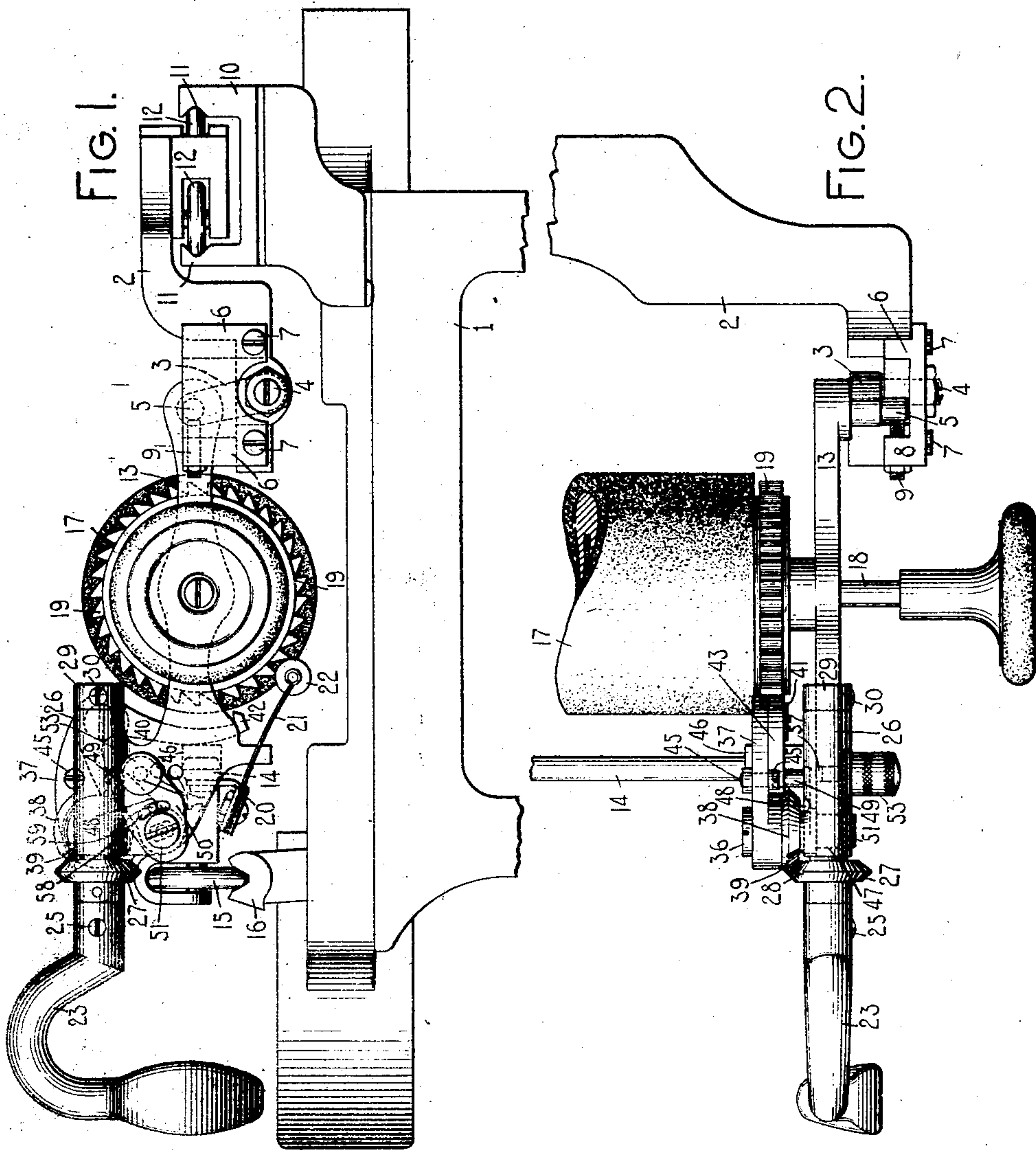


No. 814,739.

PATENTED MAR. 13, 1906.

G. H. SMITH.
TYPE WRITING MACHINE.
APPLICATION FILED DEC. 2, 1904.

2 SHEETS—SHEET 1.



WITNESSES:

E. M. Wells.
W. F. Hammer,

INVENTOR:

