

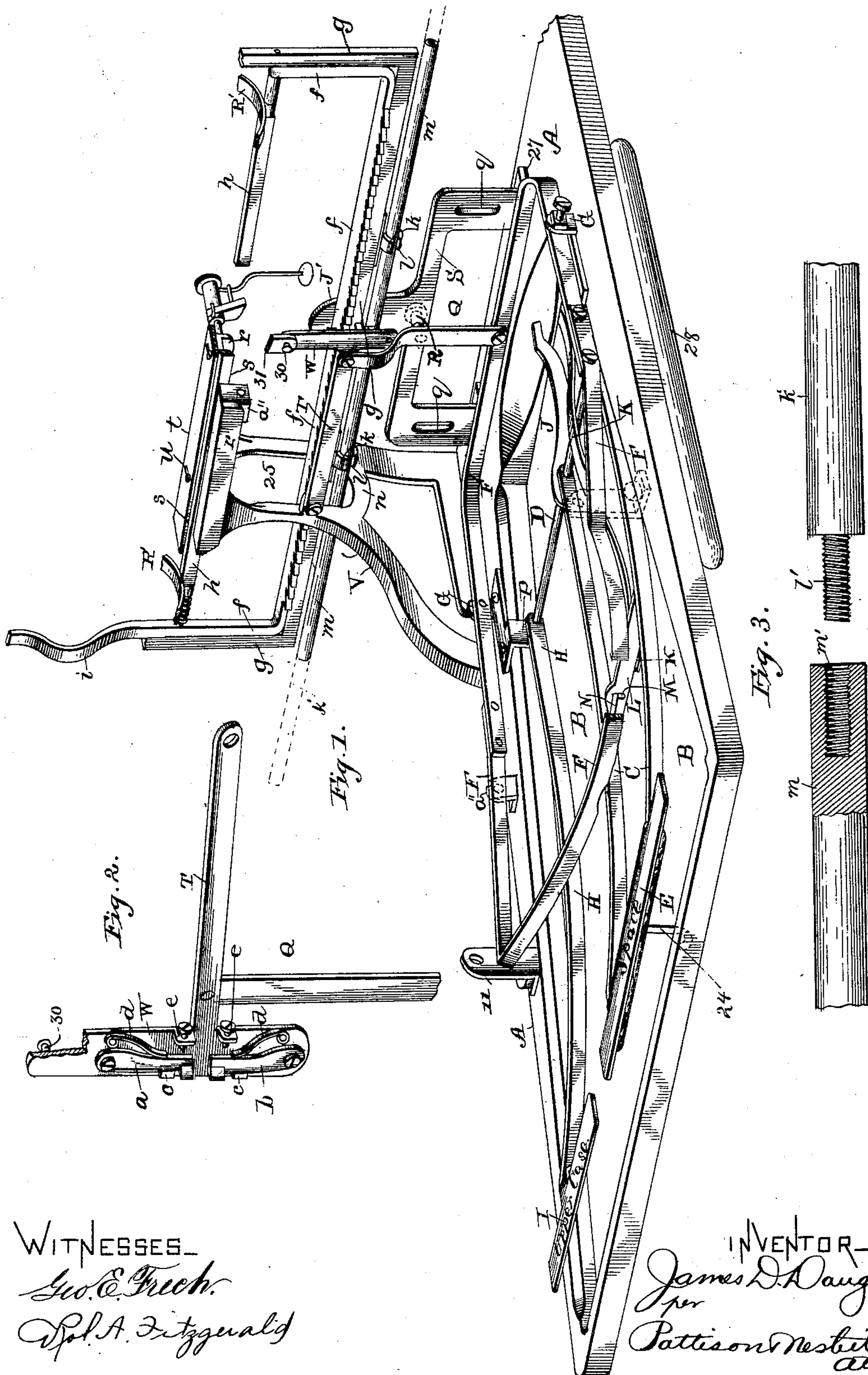
(No Model.)

4 Sheets—Sheet 1.

J. D. DAUGHERTY.  
TYPE WRITING MACHINE.

No. 481,477.

Patented Aug. 23, 1892.



WITNESSES\_

Geo. E. Frick.

Pol. A. Fitzgerald

INVENTOR-

James D. Daugherty

