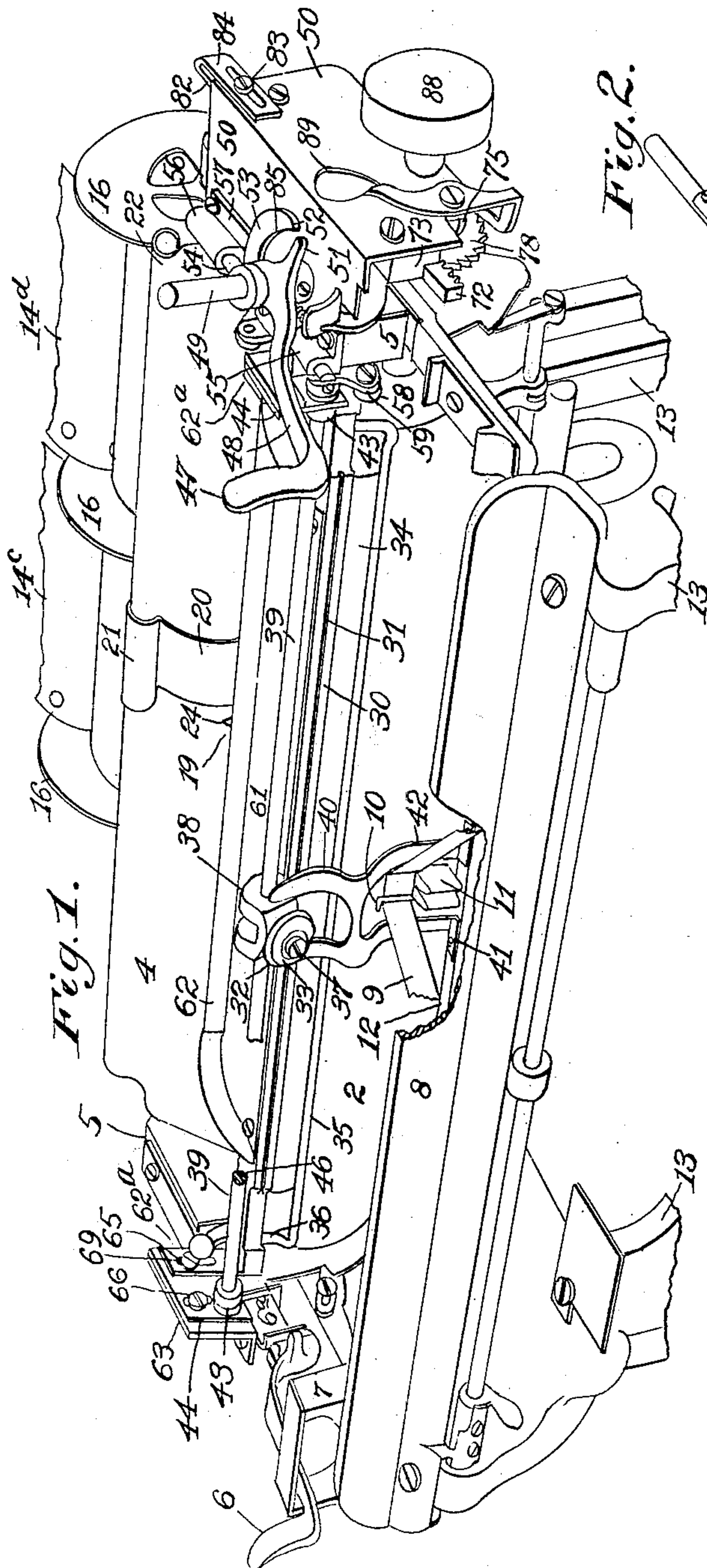


Fig. 2.

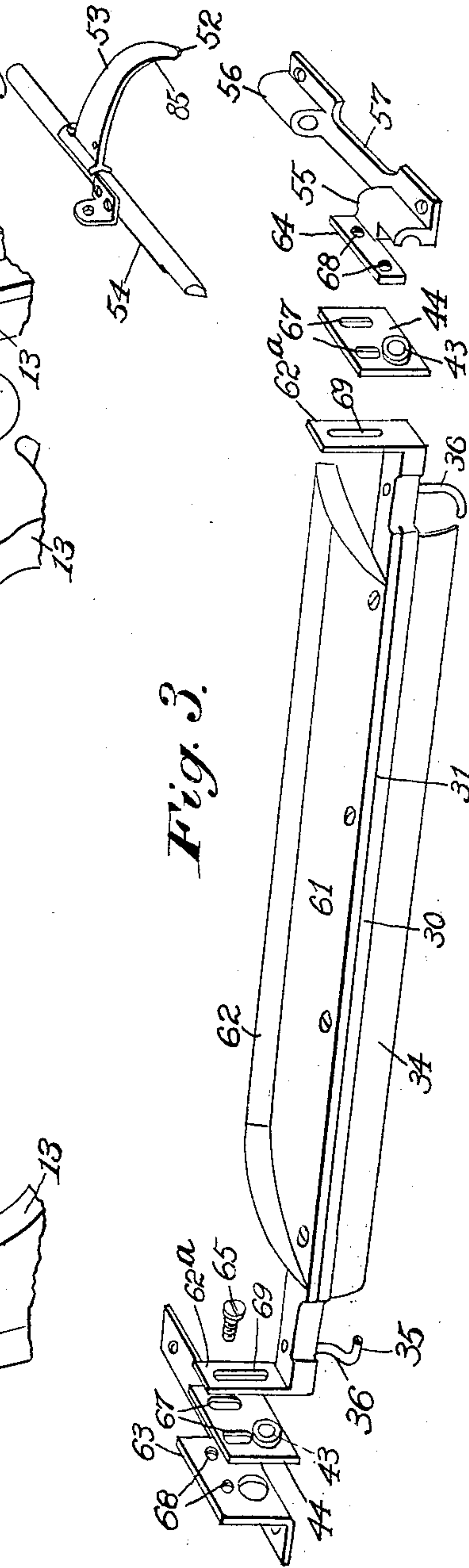


Fig. 3.

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By his Attorney
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4 SHEETS—SHEET 2.

