July 17, 1923. 1,462,183

A. S. WHEELER

VARIABLE CARRIAGE FEED MECHANISM FOR TYPEWRITERS

Filed Sept. 9, 1922 3 Sheets-Sheet 1

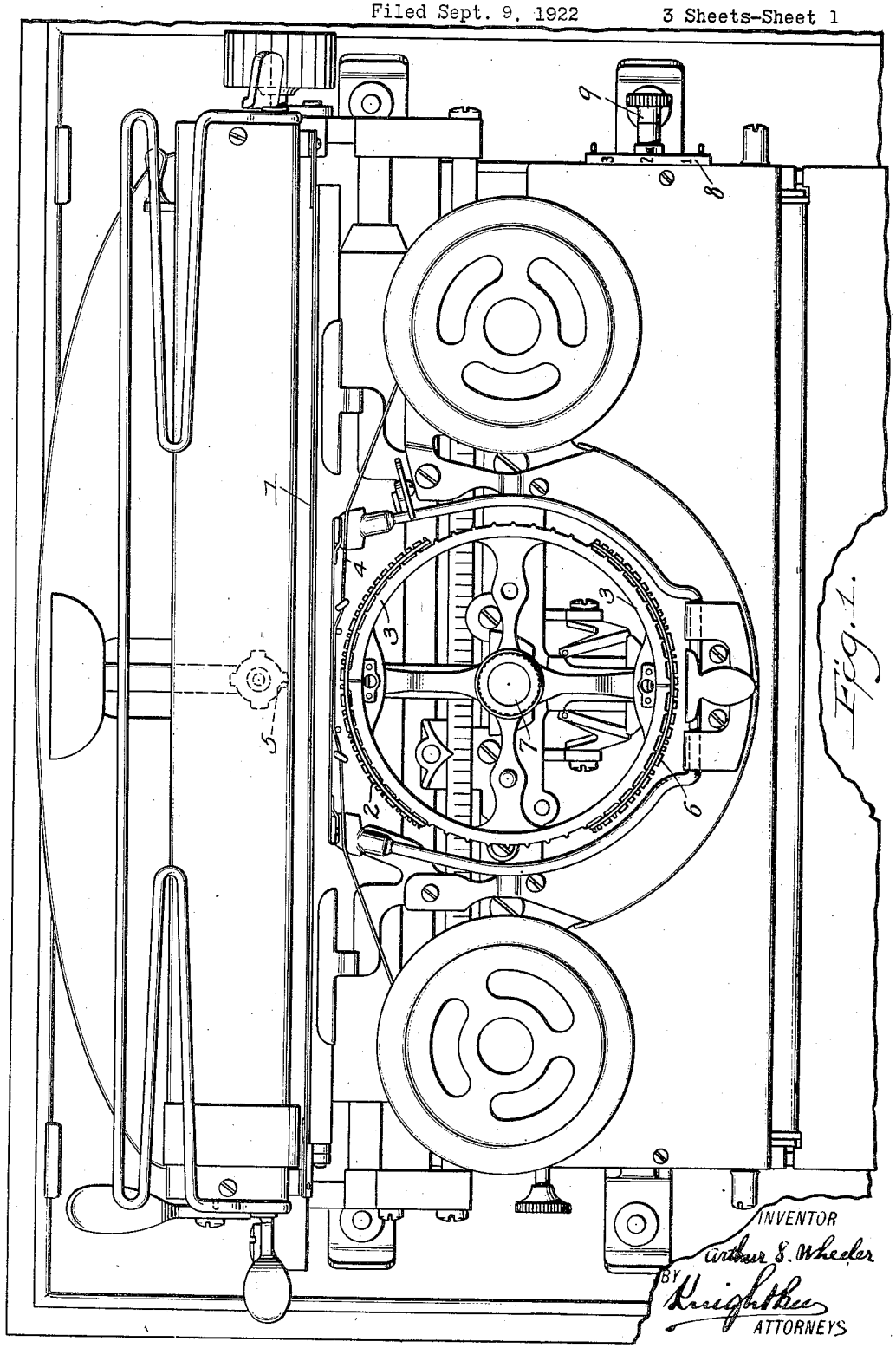


Fig. 1.

