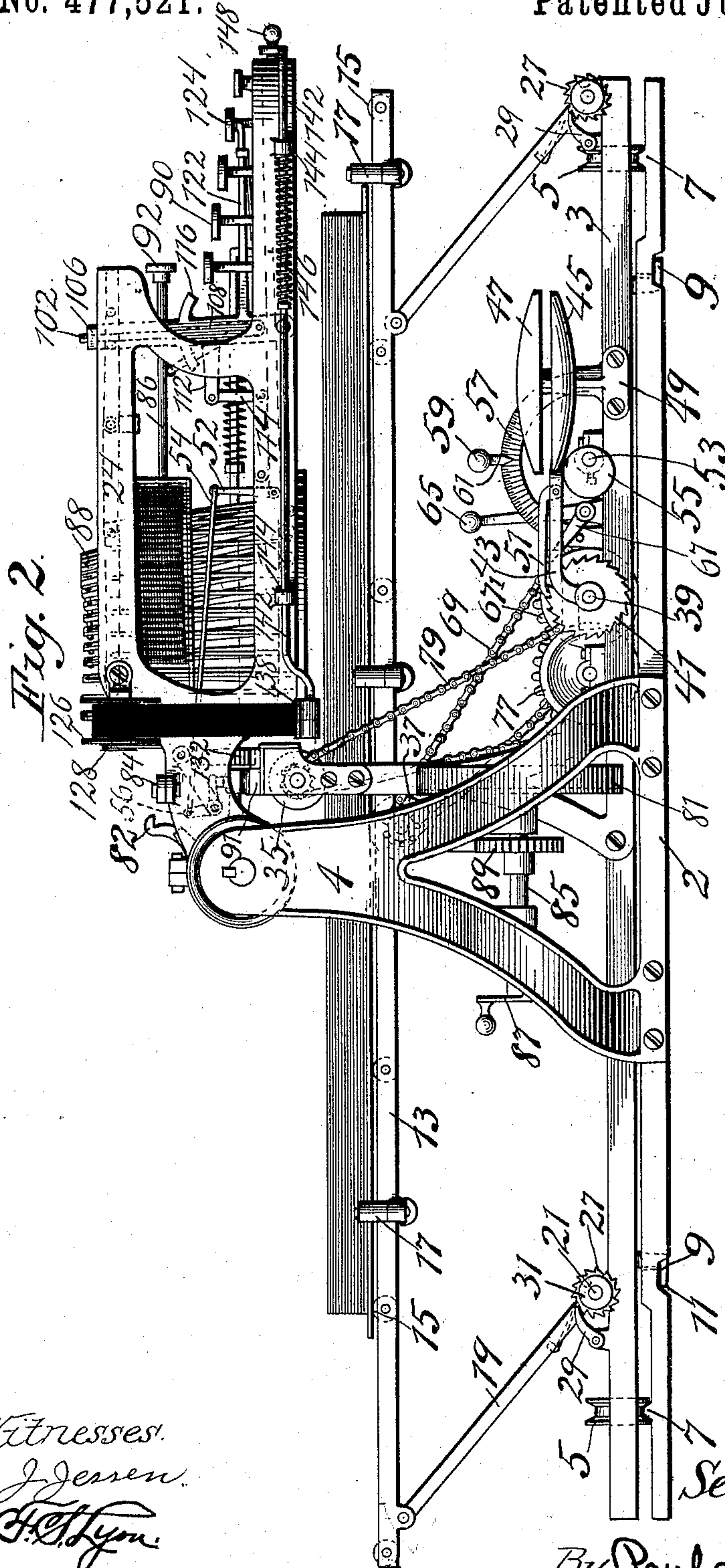


6 Sheets—Sheet 2.

No. 477,521.

Patented June 21, 1892.



Witnesses.
J. Jerren.
H. E. Lyon.

Inventor.
Seward A. Dean.

By Paul & Mervin. attys.

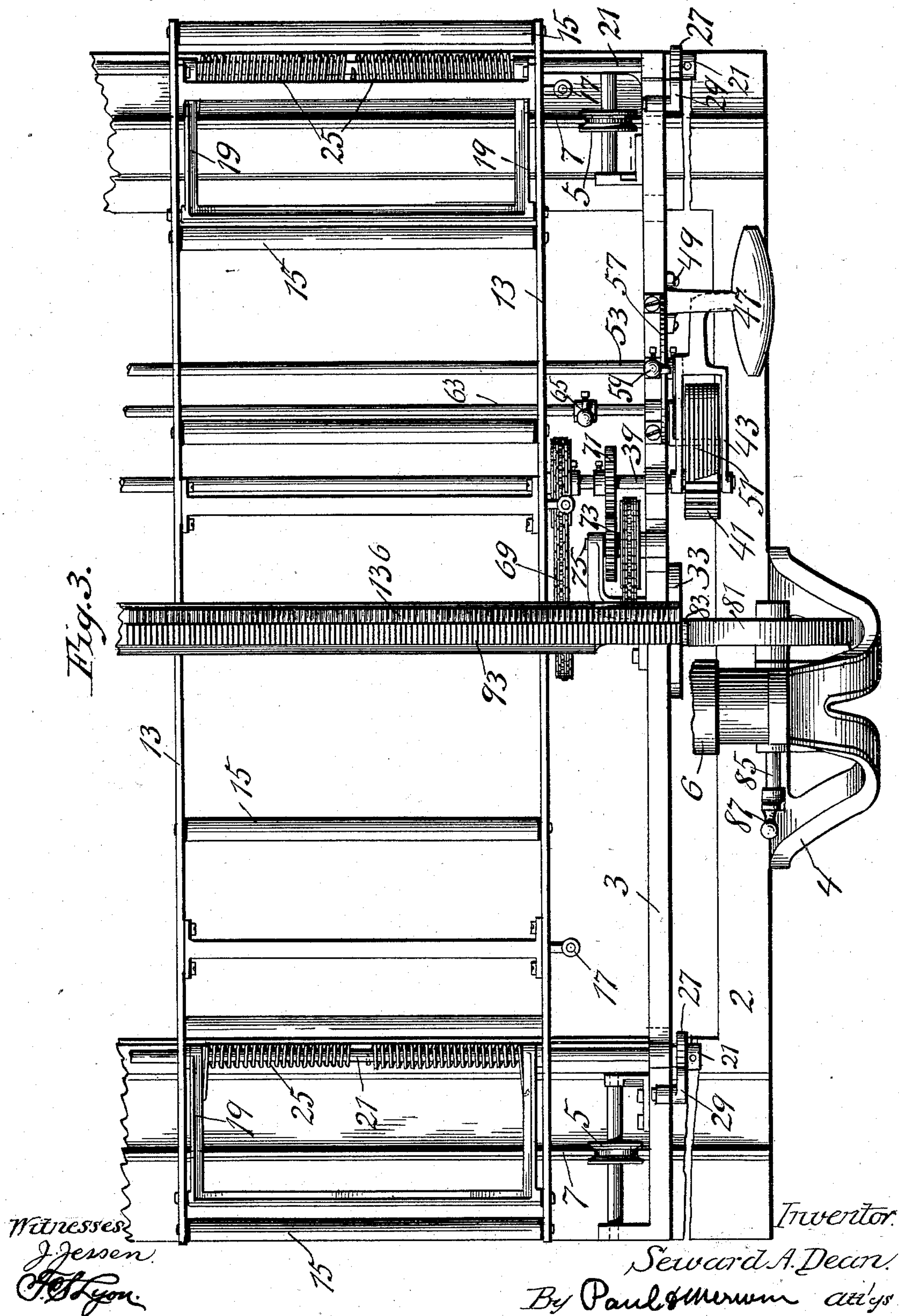
(No Model.)

