

No. 694,464.

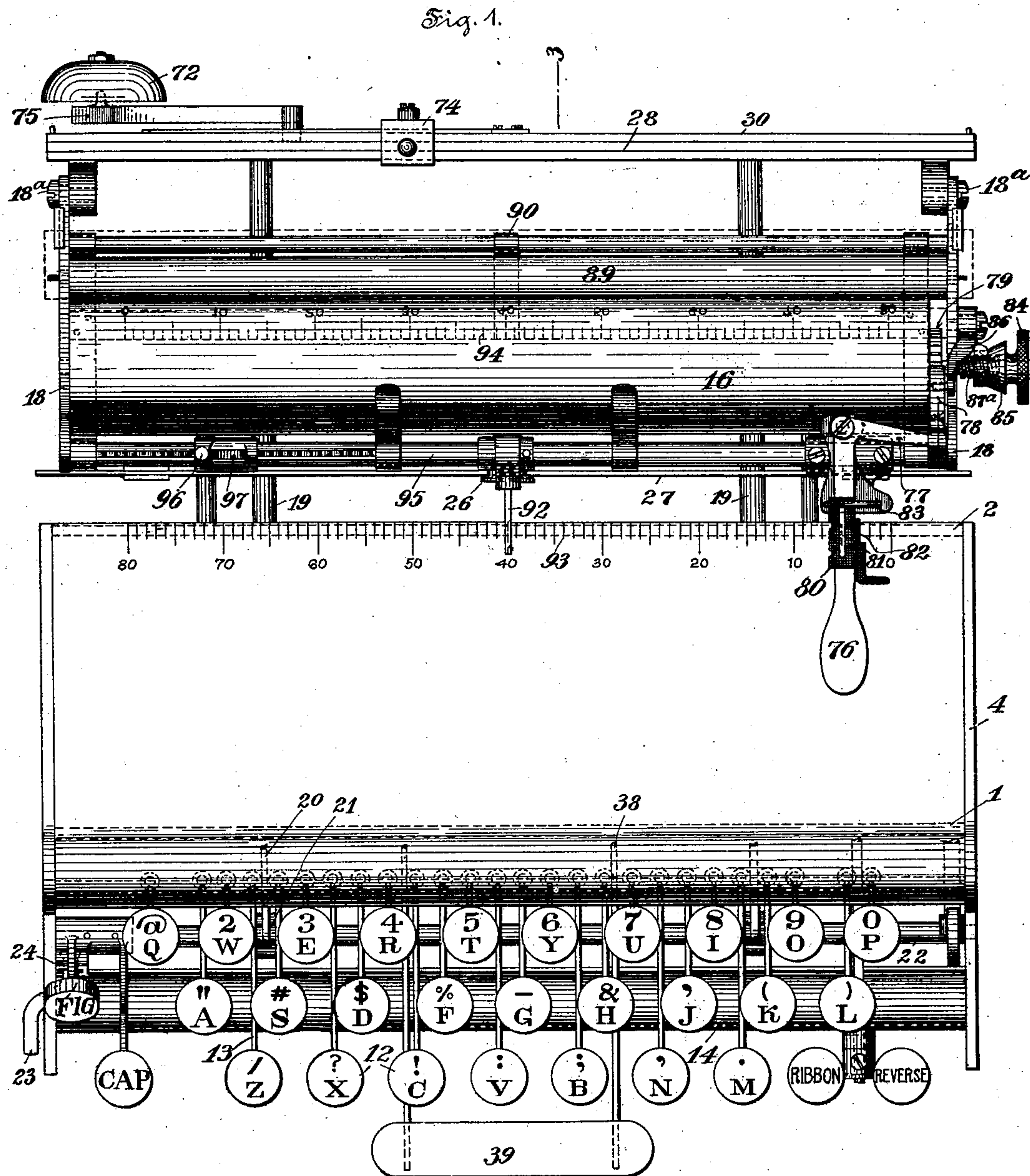
Patented Mar. 4, 1902.

J. S. DU BOIS.  
TYPE WRITER.

(Application filed Mar. 12, 1896.)

(No Model.)

8 Sheets—Sheet 1.



Witnesses:  
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W. Jackson.

Inventor.  
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By Augustus B. Stangor.  
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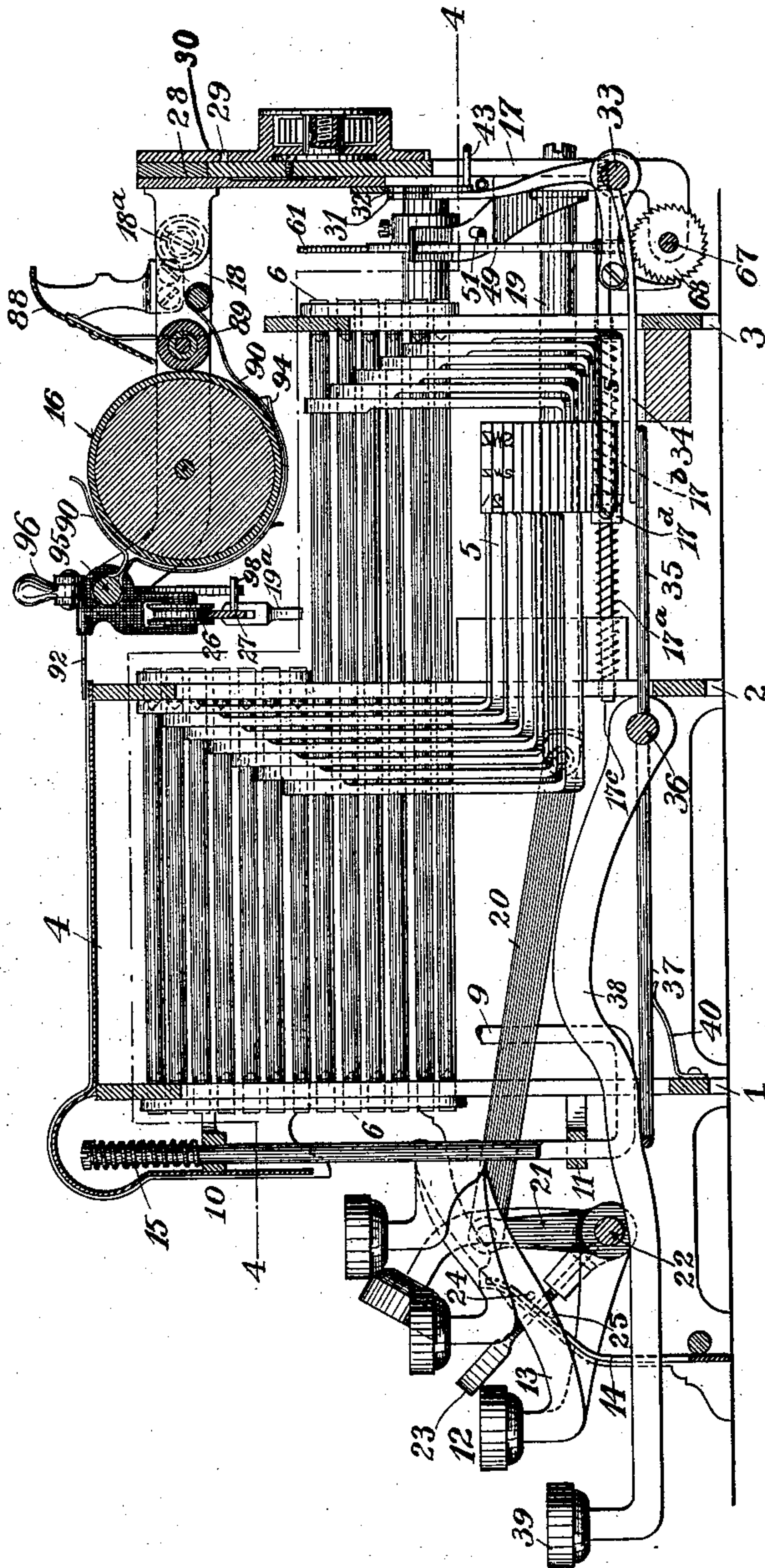
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(Application filed Mar. 12, 1898.)