Pattison & Nesbit  
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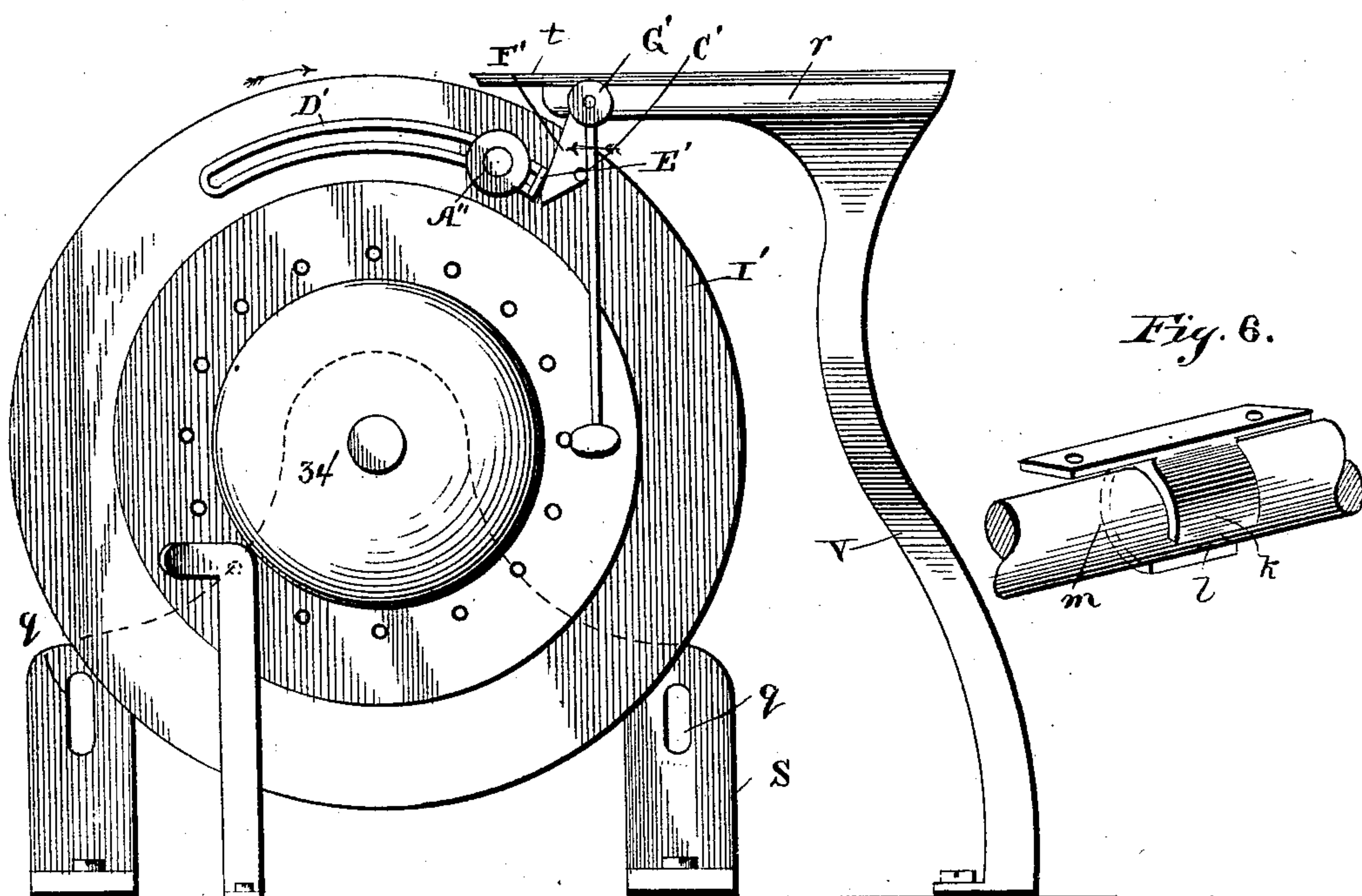
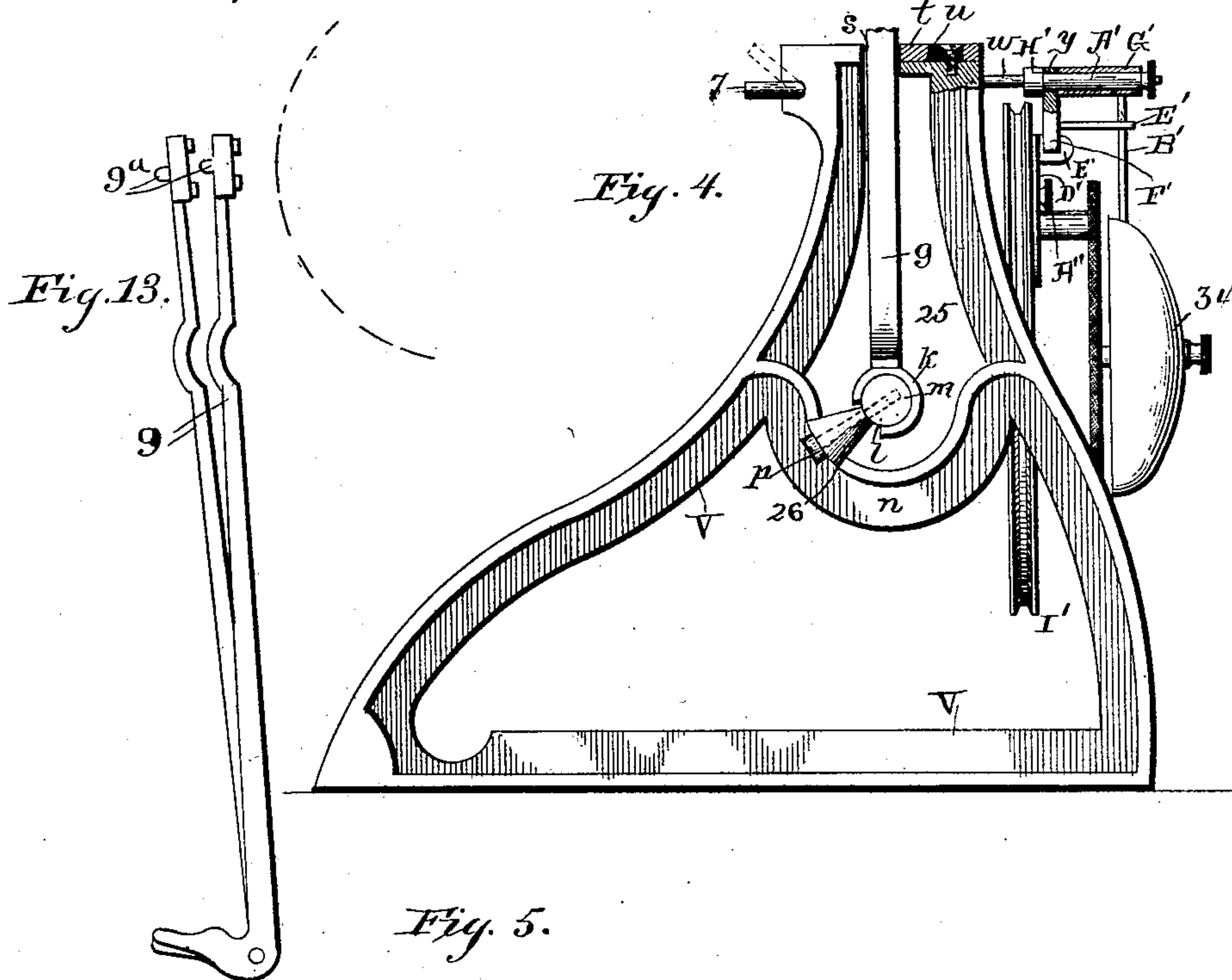
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4 Sheets—Sheet 2.

