

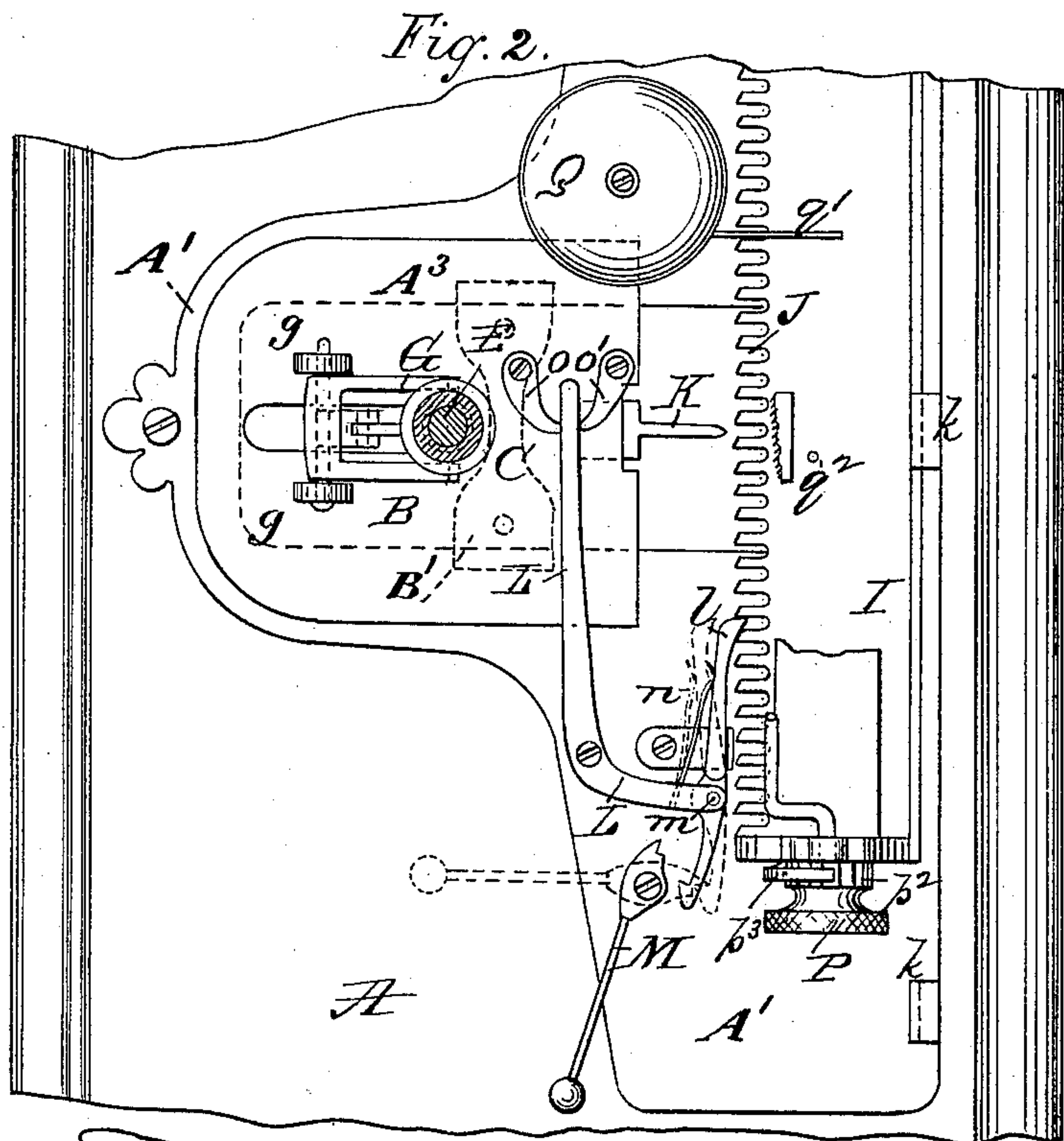