(No Model.)

8 Sheets—Sheet 3.

Fig. 3.



Witnesses  
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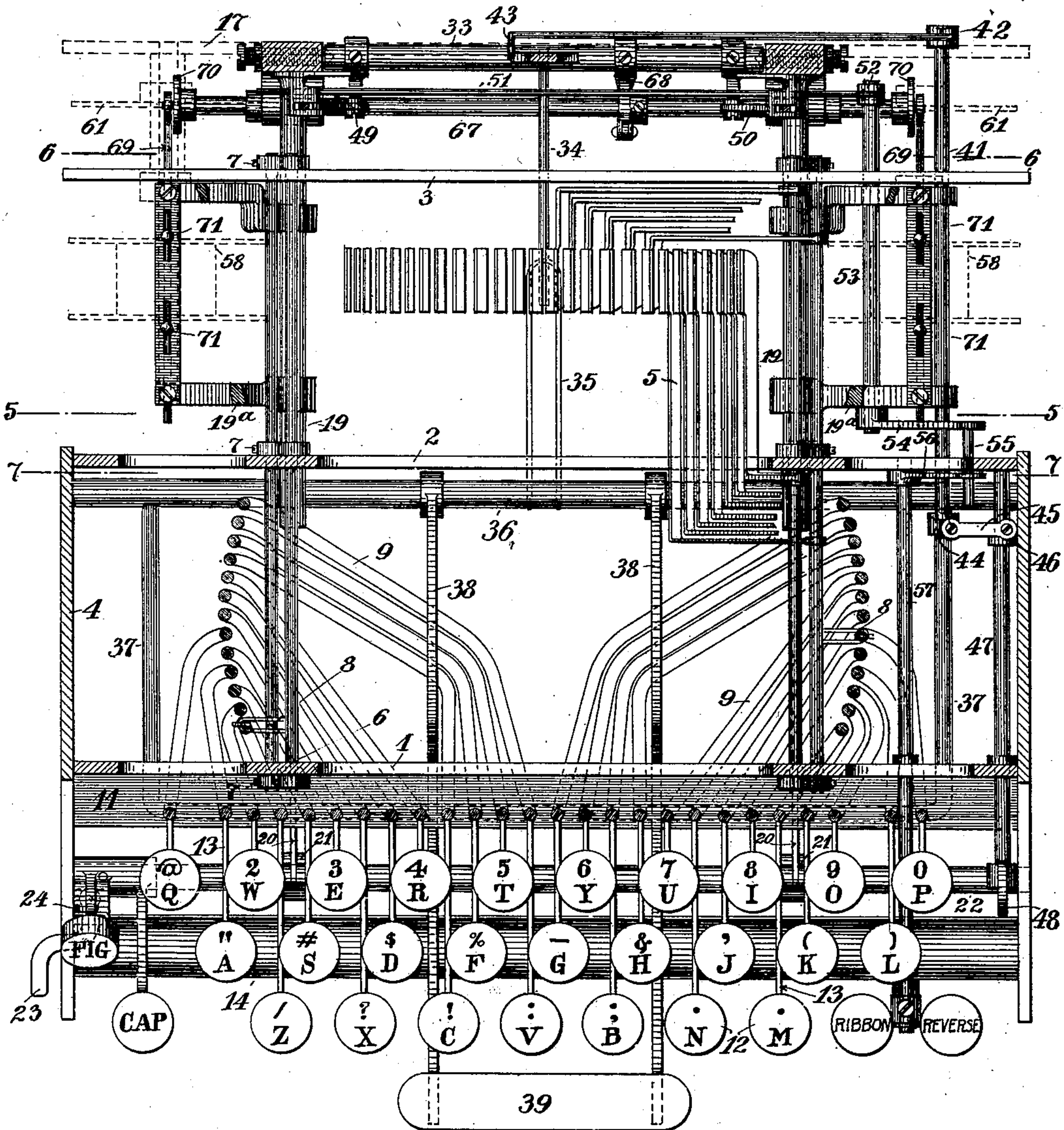
J. S. DU BOIS.  
TYPE WRITER.

(Application filed Mar. 12, 1896.)

(No Model.)

8 Sheets—Sheet 4.

Fig. 4.