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WITNESSES

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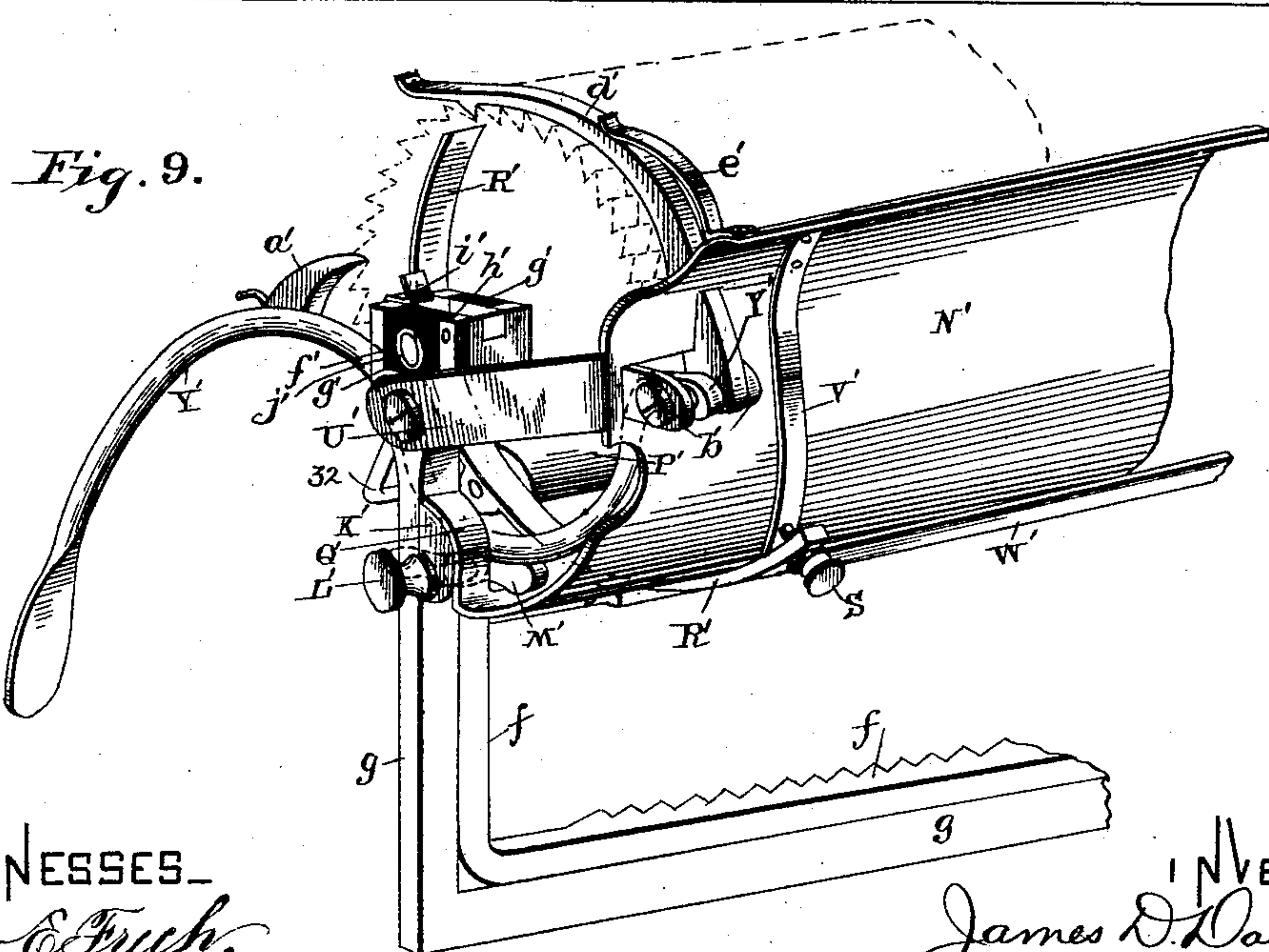
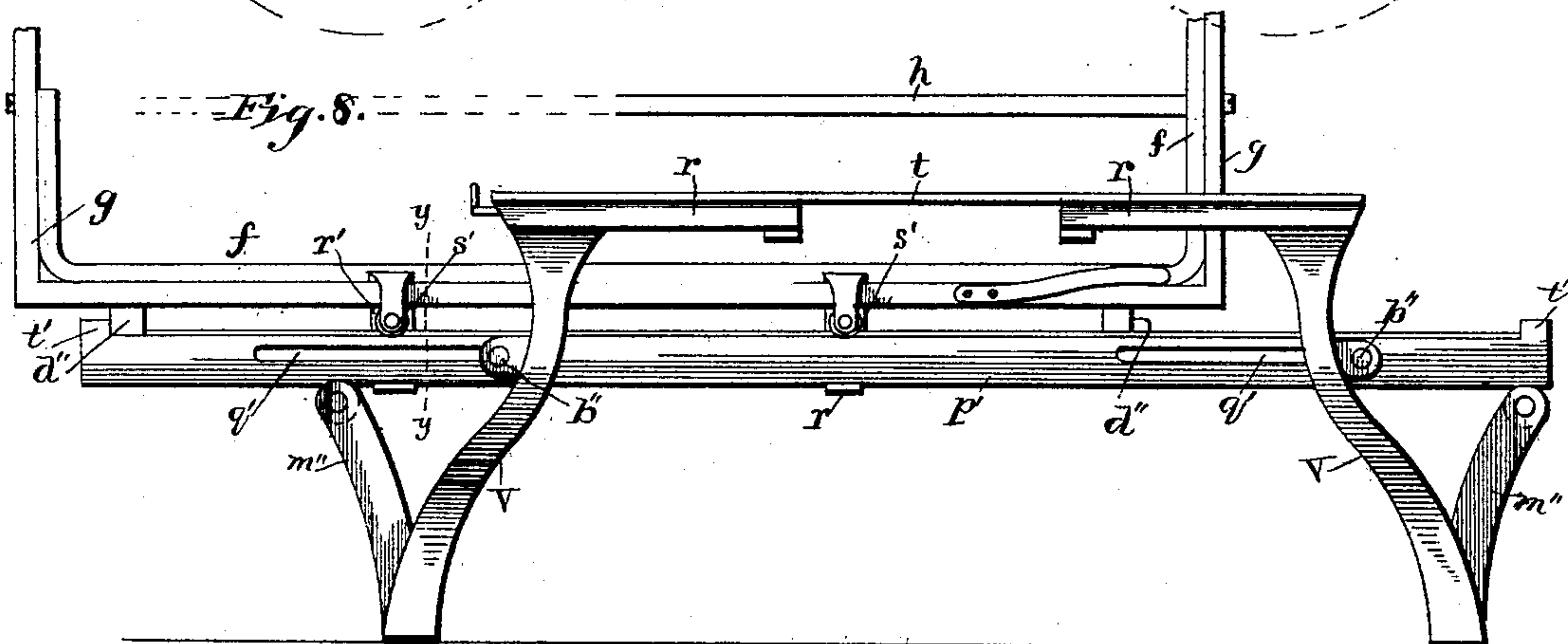
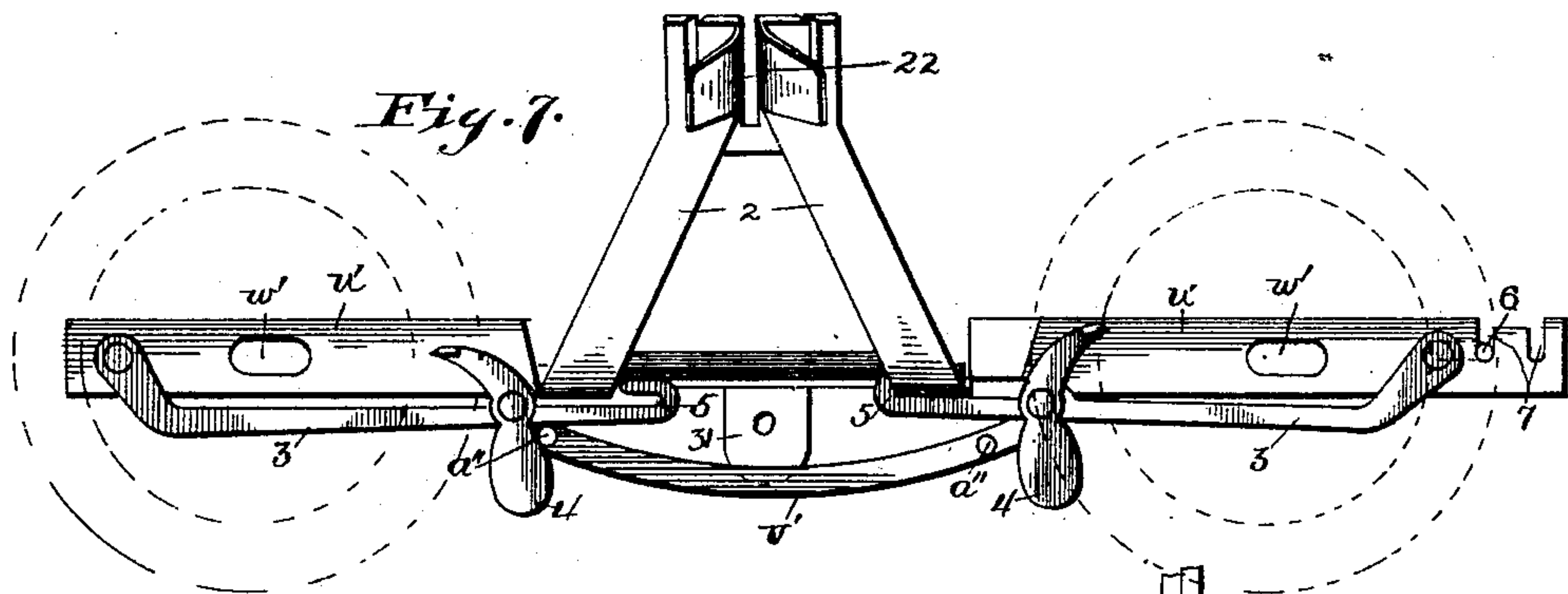
(No Model.)

4 Sheets—Sheet 3.

J. D. DAUGHERTY.  
TYPE WRITING MACHINE.

No. 481,477.

Patented Aug. 23, 1892.



WITNESSES\_

Geo. C. Frick.

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(No Model.)

4 Sheets—Sheet 4.

J. D. DAUGHERTY.  
TYPE WRITING MACHINE.

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Fig. 11.

