

No. 661,472.

Patented Nov. 6, 1900.

F. W. HILLARD.
TYPE WRITING MACHINE.

(Application filed Aug. 16, 1900.)

(No Model.)

2 Sheets—Sheet 1.

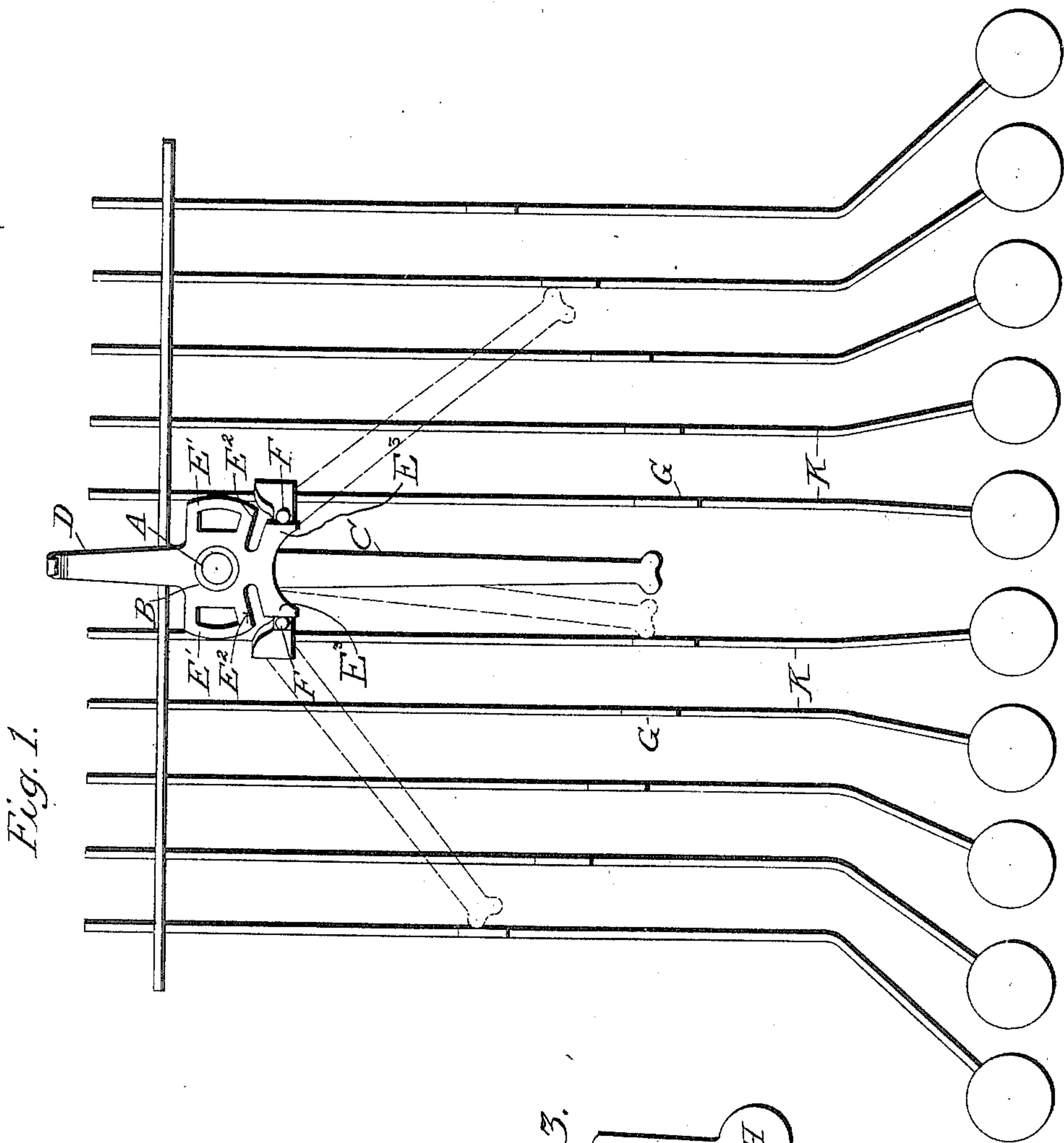


Fig. 2.