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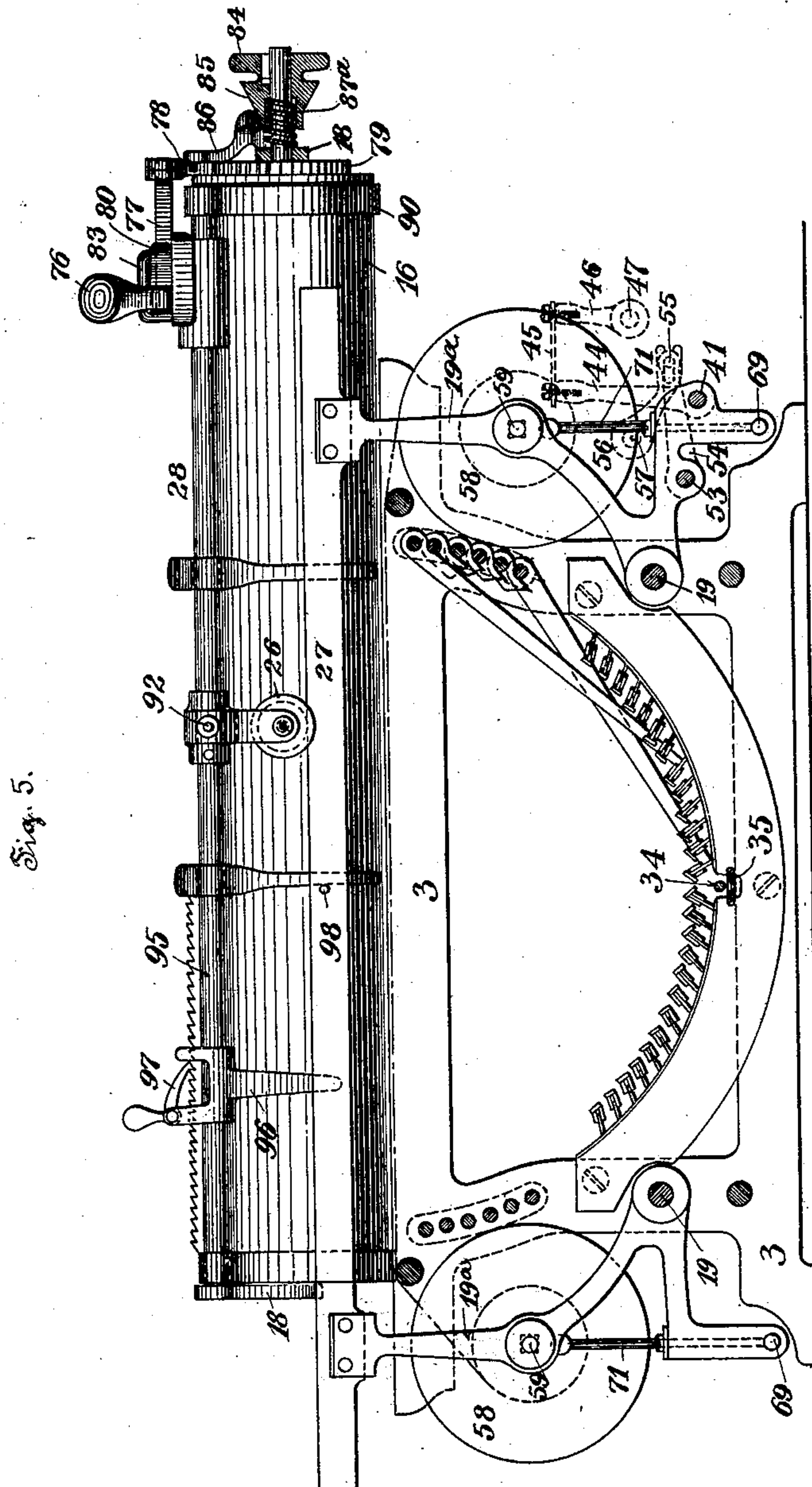
**Patented Mar. 4, 1902.**

**J. S. DU BOIS.**  
**TYPE WRITER.**

(Application filed Mar. 12, 1896.)

(No Model.)

**8 Sheets—Sheet 5.**



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No. 694,464.

Patented Mar. 4, 1902.

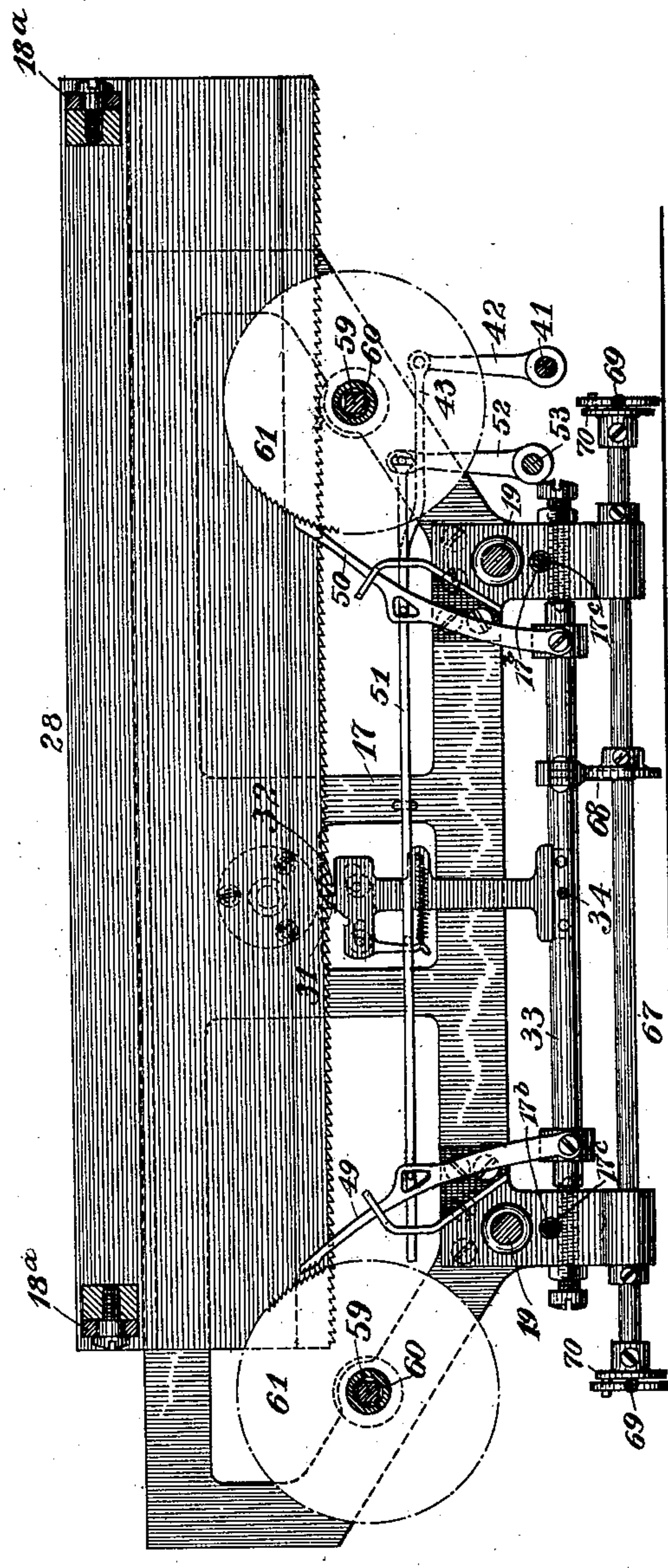
J. S. DU BOIS.  
TYPE WRITER.