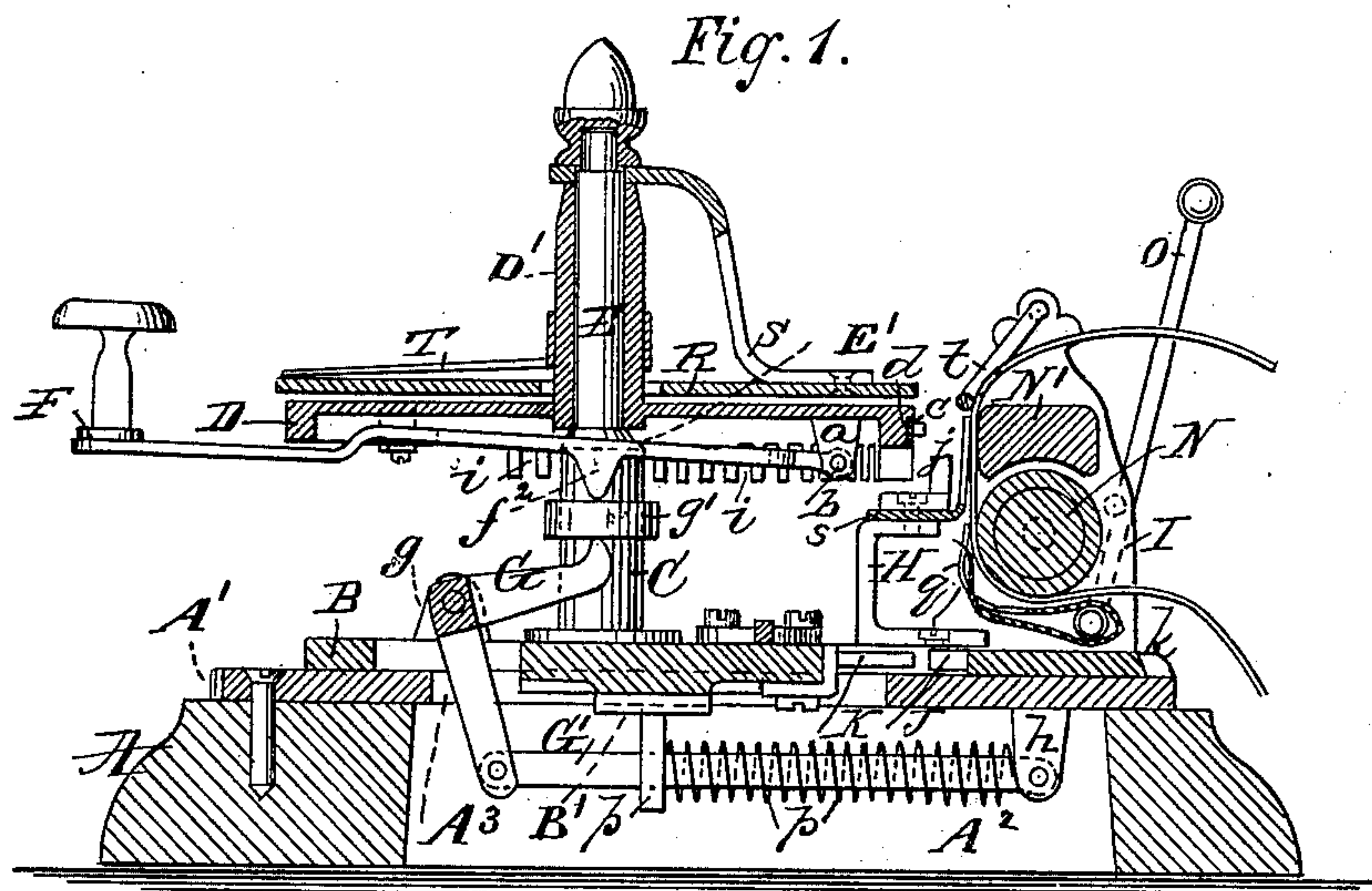
(No Model.)