INVENTOR
Arthur S. Wheeler
BY Dwight Lee
ATTORNEYS

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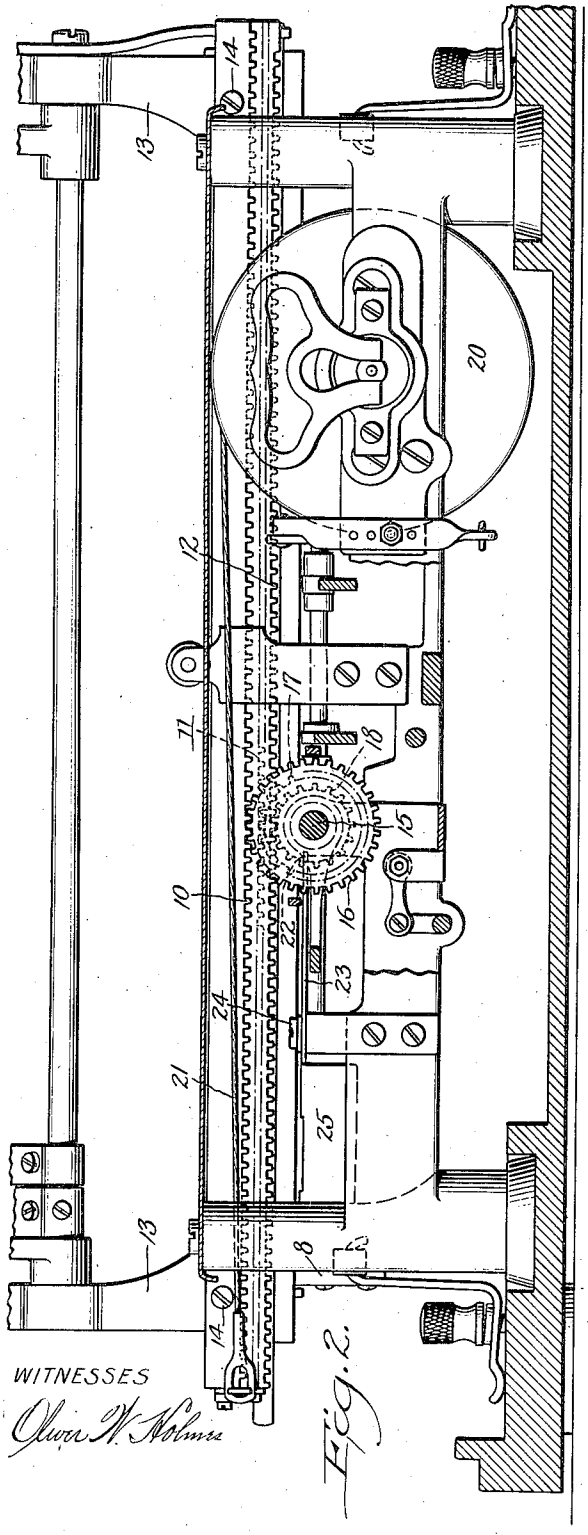


Fig. 2.

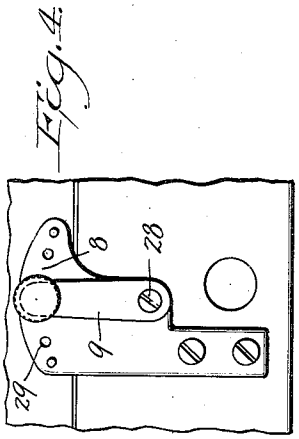


Fig. 4.

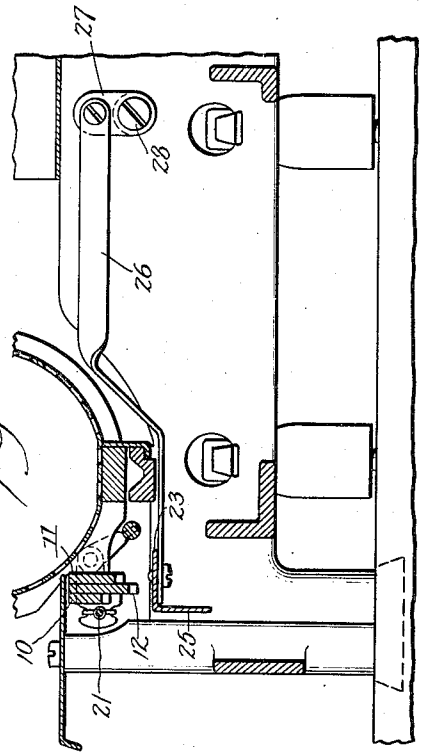


Fig. 3.

