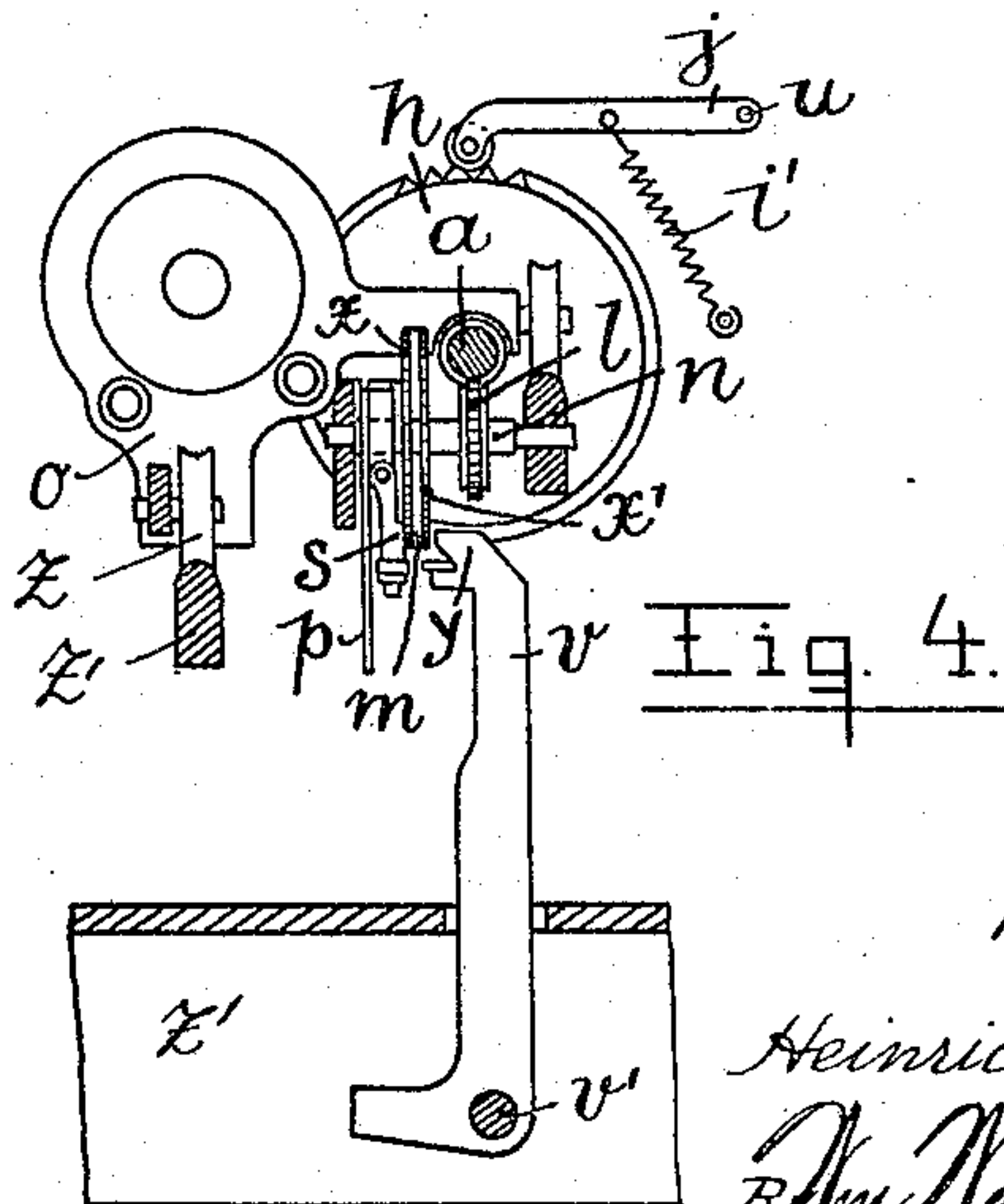