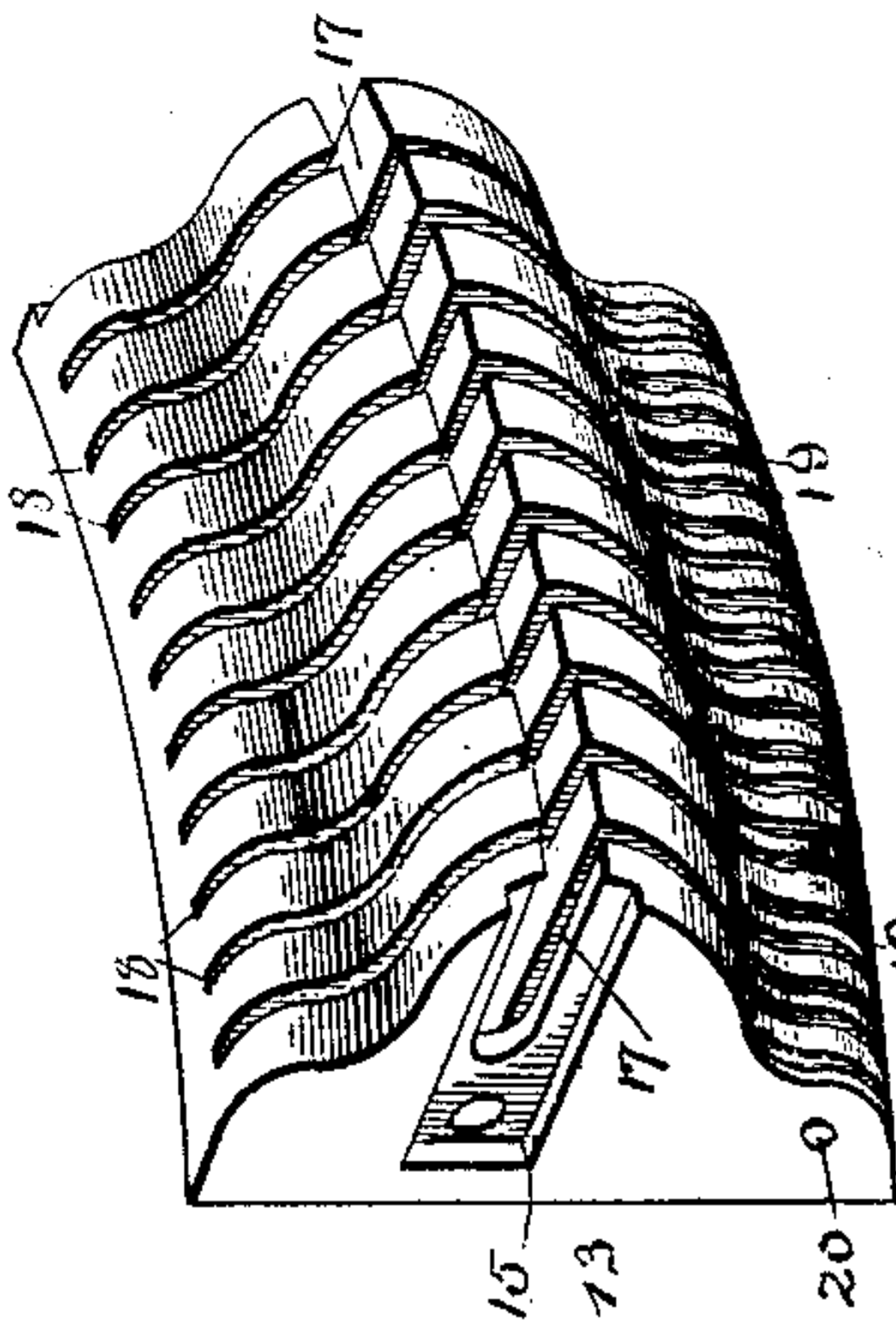


Fig. 10.

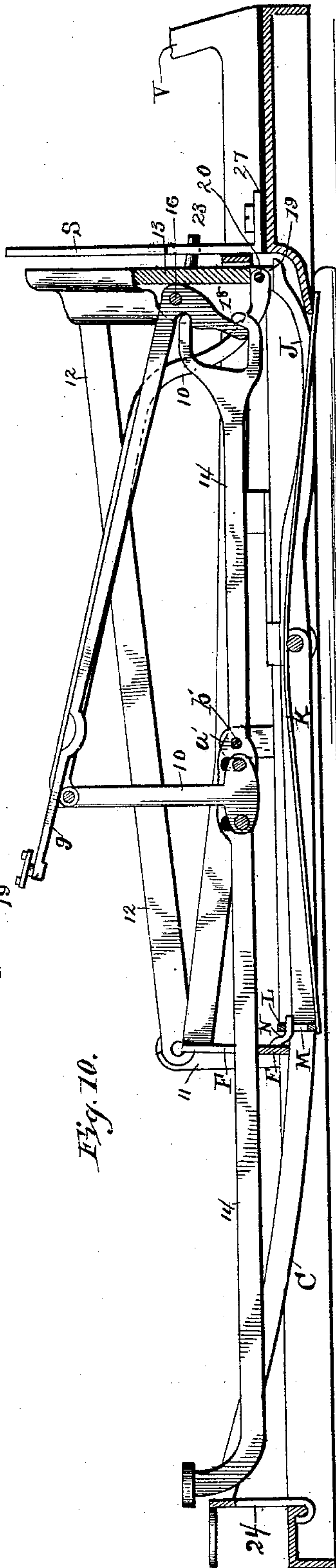
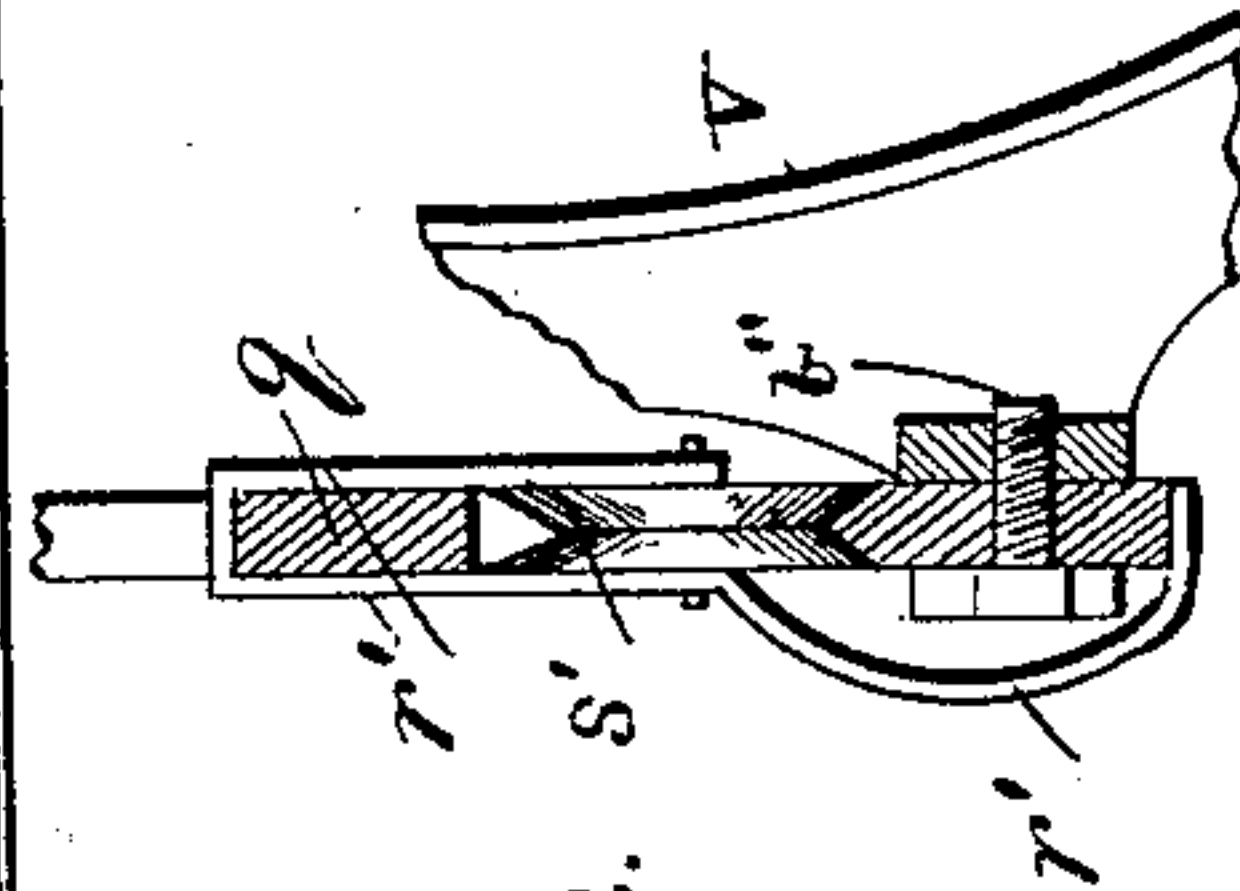


Fig. 12.



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# UNITED STATES PATENT OFFICE.

JAMES D. DAUGHERTY, OF KITTANNING, PENNSYLVANIA.

## TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 481,477, dated August 23, 1892.

Application filed March 8, 1892. Serial No. 424,154. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES D. DAUGHERTY, of Kittanning, in the county of Armstrong and State of Pennsylvania, have invented certain new and useful Improvements in Type-Writing Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to type-writing machines; and it consists in certain improvements in the construction of the parts shown and described in Patents No. 457,258, dated August 4, 1891, and No. 470,990, dated March 15, 1892, both of which were granted to me.

The object of the present invention is to improve, simplify, and cheapen the construction of the mechanism in the aforesaid patents in the manner and for the purposes fully set forth hereinafter.

In the accompanying drawings, Figure 1 is a perspective view of my machine with the upper end of the carriage broken away, the type-bars and key-levers and their frame removed, the ribbon-feed and tilting mechanism removed, and the spring-drum removed. Fig. 2 is a rear perspective view of the feed-dogs and the lever which carries them. Fig. 3 is an enlarged view showing a means for lengthening the carriage-track to accommodate a long carriage. Fig. 4 is an end view of one of the carriage-supporting standards, showing the carriage, the spring-drum, and the bell-trip supported thereby. Fig. 5 is a rear view of the spring-drum, its supporting-standard, and one of the carriage-supporting standards carrying the bell or clapper ringing mechanism. Fig. 6 is a detached enlarged perspective view of one of the yokes that are attached to the under side of the carriage, and which travel upon the carriage-track. Fig. 7 is a front view of the ribbon-feed mechanism and the ribbon-tilting frame. Fig. 8 is a modified form of construction for making the carriage-track extensible to permit the attachment to the machine of a long carriage. Fig. 9 is an enlarged perspective view of one end of the carriage, the paper-guide connected thereto, and the mechanism for holding the paper in

contact with the platen and for operating the platen to move the paper for line-spacing. Fig. 10 is a longitudinal sectional view taken through the slot M, Fig. 1, with the carriage and feed-dogs omitted. Fig. 11 is a perspective view, looking from the inner side, of the inner end of the shifting type-bar and key-lever frame, one of the division-plates being shown in position. Fig. 12 is a vertical section taken on dotted line *y y* of Fig. 8, showing the yoke used in the modified form for accommodating a long interchangeable carriage. Fig. 13 is a detached view of the type-bars.