6 Sheets—Sheet 3.

S. A. DEAN.
TYPE WRITING MACHINE.

No. 477,521.

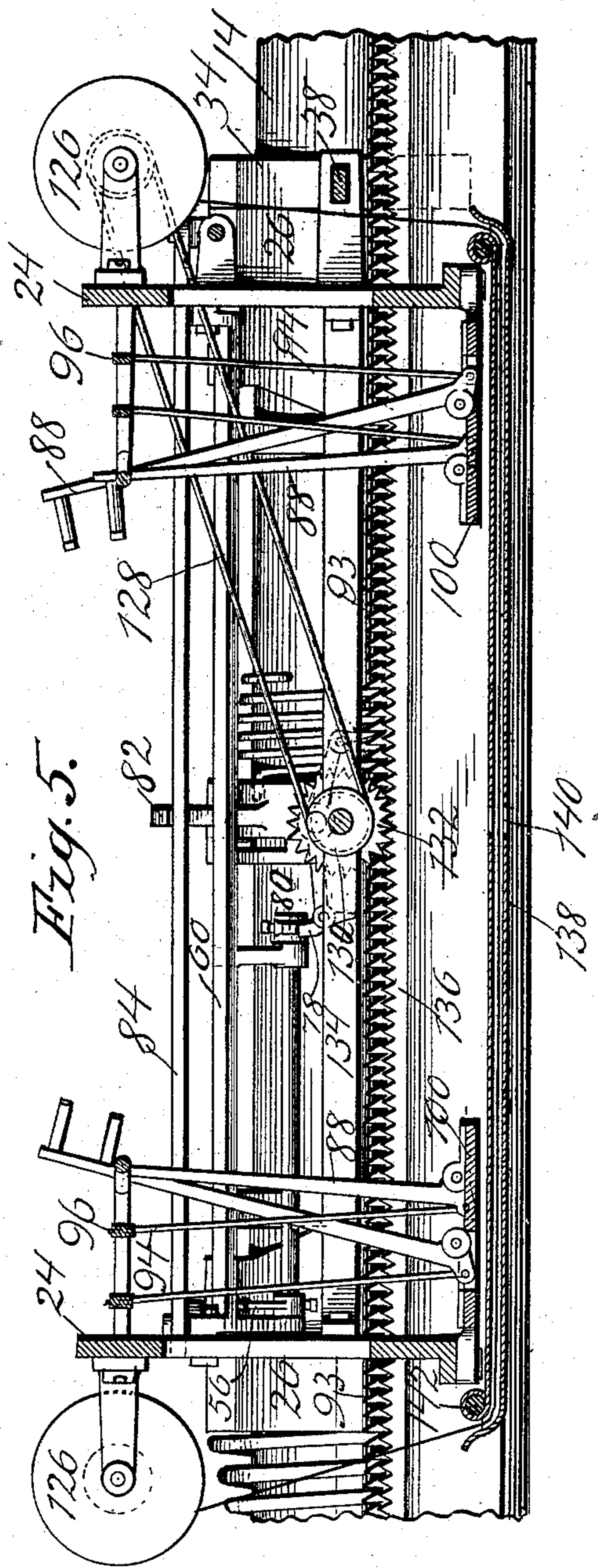
Patented June 21, 1892.



6 Sheets—Sheet 4.

No. 477,521.

Patented June 21, 1892.



Witnesses.
J. Jerren.
R. Lyon

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Seward A. Dear.
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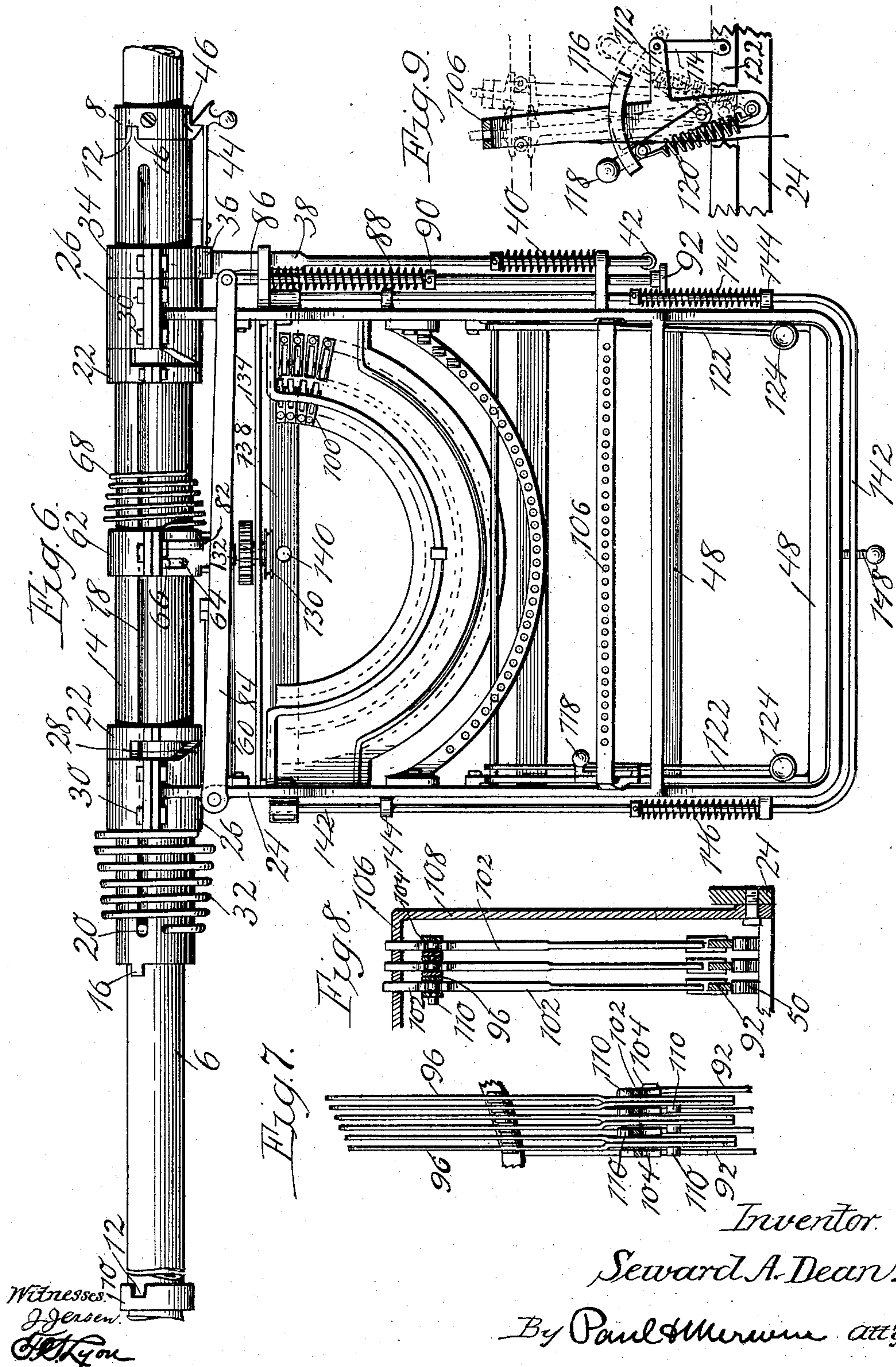
(No Model.)