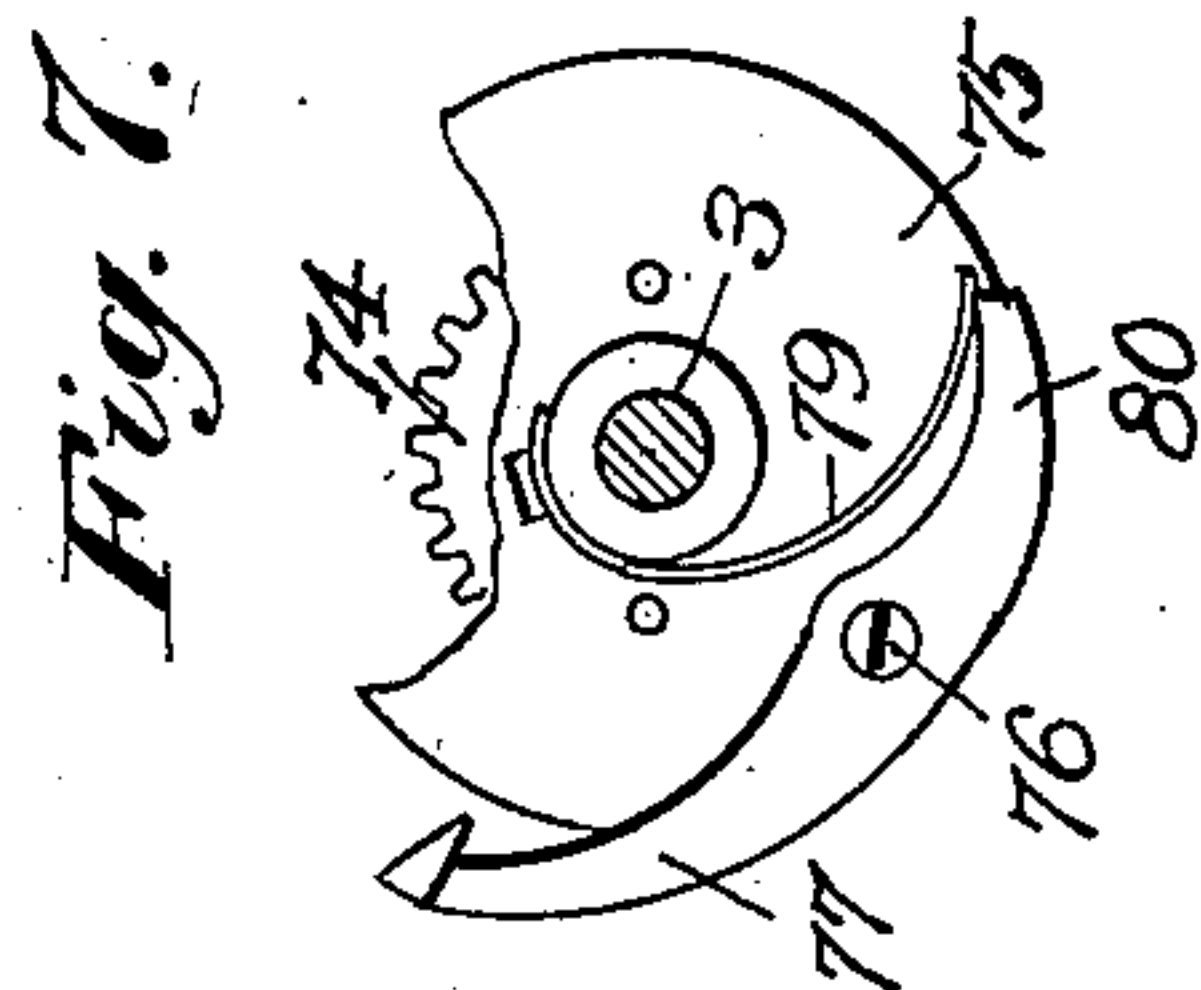
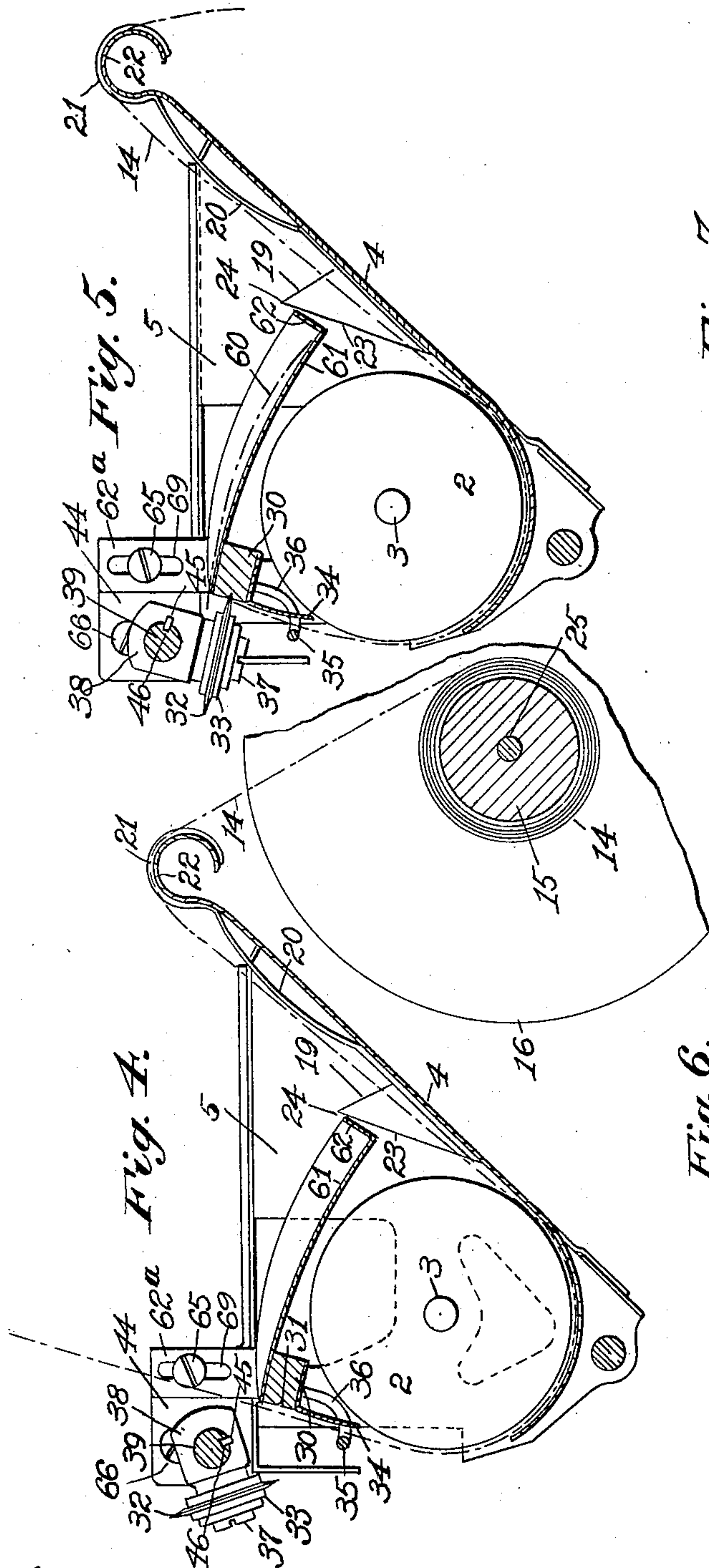
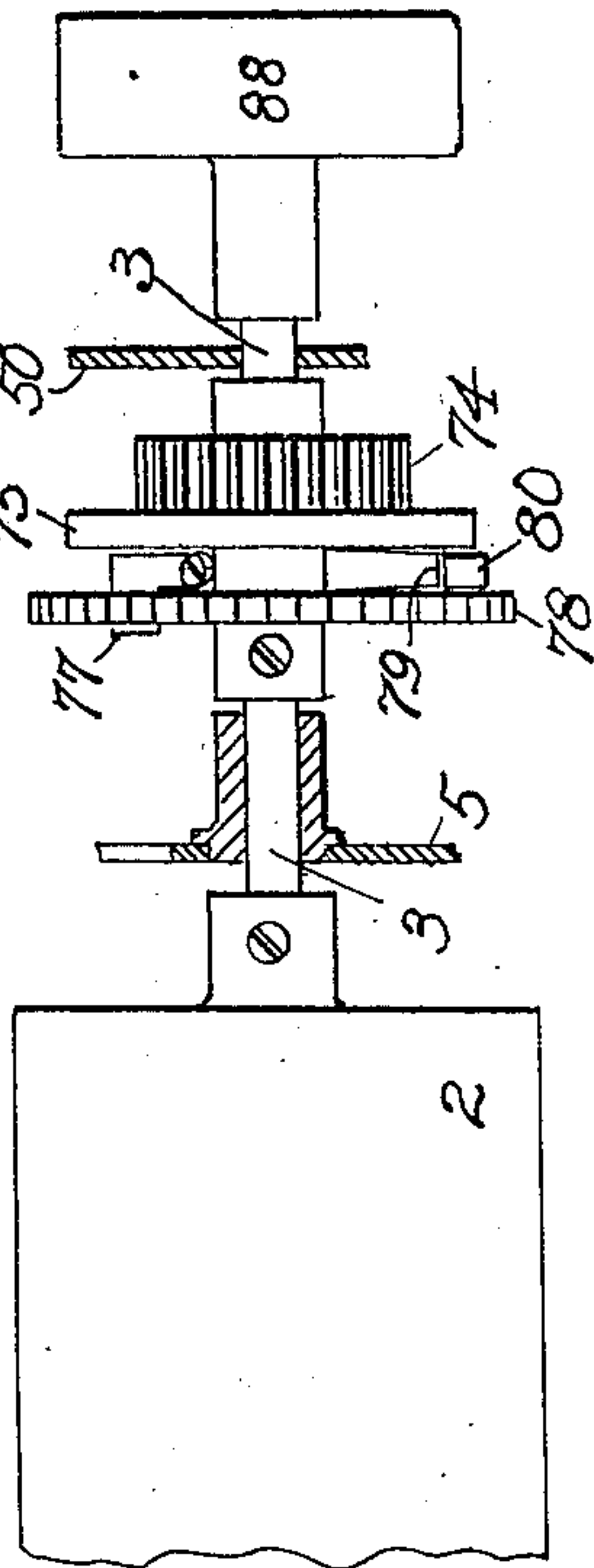


