

**No. 616,451.**

**Patented Dec. 27, 1898.**

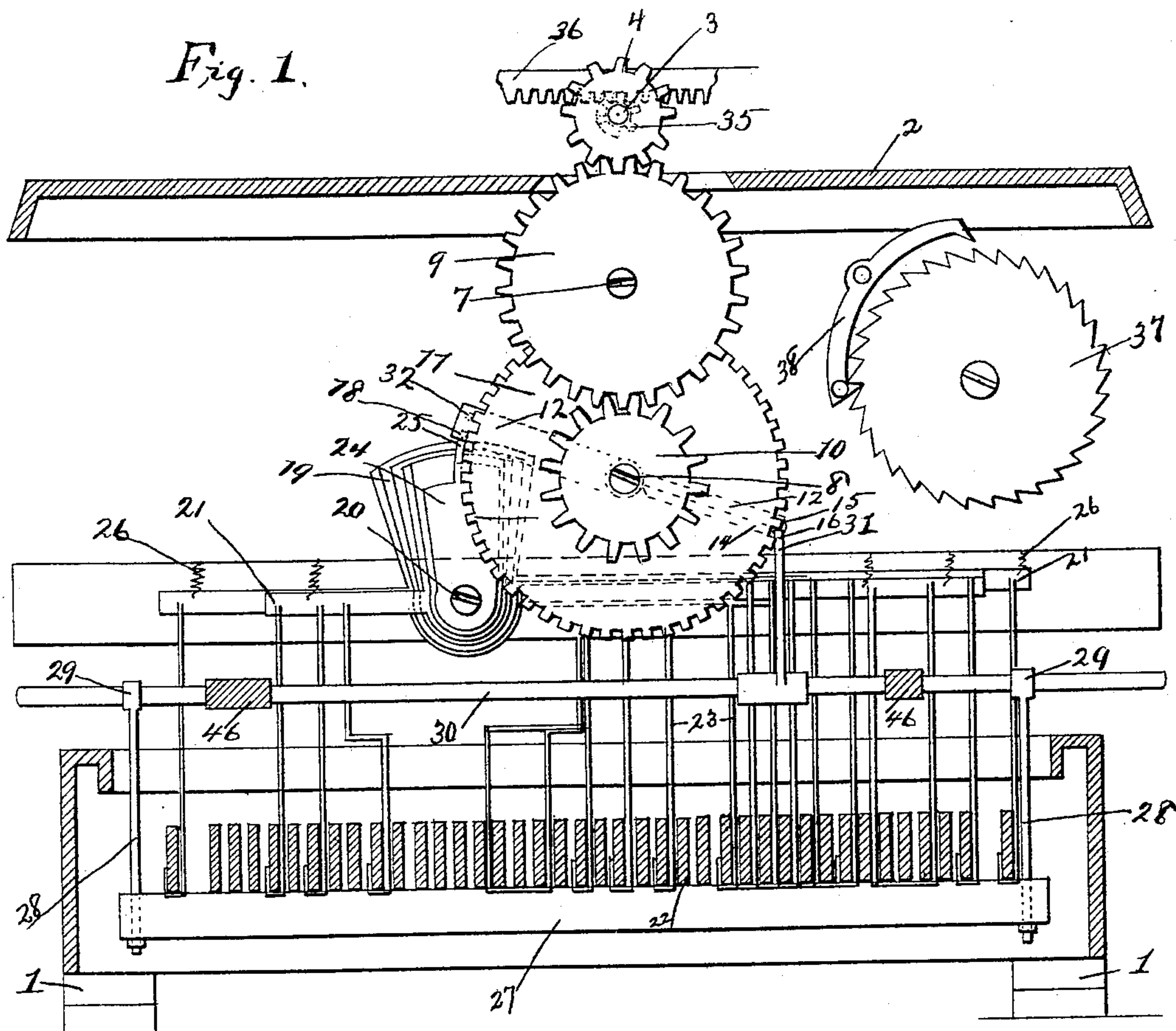
**C. W. BROWN.**  
**TYPE WRITER.**

(Application filed Aug. 12, 1897.)