(Application filed Mar. 12, 1896.)

(No Model.)

8 Sheets—Sheet 6.

Fig. 6.



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No. 694,464.

Patented Mar. 4, 1902.

J. S. DU BOIS.  
TYPE WRITER.

(Application filed Mar. 12, 1896.)

(No Model.)

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Fig. 7.

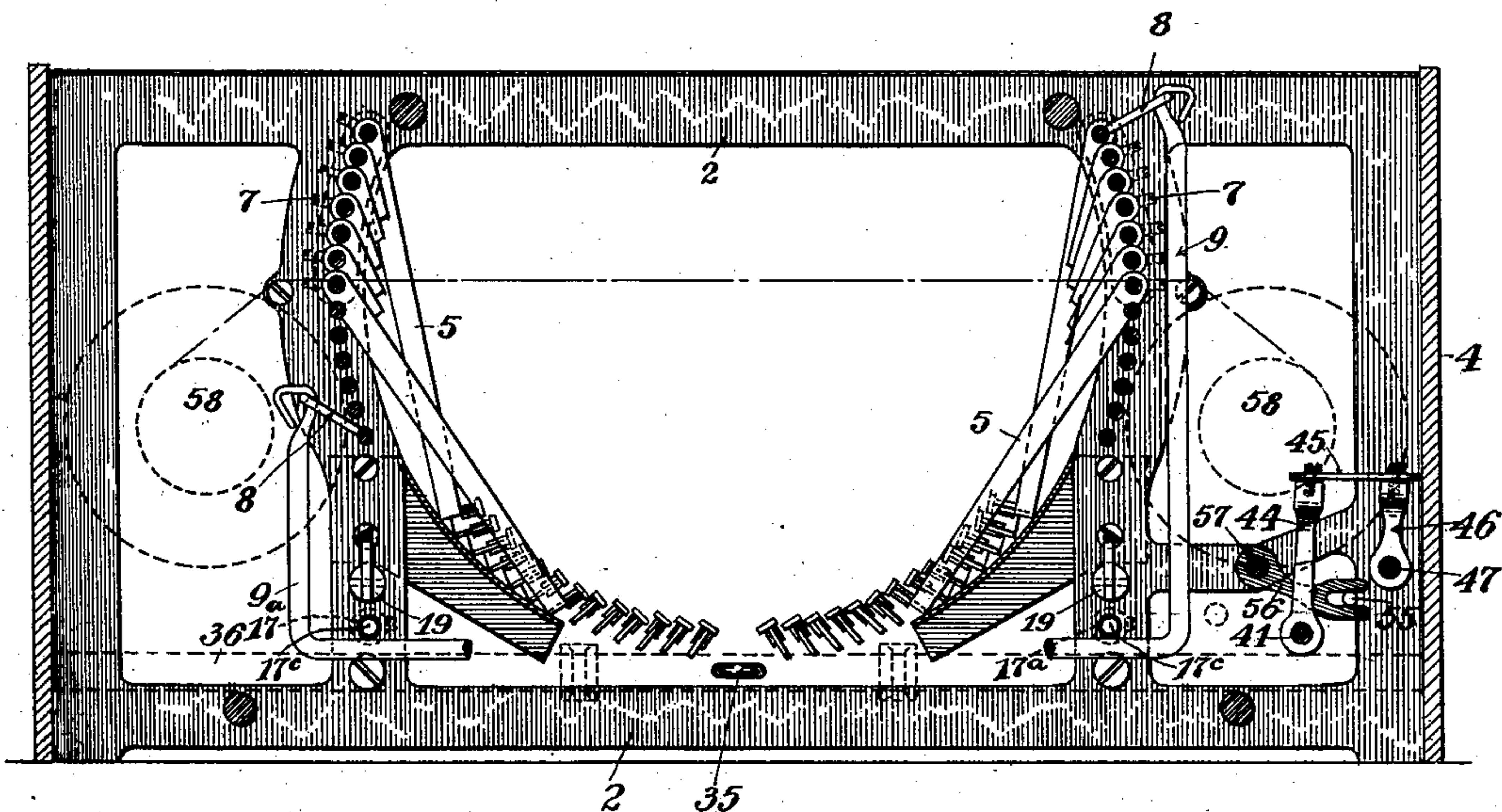
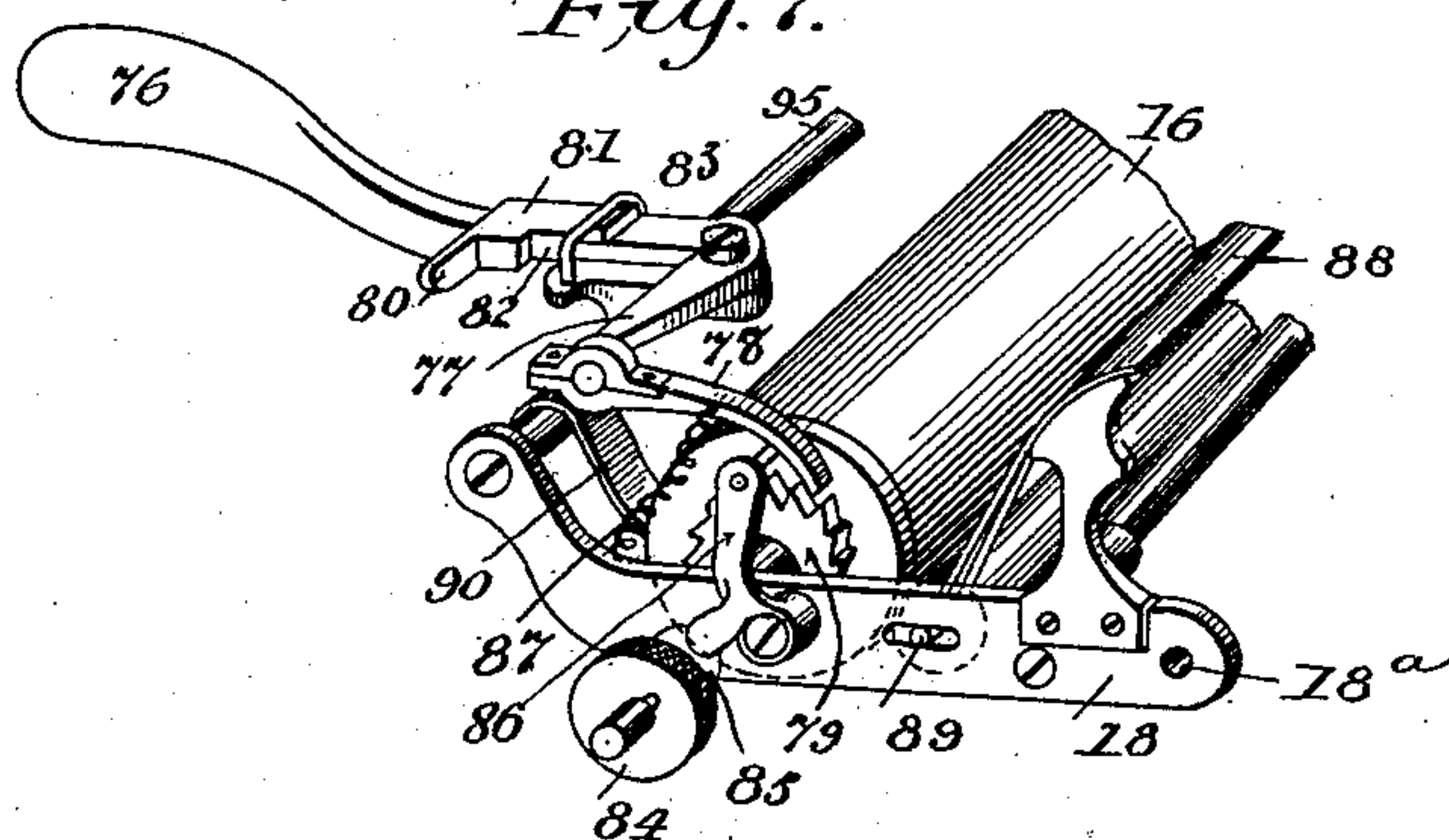