6 Sheets—Sheet 5.

S. A. DEAN.
TYPE WRITING MACHINE.

No. 477,521.

Patented June 21, 1892.



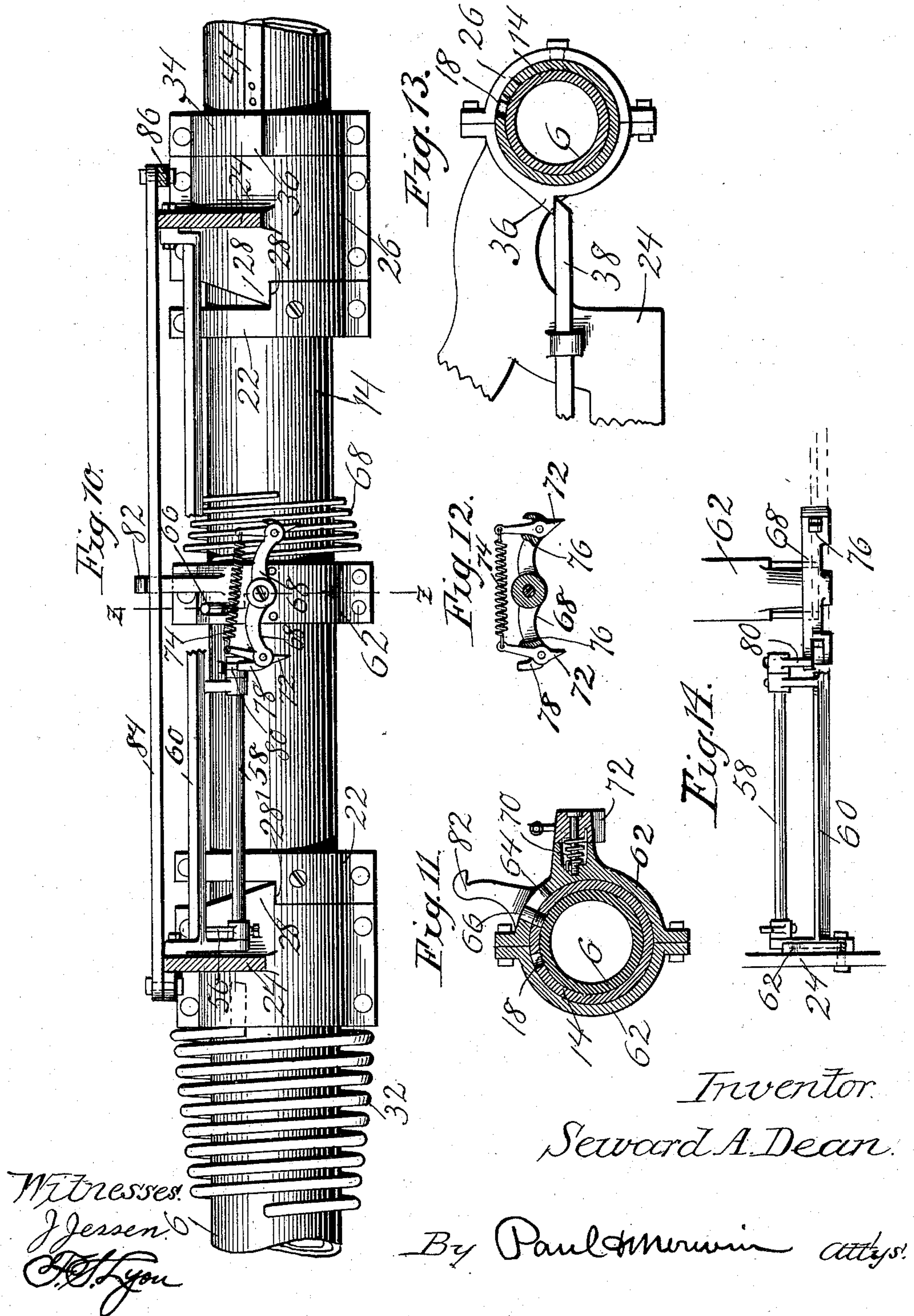
(No Model.)

6 Sheets—Sheet 6.

S. A. DEAN.
TYPE WRITING MACHINE.

No. 477,521.

Patented June 21, 1892.



UNITED STATES PATENT OFFICE.

SEWARD A. DEAN, OF MINNEAPOLIS, MINNESOTA.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 477,521, dated June 21, 1892.

Application filed November 18, 1891. Serial No. 412,320. (No model.)

To all whom it may concern:

Be it known that I, SEWARD A. DEAN, of Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to improvements in type-writers, especially of the class designed for use in making type-written entries in books, although capable of being used for the purpose of writing upon single sheets of paper; and my present invention relates particularly to improvements in the type-writer for which I have heretofore made application for Letters Patent of the United States, said application having been filed on the 1st day of September, 1890, Serial No. 364,025.