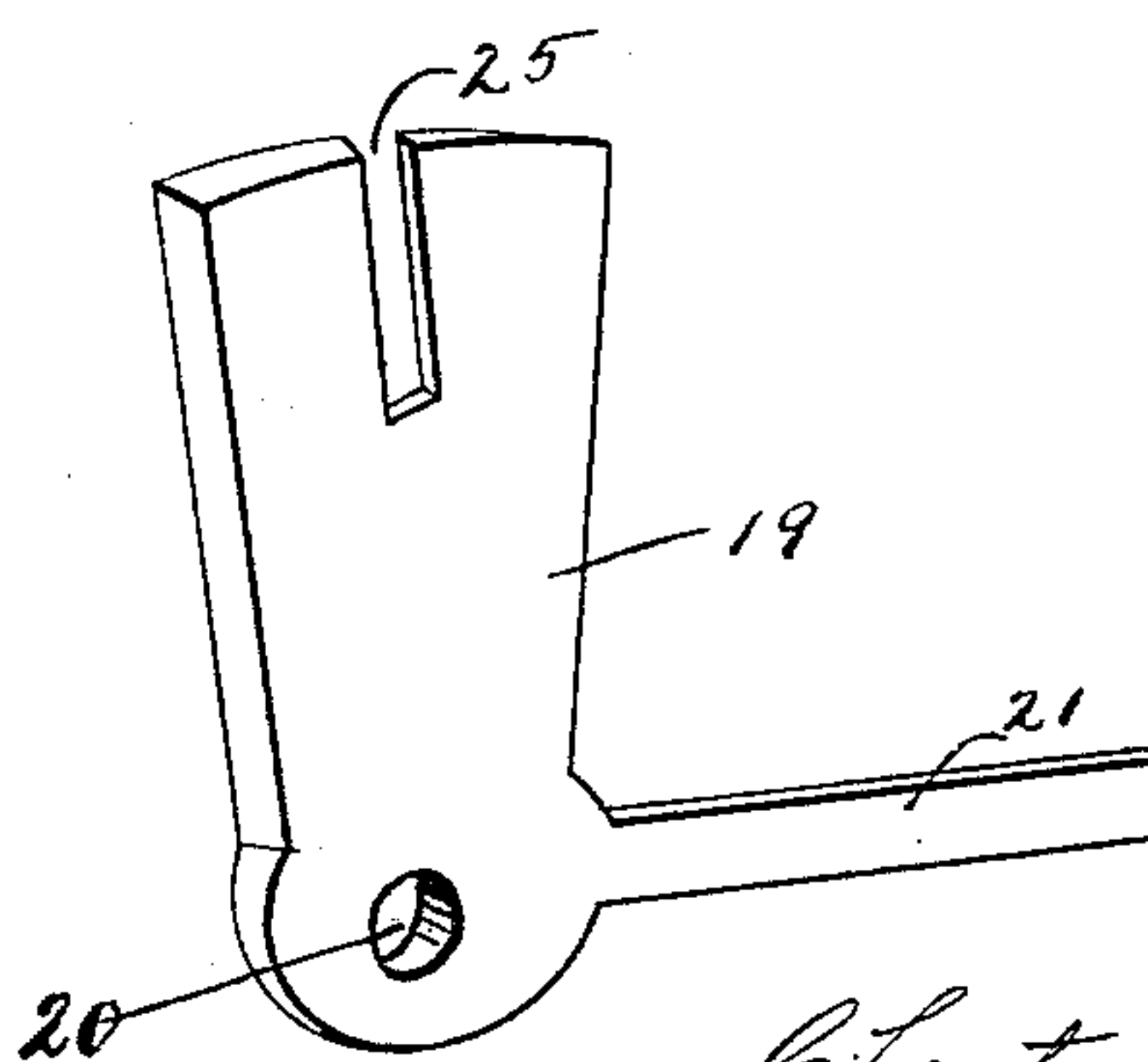
(No Model.)

**3 Sheets—Sheet 1.**

Fig. 1.