A is a base of a suitable size and thickness, which is provided with a large central opening B, in which opening are supported the spacing and upper-case shifting-levers. The spacing-lever consists of two parallel bars C, which have their inner ends loosely pivoted upon a transverse rod D, that has its ends supported in depending lugs P, secured to the sides of the base A, the outer end of these bars C being connected by a transverse finger portion E, by means of which the bars are depressed.

The universal feed-lever is composed of a rectangular frame F, that has its outer end formed into a segment of a circle or curved shape, as illustrated in Fig. 1, and is pivotally supported between its ends by means of screws, which pass through the lugs G, that extend upward from the base A.

The spacing lever or frame C is held up near the under side of the universal feed lever or frame F by means of a spring K, which has its inner end placed under the inner end of the frame or base A and its outer end under a transverse portion or bar L of the spacing-lever, the said spring passing over the transverse bar D between its ends, as plainly shown in Fig. 1. A pin or projection N extends inward from the inner side of the outer end of the feed-frame F and projects into a vertical slot or opening M made in the transverse bar L of the spacing-levers C. Owing to this construction it will be seen that the universal feed-lever F, which is operated by each of the key-levers, as will hereinafter appear, is allowed to be depressed for the purpose of allowing the carriage to move a space without at the same time depressing



the spacing-lever, as the pin or projection N, which connects the universal feed lever or frame with the spacing lever or frame, will move down in the said slot M without effecting the spacing-lever, as will be understood. This arrangement allows the spacing-lever to remain quiet or still while the key-levers and the universal frame are being depressed; but, however, when the spacing-lever is depressed the universal feed-lever is likewise depressed through the medium of the pin or projection N, which is normally in contact with the upper end of the said slot M.

Secured rigidly at its inner end to the shaft or rod D is a shifting or "upper-case" lever or key H, which carries at its outer end a finger-piece I. Also secured rigidly at its outer end to this shaft D is an arm J, which has its inner end extending inward and under the inner end of the type-bar-shifting frame, as shown in Fig. 10, and which will be fully described farther on.

The type-bar-shifting frame 12 has its outer ends pivoted between vertical lugs 11, which extend from opposite sides of the base A, and which is shifted at its inner end for the purpose of bringing the proper character at the outer end of the type-bars 9 to the printing-point. The frame differs radically from that described in said patents in that a shifting frame pivoted between its ends is not herein used for carrying the type, but the type are carried by the frame 12, which is pivoted at its outer end in this instance and has its inner free end shifted by means of a lever H and arm J, as before described. The inner end 13 of this shifting frame 12 is radically different from that shown in the said patents in that it is composed of a block of metal, as shown in Fig. 11, which is provided with horizontal grooves 15 in its ends for the reception of the inner ends of the side bars of the said frame F, which are securely held in the said grooves by means of screws, which pass through the ends of the frame into the ends of the said block. Supported in the side bars of this frame F near its inner end is a type-bar pivotal rod 16, upon which the type-bars 9 are pivoted, and which rod is formed in the shape of a segment of a vertical section, as shown and described in the said patents, and for the same purpose. Owing to this construction after the type-bars have been placed upon the rod 16 and the rod placed in the inner ends of the frame F the rod 16 is passed into the circular slot 17 made in the inner face of the block 13 for the reception thereof, the inner ends of the type-bars passing into slots 18, radiating from the curved slot 17, and the ends of the side of the shifting frame F in the grooves 15, and secured therein by means of screws. In this instance the division-plates 10 have their inner ends bent downward between the type-bars 9 and secured in slots 19, which are made in the lower edge of the block 13, and secured therein by means of a pin 20. By the use of this block I am

enabled to mill the slots therein for guiding the type-bars accurately, so that they will at all times be guided to the printing-point and which makes these blocks interchangeable, so that a new one can be placed therein for an old worn one. This is a great improvement over the construction shown in the said patents, as the inner ends of the division-plates when depended upon to guide the type-bars are liable to become misplaced slightly, and thus cause the type to stick in the guide 22. So, also, owing to this rigidity of the inner end of the frame 12 and the accurate guiding of the type-bars thereby, the key-levers may be supported independent of the shifting frame—that is, upon a rod  $b'$ , not connected with the shifting frame 12, but supported by vertical ears  $a'$ , projecting from the base  $A'$ —in which instance the said levers will simply turn slightly upon their pivotal point  $b'$  when the frame is shifted. The movement of the shifting frame is very slight and only about one-quarter of an inch in a full-sized machine at its free end, and this movement will not perceptibly effect the operation of the levers. The inner end of the arm J rests upon the under side of the center of the plate 13, so that when the upper-case lever H is depressed and the shaft D is rocked, carrying the inner end of the arm J up and raising the inner end of the type-bar frame F, to bring a capital or other character to the printing-point, as will be understood. The upward movement of the inner end of the frame is limited by means of projections 23, which project from the inner end of the type-bar frame F into vertical slots  $q$ , formed in the vertical portions of a U-shaped spring pulley-support S, and these slots also limit the downward movement of the inner end of the said frame. The normal position of the inner end of the frame F is with the pins 23 resting against the lower ends of the slots  $q$ . A hook 24 depends from the outer end of the spacing-lever, which catches against the under face of the outer end of the frame or base A and limits the upward movement of the lever to prevent it from coming against the under side of the outer end of the universal feed-lever F.

Projecting vertically from opposite sides of the inner end of the base A are the carriage-supporting standards V, which are provided with vertical slots  $s$  and openings 25 to receive the vertical portion of the carriage, as will presently appear. The upper ends of these standards are provided with the inwardly-projecting extensions or carriage-guideways  $r$ , as illustrated in Figs. 1, 5, and 8. Lugs 26 extend laterally outward from the webs  $n$  of the standards V, and passing through these lugs and inclined upwardly are the screws  $p$ , which extend into the carriage-track, which consists of a single rod  $m$ . In this manner the track  $m$  is supported and firmly held at each end.

My carriage in this instance consists of a



vertical U-shaped frame *g*, which is provided at its upper ends with vertical slots *f'*, that receive a rubber, felt, or lead material *g'*, that is held in position by means of a bar *h'*, which is pivoted in a slot in the upper end of the carriage, as shown in Fig. 9, the opposite end of this bar being held by means of a suitable spring-catch *i'*. Passing horizontally through this soft material *g'* is a boxing *j'*, which receives the end of the platen-shaft. The object of this arrangement is to prevent the sound-waves or vibrations caused by the stroke of the type against the platen from being conveyed to other parts of the machine, which will greatly deaden and reduce the noise made by type-bar machines, which is considered by some very objectionable.

In order to further deaden and reduce the noise made by the machine when at work, (the movement of the dogs, key-levers, tilting ribbon-frame, and spacing and other levers,) I place under the lower ends of the U-shaped support *S* felt or other soft material 27, which will also serve to break and interrupt the sound-waves and to support the base *A* by means of pneumatic tubes 28, that are inflated and hermetically sealed and cemented or otherwise conveniently secured to the base.

Instead of pneumatic tubes blocks of felt or rubber may be substituted therefor, though I prefer a pneumatic tube, as this will more thoroughly prevent the sound-waves from being conveyed or communicated to the desk or table upon which the machine is resting. So, also, the lower ends of the standards *V* will be insulated from the base *A* by means of a suitable felt, rubber, or lead packing, which will break the wave-sounds and prevent them from being conveyed to the base. By thus insulating the supporting portions of the machine, and thus breaking the sound-waves, I am enabled to greatly reduce the noise which is so common in type-writing machines and which is a great objection.