3 Sheets—Sheet 1.

T. W. SEARING.
TYPE WRITING MACHINE.

No. 452,290.

Patented May 12, 1891.



Witnesses:
[Signature]
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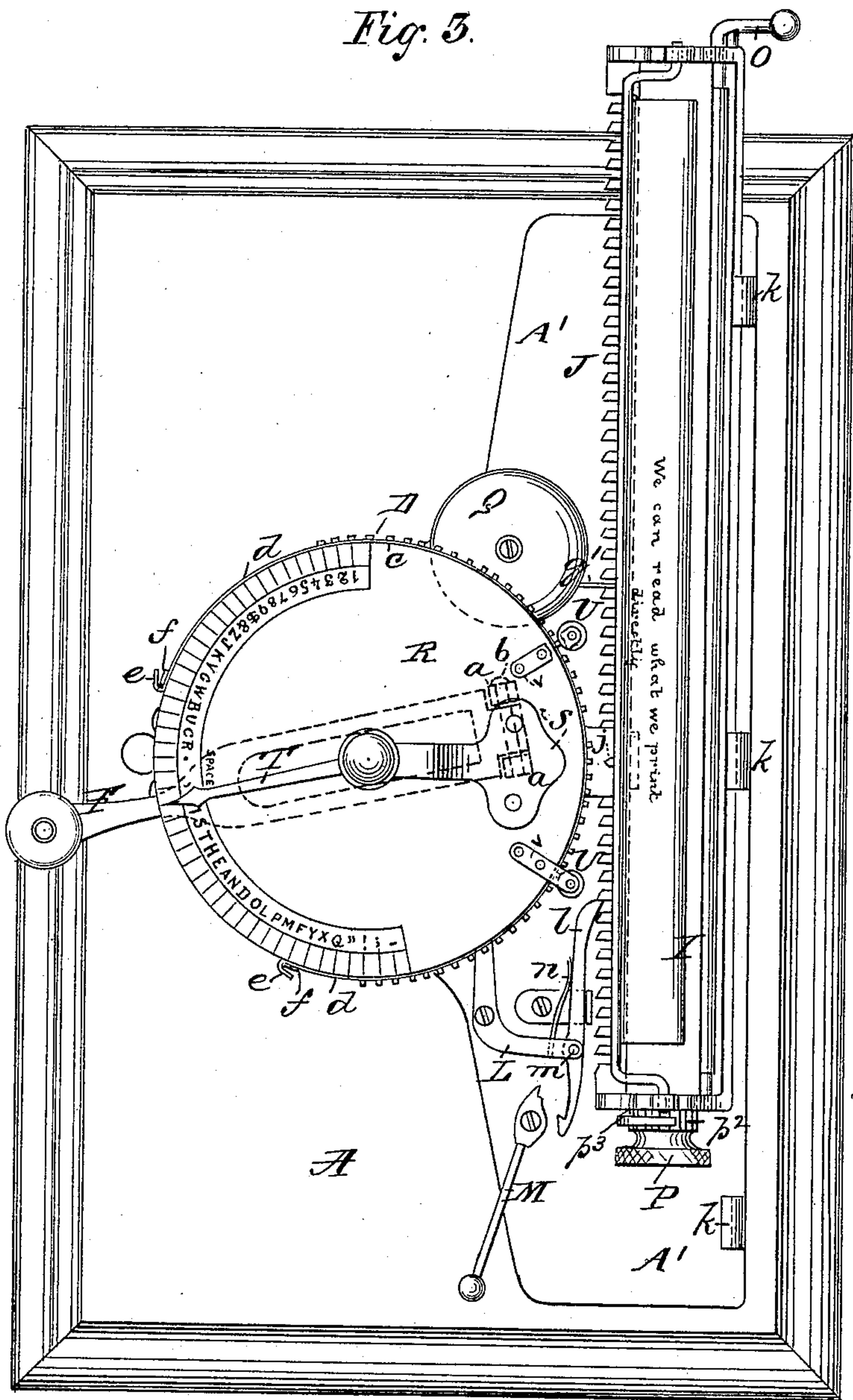
Inventor:
Theodore W. Searing

T. W. SEARING.
TYPE WRITING MACHINE.

No. 452,290.