*Fig. 3.*



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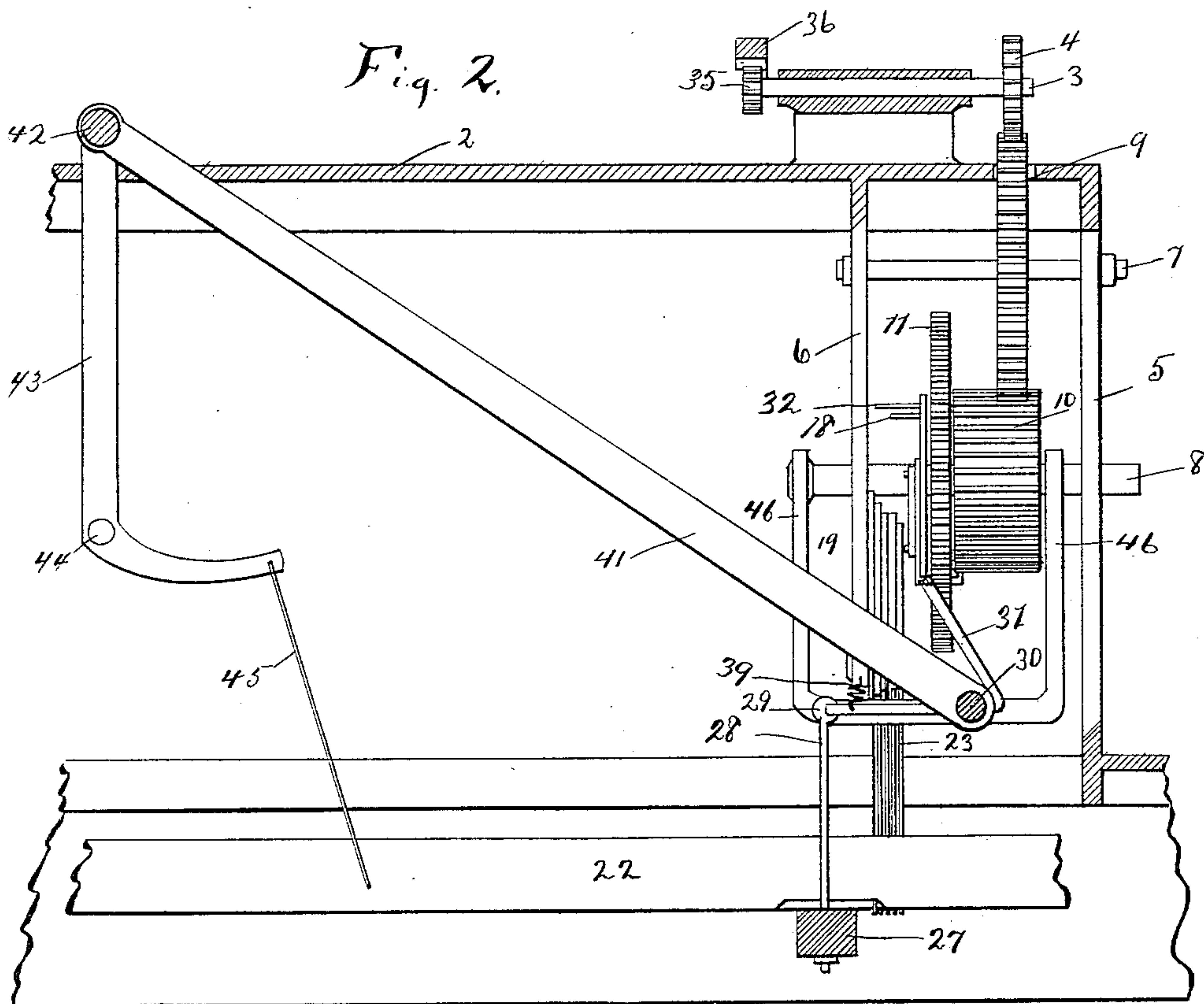
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C. W. BROWN.  
TYPE WRITER.

(Application filed Aug. 12, 1897.)

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3 Sheets—Sheet 2.