George H. Smith
By Jacob Felbel
HIS ATTORNEY

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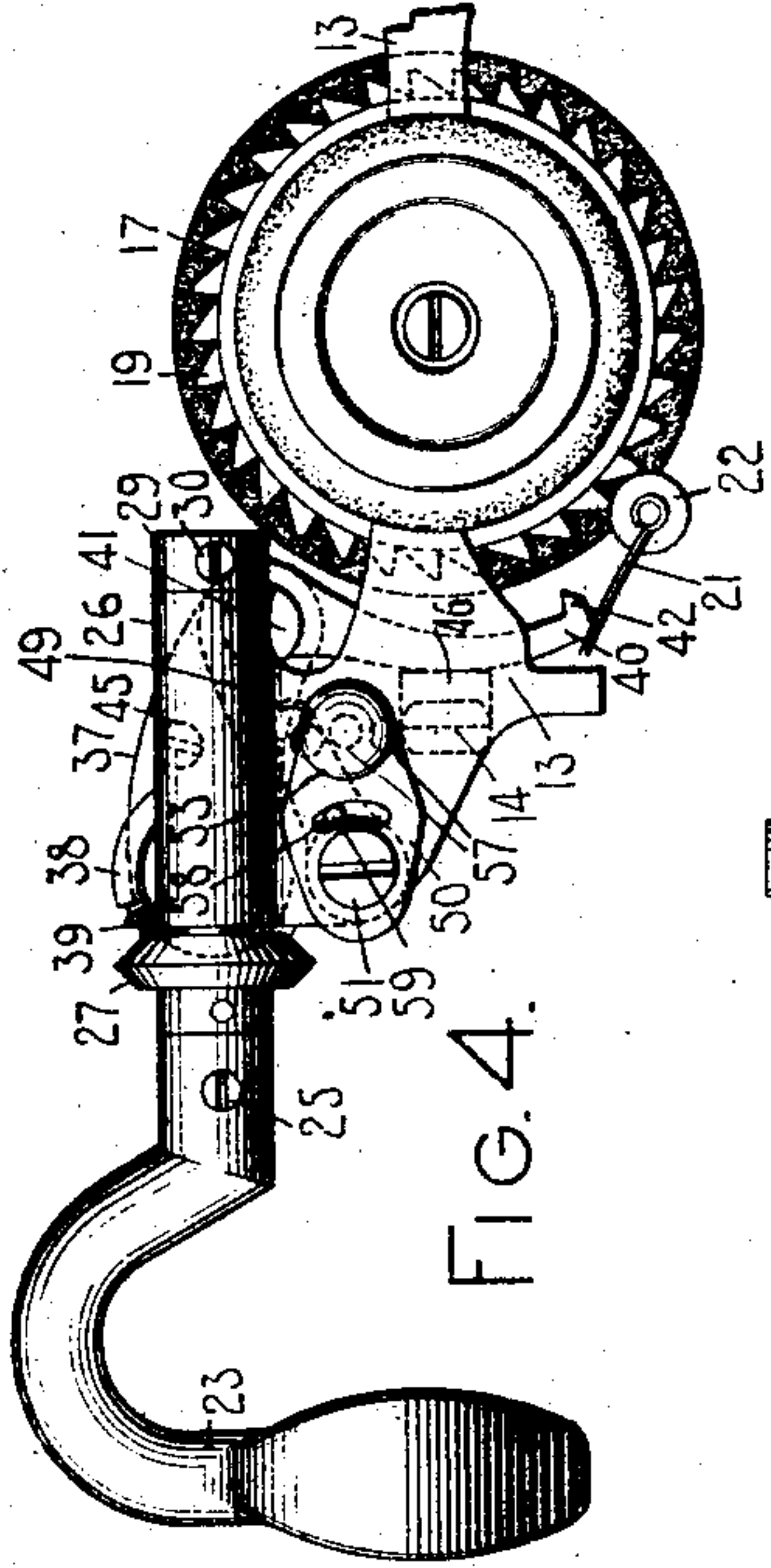


FIG. 4.