WITNESSES

Oliver W. Holmes

INVENTOR

Arthur S. Wheeler

BY Wright Brothers

ATTORNEYS

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A. S. WHEELER

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Filed Sept. 9, 1922 3 Sheets-Sheet 3

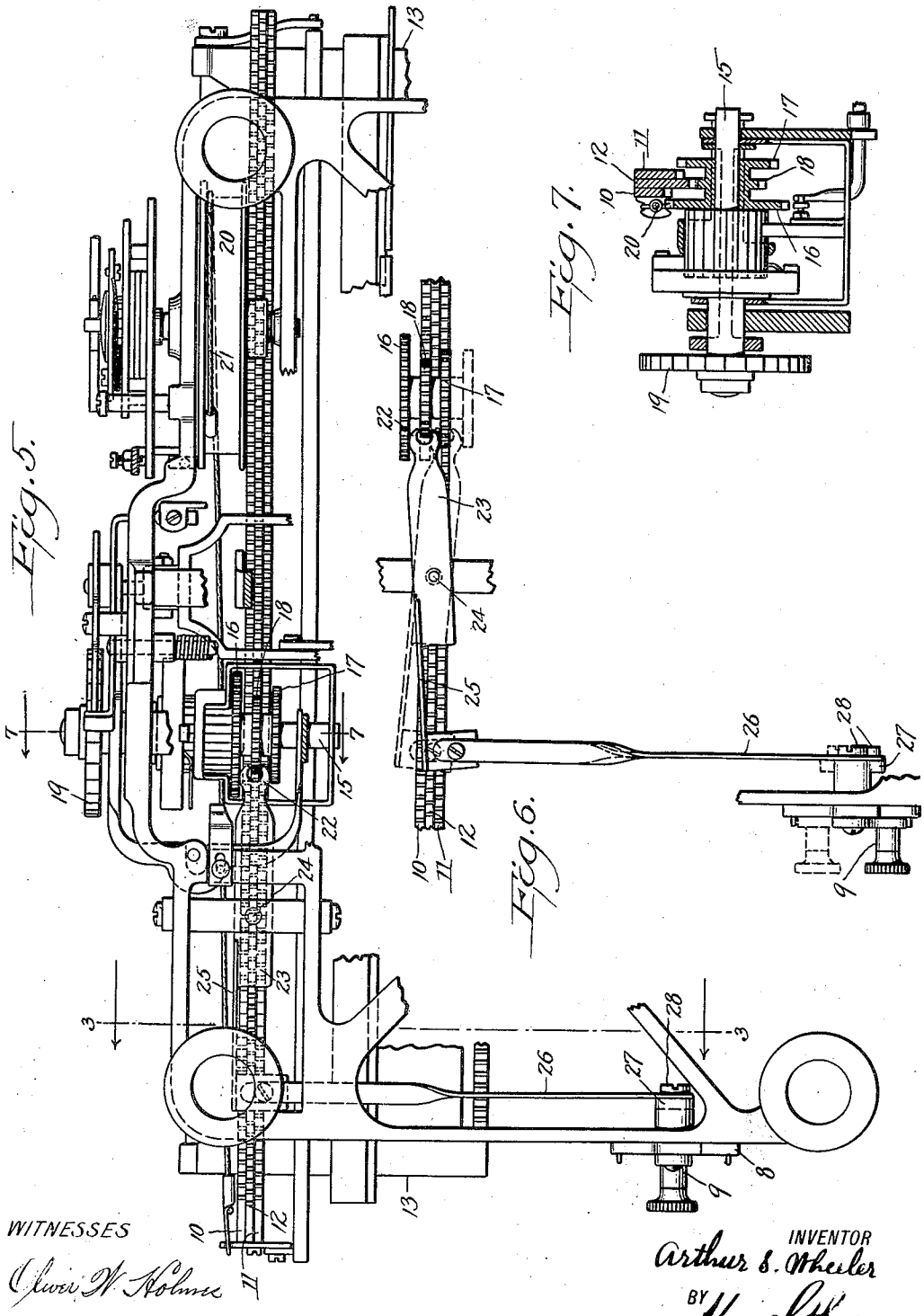


Fig. 5.