Patented May 12, 1891.

Fig. 3.



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(No Model.)

3 Sheets—Sheet 3.

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Fig. 4.

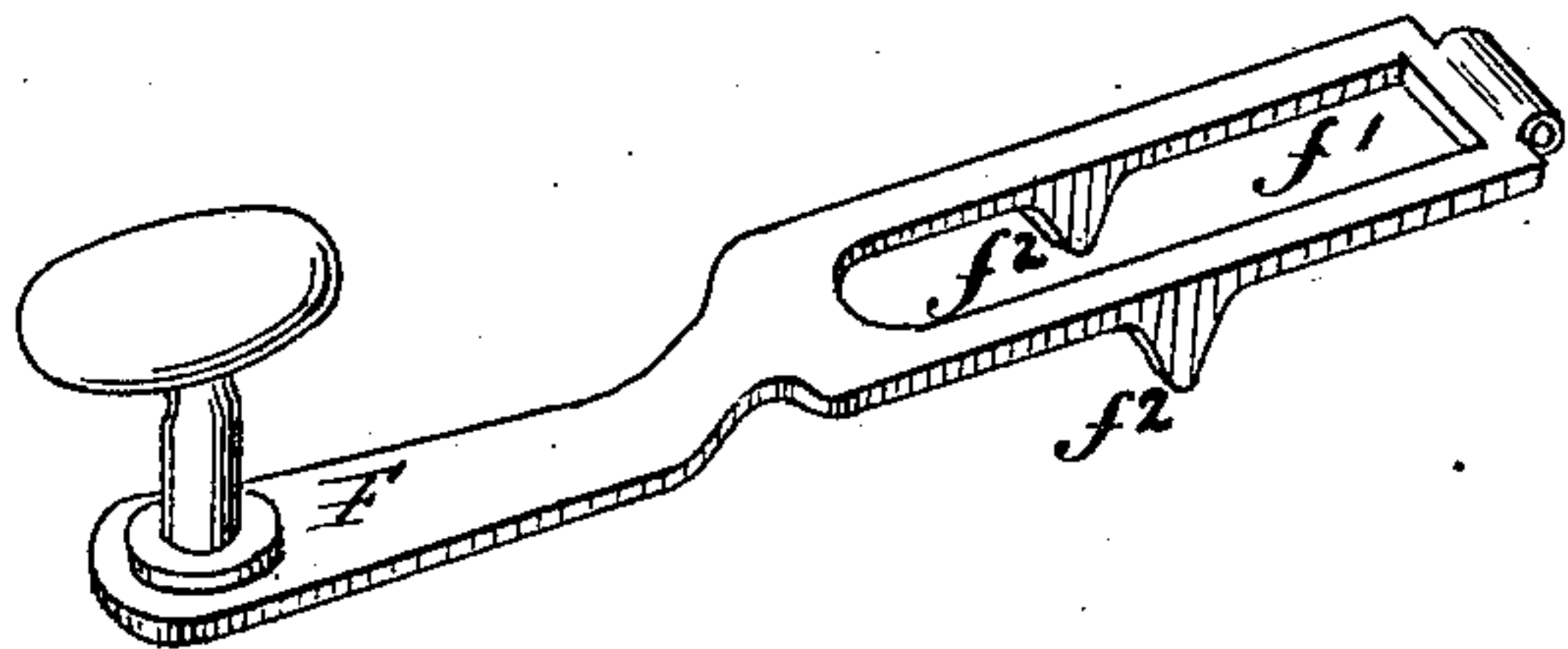


Fig. 5.