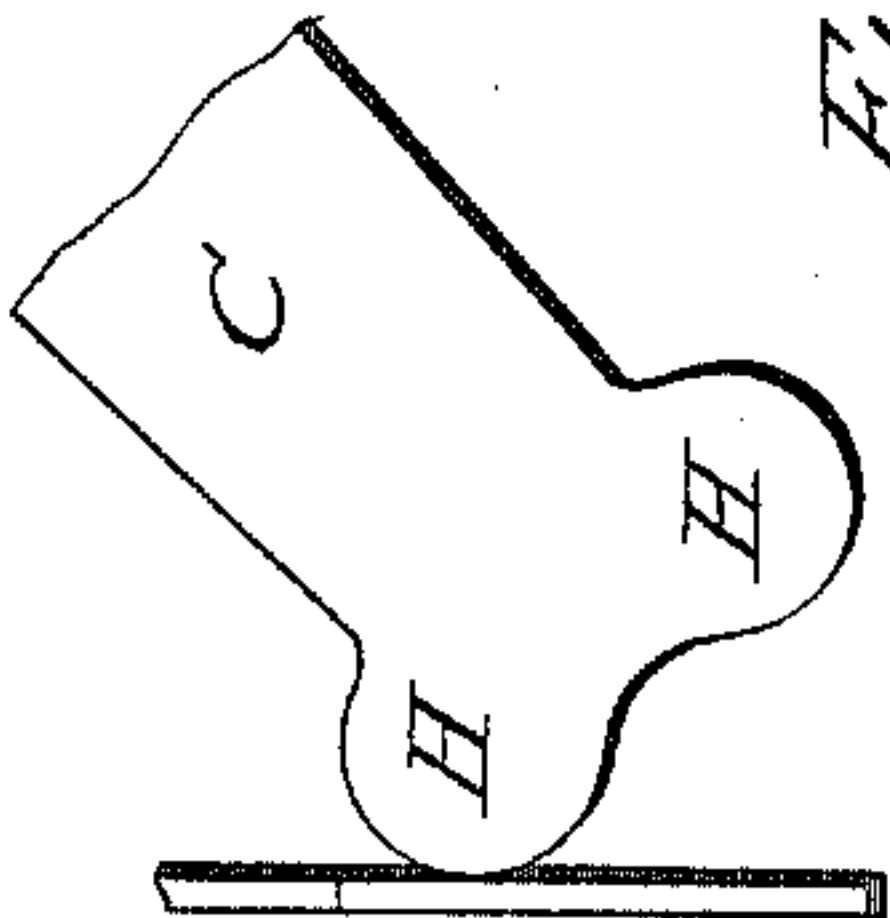
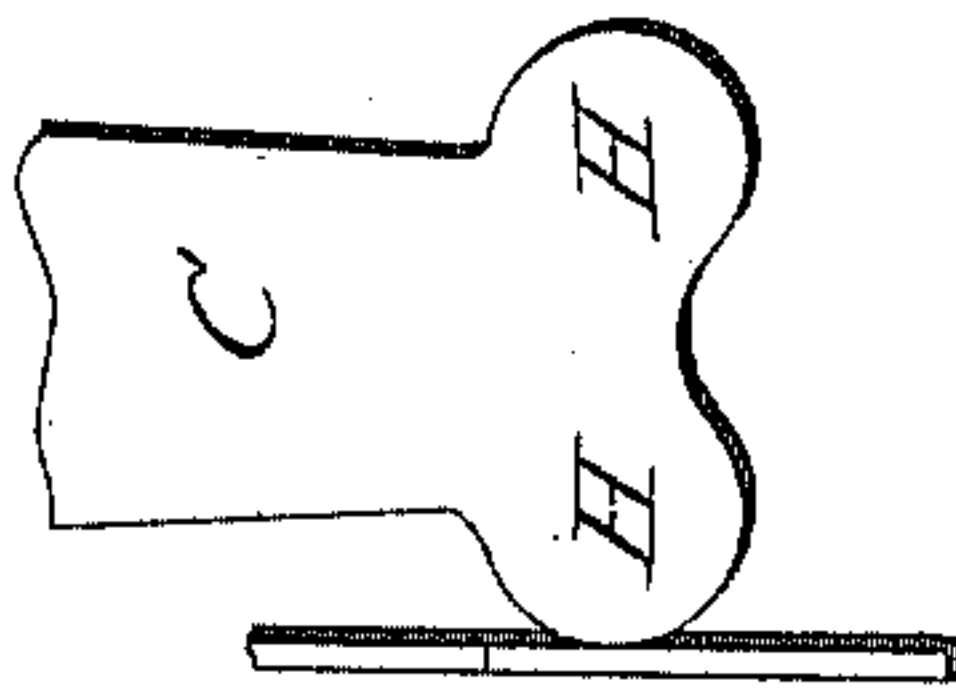


Fig. 3.