The objects I have in view are, first, to provide an improved type-writer which may be used either for writing in books of any size and thickness or may be used for writing upon single sheets or tablets of paper; second, to provide an improved book-support upon which the book or paper to be written upon may be placed and which will automatically adjust the book so as to bring its surface into proper position to be written upon; third, to provide improved means for feeding the book or paper for the line-spacing; fourth, to provide improved means for moving the book for the letter and word spacing; fifth, to provide improved means for supporting the writing mechanism, so that it may be located at will over either part of the book-support, and thus be adapted for writing upon either page of an open book; sixth, to provide improved mechanism for operating the type-bars; seventh, to provide improved means for supporting the ribbon, and, eighth, to provide improved mechanism for various parts of the structure of the machine.

In the accompanying drawings, forming a part of this specification, Figure 1 is an end elevation of my improved machine. Fig. 2 is a side elevation of the same. Fig. 3 is a plan view, partly in section, with the writing mechanism removed. Fig. 4 is a vertical section of the writing mechanism and the means for supporting it. Fig. 5 is a detail vertical section on line *x x* of Fig. 4. Fig. 6 is a detail

plan-section showing the writing mechanism with the operating keys and levers removed, and showing, also, the cross-bar for supporting the writing mechanism. Figs. 7, 8, and 9 are details of the means for operating the type-bars and changing, when desired, from the upper to lower case characters, both sets of characters being arranged to be operated by a single set of keys. Fig. 10 is a transverse vertical section on line *y y* of Fig. 4. Fig. 11 is a detail section on line *z z* of Fig. 10. Fig. 12 is a detail section of the escapement. Fig. 13 is a section of the bar that supports the writing mechanism, showing, also, a portion of the writing mechanism and the lever for locking it. Fig. 14 is a plan view of the escapement-lever and the means for operating it.

In the drawings, 2 represents the main frame or base-plate of the machine, which may be of any suitable size and construction. Upon this base-plate is mounted a transversely-moving carriage 3, which is preferably provided with suitable rolls or wheels 5 and moves upon rails 7, arranged upon the base-plate 2. The carriage is preferably provided with the lugs 9, which engage suitable rails 11 on the base-plate for the purpose of preventing the carriage from being moved from the rails. This carriage is provided with a two-part support, which consists, preferably, of a skeleton frame 13, provided with a series of transverse supporting-rollers 15 and with upright guide-rollers 17, arranged at its outer edge for the purpose of forming a bearing for the edge of the book that is supported upon said book-support. Each of these parts of the book-support is secured by brackets 19 upon a cross-shaft 21, that is mounted in suitable bearings 23 upon the base-plate 2. Suitable springs 25 are secured upon a shaft 21 and engage said brackets 19. Said springs are preferably connected at one end to said shaft and coiled around said shaft and connected at their opposite ends to said brackets. The tension of said springs tends to move the book-support upward and hold each part of said book-support, while at the same time permitting it to yield for the insertion of a book of any thickness, and as the book-support is made in two independent

parts or sections, each of which may move independently of the other, a book may be placed upon said support so as to bring any desired portion of the book upon either of
5 said supports and still have the book lie flat open with the upper surface substantially horizontal or level.

For the purpose of adjusting the tension of the springs 25 the shaft 21 is capable of being rotated in its bearings 23, and is provided
10 with a ratchet 27, that is engaged by a pawl or dog 29 upon the carriage 3. The shaft 21 is also provided at its end with a collar 31, having a radial opening in which a pin may
15 be inserted for the purpose of turning said shaft and increasing the tension of said springs, the pawl and ratchet holding said shaft in any position in which it may be turned. The carriage 3 is provided with up-
20 rights or standards 33 at each side, and in these standards is journaled a roll 35, that presses upon the book-support and holds it in a flat or level position. The roll 35 extends across the carriage and a similar master or
25 driving roll 37 is mounted in each section 13 of the book-support in position to come against the under surface of the book at a point very nearly under the roll 35. When
30 there is no book on the book-support, the said support will be moved up so as to bring the rolls 37 in contact with the roll 35. If a book is inserted, it is placed on the forward part of the book-support, which is depressed sufficiently to admit the book under the roll 35,
35 and the book is then pushed over the rolls 15 and 37 until it is brought into the proper position.

For the purpose of feeding the book for the line-spacing I provide means by which at
40 proper intervals of time the rolls 35 and 37 may be positively operated for the purpose of moving the book the desired distance. I will now describe the means that I prefer to use for operating said rolls:

45 A shaft 39 is mounted in suitable bearings upon the carriage 3 and extends across said carriage and is provided at each end with a ratchet-wheel 41. This ratchet-wheel is of sufficient width to accommodate a series of
50 dogs, as hereinafter described. A key-lever 43 is mounted loosely upon a shaft 39, the end of the lever being in the form of a yoke and extending upon both sides of said ratchet-wheel. The opposite end of the lever is preferably in the form of a handle 45, and it extends
55 beneath a stationary plate 47, that is a counterpart of the handle 45, and is secured in fixed position upon the carriage 3 by means of a standard 49. A series of dogs
60 51 is pivoted upon the lever 43, and they extend to the ratchet-wheel 41, and these dogs are of different lengths, so that one of said dogs will always be in engagement with said ratchet-wheel, even though the wheel is moved
65 each time but a distance equal to a fractional portion of the length of its teeth.