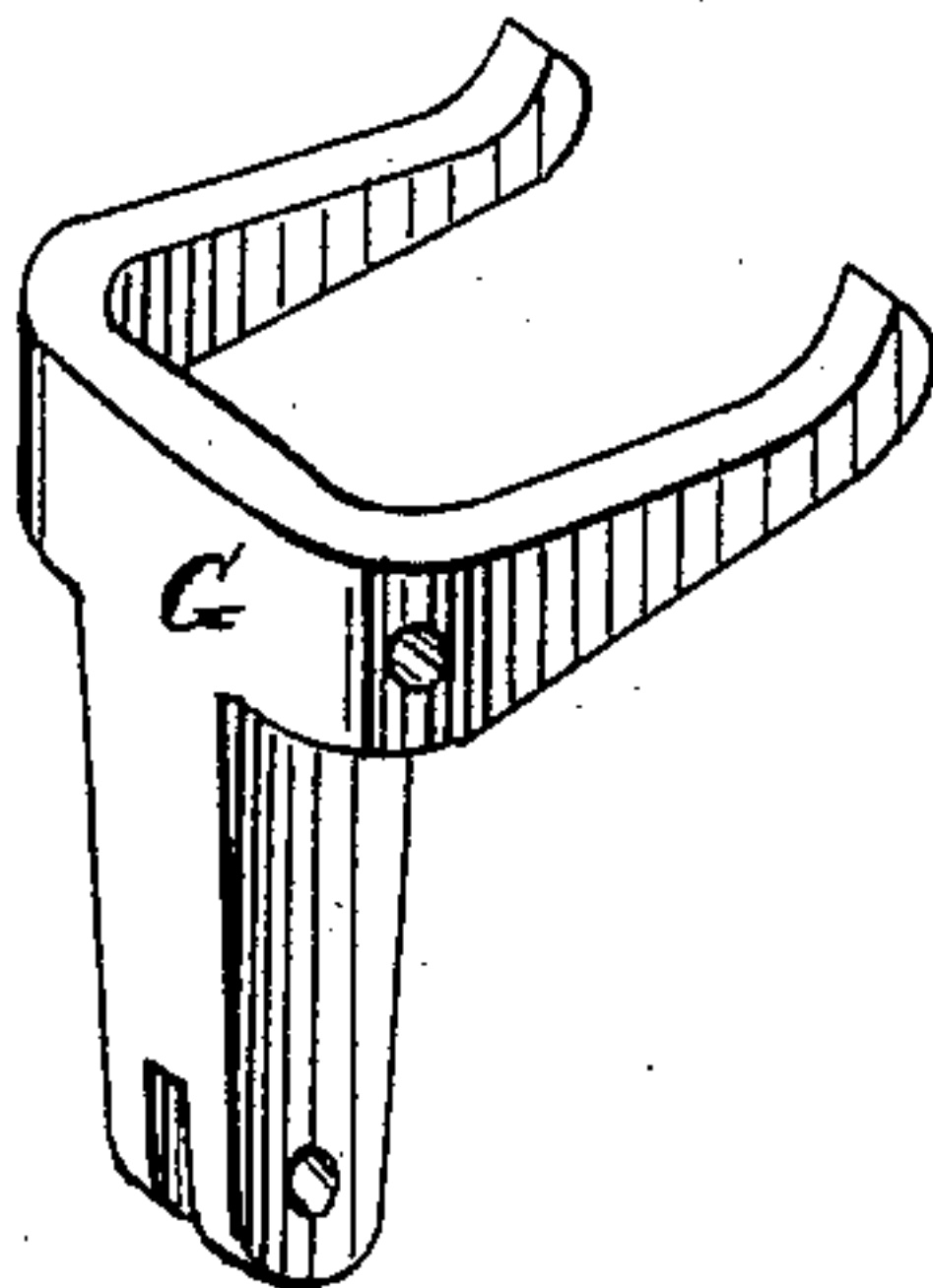
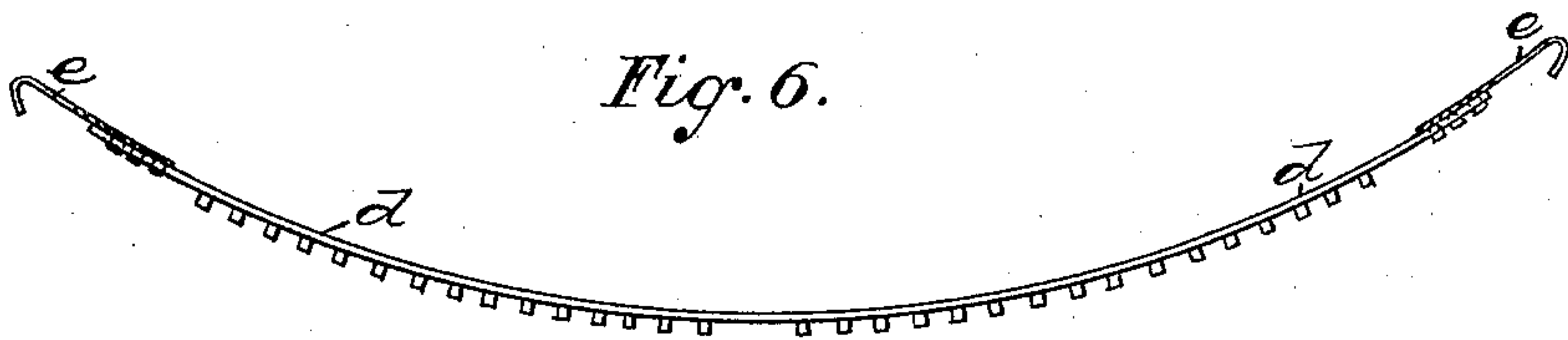