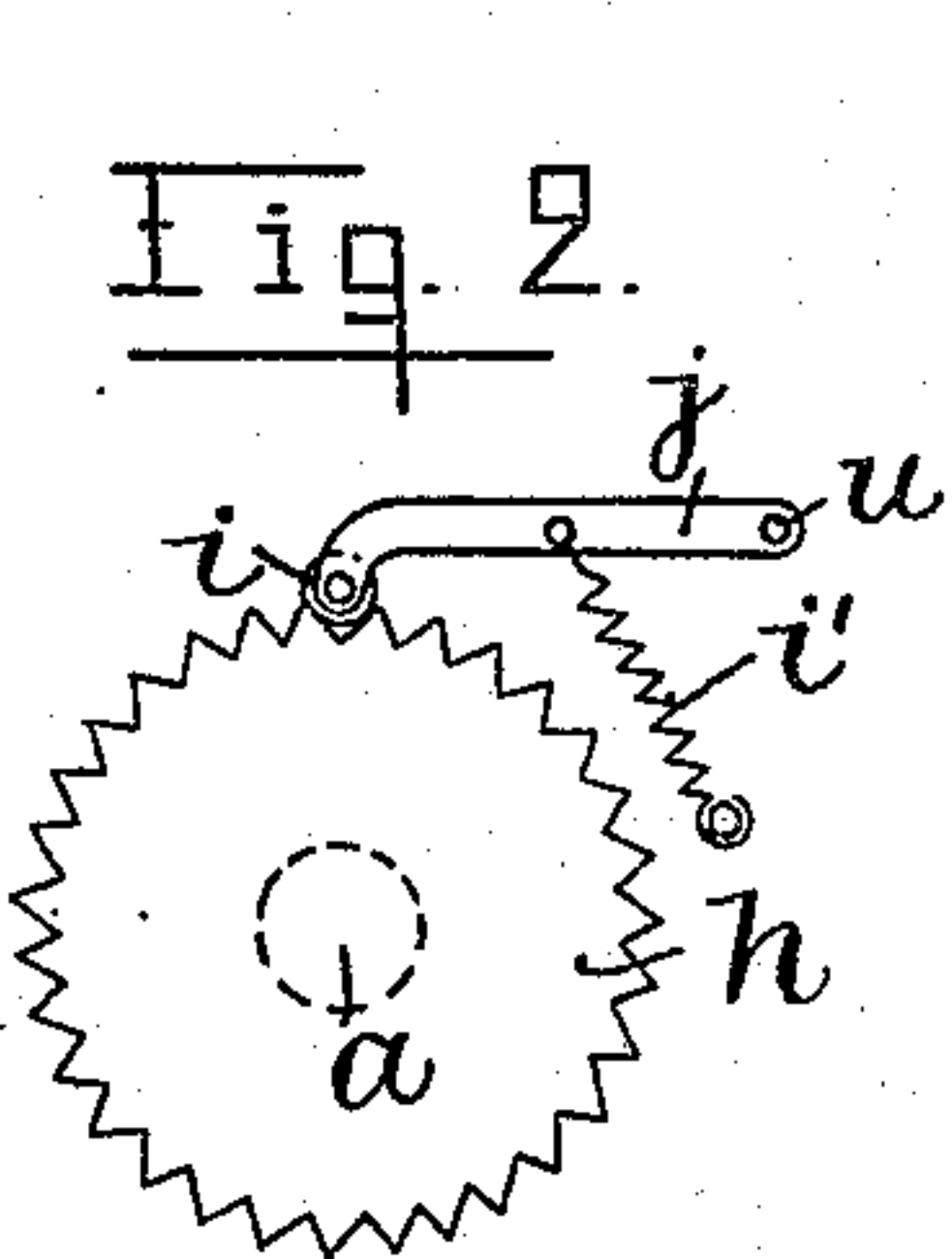
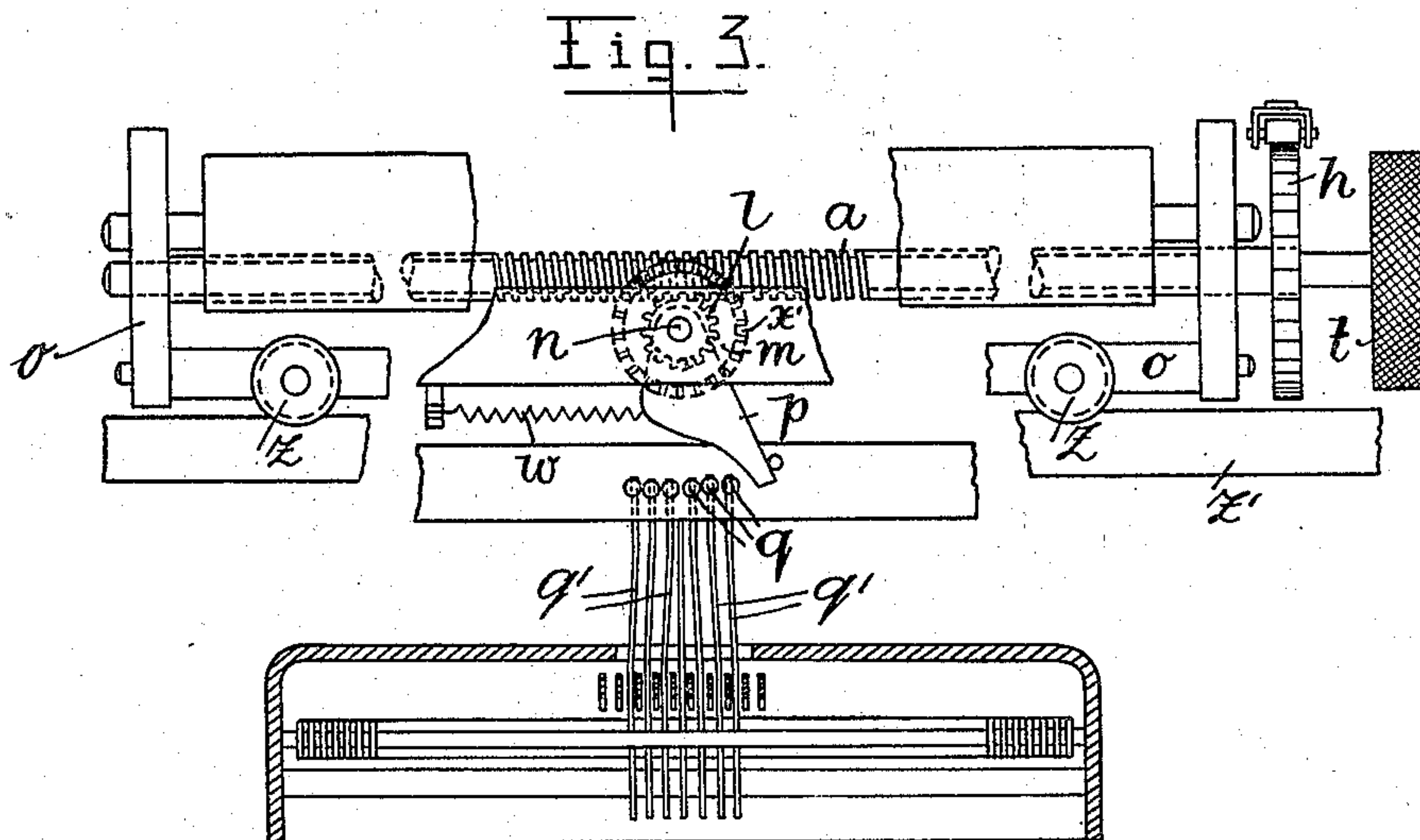