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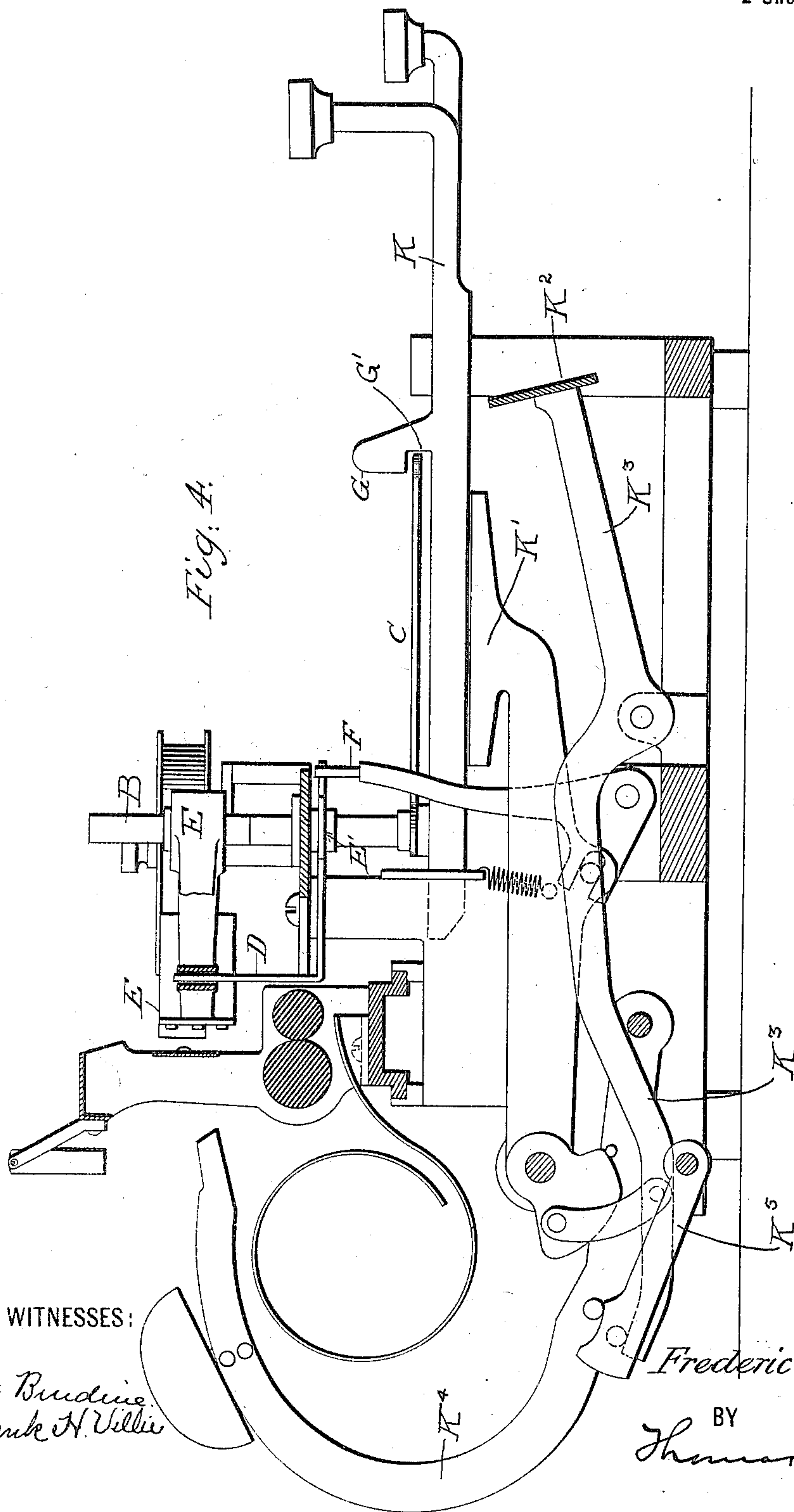
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2 Sheets—Sheet 2.

Fig. 4.



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UNITED STATES PATENT OFFICE.

FREDERIC W. HILLARD, OF NEW YORK, N. Y., ASSIGNOR TO THE ELLIOTT & HATCH BOOK TYPEWRITER COMPANY, OF SAME PLACE.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 661,472, dated November 6, 1900.

Application filed August 16, 1900. Serial No. 27,039. (No model.)

To all whom it may concern:

Be it known that I, FREDERIC W. HILLARD, a resident of New York, (Tottenville,) in the county of Richmond and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention is an improvement upon the style of type-writing machines illustrated and described in United States Letters Patent, as follows: No. 607,193, dated July 12, 1898; No. 607,274, dated July 12, 1898; No. 611,146, dated September 20, 1898; No. 624,864, dated May 9, 1899; No. 624,865, dated May 9, 1899; No. 640,699, dated January 2, 1900; No. 652,691, dated June 26, 1900.

The invention consists in the specific features hereinafter described and illustrated in the drawings and set forth in the claims.

In the accompanying two sheets of drawings, which form a part of this specification, Figure 1 is a plan view of several key-levers and the type-wheel actuators and stop-arm. Figs. 2 and 3 are detailed drawings, on an enlarged scale, showing the free end of the type-wheel stop-arm in engagement, respectively, with two key-levers, one being the lever nearest the middle of the keyboard and the other being the farthest from the middle of the keyboard. Fig. 4 is a side view, partly in section, showing the printing mechanism.