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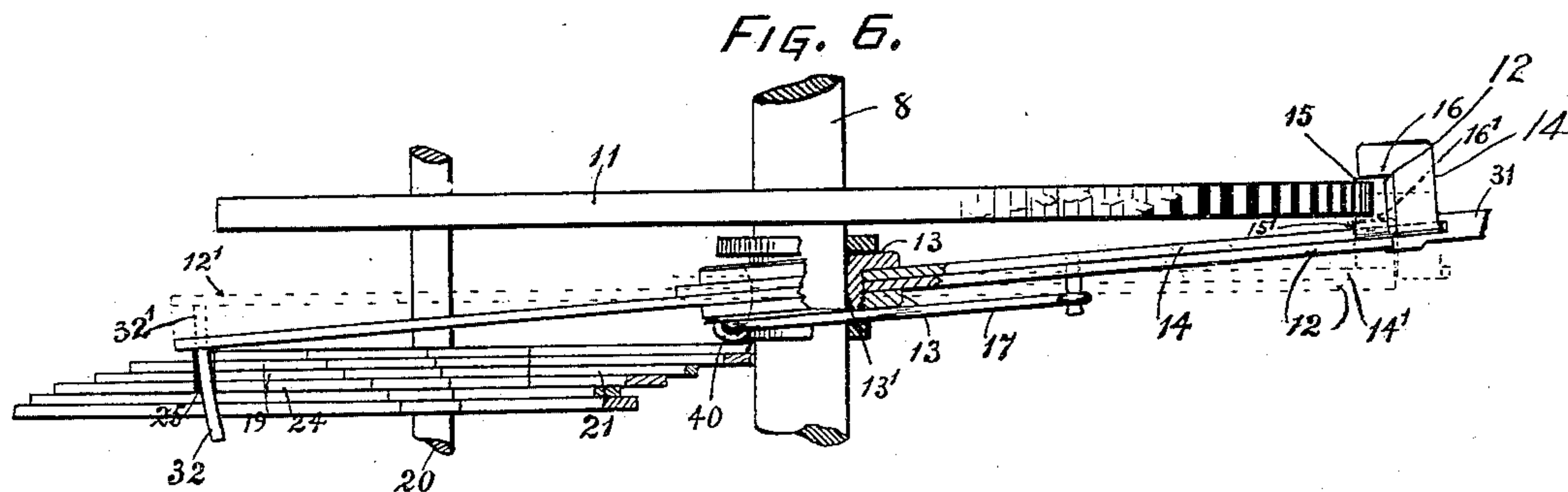
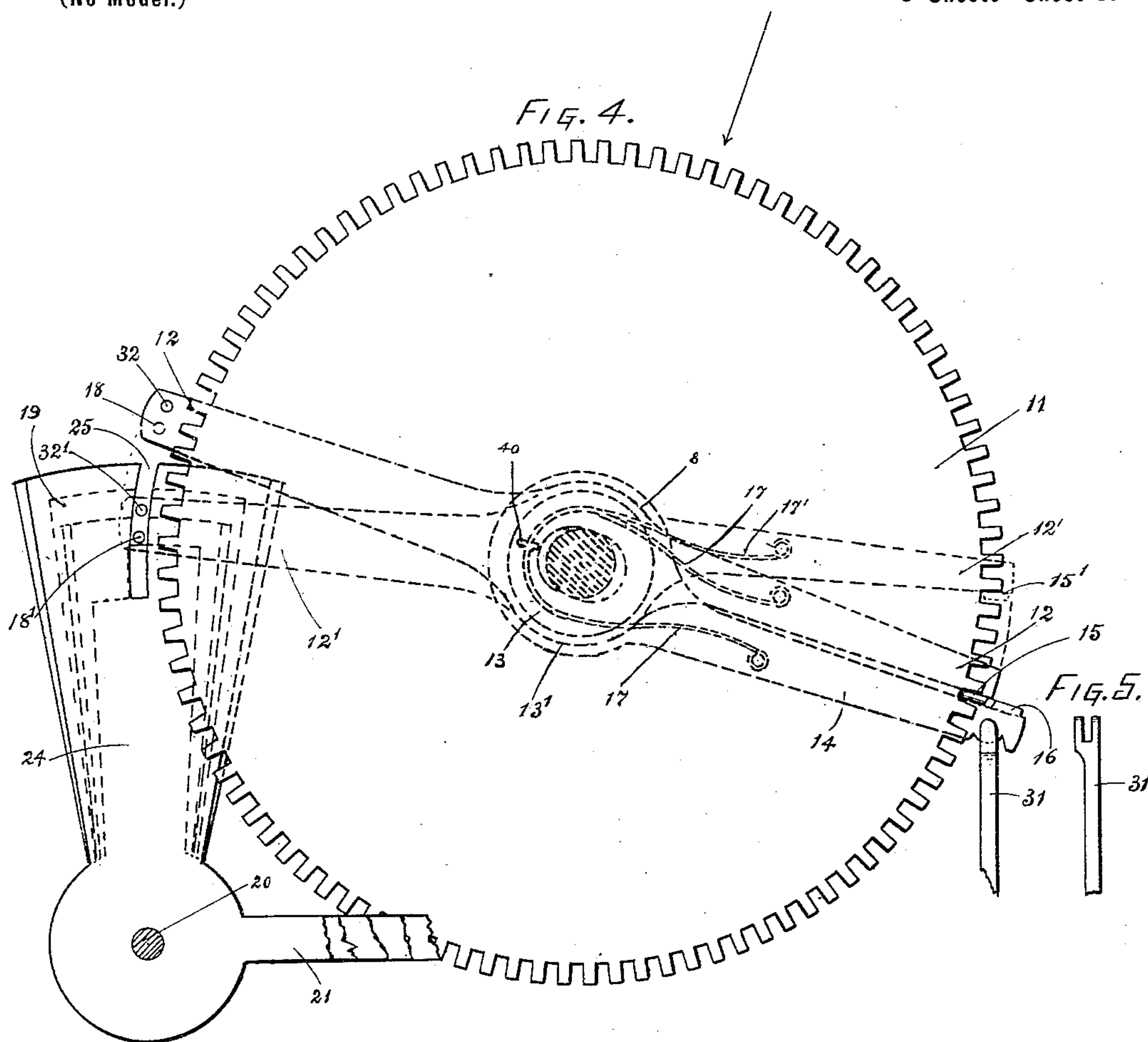
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(No Model.)