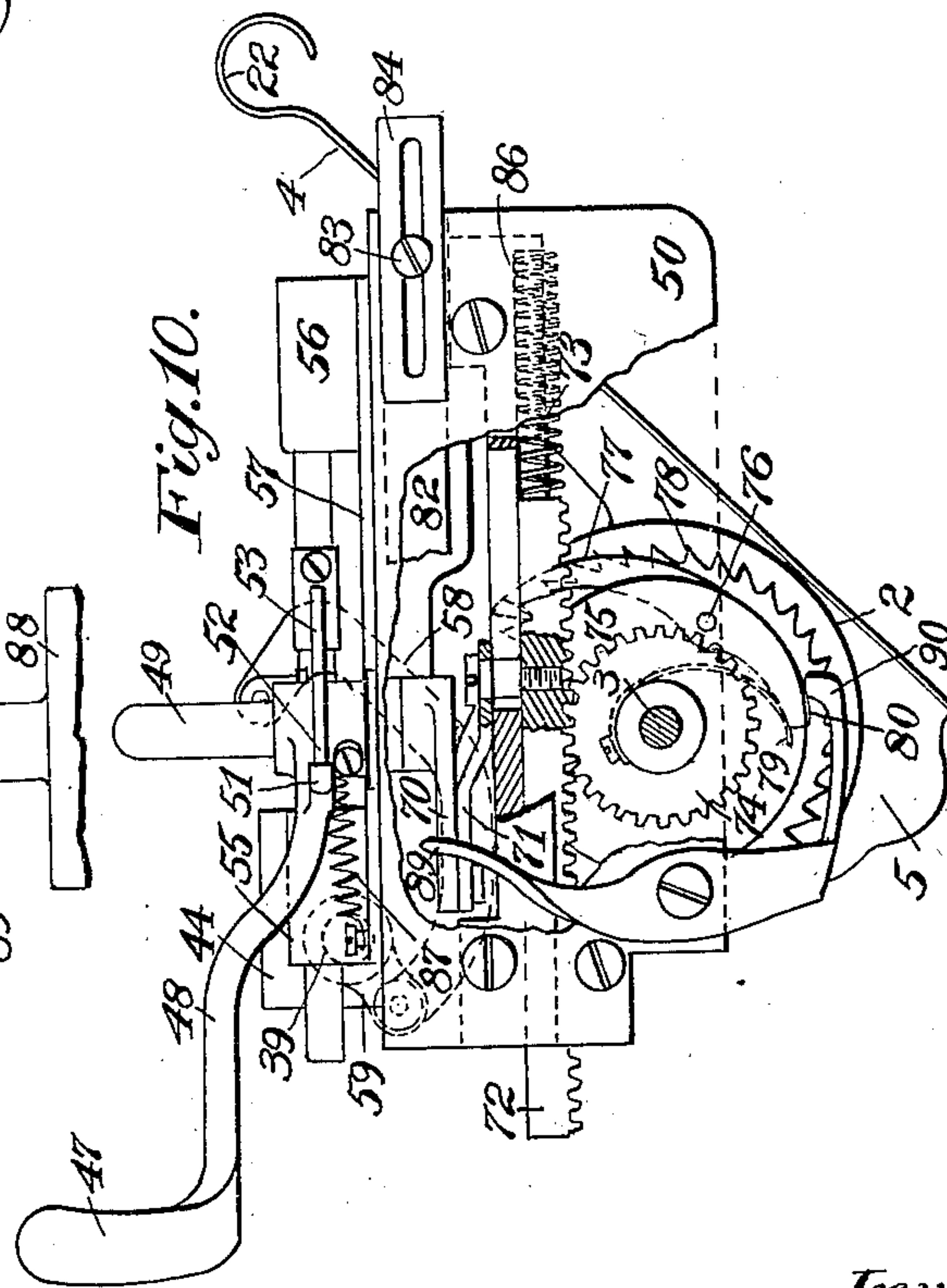
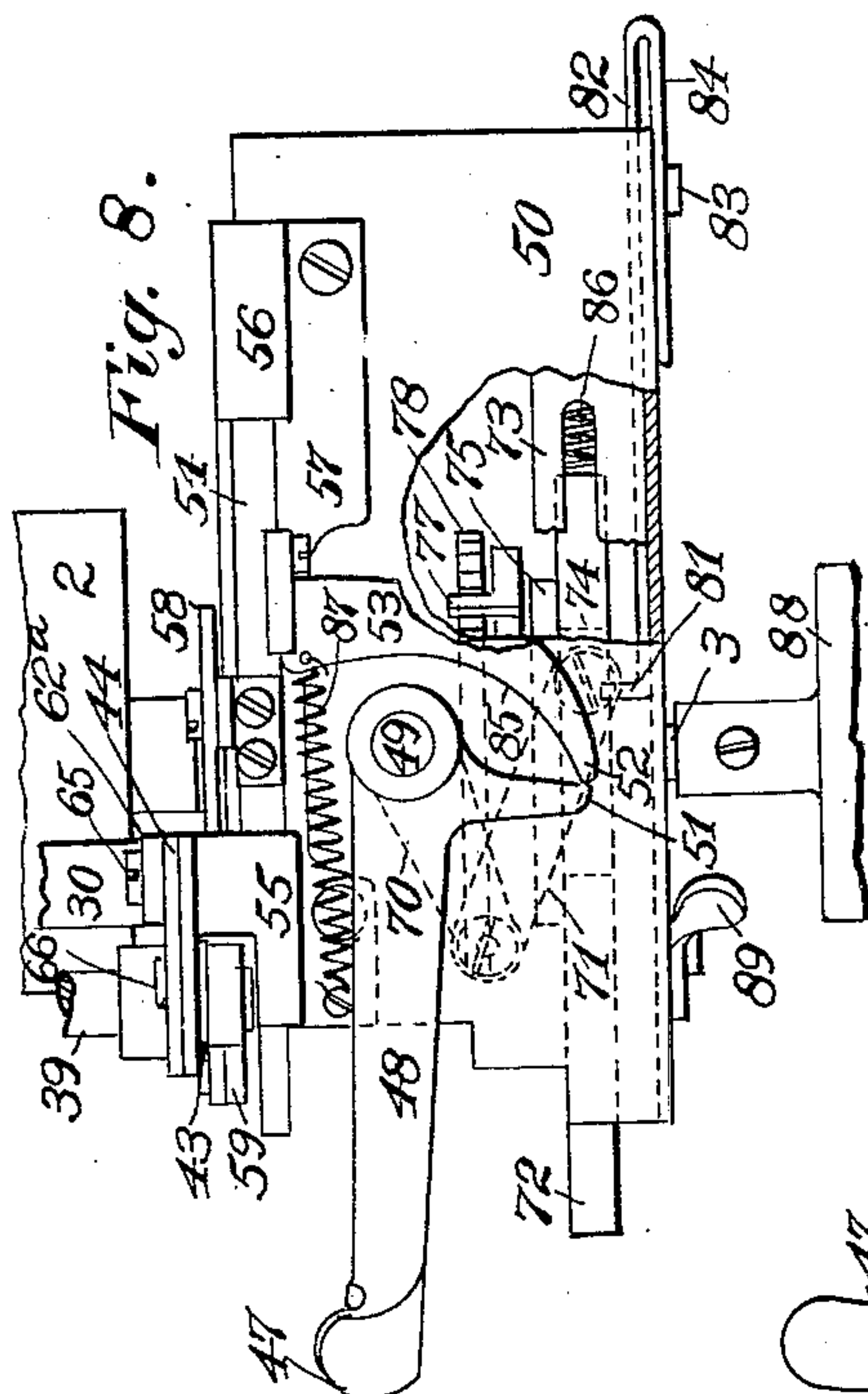
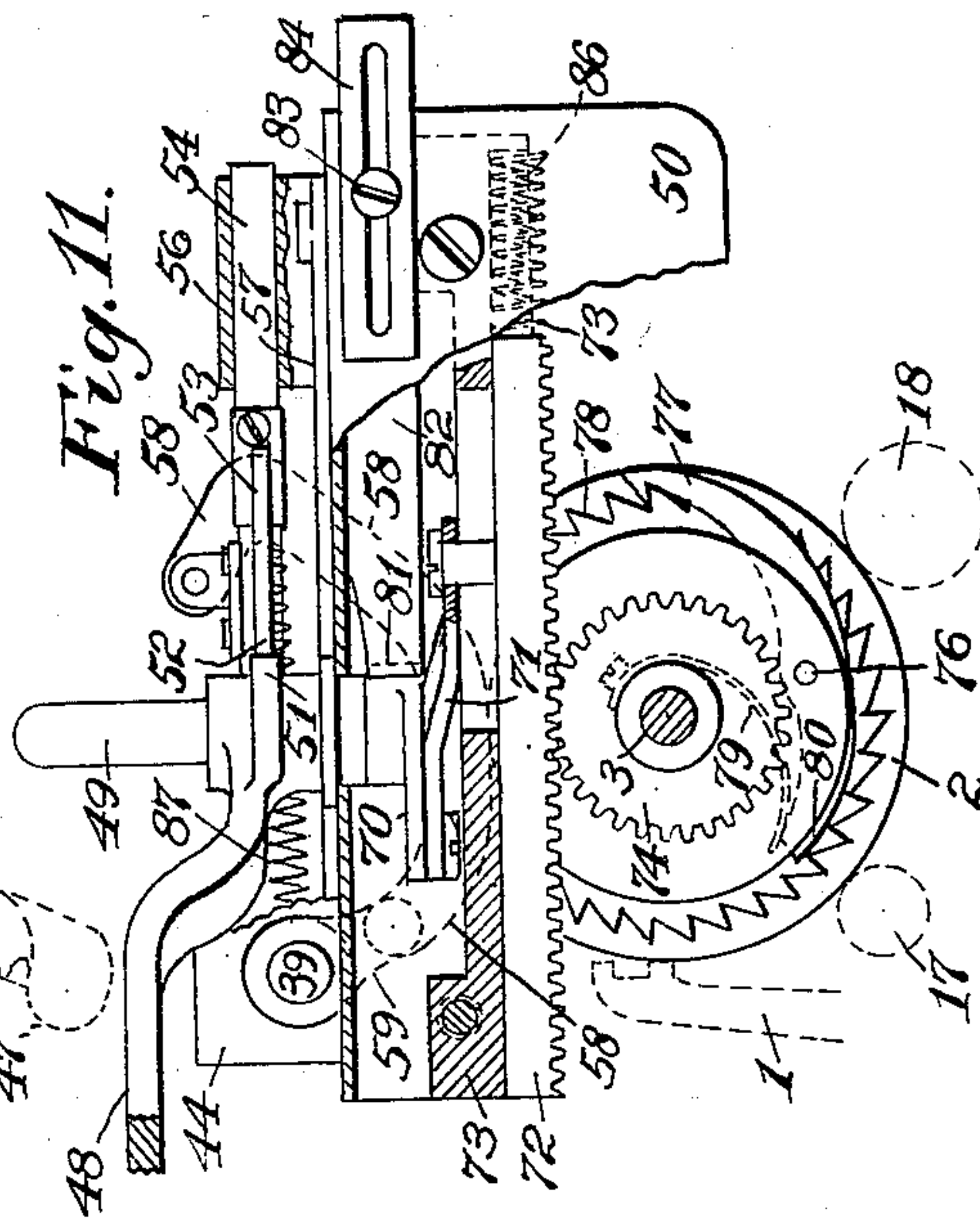
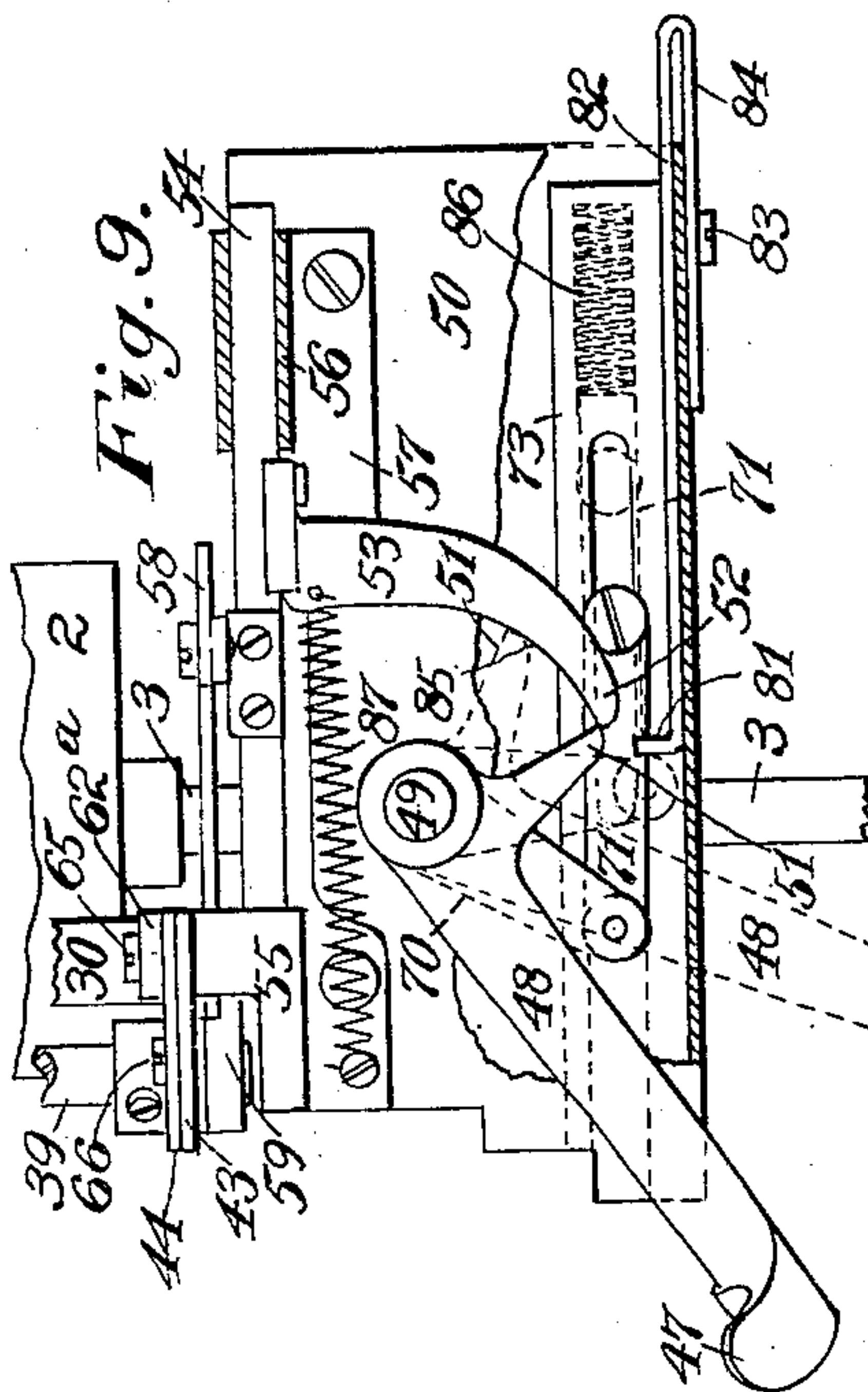
Fig. 6.