Passing through the vertical portions of the carriage *g* is a longitudinal bar *h*, which passes through the vertical portions or slots of the carriage-standards *V* and engages the inner faces of the support extensions *r* and holds the carriage in an upright position as it moves back and forth upon its track *m*, as will be seen. Secured to the under side of the carriage *g* are two or more sockets *k*, which pass partially around the track *m* and have slots or openings *l* to permit them to pass the lugs 26 and screws *p* as the carriage moves back and forth.

For the purpose of taking up wear and to facilitate the assembling of the machine without binding and lost motion I secure to the rear extensions *r* of the carriage-supports *V* a plate *t*, which is provided with slots *u*, through which clamping-screws pass, as shown. By means of this construction the slots *s* between the extensions *r* can be left larger or wider than the thickness of the vertical portions of the carriage *g* and of the bar *h*, so that the parts

of the machine can be easily and quickly assembled, and then the plate or bar *t* is moved up against the outer side of the bar *h* until it is close enough to prevent any lateral movement of the upper end of the carriage, while at the same time it will allow the carriage to move freely back and forth without binding. If the slots *s* themselves were made of a width to allow the bar *h* to pass snugly as it should, it would be very difficult to place the standards *V* upon the base *A* in a position to prevent binding of the carriage in its movements. So, also, should there be any wear, it can be taken up by this plate *t*, as will be seen. The feed-rack *f* is U-shaped and has its upper ends pivoted upon the bar *h* and the lower horizontal portion formed into horizontal teeth, as illustrated in Fig. 1. One end of this feed-rack is extended into a handle *i*, by means of which it can be swung upon the bar *h* and the teeth carried away from the feed-dogs to permit the carriage to be freely moved back and forth.

The feed mechanism is composed of a lever *T*, which is pivoted at its outer end to one of the carriage-supports *V* and its inner end provided with a vertical portion *W*. Pivoted at their outer ends to the outer side of this vertical portion and extending toward each other are two feed-dogs *a b*. These feed-dogs are limited against movement in the direction of the travel of the carriage by means of the shoulders *c*, and are held normally in contact with these shoulders *c* by means of spring *d* when the dogs are both out of engagement with the teeth of the feed-rack *f*. A link *Q* has its upper end pivotally connected with the outer portion of the lever *T* and its lower end pivotally connected with the inner end of the universal feed frame or lever *F*. In this manner the inner free end of the lever *T* is moved up and down each time the universal feed-frame is moved either by the space-lever or by one of the key-levers which engage with the inner end of the frame, as shown in Fig. 10.

The operation of this feed is as follows: When the universal lever is down in its normal position, as shown in Fig. 1, the upper dog *a* is in engagement with the teeth of the rack, and the carriage moves the said dog against the tension of its spring *d* until stopped by the set-screw *e*. Now in this position it will be seen that the dog *a* is in front of the dog *b*, and the dog *b* is ready to catch the next tooth of the feed-rack. When the universal feed-bar is moved up at its inner end by the depression of a key-lever or by the spacing-lever, the upper dog is carried up out of engagement with the feed-rack and moved backward half a space by its spring *d*, while the lower dog at the same time is in engagement with the feed-rack and allows the carriage to move half a space in the opposite direction against the tension of its spring *d*. In this way the dogs are alternately made to engage the feed-rack, and the feed-rack and carriage fed half a space when a key-lever is de-



pressed and half a space when it is allowed to move up, as will be understood. The object of feeding the carriage half a space at a time is the same as fully set forth in the patents herein referred to, and need not be particularly set forth here. The inner and free end of the lever T, which carries the feed-dogs, is prevented from moving too near the feed-rack by means of a screw R, which passes through the support S and engages the bar Q, as shown in Fig. 1. In this manner the teeth of the dogs are not allowed to project beyond the teeth of the feed-rack, but are held in the proper relation thereto, to be always guided smoothly between the teeth without interfering in any manner. The upper end of the vertical portion W of the lever T is provided with a headed pin 30, which passes loosely through an opening made in the depending portion 31 of the tilting frame 2, so that the frame 2 is tilted each time the universal feed-frame is operated for the purpose of bringing to the view of the operator the letter and words which has just been printed as soon as the impression is made.

The paper-guide consists of a curved piece of sheet material N', which has its upper edge curved outward from the roller or platen, as illustrated clearly in Fig. 9, and its opposite lower corners provided with the lips or extensions Q', which are secured to the vertical portion of the U-shaped carriage. The upper portion of the paper-guide is held in place by means of the extensions U', which extend inward and are secured to the vertical portions of the carriage. In this manner the paper-guide is securely held in place and detachably so by means of screws without the intervention of any extension from the carriage or any rod, as the paper-guide is itself directly connected with the carriage. This construction produces a paper-guide which is very conveniently applied to the machine and cheaply manufactured, besides strengthening and bracing the upper ends of the vertical portion of the U-shaped carriage-frame. Formed in one end of this paper-guide outside of the end of the platen is an opening which is provided with outwardly-extending lugs b', through which passes a screw which forms the pivotal support for the operating-lever Y' and the holding dog or lever d'. The platen-operating lever Y' is bent or curved downward, as shown in Fig. 9, to nearly conform to the curve of the paper-guide, and is provided with a pawl a', that engages the ratchet upon the end of the platen. The upward movement of this platen-operating lever is limited by means of a hook or projection 32, that extends inward from the said lever and engages the teeth of the ratchet, as will be understood.

Single and double spacing of the paper and platen is regulated by means of a pivoted stop M', that has a shaft extending through a lug K' upon the end of the carriage-frame, and the outer end of this shaft is provided

with an operating-handle L'. When this stop M' is in the position shown in Fig. 9—that is, under the operating-lever Y'—it limits the downward movement of the lever, so that the pawl a' catches only one ratchet-tooth of the platen-ratchet when the lever Y' is operated. When it is desired to turn the platen two spaces each time the operating-lever Y' is operated, the stop M' is turned from under the lever Y', as shown in dotted lines in Fig. 9, which allows the lever to drop and the pawl a' to catch two teeth each time the lever is operated. A holding dog or lever d' extends over the ratchet of the platen and engages therewith and is held in contact with the ratchet by means of a spring e', that has one end secured to the paper-guide and its opposite free end engaging the upper surface of the said holding-pawl. By means of this pawl or lever d' the platen is held in the proper position and is prevented from moving backward.

The paper is held in contact with the platen and caused to revolve therewith by means of two curved levers R', which are pivoted between their ends upon the bar h of the frame directly under the platen. These levers are placed near the ends of the platen and have journaled between them and between their ends a friction-roller P', between which and the platen the paper to be printed upon passes. The inwardly-extending ends of the said levers serve to hold the paper above the roller in position close to the platen. This friction-roller is held in contact with the platen by means of the springs V', which have one end secured to the paper-guide and their free ends to engage the rear ends of the levers R', thereby throwing their front ends toward the platen, carrying with them the roller P'. Passing through the rear ends of these levers R' and engaging the said springs V' are the regulating-screws S', by means of which the tension of the roller against the platen is regulated, as will be seen. Connecting the rear ends of these levers R' is a rod W', so that the roller P' can be forced out of contact with the said platen by drawing the said rod W' toward the paper-carriage, which will throw the front ends of the levers and the roller carried thereby away from the front side of the roller, thereby releasing the paper, so that it can be drawn backward or out without revolving the platen, if desired.

Secured to the spring-pulley shaft is a bell 34 for indicating when the carriage has reached a point near the end of the line which it is desired to print. This spring-pulley shaft is supported by the vertical projection J' of the support S and the spring-pulley I' placed thereon in any suitable manner.

Extending rearward from one of the rear extensions r of the standard V is a rod or shaft w, upon which is pivoted a pawl F', which has projecting therefrom a pin C'. Also pivoted upon the rod w is a collar or sleeve G', which carries a depending clapper-rod B',



which engages the laterally-extending pin C' of the pawl F'. A curved slotted bar D' is secured to the spring drum or pulley I' by means of a thumb-screw A'', and one end of this curved slotted bar is turned outward to form a trip, as shown at E'. This projecting end E' strikes the free end of the pawl F' when the spring-drum is unwinding and drawing the carriage, and after the projection has passed the pawl the latter drops, thus allowing the clapper to strike the bell. When the drum is being wound up by the drawing back of the carriage to write another line, the pawl is moved freely in the direction indicated by arrow without affecting the clapper-rod, as will be readily understood. By means of the above-described construction the slotted bar D' can be adjusted upon the spring-drum and the bell made to ring at any desired amount of movement of the carriage, according to the length of line it is desired to write.