3 Sheets—Sheet 3.



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# UNITED STATES PATENT OFFICE.

CHESTER W. BROWN, OF JACKSON, MICHIGAN.

## TYPE-WRITER.

SPECIFICATION forming part of Letters Patent No. 616,451, dated December 27, 1898.

Application filed August 12, 1897. Serial No. 648,019. (No model.)

*To all whom it may concern:*

Be it known that I, CHESTER W. BROWN, of Jackson, in the county of Jackson and State of Michigan, have invented certain new and useful Improvements in Type-Writers; 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 appertains to make and use the same.

My invention is applicable to that class of type writing and printing machines in which the successive depression and release of a series of key-levers throw the series of type against the inking substance and the paper or other substance to be written upon, and after each depression and release of any key, and while the type and key-lever are resuming their original position, move the paper a type-space distance, and thus print or write.

The object of my invention is to provide a variable feed for the paper-carriage of a type-writing machine, so that on striking a key-lever actuating a narrow type, like that of the letter "i," the paper-carriage will be fed a less distance than when a wider character or letter is written, thus according to each letter its proper width, as in printers' movable type, and thereby making the written page appear like ordinary print.

My invention is shown as applied to a machine which writes capitals and small letters and which has a paper-carriage hung on a guide-rail moved transversely to the key-levers by a spring-wheel and strap and reversed by hand after a line has been written. I have provided seven variations in spacing, giving to the letters the same width or space given them in the self-spacing series of the American Type-Founders Company.

With the above objects in view my invention consists in connecting the rack-bar on the paper-carriage with the controlling or escapement wheel by means of gear-wheels and controlling the movement of the escapement or controlling wheel by means of a double ratchet or pawl mounted on the same shaft as the escapement or controlling wheel and operated by a space-bar and levers connected therewith and dogs connected with the key-levers to regulate the number of teeth taken

up by the limber ratchet of the double ratchet or pawl.