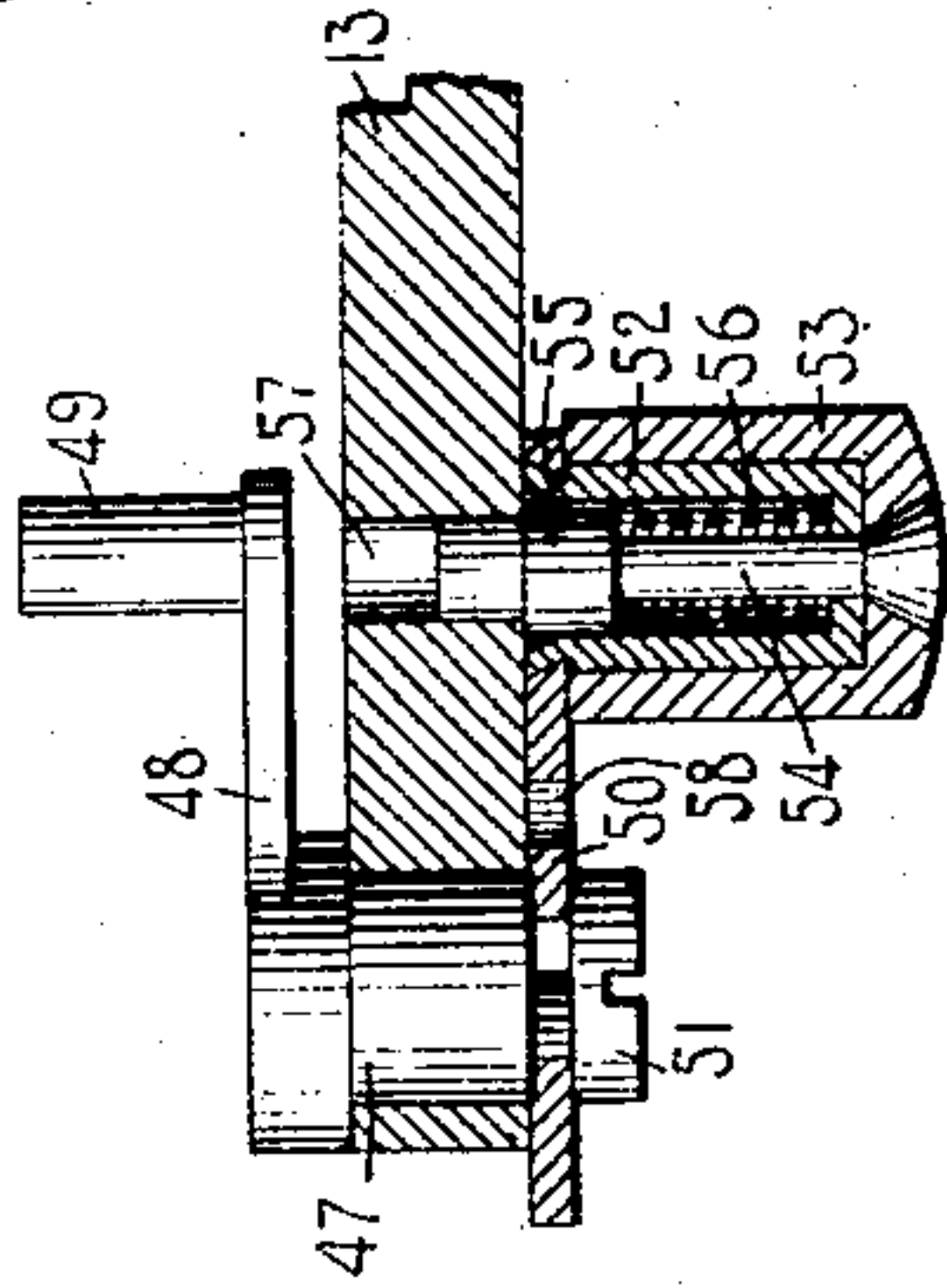


FIG. 6.

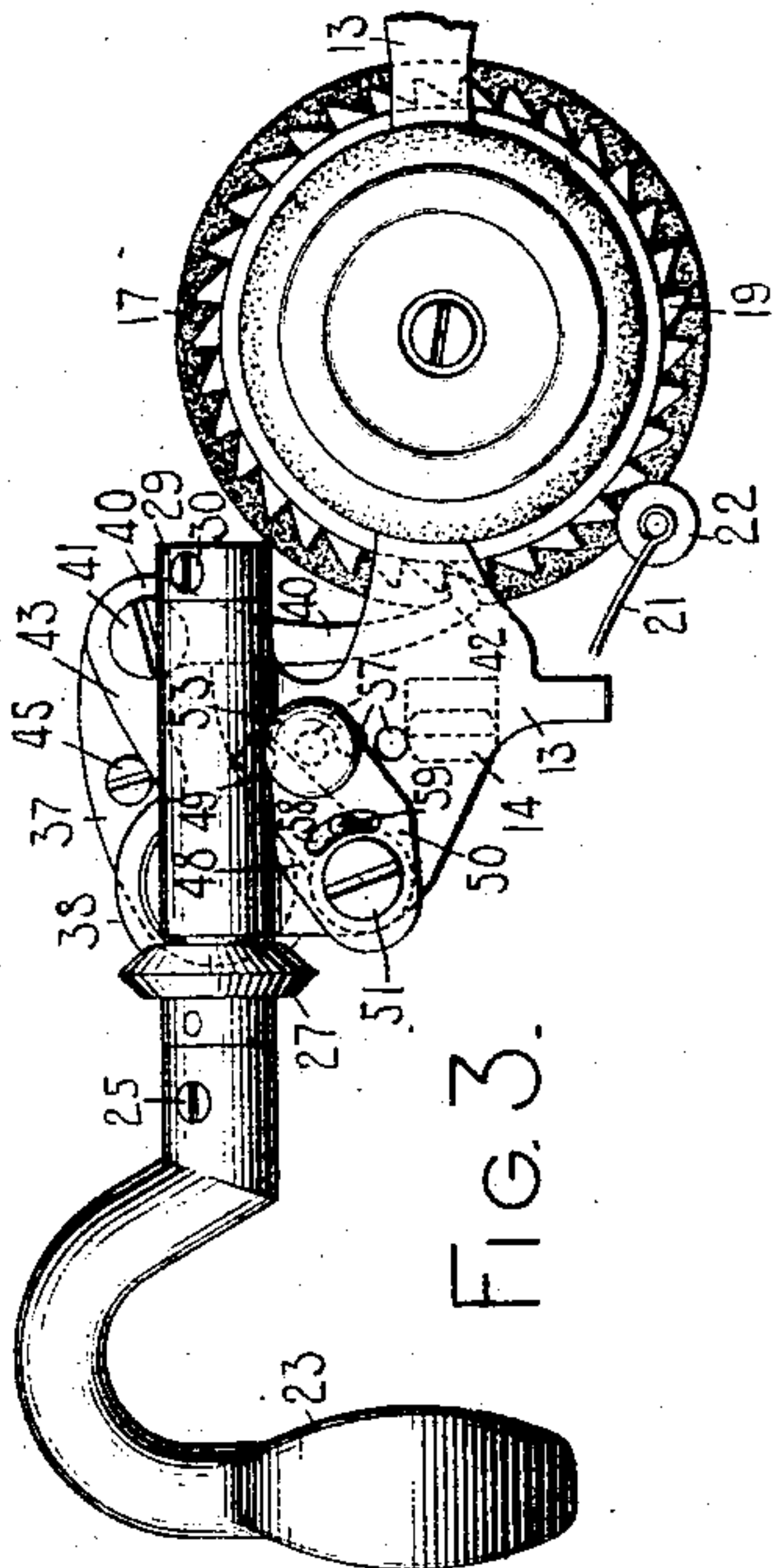


FIG. 3.