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APPLICATION FILED JUNE 18, 1908.

4 SHEETS—SHEET 4.

Witnesses:

Fig. 12.

Fig. 13.

Fig. 14.

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UNITED STATES PATENT OFFICE.

HARRY S. McCORMACK, OF NEW ROCHELLE, NEW YORK, ASSIGNOR TO UNDERWOOD TYPEWRITER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

TYPE-WRITING MACHINE.

943,445.

Specification of Letters Patent.

Patented Dec. 14, 1909.

Application filed June 18, 1908. Serial No. 439,227.

To all whom it may concern:

Be it known that I, HARRY S. McCORMACK, a citizen of the United States, residing in New Rochelle, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention relates to the paper-controlling devices of typewriting machines, and especially to mechanisms for feeding webs of paper and severing the webs into slips or sheets as the writing progresses.

Heretofore it has been the practice either to remove the web from the typewriting machine before cutting it into slips, or to tear the web into slips during the progress of the writing.

The principal objects of my invention are to save the time and labor consumed in practicing either of said methods, and to avoid the production of rough edges caused by tearing the web into slips.

Further objects are to avoid the necessity of removing each slip from the machine as it is severed from the web; to provide for regulation of the length of the slips to be cut from the web; and to secure approximate uniformity in the length of the slips.

The operation of writing upon a paper web involves the return of the carriage at the completion of each line to begin a new line, and also the advancement of the web in line-space direction; and I not only provide means for cutting the web transversely into slips, as distinguished from tearing, but I also connect the cutting devices to the web-controlling means, so that the operation of writing upon the web line by line automatically effects the severing of the web into the desired slips; thus involving no special operation on the part of the operator, and requiring no attention for this purpose. It is only necessary for the operator to perform the usual line-by-line writing operations; and the severing of the web takes care of itself.

The machine is adapted especially for making car records, as well as for other classes of work; and since usually these records contain each but a single line of writing, I provide a line-spacing or web-advancing mechanism which at one stroke

feeds the web the length of a slip, that is, to position to begin the line on the next slip. This web-advancing mechanism is operated by a handle, and the latter is also used to return the carriage to begin the new line. One of the features of my invention consists in connecting the transverse web-severing mechanism to be operated by said handle, so that it is only necessary to operate said handle in the usual way for the usual purposes, in order to effect also the cutting of the web into slips. The transverse cutting of the paper is preferably effected through said handle during the return stroke of the carriage, effected by said handle, to begin the new line of writing; and with this in view I employ two cooperative cutting members, one connected to the carriage and one connected to the frame-work, so as to enable the movement of the carriage to shear the web from side to side. Said cooperative cutting members are preferably ineffective during the usual movements of the carriage to and fro in letter-feeding direction, especially since it is sometimes desired to return the carriage without cutting the web, as when more than one line is written upon each slip. I therefore cause said handle or lever to effect cooperation of the cutting devices by moving one to the other in advance of the return of the carriage. In other words said handle first moves the cutting devices to cooperative position, and then draws the carriage back to cause said devices to shear the web.

The line-feeding mechanism already referred to is auxiliary to the usual or main line-feeding mechanism, the latter adapted to feed the web line by line by means of the usual carriage-returning lever; this being used whenever it is desired to write two or more lines on each slip. The auxiliary line-feeding or web-advancing mechanism is made adjustable to regulate the throw of the platen. If all slips are to be the same size, the throw of the auxiliary lever will be reduced to compensate for the extra space occupied by the additional lines of writing on each slip.

In the preferred form of the invention, a knife or cutter is connected to the machine frame, while a slitted bar is mounted upon the carriage to receive the edge of the cut-

ter; the bar and paper being drawn past the knife, which during this operation shears the web.

My invention is illustrated as applied to the well known Underwood front strike typewriting machine, having a cylindrical platen revoluble upon the carriage; and for such a machine I mount the slitted bar right over the front upper side of the platen, so that the web may advance up from the printing point to the front of said bar and in rear of the cutter. The latter, which may be in rotary form, is pivoted upon a bracket, and the bracket is splined to a rock shaft, which is mounted upon the carriage, but the bracket is held against movement during the return of the carriage. The purpose of mounting the cutter upon the rock shaft is to enable the cutter to be swung into and out of engagement with the slitted bar, by means of the lever or handle which controls the auxiliary platen-rotating mechanism. The operation of said handle is first to turn the cutter into engagement with the slitted bar, and also to advance the web, and then to return the carriage and thereby effect the cutting of the web.

The cutting devices are made adjustable toward and away from the printing point to vary the position at which the first line of writing shall appear on the slip.

The transverse cutter may operate in conjunction with a slitter that slits a single web longitudinally, as the same is advanced around the platen; so that the longitudinal and transverse cuts of the web are all effected automatically. The illustration shows two original webs wound on separate spools mounted end to end; but these spools are readily replaceable upon the machine by a single long spool bearing a double width web, to be slit by the longitudinal slitter. As the slips are cut off, they fall upon a tray and there accumulate, so that it is unnecessary for the operator to pay any attention to them until the tray is filled, when they may be removed. The tray is mounted directly over the platen in position to catch the slips and prevent them from falling down behind the platen.

Other features and advantages will hereinafter appear.

In the accompanying drawings, Figure 1 is a perspective front view of the upper portion of an Underwood typewriting machine provided with one form of my present improvements. Fig. 2 is a perspective detail of a slide to set the paper cutter. Fig. 3 is a perspective detail of a slitted bar to co-operate with the paper-cutter and the brackets by which it is mounted upon the carriage. Fig. 4 is a sectional end elevation of the platen frame, etc., to illustrate the course of the paper web; the paper-cutter being shown in normal ineffective position. This

figure also illustrates the longitudinal slitting of a double width web into two webs; the spool shown being double length. Fig. 5 is a view like Fig. 4, but showing the cutter in operative position, and the slip cut from the end of the web and deposited on the tray. Fig. 6 is a part sectional view of the auxiliary platen-controlling mechanism arranged at the right hand end of the platen. Fig. 7 is a sectional elevation of certain of the devices seen at Fig. 6. Fig. 8 is a plan of the auxiliary platen-turning devices, and the means connected thereto, to set the paper-cutter; the parts being shown in normal positions. Fig. 9 is a part sectional view like Fig. 8, but showing the paper-cutting connections as set to working positions, and the platen-rotating mechanism as partially operated. Fig. 10 is an elevation of the parts seen at Fig. 8. Fig. 11 is an elevation of the parts shown at Fig. 9. Fig. 12 is a diagrammatic plan showing a double width web and spools and portions of the web-carriage and the main carriage, and also the web-slitter. Fig. 13 is a perspective view of the parts put into operation by the handle which returns the carriage. Fig. 14 is a diagrammatic plan illustrating two spools in place of the single spool at Fig. 12.

Type bars 1 strike upon the front side of a cylindrical platen 2, revolubly mounted by means of an axle 3 in the ends 5, of a platen frame, which also comprises a rear paper shelf 4 inclining upwardly and rearwardly from the rear side of the platen. The platen is rotatable line by line by means of the usual line-spacing mechanism, comprising a lever 6 and a slide 6^a operated thereby; this line-spacing mechanism being all located at the left hand end of the platen frame. Said platen frame is mounted upon a carriage 7 running upon rear and front tracks, the latter seen at 8. The types strike rearwardly through a ribbon 9 mounted upon a vibrator 10; and a type guide 11 is secured upon a bracket 12 fixed upon the framework 13. As so far itemized the parts are in common use upon said Underwood typewriting machine.