Fig. 7.<sup>a</sup>



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No. 694,464.

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J. S. DU BOIS.  
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8 Sheets—Sheet 8.

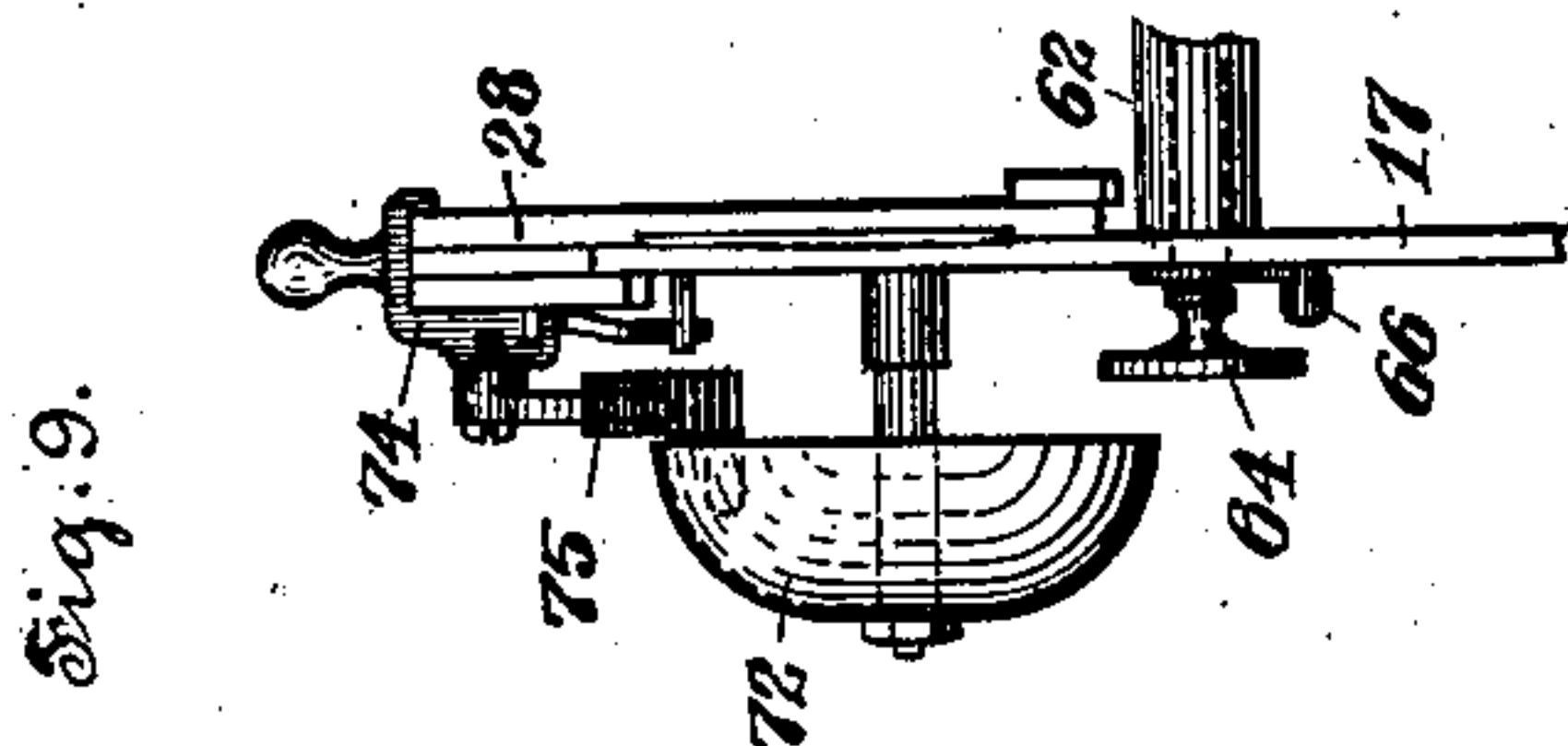
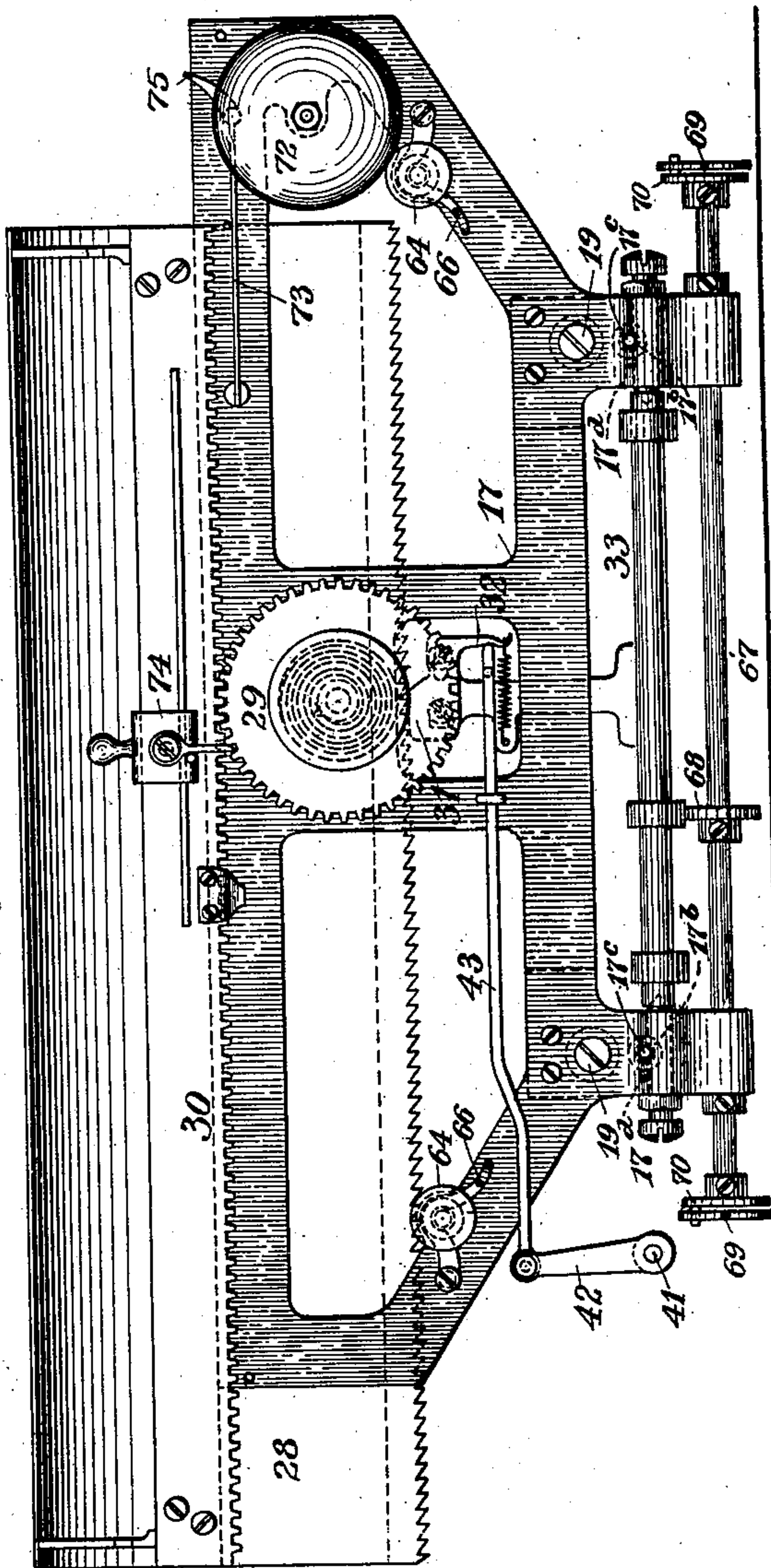