For the purpose of operating the ratchet-

wheel the plate 47 and the handle 45 are grasped together by the hand of the operator and the handle 45 is moved upward against
70 the plate 47. By this means the ratchet-wheel 41 and shaft 39 are turned a distance corresponding to the distance that the handle 45 is away from the plate 47 at the beginning of the operation. The plate 47 therefore serves
75 as a stop to limit the movement of the lever 43, and it also makes a convenient hand-grasp to be used when it is desired to move said lever. As soon as the handle 45 is released its weight turns the lever 43 and draws the pawls
80 51 over the ratchet until the movement of the lever is stopped, as hereinafter described. I provide means for limiting this movement of the lever 43, and thereby regulating the distance that the handle 45 may be separated
85 from the plate 47, and consequently regulating the movement of the ratchet 41 at each operation of said lever. For this purpose I provide a shaft 53, mounted in bearings upon the carriage 2 and extending across said car-
90 riage and provided at each end with an eccentric, 55 that comes directly beneath the lever 43. By turning the shaft 53 the upper surface of the eccentric 55 will be brought higher or lower, and as this eccentric forms the stop
95 for the lever 43 it will determine the position into which the lever may be moved after being released by the hand of the operator. I also provide a graduated scale 57 and a handle 59, secured to the shaft 53, provided with
100 a pointer 61, that extends over the graduated scale 57. By this means the shaft 43 may be turned so as to bring said eccentrics 55 into any desired position. The ratchet 41, the lever 43, the plate 47, and the eccentrics 55
105 are preferably in duplicate upon each side of the machine, so that the line-spacing mechanism may be operated by either hand of the operator. The graduated scale 57 and the handle 59 and pointer 61 may, if preferred, be
110 provided on one side of the machine only. I also provide means by which when desired all of the pawls 51 on each lever 43 may be thrown out of engagement with the ratchet 41. For this purpose I provide a shaft 63, mounted
115 in bearings upon the carriage 3 and provided with a suitable operating-handle 65 and having at each end a projection or finger 67, that extends under the pawls 51. By turning this lever all of said pawls may be raised from the
120 ratchet-wheels, thereby permitting the line-spacing mechanism to be reversed and the book to be drawn backward, or out from between the rollers 35 and 37. The shaft 39 is provided with a sprocket-wheel 67', and this
125 is connected by a sprocket-chain 69 with a sprocket-pinion upon the shaft of the rollers 37. The shaft 39 is provided with one of said sprocket-wheels 67' for each of the rollers 37, and connection is made by means of said
130 chains to each of said rollers, whereby said rollers are moved simultaneously from the shaft 39. If preferred, the means for operating the rollers 37 may be omitted and they

may be idle-rollers, and the book may be moved by the roller 35 alone. The shaft 39 is also provided with a pinion 71, that engages a pinion 73 upon a short shaft 75. The shaft 75 is provided with a sprocket-wheel 77, from which a chain 79 extends to a sprocket-wheel upon the axis of the roller 35. By this means the rolls 35 and 37 are operated from the shaft 39 and are rotated in opposite directions, and they may be moved any desired amount for the purpose of moving the book any desired distance for any suitable line-spacing. I also provide means for moving the carriage and book for the purpose of forming spaces between the letters and the words. The writing mechanism, as will be described hereinafter, remains stationary and the carriage and the book-support thereon are moved beneath the writing mechanism for the purpose of forming such spaces between the letters and between the words. For this purpose I provide a barrel or drum 81, which is similar to those commonly used on other type-writers. A belt or strap 83 is connected to this drum and to the carriage 2. Within the drum 81 is a suitable spring and when the carriage is moved to the right this spring is wound up, and as the carriage is released the spring draws the carriage to the left in the usual way. A shaft 85, provided with a handle 87 and ratchet 89, is arranged in connection with said drum, by means of which the spring is tightened when it is necessary to increase its tension. The carriage 2 is provided with a suitable rack-bar and the writing mechanism with a suitable escapement, which controls and limits the movement of the carriage, preventing it from moving any faster than is necessary for the proper spacing of the letters or characters and words. The rack-bar 91 is secured upon the standards 33 and extends across the machine above the roll 35. This rack-bar consists of a series of notches 93, that are preferably inclined upon one side and straight or vertical upon the other. A suitable escapement, hereinafter described, engages this rack-bar, and each time that a character is written or the universal space-bar is operated the escapement device permits the carriage to move the distance of one notch on said rack-bar. The means for operating the escapement device is secured upon the frame that carries the type-bars and the keys, and I will describe its mechanism and operation before describing the construction and arrangement of the frame on which these parts are supported.

The base-plate 2 is provided at each side of the machine with a standard 4, that preferably extends above the roll 35 and said standard-supports. A cross-bar 6, preferably in the form of a hollow tube, extends across the machine and is fixed in said standards. Secured upon this cross-bar are the fixed collars 8 and 10, each of which is provided, preferably, with a suitable notch 12. A tube or sleeve 14 is mounted upon the cross-bar 6 and is adapted

to slide thereon and is provided at each end with a projection 16, adapted to engage the notch 12 in said collars 8 and 10. The sleeve 14 is also provided with a longitudinal slot 18, and the cross-bar 6 is provided with a pin 20, that projects into said slot and limits the longitudinal movement thereof. Collars 22 are also arranged upon the sleeve 14 and are secured thereto by any suitable means.

The frame 24 of the writing mechanism is preferably of substantially U shape, and at its ends it is secured to the collars 26. The collars 26 are in two parts and are secured to the sleeve 14 by means of suitable bolts 30, and these collars are capable of rotation upon said sleeve 14, so that the frame of the writing mechanism may stand in a horizontal position when the device is in use, as shown in Figs. 1 and 2, or it may be turned into a vertical position, or a position substantially at right angles to that which it is shown as occupying in Fig. 2. The collars 26 are provided with shoulders 28, that engage corresponding shoulders 28' on the collars 22 when the writing mechanism is in position for operation, whereby the frame of the writing mechanism is supported in a substantially horizontal position. The cross-bar 6 preferably forms the only support for the frame that carries the writing mechanism. A spring 32 is secured to the sleeve 14 and also to one of the collars 26. When the frame is brought into a horizontal position, the tension of this spring is increased and when said frame is released the spring turns the frame and the mechanism carried by it into a substantially vertical position.

For the purpose of holding the frame 24 in a horizontal position I provide a collar 34, that is fixed upon the sleeve 14 and has a projection 36, that is engaged by a sliding rod 38, provided with a suitable spring 40, by means of which said rod is held in position to engage said projection 36. This rod extends to a point near the front of the machine and is provided with a handle 42, by means of which it may be drawn back, so as to release the frame and permit the spring 32 to raise said frame into a vertical position.

As before stated, the sleeve 14, upon which the frame 24 of the writing mechanism is secured, is capable of being moved along the cross-bar 6, and in using the machine for writing in books the writing mechanism is placed in position to write upon one page of the book or over one part of the book-support, and it may afterward be moved across the frame of the machine by sliding the sleeve 14 on the cross-bar 6, so as to bring the writing mechanism into position to write on the other page of the book; or if the machine is used for writing upon sheets of paper the writing mechanism will be placed in position to write over either one of the sections of the book-support. When the machine is used for writing upon the left-hand page of the book, the sleeve 14 is moved to the left, so as

to bring the end of the sleeve against the collar 10, with the projection 16 engaging the notch 12. In this position the writing mechanism may be used for writing upon the page or paper that is supported upon the left-hand section of the book-support. When the frame 24 is moved so as to bring it over the right-hand section of the book-support, it is locked in this position by means of the spring-catch 44, that engages a lug 46 on the collar 8.

