(No Model.)

G. S. GRAFF.

PAPER CARRIAGE FOR TYPE WRITING MACHINES.

No. 429,757. Patented June 10, 1890.

Fig I.

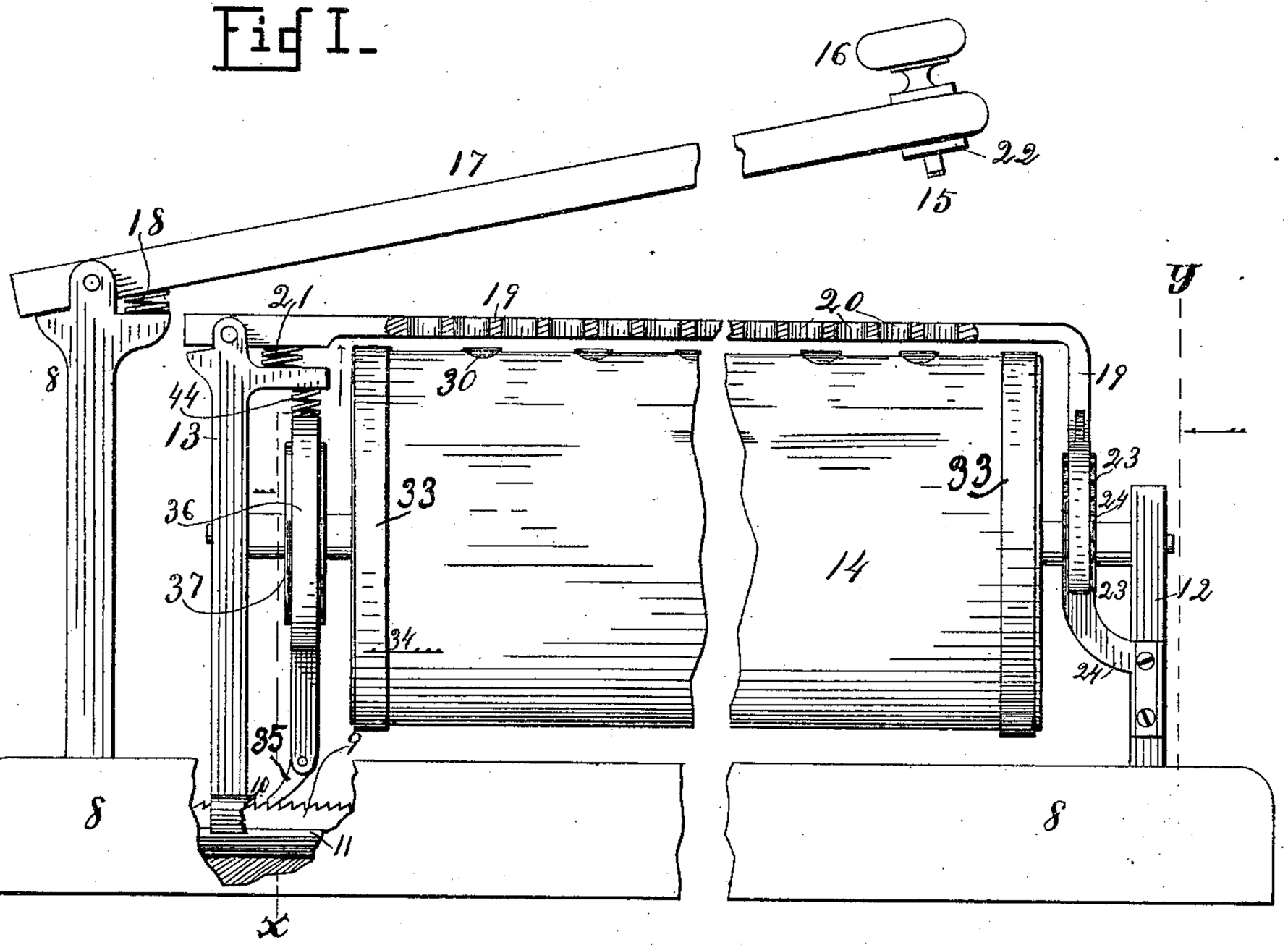


Fig II.