A paper web 14 is wound upon the core of a spool having flanges 16. The spool is usually carried upon a rearward extension of the main carriage 7. The web is led up from the spool over the top of the paper shelf 4, and then down around the platen 2, and up in front thereof to be imprinted by the types 1. Rolls 17, 18, Fig. 11, press the web against the platen, to enable the rotation of the latter to advance the web. The web may be slitted longitudinally by means of a stationary knife 19, into two webs 14^a and 14^b; said knife being adjustable along the paper shelf 4, to determine the point at which the web shall be slit; said knife being formed upon a carrier plate 20 having a

hook 21 to fit tightly over a rim 22, rolled upon the top edge of the paper shelf 4. In some cases two spools may be used, as at Fig. 1, and the webs 14^c and 14^d may pass one each side of the longitudinal slitter 19, or the latter may be adjusted to slit one of said webs, if desired, the other passing through the machine without being slitted; or by the use of an additional slitter provision may be made for slitting both webs simultaneously. It will be seen that the knife 19 may be formed by bending up a short flange on the lower end of the carrier plate 20, and sharpening said flange to form a cutting edge. The back edge of the knife is beveled as at 23, to form a point at 24 to puncture the web when starting the slit. The spool or spools may be adjusted along an axle 25 carried upon a carriage 26 connected to the main carriage 7, to travel therewith. Collars 28 provided with screws 29 may be used to secure the spool or spools in different positions along said shaft, as required. The web, either single or divided, is led up from the front side of the platen in front of a bar 30 having a slit 31 to receive the edge 32 of a rotary cutter 33, to sever the web transversely into slips, Fig. 5. Said slitted bar is mounted upon the platen frame, and extends along and over the platen. An apron 34 drops from the front side of said bar to cover the gap between the same and the front face of the platen, to prevent liability of the web entering between the bar and the platen. A guide-rod 35 in front of said apron retains the web, said rod having bent up ends 36 to fasten it to the ends of the bar. The knife 33 is preferably revoluble, but it does not travel with the carriage when the latter is moving longitudinally or in letter-feeding direction; the web being severed by reason of the relative movement between the slitted bar 30 and the cutter, in a direction longitudinal of said bar. The cutter is pivoted upon a screw 37 threaded into a bracket or head 38, which is loosely supported upon a rod or shaft 39, which is mounted upon the platen frame; movement of the bracket and its cutter in the direction of the travel of the carriage being prevented by a yoke 40 embracing the bracket 38 and secured by screws 41 upon the portion 12 of the framework; the base portion 42 of the yoke being divided to bestride the ribbon 9 and the type guide 11. The shaft 39 is rotatably mounted in bearings 43 provided upon a pair of brackets 44 secured upon the platen frame, said roll bracket 38 being splined to said shaft by means of a feather 45 fitting in a groove 46 in said shaft. The cutter and its bracket may be rotated from the normal ineffective position at Fig. 4 to the working position at Fig. 5, by means of said rock-shaft 39, and held there, without interfering with the longitudinal movements of the main carriage 7, since the roll bracket

or head 38 must turn with the shaft 39, while the latter is permitted to move longitudinally through the bracket, the latter being detained by the yoke 40 against traveling with the carriage.

The movement of the cutter 33 from the ineffective Fig. 4 position to the working position at Fig. 5 is effected by a handle 47 formed upon a lever 48, turning about a vertical shaft or axis 49 mounted in a supplementary platen frame end 50 provided at the right hand end of the platen frame. It will be seen that the lever has an arm 51, which engages the tip 52 of a horn 53 fixed upon a slide 54, to thrust said slide rearwardly in its bearings 55, 56 formed upon a bracket 57 secured upon the supplementary platen frame end 50. The lever arm 51 presses the horn 53 and the slide 54 backwardly, and this movement is transmitted by means of a curved link 58 to a crank 59 provided upon the end of said rock shaft 39. Hence it will be understood that a movement of the handle 47 to the right, which is in the general direction of the return movement of the carriage, serves not only to return said carriage to begin a new line, but also to swing the cutter 33 into the slit 31 in the bar 30, to sever a slip 60 from the web, Fig. 5, said slip falling into a tray 61, which is secured at its front edge upon the slitted bar, and extends back over the top of the platen; being provided with a ledge 62 extending around its rear and side edges; the slips accumulating in this tray and being removed a quantity at a time by the operator.

Adjustment of the slitted bar 30 up and down or away from and toward the printing point is effected by the following means: Upon the ends of the bar are provided ears 62^a, whereby the bar is supported at one end upon a bracket 63, and at the other end upon an ear 64 formed upon the bracket 57; screws 65 holding the bar rigidly upon said brackets. Between the ears 62^a and the devices 63, 64, are clamped the plates 44 having the bearings 43 for the cutter-controlling rock-shaft 39. Said plates are held partly by the screws 65 and partly by screws 66. Said screws pass through vertical slots 67 in the plates 44, and are threaded into holes 68 in the supports 63 and 64. It will also be noted that the screws 65 pass through vertical slots 69 in the ears 62^a. By loosening the screws 65, 66, the plates 44, together with the slitted-bar 30 and the cutter-controlling shaft 39, may be adjusted down toward the printing line on the platen, or up therefrom, and resecured by tightening the screws. Thus the line of writing may be caused to fall on the slip or web at any desired point from the top edge thereof. It will be observed that the provision of the link 58, between the slide 54 and the crank

59 of the cutter-controlling rock-shaft 39, permits the bodily adjustment of said shaft up and down to the desired extent independently of said slide; and that the handle 47 may operate the cutter at all adjustments of the latter and the slitted bar up and down. Whenever desired, the screws 65 may be loosened to permit adjustment of the slitted bar 30 independently of the shaft 39, to enable the edge of the cutter 33 to register accurately with the slit 31 in the bar; such adjustment being desirable to compensate for reduction in diameter of the rotary cutter caused by the sharpening thereof from time to time.

In addition to the usual line by line platen spacing mechanism, part of which is seen at 6, 7, I prefer to employ an auxiliary platen-turning or line-spacing mechanism for the purpose of advancing the web, after completing the writing of one slip far enough to begin the writing of the succeeding slip. If more than one line is written on each slip, the usual line-spacing mechanism is called into use to advance the web step by step between lines, the auxiliary web-advancing mechanism being thereupon used to advance the web between entries, or to position to begin the first line on the succeeding slip. In other words, the operator uses first one line-spacing mechanism and then the other, as the web advances; but if only a single line is written on each slip, only the auxiliary web-advancing mechanism will be employed. This auxiliary web-advancing mechanism preferably comprises the handle 47 and lever 48 connected to the web-severing mechanism as already described, so that one movement of the handle 47 may return the carriage to begin a new line, sever the web, and also advance the web to position for writing the next line thereon. The shaft 49 carrying said lever 48 is provided at its lower end with a link 70, which is connected by a link 71 to a rack 72 mounted to slide horizontally backwardly and forwardly in guides 73 fixed in the auxiliary platen frame end 50. The rack 72 overlies and meshes with a pinion 74; loose upon the platen axle 3 and fixed to a disk or member 75, upon which is pivoted at 76 a pawl 77 to drive a ratchet wheel 78, having the same number of teeth as the usual line-space wheel, (not shown) at the left hand end of the platen. A spring 79 bearing on an arm 80 of the pawl, holds the same in mesh with the ratchet or line-spacing wheel 78.

It will be seen that when the handle 47 is moved to the right, the crank 70 turns, and by means of the link 71, the rack 72 is driven back, rotating the pinion 74; while the pawl 77 is caused to pull around the ratchet wheel 78 together with the platen, thereby advancing the web, until these parts are arrested

by a stop 81 provided upon a slide-bar 82 looped around the wall of the auxiliary platen frame end 50 and secured by a screw 83; the latter passing through a slot in the outer arm 84 of the loop, to permit adjustment of the stop 81 backwardly and forwardly, to regulate the throw of the handle 47 and the platen, and thereby to determine the length of the slips to be cut off from the web. In the present form of the invention it is intended that the handle 47 shall complete its stroke to the dotted line position, seen at Fig. 9, before the carriage starts upon its return movement; and in order to avoid liability of the carriage making a false start, the vertical shaft 49 may be lengthened upwardly from the hub of the lever 48, as illustrated at Figs. 1 and 11, to make a hand-hold, upon the right hand side of which the operator's forefinger may rest while his thumb turns the handle 47; the pressure of the finger being sufficient to hold the carriage steady until the handle movement is completed. In order to permit the described regulation of the stroke of the auxiliary web-advancing mechanism, independently of the stroke of the cutter-controlling rock-shaft 39, and to gain other obvious advantages, the horn 53 is formed with a curved edge at its outer portion, the curve being concentric at Fig. 9 with the axis upon which the lever arm 51 turns. It will be understood that in moving from the Fig. 8 position to the full line position in Fig. 9, the arm 51 drives back the slide 54, by means of the horn 53, thereby setting the cutter to the Fig. 5 position; while thereafter, during the movement of the arm 51 from the full line to the dotted line position at Fig. 9, the end of said arm rides idly along the curve 85 on the horn, maintaining the cutter in its working position, (Fig. 5) while completing the throw of the auxiliary web-advancing mechanism. As soon as the dotted line position at Fig. 9 is reached, the operator releases the hand-hold 49, and by means of the handle 47 pulls the carriage to the right, severing the web, and bringing the carriage to position to begin the next line of writing. Upon releasing the handle 47, it may be returned to normal position by a compression spring 86 or otherwise, said spring bearing against the rear end of the rack 72. A draw-spring 87 connected to the horn 53 returns the slide 54 to normal position together with the shaft 39 and the cutter 33. When it is desired to turn the platen backwardly by means of a hand wheel 88, a lever 89 may be turned forwardly to cause an arm 90 thereon to bear against the arm 80 of the pawl 77, to disengage said pawl from the ratchet wheel 78.

It will be understood that the auxiliary line-spacing mechanism has a substantially

greater throw than the illustrated ordinary line-spacing mechanism, for advancing the web to a position to be severed.

Variations may be resorted to within the scope of the invention, and portions of the improvements may be used without others.

Having thus described my invention, I claim:

1. In a typewriting machine, the combination with a platen and a letter-feeding carriage, of a paper cutter normally ineffective, a shaft mounted upon the carriage to control said paper cutter, means to turn the shaft to move the paper cutter to effective position, and means to coöperate with the cutter at the movement of the carriage to sever the web.

2. In a typewriting machine, the combination with a platen and a letter-feeding carriage, of a lever mounted upon the carriage, a paper cutter normally ineffective, a shaft mounted upon the carriage to control said paper-cutter, and means connected to said lever to turn the shaft to move the paper-cutter to effective position.

3. In a typewriting machine, the combination with a revoluble platen and a letter-feeding carriage, of a paper cutter normally ineffective, means to support said paper cutter, means to move the paper cutter to effective position, and a bar having a slit to receive the edge of the paper cutter; said cutter and bar mounted one upon the carriage and the other upon the framework.

4. In a typewriting machine, the combination with a platen and a letter-feeding carriage, of a paper-cutter normally ineffective, a shaft mounted upon the carriage to control said paper cutter, means to move the paper cutter to effective position, and means mounted upon the machine frame to prevent the paper-cutter from traveling with the carriage.