In the accompanying specification I have entered into a detail description of the invention, reference being had to the accompanying drawings and to numerals thereon, which designate the different parts, and what I consider to be the novel features of construction are specifically set forth in the appended claims.

In the drawings forming part of this specification, Figure 1 is a rear view of a type-writing machine, showing my improved feeding mechanism. Fig. 2 is an end elevation. Fig. 3 is a detail view of one of the dogs. Fig. 4 is an enlarged view of the escapement or controlling wheel and the double ratchet or pawl. Fig. 5 is a side view of the end of the push-bar. Fig. 6 is a sectional view as viewed from the arrow, Fig. 4.

As my invention relates solely to certain devices for controlling the movement of the paper-carriage to accord the correct spacing to each letter and as the said means are more especially adapted to type writing and printing machines having key-levers like the Remington, I have only illustrated so much of said type-writer as to show its connection therewith and manner of operation.

Referring to the drawings, the numerals 1 1 designate the rear corner-pieces of the frame of the type-writing machine; 2, the top plates of the frame; 3, the shaft, upon which cog-wheel 4 and pinion 35 are mounted. Said shaft 3 is mounted horizontally in bearings in the frame, so that pinion 35 is in mesh with the rack-bar 36 of the paper-carriage.

The frame of the machine is provided between the corner-posts 1 1 with a vertical strip 5, and in front of said strip is a hanger 6, which depends from the top plate 2, said strip and hanger forming bearings for the horizontal shafts 7 and 8. The shaft 7 carries an idle-wheel 9, in mesh with wheel 4 and with the wide cog-wheel 10 on shaft 8. On said shaft 8 and immediately in front of wheel 10 is a larger cog-wheel 11, which is the escapement or controlling wheel and controls the movement of the train of wheels connecting it with the rack-bar, and consequently the movement of the carriage. The several



wheels of the train, in connection with the train connecting wheel 11 with the rack-bar, are of such relative proportion that a movement of the escapement or controlling wheel the extent of one tooth gives a movement to the paper-carriage equal to a single space.

The double ratchet or pawl consists of two sections 12 and 14, mounted upon the hub 13, which is mounted upon the shaft 8 in front of the wheel 11. This hub at its middle is just enough larger than shaft 8 to turn easily, but is enlarged as it comes to the ends to allow for the side motion of the double ratchet. (Shown in Fig. 6.) Said hub also has a collar at each end to hold the parts 12 and 14 in contact with each other, so that the ends 15 and 16 are held in their proper positions and kept from spreading apart. Section 12 is farther from the wheel 11 than section 14 and at its end has a knife-edged ratchet 15, disposed at right angles to the wheel 11. The section 14 is on the side of section 12 nearest the wheel and at its end is shaped so that it passes around the end 15 of section 12 and has a knife-edged ratchet 16, disposed at right angles to the wheel 11 and on the side of 11 away from said section 12 and on a line with said knife-edged ratchet 15. Said ratchet 16 forms the stiff ratchet, and said ratchet 15 forms the limber ratchet. The lower edge of the section 14 rests in the notch in the end of the push-bar 31, which is attached to the rod 30. Rod 30 has the forwardly-projecting arms 29, which are connected with the space-bar 27 by links 28. The space-bar 27 is arranged transversely under the key-levers 22, so as to be operated by all of said key-levers excepting the shift-key levers, which are cut out on the under side, as shown in Fig. 2. The spring 17 operates the limber ratchet 15 whenever that is out of engagement with the teeth of the wheel 11.

40 is a staple holding spring 17 in position.

18 and 32 are posts fastened to section 12 at equal distances from the center of shaft 8 and at right angles to said section 12. Post 32 is situated higher up than post 18 and is longer. These posts, in conjunction with the series of dogs 19 and 24, disposed underneath them, regulate the amplitude of the arc of vibration of the limber ratchet 15. Dogs 19 19 24 are mounted upon a horizontal shaft 20. Each dog has a projecting arm 21, by which it is connected with key-levers 22 by means of rods 23 23, that depend from said arms and are bent around the lower edges of said key-levers, as shown. The dogs are of different length for the different spacings and, with the exception of the rear one 24, I have constructed them with vertical openings 25 at their outer ends, Fig. 3. Said openings are curved and adapted to form a way for posts 18 and 32. As the dogs are constructed to rock in but one direction, it is obvious that the portion on the side of the opening nearer the arm 21 is of no practical use and would work equally as well if this portion of the dog