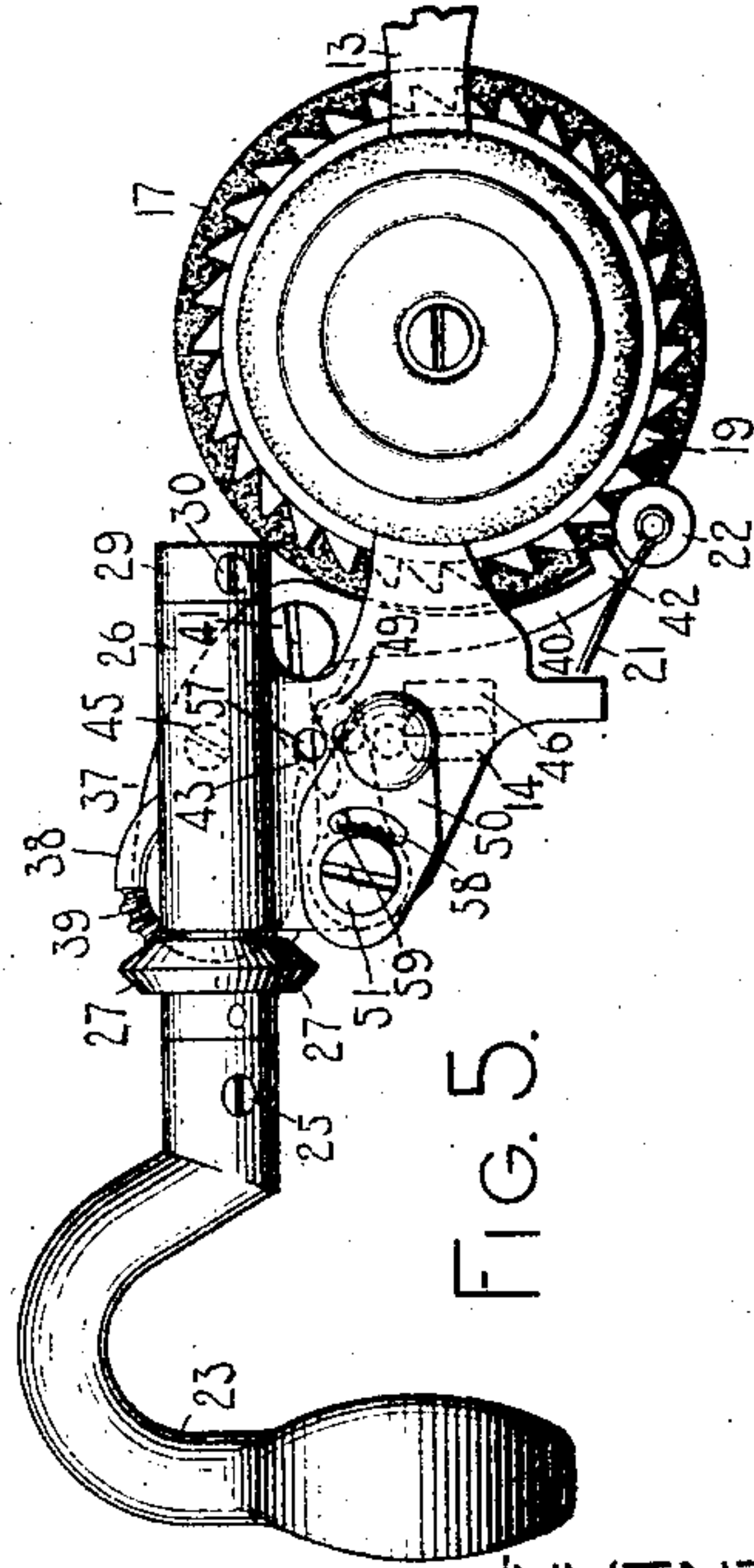


FIG. 5.

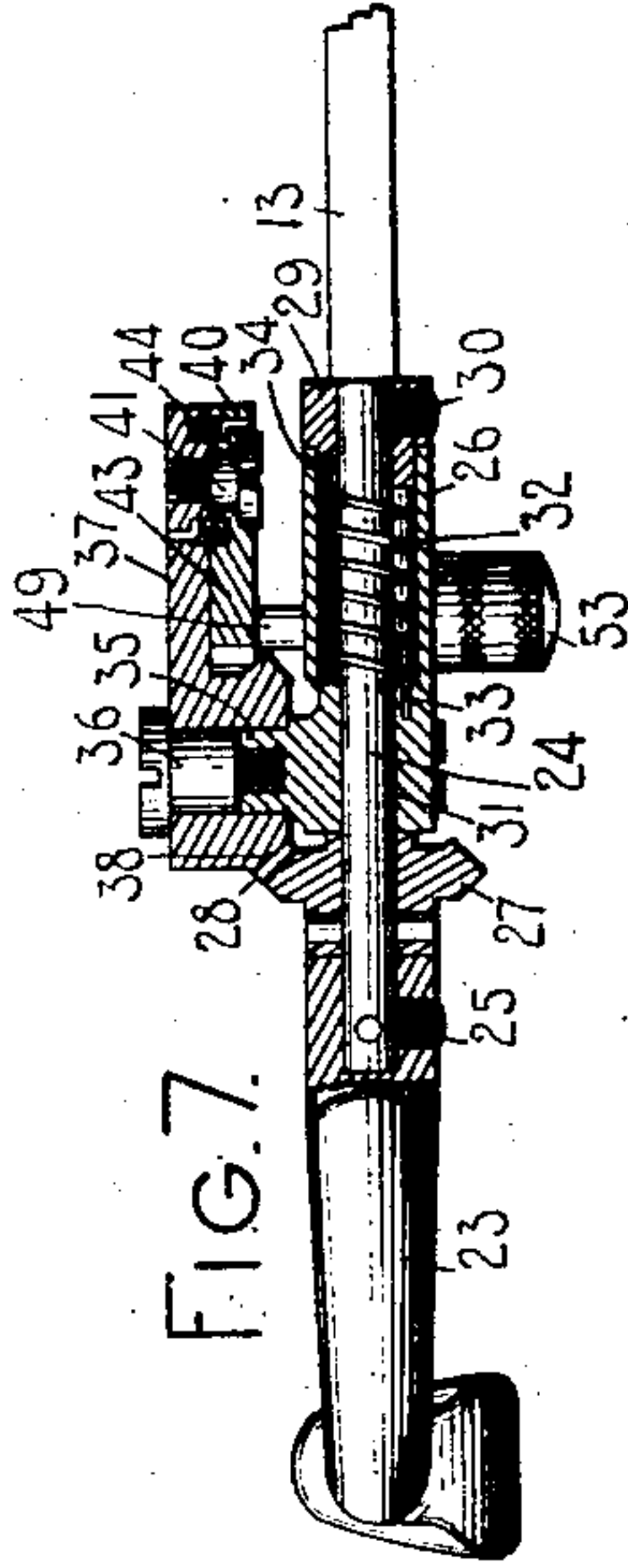


FIG. 7.