5. In a typewriting machine, the combination with a platen and a letter-feeding carriage, of a paper-cutter normally ineffective, a shaft mounted upon the carriage to control said paper cutter, means to move the paper cutter to effective position, means mounted upon the machine frame to prevent the paper cutter from traveling with the carriage, and a device upon the carriage to coöperate with said cutter to sever the web.

6. In a typewriting machine, the combination with a platen, and a letter-feeding carriage, of a lever mounted upon the carriage, a paper cutter normally ineffective, a shaft mounted upon the carriage to control said paper cutter, means connected to said lever to cause the shaft to move the paper cutter to effective position, a bar mounted on said carriage and having a slit to receive the edge of the paper cutter, and means mounted upon the machine frame to prevent the paper cutter from traveling with the carriage.

7. In a typewriting machine, the combination with a revoluble platen and a carriage, of a paper cutter normally ineffective, a shaft mounted upon the carriage to control said paper cutter, means to move the paper cutter to effective position, a bar mounted on said carriage and having a slit to receive the edge of the paper cutter, and a tray surmounting the platen to receive the severed sheets.

8. In a typewriting machine, the combination with a revoluble platen and a carriage, of a paper cutter normally ineffective, a shaft mounted upon the carriage to control said paper cutter, means to move the paper cutter to effective position, a bar mounted on said carriage and having a slit to receive the edge of the paper cutter, and a tray surmounting the platen and mounted upon said bar, to receive the severed sheets; said bar and cutter being adjustable with said tray toward and away from the printing line on the platen.

9. In a typewriting machine, the combination with a revoluble platen and a carriage, of a paper cutter normally ineffective, a shaft mounted upon the carriage to control said paper cutter, means to move the paper cutter to effective position, a bar mounted on said carriage and having a slit to receive the edge of the paper cutter, and a support extending along the carriage and mounted on said bar to guide the paper up from the platen to said slitted bar.

10. In a typewriting machine, the combination with a platen and a letter-feeding carriage, of a paper cutter mounted upon the framework and normally ineffective, means to move the paper cutter to effective position, a bar mounted on said carriage and having a slit to receive the edge of the paper cutter, and means to permit adjustment of the bar and cutter toward and away from the printing point.

11. In a typewriting machine, the combination with a revoluble platen and a carriage, of a paper cutter normally ineffective, a shaft mounted upon the carriage to control said paper cutter, means to move the paper cutter to effective position, means mounted upon the machine frame to prevent the paper cutter from traveling with the carriage, and means to permit adjustment of the cutter toward and away from the printing point.

12. In a typewriting machine, the combination with a platen and a carriage, of a paper cutter normally ineffective, a shaft mounted upon the carriage to control said paper cutter, means to move the paper cutter to effective position, a bar mounted on said carriage and having a slit to receive the edge of the paper cutter, means mounted upon the machine frame to prevent the paper cutter from traveling with the car-

riage, and means to permit adjustment of the bar and cutter toward and away from the printing point.

13. In a typewriting machine, the combination with a platen and a letter-feeding carriage, of a paper cutter normally ineffective, a shaft mounted upon the carriage to control said paper cutter, means to move the paper cutter to effective position, and a paper spool mounted upon an extension of the carriage to travel therewith.

14. In a typewriting machine, the combination with a platen and a carriage, of a paper cutter normally out of use, a line-spacing mechanism for said platen, and means connected to said line-spacing mechanism to move said cutter to working position.

15. In a typewriting machine, the combination with a platen and a carriage, of a paper cutter normally out of use, a line-spacing mechanism for said platen, and means connected to said line-spacing mechanism to move said cutter to working position, said cutter mounted to remain stationary while the carriage travels.

16. In a typewriting machine, the combination with a platen and a carriage, of a paper cutter normally out of use, a line-spacing mechanism for said platen, and means connected to said line-spacing mechanism to move said cutter to working position, said cutter mounted to remain stationary while the carriage travels, and said line-spacing mechanism comprising a platen-advancing lever whereby the carriage may be returned and the sheet concomitantly severed.

17. In a typewriting machine, the combination with a carriage, of a paper cutter mounted upon the framework and normally in a position of disuse, and a lever upon the carriage having means to move said paper cutter to effective position.

18. In a typewriting machine, the combination with a carriage, of a paper cutter normally in a position of disuse, and a lever upon the carriage having means to move said paper cutter to effective position, said lever also serving as a handle whereby to return the carriage to cause the sheet to be severed by said cutter.

19. In a typewriting machine, the combination with a paper carriage, of a handle to return the same, and a paper cutter movable by said handle to effective position; whereby movement of the handle causes the carriage to be returned and the paper to be severed.

20. In a typewriting machine, the combination with a paper carriage and a handle to return the same, of a rock-shaft mounted upon the carriage and extending therealong, a rotary paper cutter splined upon said rock-shaft, means upon the framework to

prevent the cutter from traveling with the carriage, and an operative connection between the rock shaft and the handle.

21. In a typewriting machine, the combination with a paper carriage and a handle to return the same, of a rock-shaft mounted upon the carriage and extending therealong, a rotary paper cutter splined upon said rock-shaft, means upon the framework to prevent the cutter from traveling with the carriage, and an operative connection between the rock shaft and the handle, a bar being provided upon the carriage over which the paper advances out of the machine, said bar provided with a slit to receive the edge of said paper cutter.

22. In a typewriting machine, the combination with a paper carriage and a handle to return the same, of a rock shaft mounted upon the carriage and extending therealong, a rotary paper cutter splined upon said rock-shaft, means upon the framework to prevent the cutter from traveling with the carriage, an operative connection between the rock shaft and the handle, a bar being provided upon the carriage over which the paper advances out of the machine, said bar provided with a slit to receive the edge of said paper cutter, a slide mounted upon the carriage to slide forwardly and rearwardly and connected to said rock-shaft, and means for enabling said handle to operate said slide.

23. In a typewriting machine, the combination with a carriage and a normally ineffective paper cutter, of a handle to return said carriage, and means for enabling said handle to turn the platen and sever the sheet.

24. In a typewriting machine, the combination with a carriage and a normally ineffective paper cutter, of a handle to return said carriage, means for enabling said handle to turn the platen and sever the sheet, and means to regulate the extent of turning movement imparted to the platen by said handle.

25. In a typewriting machine, the combination with a carriage, of a rock-shaft mounted thereon, a paper-cutter splined upon said rock-shaft and normally in ineffective position, and a handle to turn said rock-shaft to cause the cutter to operate.

26. In a typewriting machine, the combination with a carriage, of a rock-shaft mounted thereon, a paper-cutter splined upon said rock-shaft and normally in ineffective position, and a handle to turn said rock-shaft to cause the cutter to operate, a slitted bar being mounted upon the carriage to cooperate with said cutter.

27. In a typewriting machine, the combination with a carriage, of a rock-shaft mounted thereon, a paper-cutter splined upon said rock-shaft and normally in in-

effective position, and a handle to turn said rock-shaft to cause the cutter to operate, a slitted bar being mounted upon the carriage to cooperate with said cutter, and said bar being adjustable together with said rock-shaft toward and away from the printing point.

28. In a typewriting machine, the combination with a platen, of means for advancing the platen, a carriage, means for returning the carriage to begin a new line, a paper-spool, and means connected to the platen-advancing and carriage-returning devices to cause the web to be severed by reason of the return movement of the carriage.

29. In a typewriting machine, the combination with a platen, of means for advancing the platen, a carriage, means for returning the carriage to begin a new line, a paper-spool, and means connected to the platen-advancing and carriage-returning devices to cause the web to be severed by reason of the return movement of the carriage; the platen-advancing devices being constructed to advance the web at a single movement to a position to begin the first line of writing on the succeeding slip.

30. In a typewriting machine, the combination with a carriage and means to feed a web of paper in line-space direction, of a cutter, a slitted bar over which the web is led, and adjustable means to enable said cutter to cooperate with said slitted bar during the traveling movement of the carriage within the writing field, to sever the web.

31. In a typewriting machine, the combination with a carriage, means to advance the web of paper in line-space direction, and carriage-returning means, of adjustable means for enabling the return of the carriage to sever the web.

32. In a typewriting machine, the combination with a carriage and means to feed a web of paper, of web-severing members normally out of engagement, a handle to return the carriage, and means connected to said handle to throw said severing members into engagement and sever the web at the movement of the carriage.

33. In a typewriting machine, the combination with a carriage and means to feed a web of paper, of web-severing members normally out of engagement, a handle to return the carriage, and means connected to said handle to throw said severing members into engagement and sever the web at the movement of the carriage, one of said severing members consisting of a cutter, and the other consisting of a slitted bar over which the web travels.

34. In a typewriting machine, the combination with a carriage and means to feed a web of paper, of web-severing members normally out of engagement, a handle to re-

turn the carriage, means connected to said handle to throw said severing members into engagement and sever the web at the movement of the carriage, one of said severing members consisting of a cutter, and the other consisting of a slitted bar over which the web travels, and means connected to said handle to advance the web in line-space direction to the point to begin the first line of writing on the succeeding slip.

35. In a typewriting machine, the combination with a platen and a letter-feeding carriage, of a spool to carry a web of paper, a rotary paper-cutter, and a bar having a slit to receive the edge of the paper-cutter; said cutter and bar mounted one upon the carriage and the other upon the framework and relatively adjustable to cooperative position.

36. In a typewriting machine, the combination with a platen and a letter-feeding carriage, of a spool to carry a web of paper, a rotary paper-cutter, means mounted upon the machine frame to prevent the paper-cutter from traveling with the carriage, and means upon the carriage to cooperate with the cutter to sever the web.

37. In a typewriting machine, the combination with a platen, a letter-feeding carriage, and a spool to carry a web of paper, of a rotary paper-cutter normally ineffective, means to move the paper-cutter to effective position, means to prevent the paper-cutter from traveling with the carriage, and a device upon the carriage to cooperate with said cutter to sever the web.

38. In a typewriting machine, the combination with a paper-spool, a revoluble platen and a carriage, of a paper-cutter, a bar mounted on said carriage and having a slit to receive the edge of the paper cutter, and a tray surmounting the platen to receive the severed sheets.