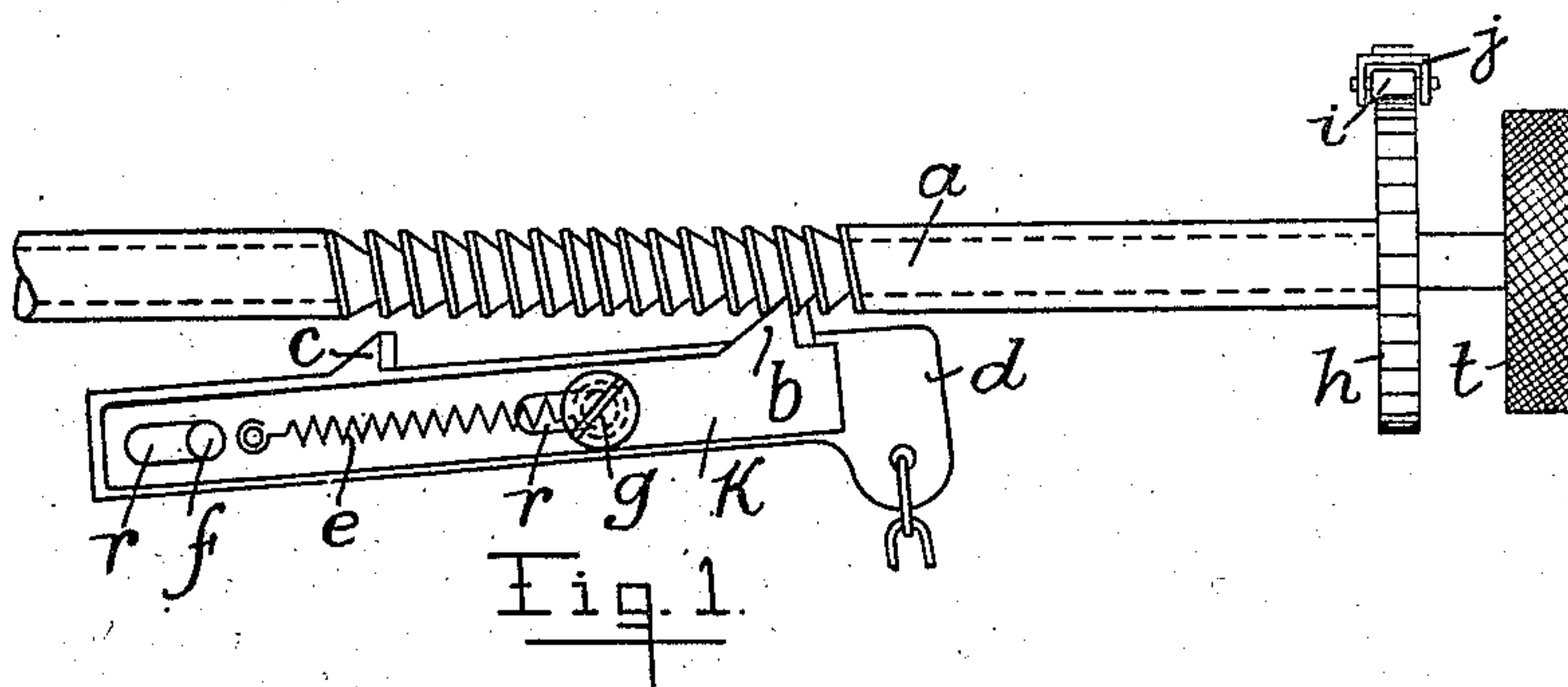