WITNESSES.

E. M. Wells.
W. F. Hauswiler,

INVENTOR.

George H. Smith
By Jacob F. Felt
HIS ATTORNEY

UNITED STATES PATENT OFFICE.

GEORGE H. SMITH, OF EVANSTON, ILLINOIS, ASSIGNOR TO DENSMORE TYPEWRITER COMPANY, OF SYRACUSE, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

No. 814,739.

Specification of Letters Patent.

Patented March 13, 1906.

Application filed December 2, 1904. Serial No. 235,211.

To all whom it may concern:

Be it known that I, GEORGE H. SMITH, a citizen of the United States, and a resident of Evanston, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention relates to improvements in the line-spacing and carriage-returning mechanism of type-writing machines, the object of the invention being to improve the construction, operation, and appearance of such mechanism.

The invention consists of the several features of construction, combinations, and arrangements of parts, which are hereinafter described, and particularly defined in the appended claims.

In the accompanying drawings, in which like reference-numerals designate like parts in different views, Figure 1 is a side view of a fragment of a type-writing machine and of line-spacing and carriage-returning mechanism embodying the invention; Fig. 2, a top view of this mechanism and of fragments of the platen and platen-carriage. Figs. 3, 4, and 5 are side views of the line-spacing and carriage-returning mechanism, illustrating its action, the end of the platen being also shown in each of these views. Fig. 6 is a sectional view, on an enlarged scale, illustrating the construction of an adjustable gage; and Fig. 7, a plan and horizontal section of parts of the mechanism, the section being on a plane containing the axis of the spacing-lever.

The machine from which the drawings were made is a Densmore type-writing machine; but it is to be understood that the invention may be applied to machines of various forms and styles.

The mechanism of the invention is attached to the platen-carriage, which is mounted on the top of the frame 1 of the machine, the front portion of the carriage or that which contains the platen being hinged to the rear portion or truck 2 by a pair of links, one of which is the link 3. (Shown in Figs. 1 and 2.) Each of these links is pivoted at its lower end to the truck 2 by a pin 4 and is pivoted at its upper end to one of the end bars of the carriage by a stud 5. The stud 5 extends through the link and into a recess formed in a block 6, which is fastened

by screws 7 to the truck. In the front wall 8 of the recess in the block 6 is a screw-threaded stop-pin 9. The stud 5 makes contact either with the pin 9 or with the back of the recess in the block 6, it being moved from one position to the other whenever the platen is shifted to provide for upper-case or lower case writing. The truck of the carriage extends over and into a channel-beam 10, which extends across and is affixed to the frame 1 of the machine, and in this channel-beam are grooves 11, in which fit three wheels which are mounted on the truck, two of these wheels 12 being shown in Fig. 1. These wheels secure the truck to the beam 10, and they roll in the grooves 11 when the carriage is moved back and forth.

The front portion of the carriage or the platen-frame consists of the end bar 13 and another similar bar connected at their front ends by a bar 14. On the bar 14 is secured a wheel 15, which normally rests on a shift-rail 16, which contains a groove in which the wheel 15 fits. The platen 17 is mounted between the end bars of the platen-frame on a shaft 18, which has bearings in the end bars. A ratchet-wheel 19 is affixed to the platen, and on the platen-frame is a bracket 20, to which is attached a detent composed of a spring 21 and a roller 22, mounted in bearings on the spring, the roller being pressed by the spring against the teeth of the ratchet.

Although the mechanism above described is not fully shown in the drawings, its construction and operation will be readily understood by persons familiar with type-writing machines.

The line-spacing and carriage-returning mechanism comprises a united lever and rock-shaft, a pawl operative on the ratchet 19, and other devices combined therewith. The lever, including the handle or crooked part 23 and the rock-shaft 24, fitting in the part 23 and tightly fastened therein by a screw 25, is mounted on the end bar 13 of the platen-frame, the rock-shaft having bearings in the tubular case 26, which is fast on the bar 13. On the rock-shaft 24, between the part 23 of the lever and the case 26, is a wheel 27, which is fast on the rock-shaft and on which are bevel gear-teeth 28. Figs. 2 and 7. A collar 29, fastened to the rock-shaft at its rear end by a set-screw 30, fits in and bears on the in-

ner surface of the tubular case, and the rock-shaft has another bearing 31 at the front end of the case 26. Within this case is a coil-spring 32, whose ends extend into holes 33 and 34 in the case and in the collar 29, respectively. This spring restores the lever and other parts of the mechanism to their normal positions after the lever has been turned on its axis to produce a spacing movement of the platen.

A stud 35 is formed on the case 26 on the left side and near the front of the case, and on this stud and a shouldered screw 36, forming an extension of the stud, is mounted a pawl-carrying arm 37. This arm extends backward beside the case 26 from the fixed pin or stud 35 36 toward the ratchet 19, the rear end of the arm being preferably over or nearly over the teeth at the front of the ratchet. On the front end of this arm is a wheel or hub 38, which is fast on the arm and on which are bevel gear-teeth 39, which engage with the teeth 28 on the wheel 27.