In the present invention the ribbon-feeding mechanism consists of two levers 3, which are pivoted at their outer ends outside of the journal of the ribbon-spools (which latter are shown in dotted lines) upon an endwise-sliding bar *u'*. This bar *u'* extends across the front of the machine and transverse the ribbon-spools, and has a depending or downwardly-curved portion *v'*. The ends of this sliding bar are provided with openings *w'*, which are elongated, and through these openings the supports upon which the ribbon-spools are journaled pass into the front faces of the portions *r*, and these supports therefore form the support for the said sliding bar. The inner ends of these levers 3 are formed into hooks 5, which alternately engage the tilting ribbon-frame 2, that is pivoted in the portions *a*, as the said endwise-moving bar is operated. Pivoted upon these levers 3 near their inner ends are the weighted pawls 4, which have their upper ends sharpened to engage the periphery of a ratchet-wheel upon the spools. As the tilting frame 2 is vibrated through its connection with the lever *y* the lever 3, that is in engagement with said frame, is moved up and down therewith as it vibrates, and therefore revolves the spool at that side of the frame, as will be understood.

Projecting outward from the depending curved portion *v'* of the sliding bar are the pins *a''*, which are adjacent to the pawls 4, so that when the bar is moved, as shown in Fig. 7, the pawl of the lever 3, which is out of engagement with the tilting ribbon-frame, is caught by the pin *a''*, that is adjacent thereto, which prevents the upper ends of the pawl from falling in engagement with its ribbon-spool, which would prevent the spool from unwinding as the other spool was winding. These pins *a''* also serve to support the inner ends of the levers 3 when they are out of engagement with the tilting-frame 2, as shown at the left-hand side of Fig. 7, and holds them in position to hook over the said tilting-frame when the bar *u'* is moved in that direction.

The sliding-bar *u'*, which carries the levers 3, is locked into the desired position by means of a pivoted wire 6, which falls into the vertical slots 7, made in the right-hand side of the said sliding bar. By raising the outer end of this wire the bar can be moved, and is then locked in this position by letting the wire fall into one of the slots. By means of this sliding bar *u'* the ribbon can be wound upon either spool desired, and thus the "shift" of the ribbon accomplished in a very simple manner. The mechanism just described is a very simple and cheap one for feeding the ribbon and is very reliable.

For certain kinds of work it is desirable to have a carriage which is much wider than the ordinary-sized carriage in order to admit a very wide sheet of paper. In order to permit of the carriage here shown being removed, the standards V are provided with the slots *s*, which allow the carriage to be moved endwise through them. To permit the insertion of a wide carriage to suit the particular kind of work it is desired to do, I provide the ends of the carriage-track *m* with screw-threaded openings *m'*, and provide track extensions *k'*, which are provided with screw-threaded projections *l'* to enter the said openings *m'*. These extensions can be made of any desired length, and thus a carriage of a corresponding length can be inserted between the standards V, and the machine thus converted into a wide-carriage machine in a few moments and with but little trouble. Owing to the construction of the supports V the carriage, as before stated, can be removed, the extensions *k'* put in position, and a large carriage inserted between the standards, and the machine is converted into a wide-carriage machine, which I term my "interchangeable carriage" feature. This adaptation to admit a longer carriage is accomplished in another manner, which is as follows: Referring to Fig. 8, I provide a track *p'*, which is a bar of a suitable size, and this bar is provided at its ends or near its ends with the longitudinal slots *q'*, through which pins or guides *b''* extend. Extending upward and outward from the lower ends of the standards V are the arms *m''*, which carry rollers *n'*, and upon these rollers the track *p'* moves. The carriage is the same shape and construction as hereinbefore described, and is provided with yokes *r'*, which pass around the track, and journaled in these yokes are the wheels *s'*, which run upon the top of the said track. This track is provided at its extremities with the projections *t'*, with which the lugs *d''* of the carriage engage as it is moved back and forth. In this manner a much longer carriage is permitted, the length of the carriage being limited only by the length of the slots *q'* made in the track, as will be seen.

For the purpose of preventing the type from battering when they interfere, and thus injuring them, I provide the back of the type-bars with projections 9<sup>a</sup>, which are on the



back sides of the bars and at a point between the two type upon the bars. In this manner when one bar is thrown up before the other has gotten out of its way, as shown in Fig. 13, the projection upon the bar that has just printed will strike between the type upon the bar that interferes therewith, and thus prevent the type of the bars being battered, as will be understood. While I here show this projection used with two types upon a single bar, it will be understood that it is equally applicable to bars having only a single type, for in that case the single type are prevented from being battered. The projections are slightly longer than the depth of the type, so that it is struck before the type reach the bar in front of them. By means of a type-bar of this construction I prevent the usual battering and injuring of the type, which is so common in type-writers, thus making the type last much longer and do better work.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A type-writer comprising a base, a printing mechanism, carriage-supporting standards having a vertical longitudinal slot, a carriage-track within the slot below its upper end, a carriage having a vertical portion moving in the said slot, and yokes secured to the carriage, which engage the said track, for holding the said vertical portion in position, substantially as specified.

2. A type-writer comprising a base, a printing mechanism, carriage-supporting standards having a vertical longitudinal slot, a track within the slot below its upper end, screw supported by the said standards, which secure the said track, a carriage having a vertical portion which moves in the said slot, and yokes upon the said vertical portion of the carriage, which have a slot or opening to allow them to pass the said track-securing screws, substantially as shown.

3. A type-writer comprising a base, a printing mechanism, carriage-supporting standards having a vertical longitudinal slot, a track within the said slot and below its upper end, a carriage substantially U-shaped, a platen supported between its upper end, yokes at the lower end of the carriage, which slide upon the said track, and a longitudinal bar connecting the vertical portions of the carriage below the said platen, which bar slides in the said vertical slot of the standards for supporting the carriage in an upright position, substantially as described.

4. A type-writer comprising a base, a printing mechanism, carriage-supporting standards having a vertical longitudinal slot, a track in the said slot below its upper end for supporting the lower end of a carriage, a carriage substantially U-shaped carrying a platen in its upper ends, a bar connecting the vertical portions of the carriage below the platen, a U-shaped rack having its ends pivoted upon the said rod, one end of the rack

being extended to form a handle, substantially as specified.

5. A type-writer comprising a base, a printing mechanism, carriage-supporting standards having a vertical longitudinal slot, a carriage having a vertical portion, which slides in the said slot, and a laterally-adjustable plate at the upper end of the slot, for the purpose set forth.

6. An interchangeable-carriage type-writer comprising a base, a printing mechanism, and a track having screw-threaded openings in its ends and screw-threaded extensions to be screwed therein, whereby a long carriage can be accommodated, substantially as specified.

7. An interchangeable-carriage type-writer comprising a base, a printing mechanism, carriage-supporting standards having a vertical longitudinal slot from end to end, a carriage having a vertical portion sliding within the slot, and a track within the slot below its upper end constructed to have its ends extended, substantially as set forth.

8. An interchangeable-carriage type-writer comprising a base, a printing mechanism, carriage-supporting standards having vertical longitudinal slot, a track within the said slot below its upper end constructed to have its ends extended, and a carriage having a vertical portion sliding in the said slot and its lower end sliding upon the extensible track, substantially as described.

9. A type-writer carriage comprising a frame, a platen journaled therein, a rod extending longitudinally of the said frame below the said platen, a paper-guide in rear of the said platen, curved levers pivoted between their ends upon the said rod near the ends of the platen, a roller journaled between the said levers in front of the said platen, springs upon the paper-guide, which engage the opposite ends of the said levers for holding the roller in contact with the platen, and a bar which connects the said spring-pressed ends of the levers, whereby they can be operated to release the tension of the roller upon the platen.

10. A type-writer carriage comprising a frame, a platen journaled therein, a paper-guide curved and having at each end vertical lips or extensions at its lower edge and inwardly-projecting extensions at its upper portion, both of which are secured to the said frame, substantially as described.

11. A type-writer carriage comprising a vertical U-shaped frame, a platen journaled in its upper end, a curved paper-guide provided with extensions or lips, which are secured to the vertical portions of the said U-shaped frame, substantially as set forth.