H. DREWELL.
CARRIAGE MOVING DEVICE FOR TYPE WRITERS.
APPLICATION FILED JULY 17, 1907.

915,749.

Patented Mar. 23, 1909.



WITNESSES

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CARRIAGE-MOVING DEVICE FOR TYPE-WRITERS.

No. 915,749.

Specification of Letters Patent.

Patented March 23, 1909.

Application filed July 17, 1907. Serial No. 384,219.

To all whom it may concern:

Be it known that I, HEINRICH DREWELL, subject of the German Emperor, residing at Charlottenburg, near Berlin, Germany, have invented new and useful Improvements in Carriage-Moving Devices for Type-Writers, of which the following is a specification.

The present invention relates to a device for adjusting the movement of the paper-carriage of typewriters and similar devices.

It frequently happens with typewriters, particularly if the movement of the paper-carriage is not uniform, but varying corresponding to the widths of the typewriter-characters, that the carriage-pointer is to be set at a point of the line which can either not be reached at all or only with difficulty by means of the shifting device. In such cases, in devices used hitherto, the paper itself had to be loosened and displaced on the platen roll. This is a particularly risky proceeding when several sheets of paper are placed one on another in order to obtain several copies at once. In the case of typewriters which are arranged with "systematic shifting" of the carriage, that is with a carriage moving device pushing the carriage in steps of different widths in correspondence to the different width of the types, returning the carriage back into position is particularly troublesome, this being necessary, for example, when one or more letters have to be erased.