The pawl 40 is pivoted to the pawl-carrying arm 37 at the rear end of this arm by a shouldered screw 41, which passes through the pawl and fits in a threaded hole in the arm 37. The pawl extends downward from the pawl-carrying arm in front of the ratchet 19 and behind the bar 14 of the platen-frame. It has at its lower end a hook 42 and at its upper end an extension 43. A spring 44, confined in a recess between the pawl and the arm 37, tends to turn the pawl on its pivot into engagement with the ratchet. On the arm 37 is a device 45, consisting of a screw which fits in a hole in the arm and projects over the extension 43 of the pawl, and on the bar 14 directly in front of the pawl is a block 46, these devices being stops which help to limit the movements of the pawl under certain conditions.

An adjustable gage, which is operative to regulate the action of the pawl on the ratchet, is mounted on the end bar 13 under the case 26. This gage comprises a locking device on the exterior of the platen-frame and a stop connected with the locking device and operative on the pawl within the frame. The locking device and stop are both fast on a pin 47, Fig. 6, which extends through and has a bearing in the bar 13. On the left end of this pin is an arm 48, to which is affixed a stop-pin 49, which extends underneath the extension 43 of the pawl 40. To the right end of the pin 47 an arm 50 is fastened by a screw 51, and on this arm next to its rear end is a hollow hub 52, which is fast on the arm and on which is a loose-fitting cap 53. A bolt 54, which extends through and fits loosely in the head of the hollow hub 52, is fastened at its outer end to the head of the cap 53, and between the head of the hub 52 and the enlargement 55 on the bolt is a coil-spring 56, which is compressed endwise. The

bar 13 contains three holes 57, in which the bolt 54 fits, and when the bolt is in one of these holes the stop-pin 49 is locked in one of three positions. When the bolt is in the uppermost of the holes 57, the stop-pin is in its highest position, which is indicated in Figs. 1 and 3. It is in a lower position, which is indicated at Fig. 4, when the bolt 54 is in the next hole in the bar 13, and the stop-pin is in its lowest position, which is indicated in Fig. 5, when the bolt is in the lowest of the holes 57. The position of the stop-pin may be changed by pulling the cap 53 outward until the bolt 54 is withdrawn from the bar 13, and then turning the locking device, together with the pin 47, arm 48, and stop-pin, on the axis of the pin or shaft 47 and enabling the spring 56 to push the bolt into another hole 57 in the end bar 13. The arm 50 of the locking device contains a curved slot 58, in which is a pin 59, which is fixed in the bar 13 and with which the upper end of the slot 58 makes contact when the bolt 54 is within or in front of the lowest hole 57.

The stop-pin 49 is to be locked in its highest position when it is desired to impart a single line-space movement to the platen. In that position the stop-pin coacts with the block 46 on the bar 14 in supporting the pawl 40 at the right elevation when the parts of the mechanism are in their normal positions, as they are shown in Fig. 1. Then the pawl bears against the block 46, and the extension 43 of the pawl rests on the stop-pin 49. If the line-spacing lever is now actuated by pulling the handle of the lever toward the right of the machine, the rock-shaft 24 turns on its axis, the bevel-gearing acts on the pawl-carrying arm 37, whose inner end rises, and the pawl is drawn upward by the pawl-carrying arm. As the pawl ascends its lower end is advanced to the ratchet by the action of the pawl-spring 44, and the ratchet and platen are then turned by the pawl, the movement of the platen being that required to produce a single line-space and being completed when the parts of the mechanism are brought to the positions in which they appear in Fig. 3. At the end of this spacing movement or of either of the two others which may be produced with the mechanism described, one of these affording two line-spaces and the other three line-spaces, the extension 43 of the pawl makes contact with the under side of the stop 45 on the arm 37, and the pawl is prevented from ascending farther by the coaction on it of the arm 37, stop 45, and ratchet 19. The carriage may then be drawn from left to right by pulling on the spacing-lever, the platen being meanwhile kept from turning in either direction by the engagement of the pawl with the ratchet. The line-spacing lever and the parts of the mechanism connected therewith are restored to their normal positions by the action of the restoring-

spring 32 on the rock-shaft 24. The lower end of the pawl is withdrawn from the ratchet by the downward action of the arm 37 on the pawl and that of the extension 43 of the pawl on the stop-pin 49 of the adjustable gage, the force exerted by the spring 32 being great enough to further depress the inner end of the arm 37 after the extension 43 reaches the stop-pin 49, notwithstanding the additional resistance offered by the pawl-spring 44. When the pawl makes contact with the stop 46, further motion cannot be imparted to it or to the other parts of the mechanism by the restoring-spring 32.

From the foregoing description it will be understood that when the adjustable gage is locked in the position indicated in Fig. 4 the pawl will be movable by the spacing-lever far enough to impart to the platen a movement of two line-spaces and that a movement of three line-spaces may be produced when the gage is locked in the position in which it appears in Fig. 5. The pawl makes contact with the spring 21 instead of the stop 46 when the gage is adjusted to provide for a three-line movement and when the pawl is in its lowest position.

Various changes may be made in the mechanism described without departing from the invention.

Certain features of invention herein shown and described are not claimed, the same being the invention of Oscar Woodward and claimed by him in his application filed February 5, 1906, Serial No. 299,536.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a type-writing machine, the combination with the platen and platen-carriage of a ratchet-wheel on the platen, a line-spacing lever including a rock-shaft mounted on the platen-carriage, the axis of the rock-shaft being higher than that of the platen, a pawl-carrying arm mounted on a fixed pin and extending backward from said pin toward the ratchet on one side of the rock-shaft, means connecting the rock-shaft with said pawl-carrying arm at the front end of said arm, a spring-pressed pawl pivoted to said arm at the rear end of the arm and extending thence downward in front of the ratchet, an adjustable gage operative to regulate the action of the pawl on the ratchet, and a restoring-spring operative on the spacing-lever and pawl-carrying arm.