Fig. 8.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

JOSIAH S. DU BOIS, OF CAMDEN, NEW JERSEY.

## TYPE-WRITER.

SPECIFICATION forming part of Letters Patent No. 694,464, dated March 4, 1902.

Application filed March 12, 1896. Serial No. 582,853. (No model.)

*To all whom it may concern:*

Be it known that I, JOSIAH S. DU BOIS, a citizen of the United States, residing at Camden, in the county of Camden and State of New Jersey, have invented certain new and useful Improvements in Type-Writers, of which the following is a specification.

The principal objects of my present invention are, first, to provide a compact, light, durable, efficient, and comparatively inexpensive type-writer adapted to meet all the requirements of such machines and arranged and constructed so as to be conveniently, rapidly, and accurately controlled by the operator from its front part, and, second, to improve and simplify the various component mechanisms of the machine and arrange them for coöperation with each other for the production of great excellence in the complete type-writer.

To these ends my invention consists of the improvements hereinafter described and claimed.

The nature, characteristic features, and scope of my invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, and in which—

Figure 1 is a view illustrating the top portion of the machine. Fig. 2 is a view, partly in section, of the right-hand side of the machine as shown in Fig. 1. Fig. 2<sup>a</sup> is a diagrammatic view illustrating the line of type impressions on the ribbon. Fig. 3 is a sectional view taken on the line 3 3 of Fig. 1. Fig. 4 is a sectional view taken on the line 4 4 of Fig. 3. Fig. 5 is a sectional view taken on the line 5 5 of Fig. 4. Fig. 6 is a sectional view taken on the line 6 6 of Fig. 4. Fig. 7 is a view taken on the line 7 7 of Fig. 4. Fig. 7<sup>a</sup> is a perspective view of the end of the platen, showing the parts in their relative positions when the pawl 78 is thrown out of action. Fig. 8 is a view taken from the rear of the machine, and Fig. 9 is a detached view of the end of the machine shown at the right-hand side of Fig. 8.

The main frame of the machine comprises three parallel cross-pieces 1 2 3, suitably connected together—for example, by means of tie-rods, as illustrated. In the drawings there is a housing 4 at the front of the machine.

The type-bars 5 are of the type described in Letters Patent No. 514,141 of February 6, 1894, granted to T. F. Woodward, and they are carried by the cross-pieces 1 2 3 and disposed in the arc of a circle. As shown in the drawings, these type-bars are supported by endwise-movable bearings or screws 6 and are centered by means of cone points and sockets. (Indicated by dotted lines on Figs. 2 and 3.) Each of these screws 6 is fitted to a suitably-threaded aperture formed, for example, in a plate that is also provided with threaded apertures for the reception of set-screws 7, that serve to prevent accidental displacement or loosening of the screws 6 and afford means for permitting of their adjustment. The endwise-movable bearings or screws 6 constitute means for readily and accurately adjusting the type-bars in the direction of their lengths, whereby the letters of the machine may be readily brought into alinement at the time the machine is built and whereby any error in the alinement which may occur after the machine is in use can be readily corrected without the exercise of special skill or knowledge. The type are impinged upon the platen by the rotation of the type-bars around the bearings or screws 6 as centers. For this purpose they are provided with crank-arms 8.

9 are U-shaped arms, which may be constructed of bent wires and which have one of their ends attached to one of the crank-arms 8 and the other of their ends passed through suitable openings in brackets or bars 10 and 11, applied to the front of the machine. The keys 12 are attached to the intermediate portions of the ends—i. e., the ends or branches that work in the parts 10 and 11—of the U-shaped arms by means of shanks 13, which work in slots provided in the front plate 14 for their reception, so that the keys are free to move up and down in the slots and are held against accidental turning. Each part 13 is attached to a key and to a part 9, and each three of these parts constitute, in effect, a single piece.