Fig. 6.



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E. S. Seeger
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Inventor:

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UNITED STATES PATENT OFFICE.

THEODORE W. SEARING, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE PEARL TYPEWRITER COMPANY, OF NEW JERSEY.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 452,290, dated May 12, 1891.

Application filed August 9, 1890. Serial No. 361,575. (No model.)

To all whom it may concern:

Be it known that I, THEODORE W. SEARING, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to improvements in type-writers, its object being to make the operation of the machine automatic by the action of one key and cause a direct movement of the type characters against the paper destined to receive the impression.

The object, further, is to simplify the manufacture of this class of machines over those heretofore in use, and also make the machine entirely automatic both in feeding the paper-carriage, inking the type, and obtaining an impression parallel to the face of type, all by the action of one key. The means by which I obtain these results is more fully shown in the drawings accompanying this specification.

Figure 1 is a vertical central section through the center of the machine. Fig. 2 is a partial top view of the machine as it appears with the type-wheel removed. Fig. 3 represents a top view of the entire machine. Figs. 4, 5, and 6 are detached details on an enlarged scale.

A represents the supporting-base, and A' a metal plate secured thereon. The base is cut away, as shown at A², and the plate A' has an opening A³, as indicated by dotted lines in Fig. 2, and which is over the cut-away portion of the base A.

B is a slide adapted to move on the plate A' over the opening A³, the slide being held in position by a cross-piece B', secured to its under side, the ends of which engage the under side of the plate A', as indicated in dotted lines, Fig. 2. This slide B moves at a right angle to the movement of the paper-carriage.

C is a spindle rigidly secured to the slide B, its upper portion E being reduced in diameter, a shoulder E' being formed thereby.

D is the type-wheel, having a sleeve D' rigidly attached thereto. The sleeve D' fits over the reduced portion E of the spindle and rests on the shoulder E', thereby supporting

the type-wheel D, which can turn freely on the spindle C.

F is the operating-key, constructed as shown in Fig. 4. This key is pivoted to the lugs *a* on the under side of the type-wheel D by the pin *b*, the spindle C passing through the slot *f'* in the key. The key F is therefore capable of vertical movement, and also serves to revolve the type-wheel D on the spindle C.

Upon the rim of the type-wheel D, I have cut a groove *c* of sufficient width and depth to admit the strip *d*, (shown in Fig. 6,) having the proper type characters thereon. These characters may be made of metal or or part rubber and part metal; but in the present instance I prefer rubber. At each end of the metal strip clamps *e* are secured, by which it can be hooked on the pins *f* on the type-wheel D.