were no higher than the bottom of the opening 25, and I make no claim upon the method of construction with both sides of opening the same height. When the dogs 19 19 are rocked, the outer curved surface on the side of the openings come under the post 18, and when returned to their first position by springs 26 26 engage stops, so that the openings 25 are under post 18. Where necessary, two dogs of the same length are used, one to rock in one direction and the other to rock in the opposite direction. In the drawings I have made two dogs of the largest size and two of the third-largest size. The dog 24 is recessed, as shown, to form steps or curved surfaces in different planes, with the higher plane resting across the openings 25 25. It is adapted to rock only in the direction to bring the lower plane under the openings 25 25, and the key-levers with which it is to be connected must all be disposed on the same side of the dog.

The operation of the foregoing parts is as follows: When any key-lever is depressed and a type impressed on the paper, the space-bar 27 is depressed, and with it the arms 29, turning the rod 30, which moves the upper end of the push-bar 31, upon which the section 14 rests, forward, and with it said section 14 and the stiff ratchet 16, which engages this ratchet with the teeth of the wheel 11. This brings the limber ratchet 15 out from the teeth of the wheel 11, and the spring 17 causes it to stand at the distance of a certain number of teeth of the ratchet-wheel 11 from its former position. Then when the key-lever is released the stiff ratchet under the action of the spring 39, which raises the space-bar, and consequently draws the push-bar 31 back, releases the ratchet-wheel, and while that is passing out from between the teeth the limber ratchet by the same spring is drawn in between two teeth at the place where spring 17 had raised it, distant one or more teeth from the stiff ratchet. As soon as the ratchet-wheel is released from the stiff ratchet the main spring of the type-writer, which draws the carriage, draws it along and turns the wheels of the train connecting with wheel 11 until the limber ratchet 15 comes in contact with section 14 on a line with the stiff ratchet 16. The wheels and carriage then remain at rest until another key-lever is struck. When a key-lever which prints a letter the width of "i" is struck, the key-levers for this width being connected with the next to the largest dog by rods and arms 23 and 21, the second-largest dog is turned or rocked so that its outer edge is across the openings 25 in the other dogs and directly in the path of the post 18, so that when the limber ratchet is released by the depression of the space-bar by said key-lever, as above described, and is raised by said spring 17 the post 18 strikes the outer edge of the said dog, which is turned across the openings 25, as above described, and the ratchet 15 is then opposite the opening between the second and third teeth above



the stiff ratchet, and when the key-lever is released the limber ratchet enters between the second and third teeth and permits the carriage to move until the limber ratchet comes on a line with the stiff ratchet or the distance of space allowed on the line for letters of the width of the letter "i." In the same manner key-levers printing letters of the width of "c" are connected with the third-largest dog and turn it with the outer edge across the openings 25, and when the post 18 strikes it the limber ratchet is opposite the opening between the third and fourth teeth above the stiff ratchet and permits the carriage to move three spaces, or distance allowed to letters of this width. Key-levers printing the next width, or four spaces, are not connected with the dogs; but the upper edge of 24 is so placed across the openings 25 that the post 18 will strike it unless this upper edge of the dog is rocked out of the way, and when the post 18 strikes the upper edge of 24, as aforesaid, the limber ratchet 15 is opposite the opening between the fourth and fifth teeth above the stiff ratchet and permits the carriage to move four spaces—the width allowed to these letters. The small letters "m" and "w" are connected with the arm of 24, and when these key-levers are operated the upper edge of 24 is turned out of the way, so that the post 18 descends until it strikes the lower curved plane of said dog 24, and the limber ratchet is opposite the opening between the sixth and seventh teeth above the stiff ratchet, permitting the carriage to move six spaces, or the distance allotted to these letters. The space-key lever is connected with the largest dog, and when operated permits the carriage to move forward one space.