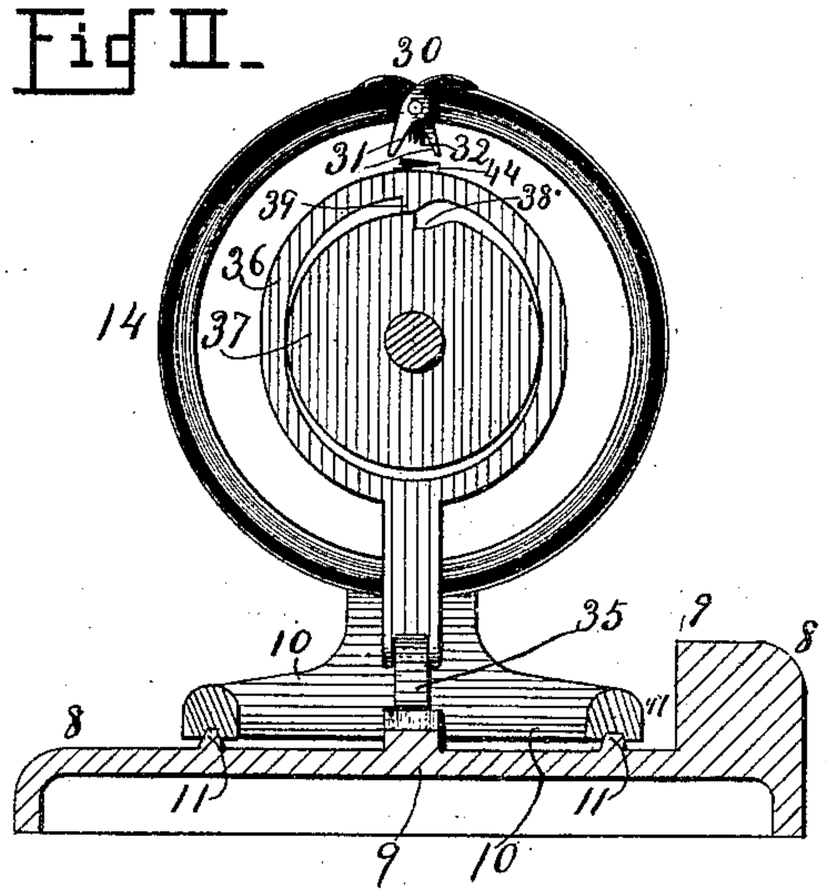
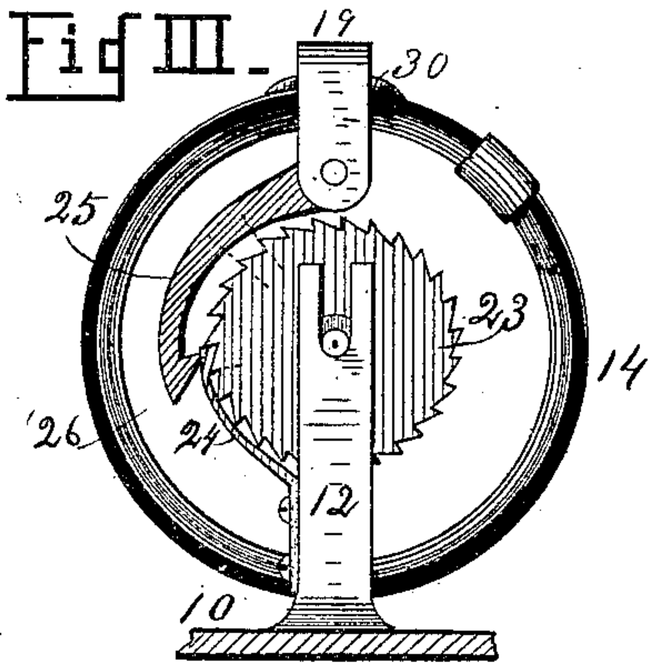


Fig III.



Witnesses

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UNITED STATES PATENT OFFICE.

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PAPER-CARRIAGE FOR TYPE-WRITING MACHINES.

SPECIFICATION forming part of Letters Patent No. 429,757, dated June 10, 1890.

Application filed October 16, 1889. Serial No. 327,185. (No model.)

To all whom it may concern:

Be it known that I, GEORGE S. GRAFF, a citizen of the United States, and a resident of Brooklyn, county of Kings, and State of New York, have invented a certain new and useful Improvement in Type-Printing Machines, of which the following is a specification.

This invention relates in general to type-writing machines, and more particularly to that class of machines in which a cylinder journaled upon a sliding carriage is adapted to support the paper against the impact of types adapted to strike all on one spot in the act of writing.

The object of the invention is to provide means whereby the paper may be held upon the cylinder to revolve therewith, so as to form the lines of writing around the cylinder and to advance with the cylinder longitudinally with its axis as the carriage advances to form spaces between lines.

To this end my invention consists in the construction and combination of parts forming a portion of a type-writing machine, hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure I represents a side elevation of a portion of a type-writing machine, showing my invention. Fig. II represents a transverse vertical section at the line *x*, Fig. I. Fig. III is a partial section on the line *y*, showing also an end view of the cylinder.

8 represents the frame of a type-writing machine provided with a fixed rack 9.

10 is the carriage fitted to slide on ways 11 of the frame, and provided with two posts 12 13, in which the cylinder 14 is journaled parallel with the slideways 11 to revolve in Y-shaped bearings.

15 represents a single type, of which there may be any number; 16, the finger-key, and 17 the arm therefor.