To change the type from one kind to another, it is only necessary to lift the ends of the strip *d* off the pins *f* and substitute another.

G is a forked lever pivoted to the lug *g* on the slide B. The forked portion of the lever extends forward to the spindle C, which is between the forks, and the ends of the prongs of the fork are turned upward, as shown in Fig. 5. The lower end of the lever G passes through a slot in the slide B and the opening A³ in the plate A' and is pivotally connected to one end of a rod G', whose other end is secured to a lug *h* on the under side of the plate A'. The rod G' passes through a slot in the lug *p*, which projects downwardly from the cross-piece B', and a spiral spring *p'* surrounds the rod G' between the lugs *p* and *h*. A collar *g'* fits loosely over the spindle C and rests on the turned-up ends of the prongs of the lever G, and projections *f*² on the key F engage the upper face of the collar *g'*. On depressing the key F the lever G will swing on its pivotal connection to the rod G', and thereby cause the slide B to move forward, the lug *p* compressing the spring *p'* in the forward movement. On releasing the key F the spring *p'* will react and throw the slide B back again.

Perfect alignment is essential to all type-writers, and to obtain this I have cut grooves

i on the lower rim of the type-wheel. These grooves correspond in number and distance apart to the type characters. I use a stationary pin j , having a knife-edge and secured to the support H, that will enter the grooves on the wheel at each advance, and in case the wheel is not exactly in position the pin will force the wheel to its proper position and lock it there while the impression is being produced.

The paper-carriage I is arranged to slide in guides k . These guides hold the carriage at the back part, and the support H, which is in the form of a channel-iron, holds the front part, allowing the carriage to move to the right or left and at a right angle to the movement of the slide B.

Upon the base of the carriage-frame a deep rack J is cut and answers the double purpose of a feed and alignment adjuster.

By referring to Fig. 2 a flat pin K is shown attached to the slide B, and any slight over-feed of the carriage will be rectified by this pin entering the rack and adjusting the carriage properly when key F is depressed. The feed-pawl l is connected to the lever L by a pivot m , and a spring n presses the pawl into the rack J. The lever L is bent, as shown, and pivoted on the plate A', its longest arm being held between two adjustable arms o o' on the slide B, the movement of the latter swinging the lever on its pivot and causing the pawl l to feed the carriage at each movement of the slide B. The disengaged lever M is for the purpose of throwing the pawl l out at the completion of a line and allows the carriage to be moved back to a starting-point.

The paper-carriage I is fitted with an elastic surface-roller N, suitably supported in journals on the plate A'. At the top of the roller is the platen N', having a flat surface to receive the impression. At the lower part of the feed-roller clips q hold the paper against the elastic surface of the roller. These clips q are preferably made by forming numerous teeth in a piece of metal, the teeth pressing against the paper.

O is a lever attached to the piece of metal on which the clips are formed and which serves to disengage the clips from the paper, as may be desired.

For turning the paper a distance of one line, or what is termed "spacing," I use a thumb-piece P at one end of the roller N, which thumb-piece has teeth p^2 cut thereon, and a spring p^3 , attached to the paper-carriage, engages the teeth.

As an indicator to warn the operator to stop printing before the full limit of travel of the paper-carriage has been reached and also to allow the completion of a word properly on each line, I have placed the bell Q (shown in Fig. 3) on the plate A', having a striking-lever q' arranged to come in contact with a pin q^2 , secured to the carriage. As the paper-carriage moves toward the left-hand side of the machine, and as soon as the lever slips off

the pin q^2 , the bell will ring, thus giving the operator warning that the end of the line is nearly reached.

On top of the type-wheel D, I have placed the index-plate R in full view of the operator. This plate is rigidly secured to the spindle E by an arm S and has a central aperture, through which the sleeve D' passes, thus allowing the type-wheel D to revolve freely beneath the index-plate. As is shown in Fig. 3, the characters are arranged on or near the edge and have graduating-marks to assist the eye in stopping the pointer T. This pointer is secured to the sleeve of the type-wheel and turns with the key F and wheel D.