The writing mechanism consists of a series of type-bars connected to key-bars provided with suitable keys, said keys being arranged in a suitable keyboard at the forward end of the writing mechanism. A universal space-bar is provided that is arranged to be operated by each one of the keys in the machine. This space-bar consists, preferably, of the U-shaped frame 48, pivotally supported and provided with springs 50 and extending beneath all of the key-levers in the machine, so that upon the operation of any one of said levers by depressing the appropriate key said universal space-bar is also operated. This space-bar is connected to the spacing mechanism, hereinbefore referred to, and operates said mechanism so as to permit the feeding of the carriage for the purpose of spacing the letters and words. The space-bar 48 is connected by means of an arm 52 and rod 54 to a crank-arm 56 on a short cross-shaft 58. The cross-shaft 58 is mounted in bearings upon a depending pivoted frame 60. This frame extends across the machine, being pivotally supported upon the frame 24 of the writing mechanism and extending parallel with the sleeve 14. The lower part of the frame is provided with bearings for the shaft 58, and a spring 62 is arranged to engage this frame and hold it normally in the position indicated by dotted lines in Fig. 2 and shown by full lines in Fig. 4. Mounted upon the sleeve 14, between the collars 22, is a collar 62, that is capable of a limited rotary movement, said collar being provided with a slot 64, into which projects a pin 66, that is secured in said sleeve. A spring 68 is arranged upon the sleeve 14 and engages the collar 62, holding this collar normally in the position shown in Fig. 6. An escapement-lever 68 is pivotally supported upon the collar 62, being provided with a spring 74, by means of which the right-hand end of the lever, as shown in Fig. 10, is held normally depressed, as shown in said figure. This escapement-lever is provided at each end with an escapement-dog 72, having one vertical side and one inclined side, as shown in Fig. 12. A spring 74 connects the upper ends of these dogs, a stop 76 being provided to prevent the upper ends of said dogs from moving toward each other beyond a predetermined point. A lug 78 is provided on the left-hand end of the said lever 68, and this lug comes directly under a projection or finger 80 on the shaft 58. The escapement-lever 68 is arranged directly over the rack-bar 93, and when in its normal position the right-

hand dog of said escapement-lever is held in engagement with one of the teeth of said rack-bar, the vertical side of the tooth coming in engagement with the vertical side of the notch of said rack-bar.

In operation, when the universal space-bar is depressed, the shaft 58 is turned, and the finger 80, engaging the escapement-lever 68, depresses the left-hand end of said lever and raises the right-hand end. This raises the right-hand dog out of the rack-bar and causes the left-hand dog to engage said rack-bar, the straight side of the dog striking the straight side of the tooth of the rack-bar as said dog is depressed. The spring 74 permits the dog to turn slightly upon its pivot. As soon as the escapement-lever is released the spring 70 returns it to its normal position, releasing the left-hand dog 72 from the rack-bar and engaging the right-hand dog 72 therewith. This operation is repeated as often as the space-bar is operated, and at each operation the carriage is permitted to move one space. When it is desired, however, to move the carriage toward the right, the right-hand dog 72 turns sufficiently to pass over the teeth of the rack-bar, being raised by the engagement of the inclined face of the teeth of the rack-bar with the inclined face of the dog 72. The opposite end of the escapement-lever 68 is thereby depressed and the inclined face of the teeth engages the inclined face of the left-hand dog 72. This dog, however, is capable of turning upon its pivot so as to lie in a position nearly at right angles to that which it normally occupies, the spring 74 permitting such movement, and there being no stop to limit its movement in this direction when it is brought into this position both dogs slide freely over the top of the rack-bar, and this permits the carriage to be moved freely toward the right without raising the escapement from the rack-bar. It is sometimes desirable, however, to raise said escapement, so that both of its dogs are disengaged from said rack-bar. For this purpose a lug 82 is provided upon the collar 62 and a bar 84 is arranged to extend horizontally across the machine in front of said projection, one end of said bar being pivoted upon the frame 24, as shown in Fig. 6. The opposite end of said bar is connected to a rod 86, that is arranged to slide in bearing upon the frame 24, and being provided with a spring 88, which engages a collar 90 on said rod and holds it normally forward in the position shown in Fig. 6. The rod 86 preferably extends to a point near the front of the machine and is provided on this end with a button 92, and when it is desired to disengage the escapement from the rack-bar the operator pushes upon the rod 86, turning the collar 62, and thereby raising the escapement, so as to bring the dogs out of the rack-bar, the frame 60 also turning sufficiently to permit a corresponding movement to the shaft 58 without any injury to its operating mechanism.

I also prefer to provide the machine with

two sets of type-bars, one for the upper and the other for the lower case letters. These may be arranged to be operated with an independent key and lever for each type-bar or

5 I may arrange the machines so that each key is adapted to operate either an upper or a lower case type-bar. The type-bars 88 are pivotally supported upon the frame of the machine and are arranged so as to strike downward upon

10 the surface of the book or paper that is arranged upon the book-support. I prefer to provide the keys 90, arranged upon the key-bars 92, and to connect to the type-bars 88 the connecting rods or wires 94, these wires being connected to the levers 96. The levers 96

15 are pivotally supported upon the frame of the machine and are provided with suitable springs 98. The type-bars are preferably arranged in two semicircular rows, as shown in Figs. 4 and 6, and the levers 96 are pivotally supported upon the curved frame 100. Said levers are preferably arranged in pairs, as shown in Fig. 7, and the connecting-rod 102

20 is arranged between each pair of levers, as shown in Figs. 4, 7, 8, and 9. Each rod 102 is connected at its lower end to one of the key-levers 92, and at its upper end is provided with the oppositely-arranged notches or recesses 104. The upper ends of all of said

30 rods 102 pass through the cross-bar 106 of a pivoted frame 108, said cross-bar serving as a guide for said rods. The levers 96 are each provided with a stud or projection 110 and each of said rods 102 is adapted to engage the stud 110 upon either one of two levers. When the frame 108 is thrown forward into the position shown in Fig. 4, the notches or recesses 104 in the connecting-rods 102 will engage the studs 110 upon the levers connected

40 to one set of type-bars. When the frame 108 is turned to the position indicated by dotted lines in Fig. 9, said connecting-rods will engage the stud upon the levers connected with the other set of type-bars. If, for example, the type-bars that are operated by the connecting-rods when the frame 108 is in the position shown in Fig. 4 are the lower-case type-bars, then when it is desired to use the capital or upper-case type-bars said frame 108

50 will be thrown into the position indicated by dotted lines in Fig. 9. The frame 108 is pivotally supported upon the frame of the machine, and it has connected to it at one side an arm 112, connected by a link 114, also, to the "shift" or shifting lever. Said frame is also provided with a curved plate 116, provided with a stop at each end, and an arm 118 is pivoted upon the side of the spring 108 and has a spring 120, connected to said arm

60 118 and also to the frame 108 at its pivotal point. A shifting-lever 122 is also connected to the frame 108 at each side of the machine. The levers 122 extend to the front portion of the keyboard and are provided with suitable keys 124. The frame 108 is connected to one of said levers 122 directly and to the other by means of the link 114 and the arms 112.