Now an important object of the present invention is a device for removing the above mentioned defects which substantially consists of a device for adjusting the position of the carriage, a screwed spindle being employed instead of the customary rack. Either an escapement mechanism which is known in itself or a toothed wheel can work on this screwed spindle; in case a wheel is employed it must be formed as a worm-wheel.

When writing, the male screw operates together with the escapement mechanism or toothed wheel exactly in the same manner as the hitherto customary rack. If, on the contrary, the carriage is to be shifted without depressing the keys, this can be effected by rotating the spindle. In consequence of the gradual motion of the carriage this adjustment can be effected exactly to any optional point, both forward and backward. The adjustment is independent of the escapement mechanism and the operation of the escape-

ment mechanism is also independent of the operation of the screw.

In the case of systematic shifting of the carriage a gradation of the width of the letters according to units takes place as a rule. Now if the carriage is to be shifted backward and set at a definite place on the line, this adjustment must be effected exactly according to the corresponding gradations when the carriage was moved forward. In order to make this possible a toothed wheel is arranged on the end of the spindle; in the gaps of the teeth of which a spring-pressed pulley engages which limits the movement of the toothed wheel and spindle. This device does not differ in the manner in which it works from those which are employed in known typewriters for shifting the carriage along the lines.

In order that the invention may be clearly understood reference is made to the accompanying drawing in which two embodiments are represented by way of example, and in which:

Figure 1 shows a screwed-spindle in combination with a simple escapement in elevation; Fig. 2 is an elevation of a device for graduating the adjustment of the carriage, whereas Fig. 3 is an elevation showing the combination of the male screw with a worm-wheel, and Fig. 4 is a cross-section in a plane at right angles to Fig. 3.

A spindle *a* provided with a male thread is mounted revolubly, but not displaceably, in the paper-carriage *o*, the latter (as shown in Fig. 3) running on wheels *z* on the machine-frame *z'*.

In the form of the device shown in Fig. 1, two detents or catches *b* and *c* of suitable shape according to the form of the male thread engage in the same. One of them *c* is arranged on a lever *d* rocking around a fixed pivot *g*, this lever *d* being moved by the keys of the typewriter in any known manner. The catch *b* is provided on a slide *k* which can be displaced longitudinally on the lever slide with slots *r* over the pivot *g* and a second pivot *f* attached to the lever *d*. The length of the slots *r* corresponds to the way the carriage is shifted each time a key is depressed. When the keys which are not represented in the drawing are depressed the lever *d* is pulled downward at the right end and the catch *c* engages with the thread or the spin-

dle *a*. Simultaneously the catch *b* leaves the thread, the slide *k* is displaced with it under the tension of a spring *e* which is fastened to the slide *k* as well as to the pivot *g* of the lever *d*, and lies with the other end of the slots *r* against the pins *f* and *g*. When the key of the typewriter which has been depressed is released, the catch *b* engages again in the thread of the spindle, whereas the catch *c* is disengaged from it. The carriage *o* now follows the pull of the drawband which is arranged as usual and which is not shown in the drawing, and moves to the left, driving the catch *b* and the slide *k* against the action of the spring *e*. The amount of this movement is determined by the lengths of the slots *r* in which the pins *g* and *f* slide. This escapement only differs from the usual form in combination with racks by the form of the catches *c* and *b* being suited to the shape of the male thread. If the carriage is to be moved forward or backward without depressing a key, this can be effected by rotating the spindle by means of a small hand-wheel *t* fastened to the end of the spindle. In this case the tooth *b* of the escapement acts in a certain sense as a stationary nut for the screw *a*. In order to enable the carriage to move step by step in smaller steps than those corresponding to the pitch of the screw *a*, as already mentioned a device is used which is similar to that on carriages of known typewriters for moving the paper a step at a time from line to line. This device consists of a toothed wheel *h* placed on the spindle *a*, in the teeth of which wheel a pulley *i* engages which is mounted in the forked end of a lever *j* mounted with its other end revoluble on a pivot *u*. This lever is pressed by a spring *v* against the teeth of the wheel *h* and gives a tactile blow for rotating the wheel *h* step by step when adjusting the position of the carriage. This rotation by steps causes, of course, a like rotation of the spindle *a* and the carriage is shifted an amount corresponding to a fraction of the pitch of the screw.