Upon the support II is secured a thin plate s , bent at a right angle, and in the vertical portion a slot is cut of just sufficient width to permit one type character to pass and come in contact with the paper on the flat surface of the platen N'. This slot is the common printing-point for all the type characters.

V V are inking-rollers carried by arms v , secured to the index-plate R, one on each side of the printing-point and at a suitable distance therefrom. These rollers may be of silk, felt, or any suitable absorbent material. As the type-wheel is revolved the characters will come in contact with the inking-rollers and be inked. A wire t is employed to hold the sheet of paper against the platen N'.

The operation of the machine is as follows: The lever O is pulled forward to release the paper-clip. The sheet of paper is then inserted and brought to bear against the flat surface of the platen N', and by reversing the lever the clips will hold the paper to the roller. After the paper has been properly placed in the holder the key F is used by turning it to the right or left to bring the pointer T over the desired character on the index-plate R, and then by depressing the key the slide B will advance, operating the lever L to move the feed-pawl l backward and also causing the pin K to enter the rack J. As the wheel D advances with the slide B the pin j will enter one of the grooves i , cut on the under rim of the type-wheel, and bring the wheel into proper position and lock it there. The impression is not produced until the full limit of the stroke is reached, thus giving ample time for the carriage and type-wheel to adjust themselves in position. Upon release of the pressure from the key F the slide B will recede and swing the lever L on its pivot, thereby operating the pawl l to force the carriage I one notch forward. As the tendency of the spring p' is to force the key F upward, it is only necessary to turn the key to the right or left and depress it to print each character desired, and on releasing the key the spring p' will cause the slide to retreat and the carriage to move automatically.

To space between words, I leave a blank space of the type-strip, and by moving the pointer to the corresponding point on the index-plate and depressing the key the carriage

will feed, but no impression will be made on the paper.

Having described my invention, I claim—

1. In a single-key type-writer, the combination of a supporting-base, a paper-carriage movable thereon in a horizontal plane, a plate adapted to slide on the base in a horizontal plane, but in a direction at a right angle to the movement of the paper-carriage, a vertical spindle carried by the sliding plate, a type-wheel on the spindle adapted to revolve in a horizontal plane, a key hinged at one end to the type-wheel, and suitable connections between the key, the sliding plate, and supporting-base, substantially as described, whereby the key serves the double purpose of revolving the type-wheel and advancing it to the printing-point, as specified.

2. In a single-key type-writer, the supporting-base, a slide B, movable thereon, a spindle rigidly attached to the slide, a revoluble type-wheel carried by the spindle, and a key pivoted to the type-wheel and having a slot through which the spindle passes, combined with a link-and-lever connection between the slide and supporting-base, a device interposed between the key and the link-and-lever connection to transmit motion from one to the other, and a paper-carriage, substantially as and for the purpose specified.

3. In a single-key type-writer, the supporting-base, a paper-carriage movable in a hori-

zontal plane thereon, and a slide B, also movable in a horizontal plane on said base, but in a direction at a right angle to that of the paper-carriage, combined with a spindle rigidly attached to the slide, a revoluble type-wheel carried by said spindle, a key pivoted to the type-wheel and provided with a slot through which the spindle passes, a forked lever pivoted to said slide, a link connecting one end of the lever to the base, a collar surrounding the spindle and interposed between the key and the forked end of the lever, and a spring to retract the slide, substantially as specified.

4. In a single-key type-writer, the supporting-base, a paper-carriage movable in a horizontal plane on said base, said carriage being provided with a rack J, and a pin *j*, rigidly secured to a suitable support on the base, combined with a slide B, having a pin K, adapted to enter between the teeth of the rack J, a revoluble type-wheel carried by the said slide and having a series of grooves on its lower rim, into which the pin *j* is adapted to enter, and means, substantially as described, to move the slide and type-wheel in a horizontal plane toward the paper-carriage, as and for the purpose specified.

THEODORE W. SEARING.

Witnesses:

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