39. In a typewriting machine, the combination with a paper-spool, a revoluble platen and a carriage, of a paper-cutter, a bar mounted on said carriage and having a slit to receive the edge of the paper-cutter, and a tray surmounting the platen to receive the severed sheets; said bar and cutter being adjustable with said tray toward and away from the printing line on the platen.

40. In a typewriting machine, the combination with a paper-spool, a platen and a letter-feeding carriage, of a paper-cutter, a bar having a slit to receive the edge of the paper-cutter, and means to permit adjustment of the bar and cutter toward and away from the printing point.

41. In a typewriting machine, the combination with a platen and a letter-feeding carriage, of a paper-spool, a paper-cutter to operate by reason of the longitudinal movement of the carriage, and means to permit

adjustment of the cutter toward and away from the printing point, to vary the line of severing the web.

42. In a typewriting machine, the combination with a platen and a letter-feeding carriage, of a rotary paper-cutter, a bar mounted on said carriage and having a slit to receive the edge of the paper-cutter, means to prevent the paper-cutter from traveling with the carriage, and means to permit adjustment of the bar and cutter toward and away from the printing point, to vary the line of severing the web.

43. In a typewriting machine, the combination with a platen and a carriage, of a rotary paper-cutter normally out of use, a paper spool on the carriage, a line-spacing mechanism for the web, and means connected to said line-spacing mechanism to set said cutter to sever the web during the return of the carriage.

44. In a typewriting machine, the combination with a platen and a carriage, of a paper-spool, a rotary paper-cutter normally out of use, a line-spacing mechanism for the web, means connected to said line-spacing mechanism to move said cutter to working position, said cutter mounted to remain stationary while the carriage travels, and means on the carriage to cooperate with said cutter, to sever the web; said cutter adjustable relatively to the printing line, and means being provided to regulate the throw of the line-spacing mechanism.

45. In a typewriting machine, the combination with a platen and a carriage, of a paper cutter, a normally ineffective device cooperating therewith to sever the sheet, a line-spacing mechanism for said platen, and means connected to said line-spacing mechanism to effect cooperation between said cutter and said cooperating device, said line-spacing mechanism comprising a platen-advancing lever whereby the carriage may be returned and the sheet concomitantly severed.

46. In a typewriting machine, the combination with a letter-feeding carriage, of a paper-cutting mechanism including two members, one of which is normally in a position of disuse, and a lever upon the carriage having means to move said member to effective position; one of said paper-cutting members mounted upon the carriage and the other upon the machine frame.

47. In a typewriting machine, the combination with a paper carriage and a handle to return the same, of a sheet-severing mechanism including a normally ineffective rocking member mounted upon the carriage, means upon the framework to cooperate with said rocking member to sever the sheet, and an operative connection between the rocking member and the handle.

48. In a typewriting machine, the combination with a paper carriage and a handle to return the same, of a rotary paper cutter, a bar upon the carriage over which the paper advances out of the machine, said bar provided with a slit to receive the edge of said paper cutter, and means connected to said handle to effect a movement between said cutter and bar one toward the other.

49. In a typewriting machine, the combination with a carriage, a paper spool, and a paper cutter, of a handle to return said carriage, and means for enabling said handle to advance the platen in line-feed direction and sever the sheet.

50. In a typewriting machine, the combination with a revoluble platen and a carriage, of a pinion to turn the platen, a rack to drive said pinion, a lever mounted upon the carriage and connected to said rack, a paper-cutter normally ineffective, and means to enable the lever to set the paper-cutter to effective position.

51. In a typewriting machine, the combination with a revoluble platen and a carriage, of a ratchet wheel for the platen, a pawl to operate said ratchet wheel, a pinion to operate said pawl, a rack to drive said pinion, a lever mounted upon the platen frame and connected to said rack, means to regulate the throw of the lever, a paper-cutter normally ineffective, and means connected to said lever to move the paper-cutter to effective position.

52. In a typewriting machine, the combination with a revoluble platen and a carriage, of a ratchet wheel for the platen, a pawl to operate said ratchet wheel, a pinion to operate said pawl, a rack to drive said pinion, a lever mounted upon the platen frame and connected to said rack, a paper-cutter mechanism normally ineffective, and means to enable said lever to operate the paper-cutter mechanism.

53. In a typewriting machine, the combination with a revoluble platen and a carriage, of a ratchet wheel for the platen, a pawl to operate said ratchet wheel, a pinion to operate said pawl, a rack to drive said pinion, a lever mounted upon the platen frame and connected to said rack, a paper-cutter normally ineffective, and means operated by said lever to set the paper-cutter to effective position, a lost-motion construction being provided to enable the lever to turn the platen after setting the paper-cutter.

54. In a typewriting machine, the combination with a platen and a carriage, of a paper spool, a ratchet wheel for the platen, a pawl to operate said ratchet wheel, a pinion to operate said pawl, a rack to drive said pinion, a lever mounted upon the platen frame and connected to said rack, a paper-cutter, a bar having a slit to receive the

edge of the paper cutter, and means to enable the lever to effect coöperation of said cutter and bar, by moving one to the other.

55. In a typewriting machine, the combination with a platen and a carriage, of a paper spool, a ratchet wheel for the platen, a pawl to operate said ratchet wheel, a pinion to operate said pawl, a rack to drive said pinion, a carriage-returning lever mounted upon the carriage and connected to said rack, and means to enable the carriage in its return movement to sever the web.

56. In a typewriting machine, the combination with a revoluble platen and a carriage, of a line-spacing mechanism, a paper-cutter normally ineffective, means to move the paper-cutter to effective position, a bar mounted on said carriage and having a slit to receive the edge of the paper-cutter, and means to permit adjustment of the bar and cutter toward and away from the printing point.

57. In a typewriting machine, the combination with a revoluble platen and a carriage, of line-spacing devices, a paper-cutter normally ineffective, a shaft mounted upon the carriage and splined to said paper-cutter, and means connected to the line-spacing devices to move the paper-cutter to effective position.

58. In a typewriting machine, the combination with a revoluble platen and a carriage, of a line-spacing mechanism, a paper-cutter normally ineffective, a rock-shaft mounted upon the carriage and connected to said paper-cutter, means connected to said line-spacing mechanism to turn said shaft to move the paper-cutter to effective position, and a bar mounted on said carriage and having a slit to receive the edge of the paper-cutter.

59. In a typewriting machine, the combination with a revoluble platen and a carriage, of a paper spool, a ratchet wheel for the platen, a pawl to operate said ratchet wheel, a pinion to operate said pawl, a rack to drive said pinion, a lever connected to said rack, and paper-cutting mechanism operated by pressure on said lever.

60. In a typewriting machine, the combination with a revoluble platen and a carriage, of a line-spacing mechanism, a paper spool, a paper-cutter normally ineffective, a shaft mounted upon the carriage to support said paper-cutter, means connected to said line-spacing mechanism to turn said shaft to move the paper cutter to effective position, a bar mounted on said carriage and having a slit to receive the edge of the paper-cutter, and means mounted upon the machine frame to prevent the paper-cutter from traveling with the carriage.

61. In a typewriting machine, the combination with a revoluble platen and a carriage, of a line-spacing mechanism includ-

ing a lever, a paper-cutter normally ineffective, a shaft connected to said lever and mounted upon the carriage to support said paper-cutter, a bar mounted on said carriage and having a slit to receive the edge of the paper-cutter, and a support extending along the carriage and mounted on said bar to guide the paper up from the platen to said slitted bar.

62. In a typewriting machine, the combination with a revoluble platen and a carriage, of a line-spacing mechanism, a paper-cutter normally ineffective, a shaft operated by said line-spacing mechanism and mounted upon the carriage to turn said paper-cutter to effective position, a bar mounted on said carriage and having a slit to receive the edge of the paper-cutter, and means to permit adjustment of the bar and cutter toward and away from the printing point.

63. In a typewriting machine, the combination with a revoluble platen and a carriage, of a line-spacing mechanism for the platen, a paper-cutter normally ineffective, a shaft mounted upon the carriage and connected to the line-spacing mechanism to turn said paper-cutter, means to move the paper-cutter to effective position, and means to permit adjustment of the shaft and cutter toward and away from the printing point.

64. In a typewriting machine, the combination with a revoluble platen and a carriage, of a line-spacing mechanism, a paper spool, a paper-cutter normally ineffective, a shaft mounted upon the carriage to turn said paper-cutter, means connected to said line-spacing mechanism to move the paper-cutter to effective position, a bar mounted on said carriage and having a slit to receive the edge of the paper-cutter, means mounted upon the machine frame to prevent the paper-cutter from traveling with the carriage, and means to permit adjustment of the shaft, bar and cutter toward and away from the printing point.

65. In a typewriting machine, the combination with a platen, of a paper-carriage having a rod or shaft, a paper-cutter mounted on the rod, and means upon the framework to prevent the paper-cutter from traveling with the carriage.

66. In a typewriting machine, the combination with a platen, of a paper-carriage having a rod or shaft, a paper-cutter mounted on the rod, and means upon the framework to prevent the paper-cutter from traveling with the carriage; a slitted bar being mounted upon the carriage to coöperate with said cutter.

67. In a typewriting machine, the combination with a platen, of a paper-carriage having a rod, a paper-cutter mounted on the rod, means upon the framework to prevent the paper-cutter from traveling with the carriage, a slitted bar being mounted upon

the carriage to cooperate with said cutter, and means for enabling the cutter and slitted bars to cooperate by moving one to the other.

68. In a typewriting machine, the combination with a platen, of a paper-carriage having a rod or shaft, a paper-cutter, a slitted bar being mounted upon the carriage to cooperate with said cutter, and means for moving the cutter into and out of operative relation to the slitted bar; the cutter being pivoted upon a bracket which is splined to said shaft, and means to prevent movement of the bracket in the direction of travel of the carriage.

69. In a typewriting machine, the combination with a platen, of a paper-carriage having a rock-shaft, a paper-cutter, and a slitted bar upon the carriage to cooperate with said cutter; said cutter being pivoted upon a bracket which is splined to said shaft, and the latter mounted on said shaft to turn the cutter into and out of the slit in the bar.