15 are springs interposed between the bracket or bar 10 and the ends of the arms 9 for the purpose of returning the same to normal positions after a key has been struck. The type-bars are provided, respectively, with several characters, and the platen 16 is



shifted so as to bring it into line with one or the other of these characters, as required. For this purpose the platen 16 is connected with a movable carriage 28, adapted to a movable frame or support 17 and is journaled to arms 18, which in turn are pivotally connected, as at 18<sup>a</sup>, with the carriage. This permits of the platen's being turned upward to permit the operator to examine the writing.

The carriage support or frame 17 is carried by rods 19, which are movable in the direction of their length in bearings provided for this purpose in the cross-pieces 2 and 3. The forward ends of these rods 19 are pivotally connected by means of links 20 with an arm 21 on a rock-shaft 22 at the front of the machine. This rock-shaft 22 is provided with two keys designated "Fig." and "Cap." on Figs. 1 and 4, by means of which the operator shifts the carriage frame or support 17, so as to bring it and the platen into various positions corresponding with the various characters on the type-bars. One of these keys—in the present instance the one marked "Fig."—is provided with a lever 23, which is pivoted so as to be capable of movement crosswise of the machine. The side piece of the housing 4 adjacent to this lever 23 is provided with pins 24 and 25, so that the operator after bringing the key marked "Fig." or "Cap." into the required position may lock it in such position by pushing the lever 23 sidewise into engagement with the corresponding pin 24 or 25. The carriage frame or support 17 is solicited into normal position by means of springs 17<sup>a</sup> and 17<sup>b</sup>, that may be mounted upon guide-rods 17<sup>c</sup>, that are connected with the frame 17 and work through the plates 2 and 3. These rods are provided with adjustable collars 17<sup>d</sup>, upon which the springs operate. The platen 16 is provided with a roller 26, adapted to run on a rail 27, carried by brackets 19<sup>a</sup> on the rods 19. The carriage 28 is normally driven from right to left along its frame or support 17, attached to the rear ends of the rods 19 by a spiral spring which operates through the intervention of a toothed wheel 29 and a rack 30. (See Figs. 2 and 3.) The movement of the carriage is regulated by means of spacing-dogs 31 and 32, of which one, 32, is movable and is acted upon by a retracting-spring. These dogs are carried by an arm projecting from a rock-shaft 33. This rock-shaft 33 is provided with a forwardly-projecting rod 34 in sliding contact with an arm 35, projecting rearwardly from a spacer-shaft 36. This spacer-shaft is provided with a forwardly-projecting yoke 37, that underlies the U-shaped arms 9, so that when a key is depressed the yoke 37 is shifted, with the result that the spacer-shaft 36 and arm 35 are oscillated or shifted, whereby the rod 34, shaft 33, and dogs are shifted crosswise of the rack, thus releasing the carriage and permitting it to advance under the influence of its actuating-spring and to be then stopped by the dogs. The sliding contact between the arms 34 and

35 permits the carriage-frame to be shifted front and back by means of the keys designated "Fig." and "Cap." and in the manner above described. The spacer-shaft 36 is also provided with forwardly-projecting arms 38, that carry a spacer-bar 39, which may be availed of in the usual manner for advancing the carriage step by step.

It will of course be understood that a spring, as 40, is provided for returning the spacer-bar 39 and yoke 37 to their normal positions after they have been actuated.

The spacer mechanism above described is adapted to release the carriage step by step.

A description will now be given of mechanism accessible from the front of the machine, whereby the operator is enabled to throw the feed-dogs entirely out of action, so as to permit him to move the platen and carriage freely in either direction. It will be understood that under ordinary circumstances the carriage is held by the movable dog 32. At the back of the machine and connected with the carriage-support is a rock-shaft 41, having at its rear end an arm 42, provided with a finger 43, which serves to release the movable dog 32, and consequently the carriage. The front of this shaft 41 is provided with an arm 44, Fig. 7. This arm 44 is connected by a universal joint with a link 45, which in turn is connected with an arm 46, carried by shaft 47, journaled within the housing of the machine. The front end of this shaft 47 is provided with a carriage-release key 48. The link 45 and its universal joints afford means which permit the carriage-support to be shifted back and forth without causing the finger 43 to release the dog 32. When the key 48 is shifted sidewise, the shaft 47 is turned and the shaft 41 is also turned, causing the finger 43 by way of the arm 42 to turn the dog 32 out of operative position, so that the carriage may be pushed back and forth, as required. The shaft 33 is also provided with arms to which are connected pawls 49 and 50, Fig. 6, so that whenever this shaft is oscillated one of these pawls operates to feed the ribbon.

51 is a rod afforded a range of endwise movement in suitable keepers and provided with pins, which penetrate suitable openings in the pawls 49 and 50. These pins and openings afford sufficient play for permitting the pawls to drive the spools, while at the same time they are so designed that when one pawl is in action the other is held out of operative position. In Fig. 6 the pawl at the right-hand side is in action and the pawl at the left-hand side is held out of action. This rod 51 is connected with an arm 52, applied to the rear end of a shaft 53, journaled to the carriage-support. The front end of this shaft 53 is provided with an arm 54, having a pin 55, which works in an opening in an arm 56. This arm 56 is attached to a shaft 57, journaled within the housing. The front end of this shaft is provided with keys marked "Rib-