12. A type-writer carriage comprising a frame, a platen journaled therein, a paper-guide secured to the said frame, a platen-operating lever, which has its inner end pivoted to the said paper-guide, and a pawl for operating the said platen, substantially as specified.

13. A type-writer carriage comprising a frame, a platen journaled therein, a paper-



guide secured to the frame, having an opening with lips extending laterally therefrom, a platen-operating lever having its inner end passing through the opening and pivoted between the lips, a dog passing through said opening and pivoted between the said lips, and a spring upon the paper-guide, which engages the said dog for holding it in engagement with the platen, substantially as described.

14. A type-writer carriage comprising a vertical frame having slots in its upper end, a soft material placed in the said slots to deaden the sound, a boxing in the said material, a means for detachably securing the said material in the said slots, whereby the platen is made detachable, substantially as set forth.

15. A type-writer carriage comprising a vertical frame, a platen journaled therein, a paper-guide secured to the said frame, an operating-lever for the platen having a downwardly-curved portion, and a space-regulator above the lower edge of the paper-guide and under the said lever, which is adapted to be turned between the lever and the paper-guide to limit the downward movement of the said lever.

16. A type-writer comprising a base, a carriage carrying a feed-rack, a universal lever operating a feed-dog, the key-levers above the said universal lever, the type-bars, a spacing-lever below and out of engagement with the feed-lever, the spacing-lever pivoted inside of the outer end of the said feed-lever and having a vertical slot and a projection, which extends from the feed-lever into the said slot, whereby the feed-lever has a vertical movement independent of the spacing-lever, and the feed-lever depressed with the spacing-lever.

17. A type-writer comprising a base, a carriage carrying a rack, a universal feed-lever operating a feed-dog for the said rack, a rod or shaft below the said feed lever or frame, a spacing-lever having its inner end loosely journaled upon the said rod, a connection between the feed and spacing levers, an upper-case lever connected at its inner end rigidly to the said rod, an inwardly-extending arm rigidly secured to the said rod, a type-bar and key-lever frame pivoted at its outer end and extending inward over the said inwardly-extending arm to be raised thereby, substantially as set forth.

18. A type-writer comprising an operating-base, a carriage carrying a platen, a printing mechanism, a feed-lever, a lever pivoted at one end and carrying a feed-dog, a rack upon the carriage, with which the dog engages, and a connection between the said feed-lever and the dog-carrying lever.

19. A type-writer comprising a base, a carriage carrying a platen and a feed-rack, a printing mechanism, a feed-lever pivoted between its ends, a horizontal dog-lever pivoted at its outer end, a dog at its inner end for engaging the said feed-rack, and a connection

between the said dog-lever and the feed-lever.

20. A type-writer comprising a base, a carriage carrying a feed-rack, a universal feed-lever pivoted between its ends, a printing mechanism, a horizontal dog-lever pivoted at one end inside of the feed-rack, a feed-dog at the inner side of the said lever, a connection between the dog-lever and the inner end of the said feed-lever, and a device for preventing the free end of the dog-lever from extending too near the feed-rack.

21. A type-writer comprising a base, a printing and feeding mechanisms, a carriage, a spring-drum for operating the carriage, a pivoted clapper, a bell, a pivoted lever, which engages the said clapper, and a trip upon the said spring-drum for operating the lever, substantially as specified.

22. A type-writer comprising a base, a printing and feeding mechanisms, a carriage, a spring-drum for operating the carriage, a bell, a pivoted clapper, a pivoted lever for operating the clapper, and an adjustable slotted trip upon the said drum for operating the said lever.

23. A type-writer comprising a feeding mechanism, a base, a carriage, a shifting frame carrying type-bars and key-levers, a standard at the rear end of the base having a vertical slot, a projection upon the inner end of the shifting frame, that engages the said slot, and the spring-drum journaled upon the said standard for operating the carriage.

24. A ribbon-feed mechanism for type-writing machines, comprising a tilting frame, a ribbon-spool, a lever pivoted at its outer end and having its inner end inside of the inner periphery of the said spool and engaging the said tilting frame, a pawl pivoted upon the lever inside of and engaging the inner periphery of the said ribbon-spool, and a stop for limiting the downward movement of the engaging end of the pawl.

25. A ribbon-feed mechanism comprising two ribbon-spools, a sliding frame or bar, a tilting frame, levers pivoted outside of the said spools and having their inner ends adapted to engage the said tilting frame alternately, stops upon the sliding bar for engaging and limiting the downward movement of the inner ends of the said levers, and pawls upon the levers inside of and engaging the inner periphery of the said spools, substantially as described.

26. A feed mechanism comprising ribbon-spools, a bar sliding transverse the spools, a tilting frame, levers pivoted outside of the spools and extending inward and adapted to engage alternately the said tilting frame, the sliding bar having a portion depending below the inner ends of the said levers, stops upon this depending portion to limit the downward movement of the inner ends of the levers, and pawls pivoted upon the lever inside of and engaging the said spools.



27. A type-bar and key-lever frame having an inner end formed of a portion of a vertical circle, which is provided with radiating slots to receive the type-bars and inner ends of the key-levers, a circular slot to receive the type-bar pivotal rod, the sides of the said frame being secured to the ends of the said inner end.

28. A type-bar and key-lever frame having an inner end formed of a block with radiating slots to receive the inner end of the type-bars and key-levers, and slots below these slots to receive the inner ends of division-plates, and division-plates which have their inner ends secured within the said slots.

29. A type-bar and key-lever frame having an inner end with radiating slots to receive the inner ends of type-bars and key-levers, and a horizontal slot to receive a pivotal rod for the type-bars, the inner end of the frame also having slots between the type-bar slots and below them for division-plates, and division-plates having their outer ends supported in an elevated position and their inner ends curved downward into the slots therefor and between the key-levers and type-bars.

30. A feed mechanism for type-writing machines, comprising a feed-rack, a universal feed-lever, a lever pivoted at one end, and dogs pivoted upon the other end of the said lever, and a connection between the free end of the said lever and the universal lever.

31. A feed mechanism for type-writing machines, comprising a universal feed-lever, a horizontal lever pivoted at one end, a feed-dog upon the free end of the said lever, a feed-rack, and a connection between the free end of the said dog-lever and the said universal feed-lever, substantially as specified.

32. A feed mechanism for type-writing machines, comprising a universal feed-lever, a horizontal lever pivoted at one end, a feed-rack, two pivoted dogs at the free end of the said horizontal lever, one above and one below the said rack, and a connection between the universal feed-lever and the free end of the horizontal pivoted lever.

33. A feed mechanism for type-writing machines, comprising a universal feed-lever, a lever pivoted at one end, a feed-rack, two dogs upon the free end of the said pivoted

lever, the said dogs being pivoted at their outer ends and extending inward toward each other, stops for the said dogs, and springs for operating the dogs.

34. A feed mechanism for type-writing machines, comprising a feed-rack, a dog-carrying device which vibrates transverse the said rack, two dogs pivoted upon the said carrying device, respectively, above and below the said rack and extending inward toward each other and vibrating in a line with the travel of the said rack, stops for the said dogs to prevent them from moving with the travel of the machine, and springs for moving the said dogs in a direction opposite the travel of the said machine.

35. A type-writing machine comprising a printing mechanism, a universal feed-lever, a horizontal dog-carrying lever pivoted at one end and carrying dogs at its opposite end, a carriage, a feed-rack, ribbon-spools, a ribbon tilting and guiding frame, a connection between the free end of the horizontal dog-carrying lever and the universal feed-lever, and a connection between the free end of the dog-carrying lever and the said tilting frame for tilting the latter.

36. A type-bar for a type-writing machine having a type upon one side and a projection upon its opposite side, as and for the purpose specified.

37. In a type-writer, the combination, with a series of individual pivoted type-bars carrying two or more type, of a vertically-shifting frame for sustaining said bars and suitable means for shifting said frame to bring either of the type in proper position to make an impression.

38. In a type-writer, the combination, with a series of type-bars provided with two or more type, of a vertically-shifting frame for sustaining said type-bars concentrically, a series of key-levers connected with said type-bars, and a series of keys for operating said levers.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES D. DAUGHERTY.

Witnesses:

ALFRED ELY,

LOUIS M. FULTON.