Fig. 7.

Fig. 6.

WITNESSES

Oliver W. Holmes

INVENTOR

Arthur S. Wheeler

BY Knight Bros

ATTORNEYS

Patented July 17, 1923. 1,462,183

UNITED STATES PATENT OFFICE.

ARTHUR S. WHEELER, OF NEW YORK, N. Y.

VARIABLE CARRIAGE-FEED MECHANISM FOR TYPEWRITERS.

Application filed September 9, 1922. Serial No. 587,101.

To all whom it may concern:

Be it known that I, ARTHUR S. WHEELER, a citizen of the United States, and a resident of the borough of Bronx, city of New York, county of Bronx, and State of New York, have invented certain new and useful Improvements in Variable Carriage-Feed Mechanism for Typewriters, of which the following is a specification.

My invention relates to typewriters, and more particularly to a variable spacing mechanism for the carriage feed. Such a machine is useful for many purposes among which is the regulating of the spacing in accordance with the number of characters in and the length of the written lines so that the lines may be of even length, as is done in justifying type in setting up printing. Another useful purpose is the changing of the spacing to conform to the size of the type, as for example when changing from pica to elite. This latter is particularly useful in connection with a typewriter having easily changeable type, and the well-known Hammond typewriter is a good example of this class of machine.

The object of my invention is to produce a variable carriage feed mechanism that may be economically incorporated in the manufacture of the typewriter, that will have the different spacings selectively controllable by the operator and that will give uniform results.

I attain this object by providing the carriage with a plurality of racks so arranged with respect to a plurality of different sized gears controlled by the escapement mechanism that any one of the gears may be caused to engage one of the racks at the will of the operator, while the other gears remain out of mesh.

My invention will be described in connection with the accompanying drawings in sufficient detail to enable those skilled in the art to readily understand it. In the drawings

Figure 1 is a plan view of the well-known Hammond typewriter showing where the control handle of the variable spacing mechanism is located on the machine.

Figure 2 is a rear view, partly in section, of the typewriter showing the racks and pinions.

Figure 3 is a sectional view on lines 3—3 of Figure 5.

Figure 4 is a fragmental view of the operating lever and sector.

Figure 5 is a bottom view of the typewriter, with parts cut away, showing the variable spacing mechanism.

Figure 6 is a detail showing the levers and links for shifting the pinions so that one or another engages its rack.

Figure 7 is a section on line 7—7 of Figure 5.

Similar numerals refer to similar parts throughout the several views.

Referring more particularly to the drawings, Figure 1 shows the main features of the Hammond typewriter, which it is not thought necessary to describe in detail. The paper (not shown), at the point where the character is printed, lies between the tape 1 and the type shuttle 2, which is mounted on the anvil 3. Ink ribbon 4 is between the paper and the type on shuttle 2. When the keys (not shown) are depressed by the operator, shuttle 2 is rotated to bring the proper character opposite hammer 5, which is brought forward to bring the paper against the ribbon and the character on shuttle 2 that it is desired to print. It will be noted that anvil 3 is made to receive an additional type shuttle 6 which may have type of a different size or style from that of shuttle 2. To change from one shuttle to the other, it is only necessary to raise anvil 3 on pin 7, turn it through 180° and drop it down again. When anvil 3 is lifted, other shuttles may be substituted or another anvil with still other shuttles may be substituted for the anvil previously used. The sector 8 is attached to the frame of the machine and the positions of the handle 9 as indicated at 1, 2 and 3 are the positions corresponding to three different spacings of the carriage feed, as will be more fully described hereinafter. When a type shuttle is changed, the spacing proper therefor is selected by the operator.