bon reverse." The pin 55 affords means, since it is free to move endwise in an opening in the arm 56, for permitting the carriage-support to be moved backward and forward in the manner described. The ribbon-reverse keys afford means whereby the operator may, through the intervention of the parts 57 56 55 54 53 52, shift the rod 51, so as to bring either the pawl 50 or the pawl 49 into action, as desired, and thus cause the ribbon to be fed in one direction or the other. The ribbon-spools 58 are provided with square or polygonal openings for the reception of square shafts 59. Each square shaft 59 is movable endwise and is mounted in the carriage-support so as to turn, for example, by providing its one end with a pintle and by adapting it to an opening in a bushing 60, which is cylindrical on the outside and free to turn. The driving ratchet-wheel 61 is mounted on a sleeve 62, connected with the bushing 60 at one end and with a similarly-supported bushing 63 at the other end. When power is applied to the ratchet-wheel 61, motion is imparted by way of the sleeve 62 to the rotatable bushings 60 and 63, which, since they are fitted to the polygonal shaft 59, impart motion to the latter. The motion of the squared shaft 59 is imparted to the spool 58, because the latter is provided with a squared opening for its reception. The shaft 59 may be provided with a handle 64, by means of which it can be withdrawn backward from the machine, so as to release the ribbon-spool, and thus afford means for permitting of the ready insertion of new ribbons. The handle 64 may be provided with an annular notch 65 for the accommodation of a movable locking-lever 66, which serves to prevent accidental detachment of the shaft 59 and also affords means for permitting of its removal. Connected with the carriage-support is a counter-shaft 67, to which rotary motion is imparted from the shaft 33 through the intervention of pawl-and-ratchet connections 68. This counter-shaft 67 reciprocates endwise-movable rods 69 through the intervention of pitmen devices or cranks and cross-heads 70. The rods 69 are provided with fingers 71, disposed upon opposite sides of the ribbon-spools, so that when the shaft 33 is oscillated the shaft 67 is turned through the operation of the parts 68, and the rod 69 and fingers 71 are shifted backward and forward through the ordinary operation of the parts 70. This movement of the fingers 71 shifts the ribbon-spools front and back on their polygonal shafts without interfering with the rotation of the spools by these shafts, with the result that different portions of the ribbon are presented at various times to the type, whereby undue wearing of the ribbon in certain places is obviated. In Fig. 2<sup>a</sup> is illustrated diagrammatically the path or line of the type impression on the ribbon, and in this connection it may be remarked that by reversing the direction of feed of the ribbon at different intervals it

is possible to prevent the paths or lines of the type impressions from being coincident, whereby the ribbon is made to last a comparatively great length of time. At the rear of the carriage-support is a bell 72. The hammer of this bell is mounted upon the free end of a spring 73. The rack of the carriage is feathered and a carrier 74 is fitted over the feather and to the rack, so as to frictionally engage the same and be capable of manual adjustment. This carrier 74 is provided with a depending projection adapted to collide with a finger 75, carried by the bell-hammer, so as to trip it, and thus sound the bell. By adjusting the carrier 74 the bell may be sounded at any required point in the travel of the carriage.

76 is a handle by means of which the platen or paper-roller is turned for the production of lines in writing. This handle 76 resembles one arm of a bell-crank lever, the other arm 77 of which is provided with a pawl 78, that actuates a ratchet-wheel 79, secured to the roller or platen 16. When the handle 76 is pushed toward the right, Fig. 1, two results are accomplished by this one motion—first, the pawl 78 turns the roller to form a new line of writing, and, second, the carriage is pushed back, so as to commence the new line of writing at the proper side of the sheet. The accomplishment of these two results by one motion is important and lightens the labor of the operator. Upon the handle 76 is a collar 80, fitted thereon so as to be moved manually and so as to remain in position when adjusted. This collar 80 is provided with several stops, as 81 and 82, which collide with the keeper 83, and thus limit the throw of the handle 76, and consequently the throw of the pawl 78. The operator may shift this collar 80, and thus bring either of the stops 81 or 82 into range of the keeper 83, whereby the throw of the pawl 78 is varied, with the result that the space between the lines may be made narrower or wider, as required. Sometimes it is desirable to turn the roller or platen 16 freely and rapidly in one direction or the other.

84 is a knob splined or otherwise mounted so as to be afforded a range of endwise movement upon the spindle of the roller or platen and so as to turn with the spindle. This knob is provided with a conical shank 85, which may collide with a finger 86, upon which the pawl 78 is normally solicited, for example, by means of a spring 87. The knob 84 is normally held by a spring 87<sup>a</sup> in such position that its conical shank does not cause the pivotal finger 86 to lift the pawl 78 out of action. However, when the knob 84 is pushed inward its conical shank 85 elevates or turns the finger 86, and thus causes it to lift the pawl 78 out of action.

From the foregoing description it follows that the operator may push the knob 84 inward, and thus throw the pawl 78 out of action, whereupon he may turn the knob, and



thus turn the platen or roller in the required direction.

88 is a paper-guide.

89 is a guide-roller which may be applied  
5 to the paper-guide 88 by means of springs,  
and 90 are strips for holding the paper in contact with the roller. The front of the carriage is provided with a roller 26, that runs  
10 upon a track 27, as before described, and with  
an index 92, that corresponds with a scale 93. There may also be provided a scale 94, which  
coöperates with the scale 93. The carriage-rod 95 is provided with a rack and has applied to it a movable detent device 96. This  
15 detent device 96 is provided with a pawl 97,  
adapted to engage the teeth of said rack, and thus lock the device to place. This detent device collides with the pin or projection 98  
20 applied to the track 27, and thus serves to  
limit the travel of the carriage, and consequently to adjust the width of the margin of the finished writing. The operator may turn  
the pawl 97 out of engagement with the teeth of the rack, and thus be enabled to shift the  
25 detent device and subsequently lock it in position for producing any required width of margin.

It will be obvious to those skilled in the art to which my invention appertains that modifications may be made in details without departing from the spirit thereof. Hence I do  
30 not limit myself to the precise construction and arrangement of parts hereinabove set forth and illustrated in the accompanying  
drawings; but,  
35

Having thus described the nature and objects of my present invention, what I claim as new, and desire to secure by Letters Patent, is—

40 1. The combination in a type-writer of, carriage-dogs connected with the shaft and carriage-support, a finger for throwing out said

dogs, a key, as 48, carried by the fixed part of the machine, and sliding connections interposed between the key and finger, substantially as described. 45

2. In a type-writer the combination of, a bell, a hammer supported by a spring and provided with a projection, a carrier, as 74, frictionally fitted to a feather on the carriage-  
50 rack, and a lug depending from said carrier into range of the projection on the bell-hammer, substantially as described.

3. In a type-writer the combination of, teeth projecting radially from the axis of a  
55 revoluble platen, a bell-crank lever pivoted to a movable carriage by a vertically-disposed pivot and having one of its ends arranged to constitute a single hand-lever for returning the carriage and advancing the platen by a  
60 single motion, a pawl connected with the other arm of said lever and coöperating with said teeth, a notched sleeve adjustable endwise on the first-mentioned arm of said lever, and a keeper applied to the carriage and  
65 adapted to collide with different notches on the sleeve to change the distance between the lines of writing, substantially as described.

4. In a type-writer the combination of, a  
70 ratchet-wheel having its teeth disposed radially in respect to the axis of the platen, a pawl and its connections for driving said platen, a knob mounted to turn with and slide endwise on the axis of said platen, and a lever operated by a conical shank on said  
75 knob and adapted to lift said pawl out of action, substantially as described.

In testimony whereof I have hereunto signed my name.

JOSIAH S. DU BOIS.

In presence of—

A. B. STOUGHTON,  
W. J. JACKSON.