The machine described herewith prints the capital and small letters by means of the same key, the platen holding the paper being shifted back by means of the shift-key lever, (shown in Fig. 2,) connected with the rocker or curved lever 43 by the rod 45, so that when the shift-key lever is depressed the shift-rod 42 is moved backward, pushing the platen also backward in the manner usually employed. The shift-rod 42 is connected with the rod 30 by the rod 41. The rod 30 is mounted in slots in the frame at its ends, so that when pushed backward by the rods 42 and 43 it slides in the said slots. The shaft 8 is so mounted in its bearings in 5 and 6 as to permit it to slide back and forward, carrying the wheels 10 and 11 and the double ratchet with it.

46 is a yoke which is mounted upon shaft 8, as shown, and is held in position by means of shoulders on the shaft, and the rod 30 passes through the yoke at the two places shown in Fig. 1. By this means the rod 30 is yoked to the shaft, so that when the shift-key is operated and the rod 30, with the parts 31, 28, 29, and 27, are pushed backward by the means described above the yoke carries the shaft 8 and the parts 10, 11, 12, 18, 32, and 14 back with it, so that these parts all bear

the same relative positions with regard to each other that they did before they were moved backward. When the said parts are moved backward, as above described, the short post 18 passes down behind the dogs without touching them when the limber ratchet is released in printing, but the long post 32 strikes the dogs in the same manner that the post 18 formerly did; but being disposed higher up than post 18 the limber ratchet raises one tooth more before the post 32 strikes the dogs than it does when post 18 is in line with the dogs, thereby permitting the carriage to move one space farther with each key-lever when the parts are moved back by the shift-key mechanism than when it is forward for printing the lower-case letters. When the shift-key is released, the spring which draws the shifted platen back to position also returns the other parts to their position for spacing for lower-case letters.

37 is the ratchet-wheel on the back of the drum, upon which the main spring which draws the carriage along is wound, and 38 is a double ratchet by means of which the main spring is tightened and loosened, and are parts found on nearly all type-writers.

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

1. In a type-writing machine, the combination with the gear-wheel governing the movement of the paper-carriage of a controlling-wheel geared thereto, a double pawl or ratchet governing the movement of the controlling-wheel, means for moving the double pawl or ratchet at the depression of each key-lever, a series of dogs of different lengths mounted upon a shaft and having projecting arms, and rods connecting said arms to the key-levers, substantially as shown and for the purpose set forth.

2. In a type-writing machine the combination with the gear-wheel controlling the movement of the paper-carriage of a controlling-wheel geared thereto, a double pawl governing the rotation of the controlling-wheel and actuated by the depression of each key-lever, a series of dogs of different lengths, an arm projecting from one side of each dog, and rods connecting the arms to the key-levers, substantially as shown and for the purpose set forth.

3. In a type-writing machine, the combination with the gear-wheel governing the movement of the paper-carriage of a controlling-wheel geared thereto, a ratchet or double pawl governing the rotation of the controlling-wheel, means for moving the double pawl or ratchet at the depression of each key-lever, and a series of dogs limiting the throw of the double pawl or ratchet, one of the dogs being normally positioned in the path of the double pawl, substantially as shown and for the purpose set forth.

4. In a type-writing machine the combination with the gear-wheel governing the move-



ment of the paper-carriage, of a controlling-wheel geared thereto, a double pawl or ratchet governing the rotation of the controlling-wheel, means for moving the double pawl or ratchet, and a series of dogs limiting the throw of the double pawl or ratchet, one of the dogs being normally in the path of the double pawl and having a depressed surface, substantially as shown and for the purpose set forth.

10 5. In a type-writing machine, the combination with the gear-wheel governing the movement of the paper-carriage of a controlling-wheel geared thereto, a double pawl governing the rotation of the controlling-wheel,

15 means for moving the pawl upon the depression of each key-lever, a series of dogs limiting

the throw of the double pawl, and operated from the key-levers, said double pawl having arms of different lengths which contact with the dogs, and a bar or other equivalent device extending from the device which shifts the paper-carriage to shift the double pawl to bring the second arm in operative position, substantially as shown and for the purpose set forth.

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

CHESTER W. BROWN.

Witnesses:

C. E. BROWN,

H. E. EDWARDS.