2. In a type-writing machine, the combination with the platen and platen-carriage of a ratchet-wheel on the platen, a line-spacing lever including a rock-shaft mounted on the platen-carriage, the axis of the rock-shaft being higher than that of the platen, a pawl-carrying arm mounted on a fixed pin and extending backward from said pin toward the ratchet on one side of the rock-shaft, means connecting the rock-shaft with said pawl-

carrying arm at the front end of said arm, a spring-pressed pawl pivoted to said arm at the rear end of the arm and extending thence downward in front of the ratchet, an adjustable gage operative to regulate the action of the pawl on the ratchet, a stop cooperative with said gage to limit the downward movement of the pawl, and a restoring-spring operative on the spacing-lever and pawl-carrying arm.

3. In a type-writing machine, the combination with the platen and platen-carriage of a ratchet-wheel on the platen, a line-spacing lever including a rock-shaft mounted on the platen-carriage, the axis of the rock-shaft being higher than that of the platen, a pawl-carrying arm mounted on a fixed pin and extending backward from said pin toward the ratchet on one side of the rock-shaft, means connecting the rock-shaft with said pawl-carrying arm at the front end of said arm, a spring-pressed pawl pivoted to said arm at the rear end of the arm and extending thence downward in front of the ratchet, an adjustable gage operative to regulate the action of the pawl on the ratchet, a stop cooperative with the pawl-carrying arm and the ratchet to limit the upward movement of the pawl, and a restoring-spring operative on the spacing-lever and pawl-carrying arm.

4. In a type-writing machine, the combination with the platen and platen-carriage of a ratchet-wheel on the platen, a line-spacing lever including a rock-shaft mounted on the platen-carriage, the axis of the rock-shaft being higher than that of the platen, a pawl-carrying arm mounted on a fixed pin and extending backward from said pin toward the ratchet on one side of the rock-shaft, means connecting the rock-shaft with said pawl-carrying arm at the front end of said arm, a spring-pressed pawl pivoted to said arm at the rear end of the arm and extending thence downward in front of the ratchet, an adjustable gage operative to regulate the action of the pawl on the ratchet, a stop affixed to the pawl-carrying arm and cooperative with said arm and the ratchet to limit the upward movement of the pawl, and a restoring-spring operative on the spacing-lever and pawl-carrying arm.

5. In a type-writing machine, the combination with the platen and platen-carriage of a ratchet-wheel on the platen, a line-spacing lever including a rock-shaft mounted on the platen-carriage, the axis of the rock-shaft being higher than that of the platen, a pawl-carrying arm mounted on a fixed pin and extending backward from said pin toward the ratchet on one side of the rock-shaft, means connecting the rock-shaft with said pawl-carrying arm at the front end of said arm, a spring-pressed pawl pivoted to said arm at the rear end of the arm and extending thence downward in front of the ratchet, an adjust-

able gage operative to regulate the action of the pawl on the ratchet, a device cooperative with the pawl-carrying arm and the ratchet and pawl to lock the platen in the desired position, and a restoring-spring operative on the spacing-lever and pawl-carrying arm.

6. In a type-writing machine, the combination with the platen and platen-carriage of a ratchet-wheel on the platen, a line-spacing lever including a rock-shaft mounted on the platen-carriage, the axis of the rock-shaft being higher than that of the platen, a pawl-carrying arm mounted on a fixed pin and extending backward from said pin toward the ratchet on one side of the rock-shaft, means connecting the rock-shaft with said pawl-carrying arm at the front end of said arm, a spring-pressed pawl pivoted to said arm at the rear end of the arm and extending thence downward in front of the ratchet, an adjustable gage operative to regulate the action of the pawl on the ratchet, a stop affixed to the pawl-carrying arm and cooperative with other parts of the mechanism to limit the upward movement of the pawl and to lock the platen in the desired position, and a restoring-spring operative on the spacing-lever and pawl-carrying arm.

7. In a type-writing machine, the combination with the platen and platen-carriage of a ratchet-wheel on the platen, a line-spacing lever including a rock-shaft mounted on the platen-carriage, a pawl-carrying arm mounted on a fixed pin, means connecting the rock-shaft with said pawl-carrying arm, a spring-pressed pawl pivoted to said arm, a restoring-spring operative on the spacing-lever and pawl-carrying arm, and an adjustable gage operative to regulate the action of the pawl on the ratchet, said gage comprising a locking device on the exterior of the carriage-frame, a pawl-engaging stop, and a pin to which said locking device and stop are attached, this pin having a bearing in the carriage-frame and being movable on its axis by means of said locking device.

8. In a type-writing machine, the combination with the platen and platen-carriage of a ratchet-wheel on the platen, a line-spacing lever including a rock-shaft mounted on the platen-carriage, a pawl-carrying arm mounted on a fixed pin, means connecting the rock-shaft with said pawl-carrying arm, a spring-pressed pawl pivoted to said arm and extending within the carriage-frame, a restoring-spring operative on the spacing-lever and pawl-carrying arm, and an adjustable gage operative to regulate the action of the pawl on the ratchet, said gage comprising a locking device on the exterior of the carriage-frame, and a stop connected with said locking device and operative on the pawl within the carriage-frame.