The above described escapement can only be employed in typewriters in which the carriage is shifted uniformly. If, on the contrary, systematic shifting is to be employed with different widths of letters it is preferable to employ a spindle provided with a male thread in combination with a worm-wheel, and to place a toothed wheel, which can be shifted in the different steps, on the axle of the worm-wheel; Figs. 3 and 4 show one form of such a device. A worm-wheel *l* engages in the male thread *a* and can rotate round a pivot *n*. On this pivot there is also a toothed wheel *m* attached which is provided with two sets of teeth *x* *x'*, one on each side. The teeth have the form of cogs. Further, a swinging arm *p* rotates round the pivot *n* to which a pawl *s* is fastened. This

pawl engages in the teeth *x* of the wheel *m*. When a key is depressed the pawl *s* is raised out of the teeth by the action of a bell-crank lever *v* mounted revolubly on a pivot *v'* fastened to the machine-frame *z'*, whereupon the arm *p* follows the pull of a spring *w* attached to it and to the frame of the carriage until it hits against one of stops *q* mounted movable in the frame of the machine; these stops *q* are also moved, when the keys are depressed, by means of the levers *q'* in such a manner that one of them comes into the path of the rocking lever *p* each time. The amount of the oscillation of the arm *p* is determined by the position of the pins *q*. When the keys are released the bell-crank lever *v* returns and allows the pawl *s* to fall again into the teeth *x* of the wheel *m*, whereby the arm *p* is connected with this wheel. The arm *p* now follows the movement of this wheel which is under the action of the carriage-drawband of the typewriter. During the depression of a key the wheel *m* is held in position by a special detent *y* which is arranged on the bell-crank lever *v* and which engages in the second set of teeth *x'* of the wheel *m*. When the keys are released this detent releases the wheel *m*. The number of the pins and their position and distance from one another depend on the number of the steps and the amount of the shifting which is to be effected when each key is depressed.

When the carriage is shifted without depressing the keys the spindle *a* acts in this device as a screw and the worm-wheel *l* as a fixed nut, whereas when writing the spindle operates as a rack and the wheel *l* as a gear-wheel. In this device also the spindle *a* can be used in combination with the device represented in Fig. 2.

The advantage of the invention consists in the carriage being able to be pushed forward and backward in any desired manner and set at every point in a line.

What I claim as my invention and desire to secure by Letters Patent is:—

1. In a typewriter and like devices the combination of a frame, a carriage movable thereon, a spindle provided with a male thread revolubly mounted on said carriage, and escapement mechanism engaging in the male thread of said spindle, as set forth, for the purpose specified.

2. In a typewriter and like devices the combination of a frame, a carriage movable thereon, a spindle provided with a male thread revolubly mounted on said carriage, a worm wheel engaging in the male thread of said spindle, a ratchet wheel attached to the axle of said worm wheel, and ratchet mechanism operating on said ratchet wheel.

3. In a typewriter and like devices the combination of a frame, a carriage movable thereon, a spindle provided with a male

thread revolubly mounted on said carriage,
a worm-wheel engaging in said spindle, a
ratchet wheel attached to the axle of said
worm-wheel and provided with two sets of
5 cogs, a swinging arm rotating around the axle
of the worm-wheel, a pawl connected to said
arm and engaging in one set of said cogs, a
bell-crank lever mounted revolubly on the
said frame, engaging in the other set of said
10 cogs and bringing said pawl out of engage-
ment with the ratchet wheel at the same

time, pins mounted in said frame movable
by the action of the keys, and a fixed stop
both the pins and the stop limiting the
movement of said swinging arm. 15

In testimony whereof I have signed my
name to this specification in the presence of
two subscribing witnesses.

HEINRICH DREWELL.

Witnesses:

HENRY HASPER,
WOLDEMAR HAUPT.