70. In a typewriting machine, the combination with a platen, of a paper-carriage having a rock-shaft, a paper-cutter, and a slitted bar upon the carriage to cooperate with said cutter; said cutter being pivoted upon a bracket which is splined to said shaft, and the latter mounted on said shaft to turn the cutter into and out of the slit in the bar, and means to adjust the bar together with the rock-shaft and cutter, toward and away from the printing point.

71. In a typewriting machine, the combination with a platen, of a paper-carriage having a rod, a paper-cutter mounted on the rod, means upon the framework to prevent the paper-cutter from traveling with the carriage, a slitted bar being mounted upon the carriage to cooperate with said cutter, said bar being mounted over the platen, and means in front of the bar to guide the ascending sheet over the slit in the bar.

72. In a typewriting machine, the combination with a platen, of a paper-spool, a paper-carriage having a rod, a paper-cutter mounted on the rod, means upon the framework to prevent the paper-cutter from traveling with the carriage, a slitted bar being mounted upon the carriage to cooperate with said cutter, said bar being mounted over the platen, means in front of the bar to guide the ascending sheet over the slit in the bar, and a tray to receive the severed slips.

73. In a typewriting machine, the combination with a platen, of a paper-spool, a paper-carriage having a rod, a paper-cutter mounted on the rod, means upon the framework to prevent the paper-cutter from traveling with the carriage, a slitted bar being mounted upon the carriage to cooperate with said cutter; said bar being mounted over the platen, and a tray to receive the several

slips; said tray mounted upon said bar over the platen.

74. In a typewriting machine, the combination with a platen, of a paper-carriage having a rod, a paper-cutter mounted on the rod, means upon the framework to prevent the paper-cutter from traveling with the carriage, a slitted bar being mounted upon the carriage to cooperate with said cutter; said bar being mounted over the platen, means in front of the bar to guide the ascending sheet over the slit in the bar, and an apron or deflector extending down from the front of said bar to close the opening between the bar and the surface of the platen.

75. In a typewriting machine, the combination with a platen, of a paper-carriage having a rod or shaft, a paper-cutter, a slitted bar upon the carriage to cooperate with said cutter, and means for moving the cutter into and out of operative relation to the slitted bar, said cutter being pivoted upon a bracket which is splined to said shaft, and the latter mounted to turn the cutter into and out of the slit in the bar, means to adjust the bar together with the rock-shaft and cutter, toward and away from the printing point, said bar being mounted over the platen, means in front of the bar to guide the ascending sheet over the slit in the bar, a tray to receive the severed slips, said tray mounted upon said bar over the platen, an apron or deflector extending down from the front of said bar to close the opening between the bar and the surface of the platen, and means upon the framework to prevent said bracket from traveling with the carriage.

76. In a typewriting machine, the combination with a platen and a normally ineffective paper-cutter, of a lever or handle operating a ratchet wheel to advance the platen, and means to enable the handle at the initial part of its movement to move said paper-cutter to effective position, and to hold it there during the final part of the platen-advancing movement.

77. In a typewriting machine, the combination with a platen and a normally ineffective paper-cutter, of a lever or handle operating a ratchet wheel to advance the platen, means for regulating the stroke imparted to the platen by said handle or lever, and means to enable the handle at the initial part of its movement to move said paper-cutter to effective position, and to hold it there during the final part of the platen-advancing movement.

78. In a typewriting machine, the combination with a platen and a normally ineffective paper-cutter, of a lever or handle operating a ratchet wheel to advance the platen, means for regulating the stroke im-

parted to the platen by said handle or lever, and means to enable the handle at the initial part of its movement to move said paper-cutter to effective position, and to hold it there during the final part of the platen-advancing movement; a member being provided between said handle and the paper-cutter having a dwell portion to permit the handle to effect the platen movement while holding the paper-cutter in its effective position.

79. In a typewriting machine, the combination of a platen, a lever, a ratchet mechanism to enable the lever to advance the platen, a paper-cutter normally in ineffective position, and a member intervening between said lever and said paper-cutter to transmit the movement of the lever to the paper-cutter, said intervening member having a dwell-portion to be engaged by the lever during the final portion of its platen-advancing stroke to hold the paper-cutter in working position.

80. In a typewriting machine, the combination of a platen, a lever, a ratchet mechanism to enable the lever to advance the platen, a paper-cutter normally in ineffective position, and a member intervening between said lever and said paper-cutter to transmit the movement of the lever to the paper-cutter, said intervening member having a dwell-portion to be engaged by the lever during the final portion of its platen-advancing stroke to hold the paper-cutter in working position; means being provided to effect relative movement between the paper-cutter and the platen to sever the sheet.

81. In a typewriting machine, the combination with a carriage and a platen thereon, of a lever to return the carriage, a ratchet mechanism to enable the lever to advance the platen, means being provided to regulate the stroke imparted to the platen by said lever, a rock-shaft mounted upon the carriage, a paper-cutter splined to said rock-shaft, and means to enable said lever to rock said shaft during the first part of its platen-advancing stroke, and to detain said rock-shaft during the last part of its platen-advancing stroke; means being provided to prevent the paper-cutter from traveling with the carriage.

82. In a typewriting machine, the combination with a carriage and a revoluble platen therein, of a ratchet mechanism to turn the platen, a lever to operate said ratchet mechanism, a rock-shaft extending along the platen upon said carriage, a paper-cutter upon said rock-shaft, means to prevent the paper-cutter from traveling with the carriage, and means to enable said lever during its platen-advancing stroke first to turn the paper-cutter to working position and then to hold the paper-cutter in such working position.

83. In a typewriting machine, the combination with a carriage and a revoluble platen therein, of a ratchet mechanism to turn the platen, a lever to operate said ratchet mechanism, a rock-shaft extending along the platen upon said carriage, a paper-cutter upon said rock-shaft, means to prevent the paper-cutter from traveling with the carriage, and means to enable said lever during its platen-advancing stroke first to turn the paper-cutter to working position and then to hold the paper-cutter in such working position; a slide being mounted on the carriage and connected to said rock-shaft to turn the same, and an arm mounted on said slide to be engaged by said lever and having a dwell-portion to be traversed by the lever after the paper-cutter had been turned to effective position and during the final portion of the revolution of the platen.

84. In a typewriting machine, the combination with web-severing means, a platen and an ordinary step-by-step line-spacing mechanism therefor, of an auxiliary line-spacing mechanism having substantially greater throw than the ordinary line-spacing mechanism, for advancing the web to a position to be severed.

85. In a typewriting machine, the combination with web-severing means, a platen and an ordinary step-by-step line-spacing mechanism therefor, of an auxiliary line-spacing mechanism having substantially greater throw than the ordinary line-spacing mechanism, for advancing the web to a position to be severed, the auxiliary line-spacing mechanism having a member adjustable to regulate the throw of the web.

86. In a typewriting machine, the combination with a revoluble platen, of a slit for the introductory side of the platen to divide a web longitudinally, and means upon the delivery side of the platen to sever the web crosswise.

87. In a typewriting machine, the combination with a spool to hold a web of paper, of a slit to divide the web longitudinally; said slit adjustable transversely of the web.

88. In a typewriting machine, the combination with a carriage, of two coöperative cutting members, one connected to the carriage and one connected to the framework, to enable the movement of the carriage to shear the paper, said members normally ineffective, and means for setting them to effective position prior to the cutting movement of the carriage.

89. In a typewriting machine, the combination of a paper-advancing mechanism adjustable to regulate the throw of the paper, and a paper-severing mechanism operatively connected to said paper-advancing mechanism.

90. In a typewriting machine, the combination

nation with a platen, a paper shelf, and a spool to hold a web of paper so that the web may pass from the spool over the paper shelf to the platen, of a slit between the paper shelf and platen to divide the web longitudinally.

91. In a typewriting machine, the combination with a platen, a paper shelf, and a spool to hold a web of paper so that the web may pass from the spool over the paper shelf to the platen, of a slit between the paper shelf and platen to divide the web longitudinally, said slit having means whereby it is supported upon the paper shelf for adjustment therealong.

92. In a typewriting machine, the combination with a carriage, of a shaft thereon, a bracket loose upon said shaft and splined thereto, a cutter upon said bracket, and a fixed detent engaging said bracket to prevent it from moving with the carriage, the base-portion of said detent being divided to bestride the typewriter ribbon, substantially as described.

93. In a typewriting machine, the combination with a carriage having a platen frame, of a shaft thereon, a bracket loose upon said shaft and splined thereto, a cutter upon said bracket, and a fixed detent engaging said bracket to prevent it from moving with the carriage, said platen frame shiftable up and down, and said detent constructed to maintain engagement with said bracket during such shifting operation.

94. In a typewriting machine, the combination with a carriage, of a platen, a platen frame shiftable up and down on the carriage, paper-cutting mechanism including a rotatable shaft on the carriage and a cutter splined upon said shaft, and means mounted upon the machine frame and loosely connected to said cutter, to prevent it from traveling with the carriage and permit it to shift up and down with the platen frame.

95. In a typewriting machine, the combi-

nation with a carriage and a platen thereon, of a handle, means operated by said handle to turn the platen, normally ineffective paper-severing means set to effective position by said handle, and a hand-hold to prevent the carriage from starting upon its return movement during the platen-rotating movement of the handle.

96. In a typewriting machine, the combination with a carriage and a platen thereon, of a handle, means operated by said handle to turn the platen, normally ineffective paper-severing means set to effective position by said handle, and a hand-hold to prevent the carriage from starting upon its return movement during the platen-rotating movement of the handle, said hold in the form of an extension of a shaft upon which the handle is mounted.

97. In a typewriting machine, the combination with a carriage, a platen, a paper spool, and the usual line-spacing devices for the platen, of an auxiliary line-spacing device having relatively great throw, and transverse paper-cutting means.

98. In a typewriting machine, the combination with a carriage, a platen, a paper spool, and the usual line-spacing devices for the platen, of an auxiliary line-spacing device having a lever, and paper-cutting means connected to said lever.

99. In a typewriting machine, the combination with a carriage, a platen, a paper spool, and the usual line-spacing devices for the platen, of an auxiliary line-spacing device having a lever, and paper-cutting means connected to said lever, the lever usable for returning the carriage, and said paper-cutting means including cooperative devices, one connected to the carriage and one connected to the main frame of the machine.

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