Said arms 112 project to the rear of said frame 108. One of said levers 122 is therefore used to move the frame 108 in one direction and the other to move it in the other direction.

When it is desired to write any upper-case character, one of the keys 124 is depressed, and thereby the frame 108 is turned upon its pivotal support and the connecting-rods 102 are disconnected from one set of levers and connected to the other. As soon as the key 124 is released the spring 120, acting through the arm 118 and the plate 116, throws said

80 frame 108 back to its original position.

If it is desired to set the mechanism so as to write upper-case characters continuously instead of the lower-case characters, the arm 118 is thrown so as to bring it against the

85 stop at the other end of the plate 116, and said frame 108 will then be normally held in the position indicated by dotted lines in Fig. 9 and the machine will write upper-case characters, and to cause it to write lower-case

90 characters the other shifting-lever will be operated.

I provide a suitable ribbon support or spool 126 at each side of the machine and provide a belt or cord 128, that extends from a pulley

95 on the side of said spool to a suitable pulley 130, that is connected to a gear-wheel 132. Said gear-wheel is suitably supported upon the frame of the writing mechanism, being preferably journaled in a suitable cross-bar

100 134, connected to the frame of the machine. Said gear-wheel engages a stationary rack-bar 136, so that as the writing mechanism is moved laterally said gear-wheel is turned, and thereby one of the ribbon-spools is also

105 turned and the ribbon is drawn off from the other spool and wound upon the one that is driven by said belt. After the ribbon has been entirely drawn off from one of said spools the belt is shifted to the other spool

110 and the movement of the ribbon is reversed. I preferably pass the ribbon through a suitable tube or guide 138, provided with an opening 140, through which the type strike, said tube or guide being preferably secured upon

115 the U-shaped frame 142, that is supported upon the frame of the writing mechanism by means of the lugs 144. Springs 146 are connected to said U-shaped frame and hold the same in its normal position. An adjusting-

120 screw 148 is arranged on the frame 142 and bears against the frame of the writing mechanism. By turning this screw the ribbon-guide may be shifted back and forth so as to bring any desired portion of it beneath the

125 type, or said ribbon-guide may be moved so as to uncover the line being written, and thus permit an examination of the work.

It will be seen that this machine is extremely simple in all its parts, and may therefore be made so as to be strong and durable

120 and capable of being operated as rapidly as any type-writer. The mechanism is adapted to support and automatically adjust the

largest book that can be placed upon a book-support. The writing mechanism may be adjusted so as to write upon either page of the book; or if it is desired to use the machine for writing upon tablets or single sheets of paper they may be placed upon either one of said book-supports, and the writing mechanism be retained in position over said support.

10 By simply releasing the frame carrying the writing mechanism said frame will be automatically raised into a vertical position, when the work may be examined, or the book or material written upon may be removed.

15 The details of the construction may obviously be varied in many parts without departing from my invention, and this is especially true of the type-bars and the means for operating them, as I may for this purpose use any of the well-known constructions without departing from my invention.

I claim as my invention—

1. In a type-writer, a supporting frame or base, a transversely-movable carriage mounted thereon, and an automatically-adjustable two-part book-support mounted upon said carriage.

2. In a type-writer, the combination of a suitable base or support, a transversely-movable carriage mounted thereon, an automatically-adjustable two-part book-support mounted upon said carriage, a stationary writing mechanism arranged above said book-support, and means for moving said carriage to produce letter and word spacing.

3. In a type-writer, the combination of a suitable base, a transversely-movable carriage mounted thereon, an automatically-adjustable two-part book-support mounted upon said carriage, a stationary writing mechanism arranged above said book-support, and means for moving said carriage laterally to provide letter and word spacing.

4. In a type-writer, the combination of a suitable base or support, a transversely-movable carriage mounted upon said support, an automatically-adjustable two-part book-support upon said carriage for holding the book or material to be written upon, writing mechanism arranged above said carriage, and means for moving said carriage laterally to provide letter and word spacing.

5. In a type-writer, the combination, with a suitable two-part book-support, of a writing mechanism arranged above said book-support and means for adjusting and holding said writing mechanism so as to bring it in position for writing upon either part of said book-support.

6. In a type-writer, the combination of a supporting base or frame, a laterally-movable carriage mounted thereon, an automatically-adjustable two-part book-support arranged above said carriage, a writing mechanism arranged above said book-support and capable of being adjusted so as to bring it over either part of said book-support.

7. In a type-writer, the combination, with a book-support, of a writing mechanism arranged above said book-support and means for adjusting said writing mechanism so as to bring it over either part of said book-support.

8. In a type-writer, the combination of a suitable frame or base, a laterally-movable carriage mounted thereon, a book-support provided upon said carriage, means for moving said carriage laterally, and writing mechanism arranged above said book-support and arranged to print upon a book or other material arranged upon said book-support, and means for moving said book or material longitudinally upon said book-support.

9. In a type-writer, the combination, with a writing mechanism, of a book-support arranged beneath said writing mechanism, means for moving said book-support laterally, and means for feeding or moving a book or material arranged upon said book-support longitudinally.

10. In a type-writer, the combination, with a suitable base, of a laterally-movable carriage arranged thereon, an automatically-adjustable two-part book-support arranged upon said carriage, and writing mechanism arranged above said book-support, means for moving said carriage laterally as the writing mechanism is operated for producing letter and word spacing, and means for moving the book or material upon said book-support longitudinally for producing line-spacing.

11. In a type-writer, the combination, with the supporting-carriage, of the book-support 13, provided with suitable supporting-rolls and with an operating-roll, and means for turning said operating-roll for moving the material upon said book-support longitudinally for producing line-spacing.

12. In a type-writer, the combination of the book-support 13, the pivoted brackets 19, connected therewith, suitable springs connected with said brackets, and means for adjusting said springs.

13. In a type-writer, the book-support 13, provided with the supporting-rolls 15, the operating-roll 35, and means for driving said operating-roll.