9. In a type-writing machine, the combination with the platen and platen-carriage of

a ratchet-wheel on the platen, a line-spacing lever including a rock-shaft mounted on the platen-carriage, the axis of the rock-shaft being higher than that of the platen, a pawl-carrying arm mounted on a fixed pin and extending backward from said pin toward the ratchet on one side of the rock-shaft, means connecting the rock-shaft with said pawl-carrying arm at the front end of said arm, a spring-pressed pawl pivoted to said arm at the rear end of the arm and extending thence downward in front of the ratchet, a restoring-spring operative on the spacing-lever and pawl-carrying arm, and an adjustable gage operative on the pawl within the carriage-frame.

10. In a type-writing machine, the combination with the platen and platen-carriage of a ratchet-wheel on the platen, a line-spacing lever including a rock-shaft mounted on the platen-carriage, the axis of the rock-shaft being higher than that of the platen, a pawl-carrying arm mounted on a fixed pin and extending backward from said pin toward the ratchet on one side of the rock-shaft, means connecting the rock-shaft with said pawl-carrying arm at the front end of said arm, a spring-pressed pawl pivoted to said arm at the rear end of the arm and extending thence downward in front of the ratchet, and provided at its upper end with an extension, a restoring-spring operative on the spacing-lever and pawl-carrying arm, and an adjustable gage operative on said extension of the pawl.

11. In a type-writing machine, the combination with the platen and platen-carriage of a ratchet-wheel on the platen, a line-spacing lever including a rock-shaft mounted on the platen-carriage, a pawl-carrying arm mounted on a fixed pin and extending backward from said pin toward the ratchet on one side of the rock-shaft, means connecting the rock-shaft with said pawl-carrying arm at the front end of said arm, a spring-pressed pawl pivoted to said arm at the rear end of the arm and extending thence downward in front of the ratchet and provided at its upper end with an extension, a restoring-spring operative on the spacing-lever and pawl-carrying arm, and an adjustable gage comprising a locking device on the exterior of the carriage-frame, and a stop connected with said locking device and operative on said extension of the pawl.

12. In a type-writing machine, the combination with the platen and platen-carriage of a ratchet-wheel on the platen, a line-spacing lever including a rock-shaft mounted on the platen-carriage, a pawl-carrying arm mounted on a fixed pin and extending backward from said pin toward the ratchet on one side of the rock-shaft, means connecting the rock-shaft with said pawl-carrying arm at the front end of said arm, a spring-pressed pawl pivoted to said arm at the rear end of the arm

and extending thence downward in front of the ratchet and provided at its upper end with an extension, a restoring-spring operative on the spacing-lever and pawl-carrying arm, and an adjustable gage comprising a stop underneath said extension of the pawl and means for securing this stop at different elevations.

13. In a type-writing machine, the combination with the platen and platen-carriage of a ratchet-wheel on the platen, a line-spacing lever including a rock-shaft mounted on the platen-carriage, the axis of the rock-shaft being higher than that of the platen, a pawl-carrying arm mounted on a fixed pin and extending backward from said pin toward the ratchet on one side of the rock-shaft, means connecting the rock-shaft with said pawl-carrying arm at the front end of said arm, a spring-pressed pawl pivoted to said arm at the rear end of the arm and extending thence downward in front of the ratchet and provided at its upper end with an extension, a restoring-spring operative on the spacing-lever and pawl-carrying arm, an adjustable gage operative to regulate the action of the pawl on the ratchet, and a stop on said pawl-carrying arm above said extension of the pawl, said stop being coöperative with the ratchet to limit the upward movement of the pawl.

14. In a type-writing machine, the combination with the platen and platen-carriage of a ratchet-wheel on the platen, a line-spacing lever including a rock-shaft mounted on the platen-carriage, a pawl-carrying arm mounted on a fixed pin and extending backward from said pin toward the ratchet on one side of the rock-shaft, means connecting the rock-shaft with said pawl-carrying arm at the front end of said arm, a spring-pressed pawl pivoted to said arm at the rear end of the arm and extending thence downward in front of the ratchet and provided at its upper end with an extension, a restoring-spring operative on the spacing-lever and pawl-carrying arm, a stop on said pawl-carrying arm above said extension of the pawl, and an adjustable

gage comprising a stop underneath said extension of the pawl and means for securing this stop at different elevations.

15. In a type-writing machine, the combination with the platen and platen-carriage of a ratchet-wheel on the platen, a line-spacing lever, including a rock-shaft having bearings in a tubular case fast on the carriage-frame, the axis of the rock-shaft being higher than that of the platen, a restoring-spring confined in said case and connected with the rock-shaft, a pawl-carrying arm mounted on a pin affixed to said case, said arm extending backward beside the case from said pin, bevel-gearing connecting the pawl-carrying arm with the rock-shaft, a spring-pressed pawl pivoted to the rear end of said pawl-carrying arm and extending thence downward in front of the ratchet, and an adjustable gage operative to regulate the action of the pawl on the ratchet.

16. In a type-writing machine, the combination with the platen and platen-carriage of a ratchet-wheel on the platen, a line-spacing lever, including a rock-shaft having bearings in a tubular case fast on the carriage-frame, the axis of the rock-shaft being higher than that of the platen, a restoring-spring confined in said case and connected with the rock-shaft, a pawl-carrying arm mounted on a pin affixed to said case, said arm extending backward beside the case from said pin, bevel-gearing connecting the pawl-carrying arm with the rock-shaft, a pawl pivoted to the rear end of said pawl-carrying arm and extending thence downward in front of the ratchet, a pawl-spring confined in a recess between the pawl and pawl-carrying arm, and an adjustable gage operative to regulate the action of the pawl on the ratchet.

Signed at Chicago, in the county of Cook and State of Illinois, this 25th day of November, A. D. 1904.

GEORGE H. SMITH.

Witnesses:

A. LAUFFS,
J. W. NEIL.