As my invention is designed to be applied to different styles of type-writing machines whose types may strike in any desired direction against the side of the cylinder, the type and its key and arm here shown are introduced for the purpose of illustrating the working of the machine, and are not supposed to be of the most practical form. The type-arm 17 is shown pivoted to the frame 8, and provided with a retracting-spring 18, adapted to return the key to place after each stroke.

19 is the feed-lever hinged to the post 13 of the carriage and provided with a lifting-spring 21, and with apertures 20, through which the type strikes. These apertures may be the distance of lines apart, and the different types all strike through one aperture to form one line, and through the next aperture when the work advances to form the next line. In either case the type-arm strikes at 22 upon the lever 19 at every blow and carries the lever downward with it.

23 is a ratchet-wheel fixed upon the shaft of the cylinder 14 and having as many teeth as there can be letters printed in any line.

24 is a spring-detent fitted to drag over the advancing teeth of the wheel 23 and to steady the wheel and cylinder by pressing into each notch between teeth while the cylinder is at rest for each type blow.

25 is a hook-shaped pawl hung to the lever 19 to engage one tooth at a time of the wheel 23 every time the lever is pressed down and to rotate the wheel and cylinder one tooth's space or the space of one letter when raised by the lever 19 and spring 21.

The paper may be held upon the cylinder by means of clamps 30, which are pivoted in the ends of the cylinder and located along its surface, and provided with levers 31, which cross each other near their pivot and are pressed apart by a spring 32 to force the clamps down upon the surface of the cylinder, the paper to be held beneath the clamps. By pressing the levers together the clamps will be raised, or if the paper be too narrow to surround the cylinder one edge may be held by one of the clamps and the other by movable bands 33 passing around the cylinder near its end. A cam 37, rigidly mounted on the cylinder-shaft, is circular, excepting at the notch 38. A yoke 36 is hung freely upon the cam and provided with a tooth 39, which slides upon the circular portion of the cam during the intermittent revolution of the cylinder, and is further provided with a backwardly-slanting pawl 35, which engages the stationary rack 9. A spring 44 presses the yoke 36 constantly into contact with the cam. The notch 38 bears such a fixed position in relation to the clamps 30 that when

the margin of the paper is reached by the revolving cylinder, the tooth 39 drops suddenly into the notch 38, thereby pressing downward upon the pawl 35, whose bracing position causes it to push against a tooth of the rack and advance the carriage and the paper thereon the space of one line, so that the next stroke of a type is made on a new line without any interruption of work or time wasted in drawing back the paper-carriage. When it is considered that the usual operation of returning the carriage to bring the next line of the paper in position takes the time in which a number of letters might have been printed, and this occurs at every ten or twelve words, the time saved and the consequent increase of rapidity in operation attained by this invention may be appreciated.

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

1. The combination, in type-writing machines, of a frame provided with slideways, a carriage fitted to slide thereon, a cylinder adapted to hold the paper lengthwise and journaled in the carriage, a lever hung to the carriage in the path of the type-arm, a ratchet-wheel secured to the cylinder-shaft, and a pawl hung upon the said lever to engage with the said ratchet-wheel, substantially as shown and described.

2. The combination of a lever hung upon a type-writing-machine carriage in the path of the type, a cylinder journaled in said carriage and provided with a ratchet-wheel, and a pawl upon the said lever adapted to engage the said ratchet-wheel, substantially as shown and described.

3. The combination of a lever hung upon a type-writing-machine carriage and having one or more apertures through it in the path of the type, and feeding mechanism connected with the said lever, substantially as shown and described, whereby the stroke of the type actuates the said lever to operate the feeding mechanism.

4. The combination of a type-writing-machine cylinder adapted to hold paper lengthwise upon it and journaled lengthwise in the carriage and having a cam upon its shaft, a frame in which the carriage is fitted to slide provided with a fixed rack of teeth, a yoke hung upon the cam, a spring pressing the yoke into contact with the cam, and a pawl hung in the yoke to engage the said rack in a slanting position, substantially as shown and described.

5. The combination of a frame having a rack of fixed teeth and slideways parallel therewith, a carriage fitted to slide in said ways, a cylinder adapted to hold paper around it journaled in the carriage and provided with a cam having a notch in its edge, a yoke hung upon the cam and having a tooth to engage the notch therein, and a pawl hung to the said yoke to engage the rack in a slanting position, the notch in the cam being located in such relation to the paper-holders on the cylinder as to operate the line-spacing pawl at the time the edge of the paper is reached, substantially as shown and described.

In testimony of the foregoing specification I do hereby sign the same, in the city of New York, county and State of New York, this 14th day of October, A. D. 1889.

GEORGE S. GRAFF.

Witnesses:

J. ODELL FOWLER, Jr.,

LOUIS A. HILL.