14. In a type-writer, the book-support 13, provided with the supporting-rolls 15 and the guide-rolls 17, substantially as described.

15. In a type-writer, the combination, with the book-support, of the operating-roll 35, the operating-lever 43, and means connecting said lever with said roll for driving the same, substantially as described.

16. In a type-writer, the combination, with the book-support and operating-roll 35, of the operating-lever 43 and means connecting said lever with said roll and means for limiting the movement of said lever.

17. In a type-writer, the combination, with the line-spacing lever 43, provided with a series of dogs 51, and the handle 45, of the stationary plate 47, the eccentric 55, the lever 59,

provided with the pointer 61, and the graduated scale 57, substantially as described.

18. In a type-writer, the combination, with the laterally-movable carriage 3, of the book-support thereon, the line-spacing lever 43, provided with a series of dogs 51, a stationary plate 47, a shaft 53, provided with the eccentric 55, the handle 59, pointer 61, and graduated scale 57, substantially as described.

19. The combination, with the book-support 13, of the brackets 19, pivoted thereto, the springs 25, connected to said brackets and to shafts 21, the ratchets 27, and pawls 29 for adjusting the tension of said springs, substantially as described.

20. In a type-writer, the combination, with a suitable two-part support arranged to hold a book or paper in a flat or level position with its upper surface in position to be written upon, of a writing mechanism arranged above said support, means for holding said writing mechanism in a horizontal position, means for moving said writing mechanism laterally to bring it over either part of said support, and means for turning said writing mechanism into a substantially vertical position.

21. In a type-writer, the combination, with a two-part book-support, of writing mechanism arranged above said book-support, means for holding said writing mechanism in position to write upon the book or paper held upon said book-support, means for adjusting said writing mechanism laterally to bring it over either part of said book-support, and means for turning said writing mechanism into an upright position, substantially as described.

22. In a type-writer, the combination, with a suitable base and a two-part book-support arranged thereon, of standards upon said base, a cross-bar supported thereon, and a laterally-movable writing mechanism supported solely from said cross-bar above said book-support, and means for adjusting and holding said writing mechanism in any desired position upon said cross-bar.

23. The combination, with the two-part book-support and the cross-bar 6 and means for supporting said cross-bar, of the writing mechanism supported solely from said cross-bar above said book-support and capable of being laterally adjusted thereon.

24. The combination, with the two-part book-support and the cross-bar 6 and means for supporting the said cross-bar, of the writing mechanism provided with a frame 24, supported solely from said cross-bar above said book-support and arranged to be turned into an upright position and to be laterally adjusted thereon.

25. In a type-writer, the combination, with a two-part book-support and the cross-bar 6 and means for supporting said cross-bar, of the writing mechanism provided with the frame 24, means for supporting said frame in a horizontal position solely from said cross-

bar, means for adjusting said frame laterally upon said cross-bar, and means for turning said frame into an upright position.

26. In a type-writer, the combination, with the two-part book-support, the cross-bar 6, and means for supporting said cross-bar, of the laterally-adjustable frame 24, mounted thereon above said book-support and supported solely from said cross-bar, and the writing mechanism supported upon said frame.

27. In a type-writer, the combination, with a suitable base, of a laterally-adjustable carriage mounted thereon, a two-part book-support mounted upon said carriage, a cross-bar 6, extending above said book-support and arranged in suitable standards on said base, and a writing mechanism supported upon said cross-bar and capable of being laterally adjusted thereon so as to bring it over either part of said book-support.

28. In a type-writer, the combination, with the type-bars and the operating-levers 96, provided with the studs 110, of the key-bars 92, the connecting-rods 102, provided with the notches or recesses 104, and the adjustable frame 108, substantially as described.

29. In a type-writer, the combination, with the type-bars and the operating-levers 96, of the key-bars 92, the connecting-rods 102, and means for disengaging said rods from said levers 96, substantially as described.

30. The combination, with the type-bars, of the operating-levers 96, the key-bars 92, the adjustable frame 108, the connecting-rods extending from said key-bars to said operating-levers, and the levers 122, provided with the keys 124, connected to said arm 108, substantially as described.

31. The combination, with the laterally-movable carriage provided with the rack-bar 93, of the stationary writing mechanism, the escapement upon said writing mechanism and means for operating the same, and means for moving said writing mechanism and escapement laterally over said carriage.

32. The combination, with the laterally-movable carriage and an automatically-adjustable book-support arranged thereon, of a rack-bar secured upon said carriage, a writing mechanism arranged above said carriage and book-support, a spring for moving said carriage, and an escapement upon said writing mechanism for releasing said carriage, substantially as described.

33. The combination, with the rack-bar 93, of the pivoted lever 68, provided with the dogs 72, springs 74, connecting said dogs, a spring 70 for depressing one end of said lever, and means for depressing the opposite end of said lever, substantially as described.

34. The combination, with the rack-bar 93, of the pivoted escapement-lever 68, provided with the dog 72 and the connecting-spring 74.

35. The combination, with the carriage provided with the rack-bar 93, of the cross-bar 6, the collar 62, supported thereon, the

escapement-lever arranged upon said collar and provided with dogs adapted to engage said rack-bar.

36. The combination, with the carriage
5 provided with the rack-bar 93, of the cross-bar 6, the frame 24, supported upon said cross-bar, the collar 62, provided with the escapement, and means for turning said collar upon said bar, and thereby releasing said escapement
10 from said rack-bar.

37. The combination, with the carriage
provided with the rack-bar 93, of the cross-bar 6, the frame 24, arranged thereon and provided with the writing mechanism and movable collar 62, the escapement pivoted upon
15 said collar, the pivoted bar 84, adapted to engage said collar, and the operating-rod 92, engaging said bar.

38. The combination, with the two-part
20 book-support and the cross-bar, of the laterally-adjustable sleeve mounted thereon, the frame mounted upon said sleeve and capable

of turning thereon, and the writing mechanism supported upon said frame above said book-support.

39. The combination, with the carriage provided with the rack-bar, of the cross-bar 6, the collar 62, arranged thereon, the escapement-lever pivoted upon said collar, the pivoted frame 60, the shaft 58, mounted upon
3 said frame and provided with the lugs for engaging said escapement, and means for operating said shaft.

40. The combination, in a type-writer, with the ribbon, of the ribbon-guide 138, the frame
3 142, connected therewith, springs 146, connected with said frame, and the adjusting-screw 148.

In testimony whereof I have hereunto set my hand this 7th day of November, 1891.

SEWARD A. DEAN.

In presence of—

A. C. PAUL,

F. S. LYON.