Three racks 10, 11 and 12 (Figure 2) are attached to the carriage 13 by screws 14. A shaft 15 (see also Figures 5 and 7) is mounted under the racks 10, 11 and 12 in the typewriter frame and transversely to the racks. A sleeve having on it three pinions 16, 17 and 18 is slidably mounted on shaft 15 but rotates with it. The diameters of these pinions and the elevations of the teeth of the different racks above shaft

15 are chosen to give the desired variations in carriage feed. The rotation of pinions 16, 17 and 18 is controlled by the usual escapement mechanism 19 and carriage 13 is actuated by the spring drum 20 and cable 21. The angular motion of escapement 19 is constant for each depression of a key, and consequently the distance the carriage will move will depend on the diameter of the pinion in mesh with its rack. Thus when pinion 16 meshes with rack 10, the carriage moves a greater distance than when pinion 18 meshes with rack 12.

As shown in Figure 5, gear 18 is in mesh with rack 12 and is held in position by fork 22 of lever 23 which is fulcrumed at 24. A strip of spring steel 25 forms an extension to lever 23, and at its end it is pivotally connected to link 26. The other end of link 26 is pivotally connected to arm 27 which is secured to bolt 28 within the frame of the typewriter. Lever 9, which is the operating lever, is also secured to bolt 28 but is outside the frame.

The operation in shifting from one position to another, as for example from that shown in Figure 5 where pinion 18 is in mesh with rack 12 to that shown in full lines in Figure 6 where pinion 17 meshes with rack 11, is done by moving handle 9 from the central position (see Figure 4) toward the front of the machine until the spring latch in handle 9 engages opening 29 in sector 8, which is position 1 of Figure 1. If pinion 17 happens to be in such position that its teeth will hit against the teeth in rack 11, spring 25 will be deflected and will exert pressure between pinion 17 and rack 11. If now the carriage be moved slightly, pinion 17 will immediately slip into mesh with rack 11. Handle 9 can equally well be shifted from the position shown in full lines in Figure 6 to that shown in dotted lines when it is desired to engage pinion 16 with rack 10 and spring 25 will insure proper meshing on the first movement of the carriage. When shifting from one spacing to another, I prefer to move the carriage a short distance by hand in the opposite direction to its motion when writing, as in that way the writing may be resumed in the least time at the proper point, using the new spacing.

A yielding connection between the pinions and operating lever is important, as with certain relations between the sizes of the pinions, the teeth can not be opposite each other. The yielding connection, however, must hold the pinions and racks securely in the position selected by the operator.

As an example of the variations in spacing possible according to my invention, I have made machines having spacings of 11, 15 and 18 characters to the inch. For justifying type the spacings may be 10, 11 and 12 to the inch. Although I have described my invention in connection with a mechanism designed for three different spacings, I do not desire to be limited to that number as I may employ two or more than three.

I claim:—

1. A variable spacing carriage feed mechanism having rack and gear connection between the escapement and the carriage, said rack and gear connection comprising a plurality of gears and racks, and yielding manually controlled means for bringing a selected pair of said gears and racks into mesh to establish the desired interval of spacing.

2. A variable spacing carriage feed mechanism having rack and gear connection between the escapement and the carriage, said rack and gear connection comprising a plurality of gears and racks, and manually controlled means having a yielding connection to said gears for bringing a selected pair of said gears and racks into mesh to establish the desired interval of spacing.

3. A variable spacing carriage feed mechanism for typewriters comprising in combination a plurality of racks extending longitudinally of and attached to the carriage, a shaft mounted transversely to said racks, pinions of different diameters equal in number to the racks and slidably mounted on said shaft but rotating with it, said pinions being adapted to mesh each with one of the racks, and means for selectively shifting said pinions to cause any desired pinion to mesh with its rack for giving the desired spacing.

4. A variable spacing carriage feed mechanism for typewriters comprising in combination a plurality of racks extending longitudinally of and attached to the carriage, a shaft mounted transversely to said racks, pinions of different diameters equal in number to the racks and slidably mounted on said shaft but rotating with it, said pinions being adapted to mesh each with one of the racks, and means for manually selectively shifting said pinions to cause any desired pinion to mesh with its rack for giving the desired spacing.

5. A variable spacing carriage feed mechanism for typewriters comprising in combination a plurality of racks extending longitudinally of and attached to the carriage, a shaft mounted transversely to said racks, pinions of different diameters equal in number to the racks and slidably mounted on said shaft but rotating with it, said pinions being adapted to mesh each with one of the racks, an operating handle for controlling said means, and a yielding connection between said means and said operating handle.

ARTHUR S. WHEELER.