There is illustrated in Fig. 1 a carrier for the type-wheel, which is mounted lengthwise upon the type-wheel shaft, the two actuators for the type-wheel which engage with the faces of the carrier on opposite sides of the type-wheel shaft, and certain key-levers for actuating the type-wheel carrier, and thereby the type-wheel. These levers also actuate the hammer; but this feature need not be described.

The type-wheel shaft A is set vertically in the machine. Upon it is sleeved a type-wheel carrier B, which consists of a hollow tube or collar to fit over the type-wheel shaft, from the lower end of which tube a stop-arm C for the type-wheel extends toward the front of the machine and at the upper end of which is a type-wheel-positioning member D. This member consists of a positioning-arm which extends backward in the opposite direction

to the stop-arm and at its rear end is turned upwardly, so as to engage with a spoke of the type-wheel E and position the wheel. The carrier B also consists of two wings E' E', which extend out from the type-wheel shaft at right angles to the line of the stop-arm and positioning member, one wing lying on one side of the machine and the other on the other side. These two wings are provided with slots E² E² and centering-faces E³ E³, with which the upper ends of the type-wheel actuators F F engage. When the parts are in normal position, the upper ends of the actuators engage with the two centering-faces, and the wheel is held in its middle position. As either actuator is driven rearwardly upon the depression of a key it strikes the face of the slot E² on the same side of the machine with it in the line of its travel and rotates the type-wheel carrier B on the type-wheel shaft, and with it the type-wheel. The end of an actuator when brought into engagement with a face of a slot E², as described, is on one side of and in front of the type-wheel shaft. The path of the actuator is in a straight line toward the rear end of the machine. Therefore as it moves rearwardly the actuator will approach more nearly to the type-wheel shaft and will travel down the slot E² a greater or less distance, depending on how far the actuator is driven. This locks the type-wheel carrier and actuator together and positions the actuator properly to engage with the other face of the slot E² to return the type-wheel to normal position when the key-lever K is released.

The angle through which the type-wheel carrier D is rotated by the actuator is determined by the location of the key-lever which is depressed. Each lever is provided with a stop G, extending upward from the lever. These stops are slotted at their bases G', so that the stop-arm may pass under them through the slots until the key-lever which is depressed is reached, when the stop-arm will come into engagement with the key-lever and stop the rotation of the type-wheel carrier and the type-wheel, thus positioning the type-wheel for printing.

The operation of the type-wheel carrier by the actuators is more clearly and fully illus-

trated in Fig. 4. On depression key-lever K is first brought in contact with the universal bar K', through which an actuator F for the type-wheel is operated to set the type-wheel
 5 E by a mechanism that is well understood. Upon still further depression the key-lever actuates the universal bar K², mounted on the front end of the lever K³ for actuating the printing-hammer K⁴. This printing-hammer-
 10 actuating lever K³ acts through a pivoted cam-lever K⁵ to throw the printing-hammer to the printing position. The stop-arm C has been heretofore constructed with substantially square ends to contact with the stops G
 15 of the key-levers. With such construction the point on the stop-arm which engages with the various key-levers is substantially the same for all the levers. This results in wear upon the stop-arm and consequent displacement of the type-wheel. It is not permissible that there should be any wear upon the stop-arm. The object of my invention is to prevent wear by changing the point of contact on the stop-arm with each key-lever.
 20 To accomplish this, instead of providing a stop-arm with a square end I provide a stop-arm which has two circular or nearly-circular lobes H H, the face of one of which engages with the key-levers on one side of the machine and the face of the other of which engages with the key-levers on the other side
 30 of the machine. It follows that the point of contact between the end of the stop-arm and the key-lever will depend upon the position of the key-lever in the keyboard. This is illustrated in detail in Figs. 2 and 3, which show the range of the contact-point on the end of the stop-arm, and therefore the length

of the arc that must be shaped, as here indicated. An advantage arises from having two 40 circular lobes instead of striking one circle around the end of the stop-arm in that the angular difference between successive contact-points increases as the diameter of the arc upon which these contact-points are located diminishes. 45

It is obvious that the configuration of the end of the stop-arm might be changed and the shape of the stop-arm itself might also be changed and that one lobe might be provided 50 to engage with the key-levers on both sides of the machine.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. In a type-writer, the combination of a 55 type-wheel, key-levers, means for rotating the type-wheel by the key-levers, and a stop-arm and stops operated by the different key-levers to set the wheel, the configuration of the end of the stop-arm being such as to secure 60 a different point of contact with the different stops, substantially as described.

2. In a type-writer, the combination of a type-wheel, key-levers, means for rotating the type-wheel by the key-levers, and a stop-arm 65 and stops operated by the different key-levers to set the wheel, the end of the stop-arm being provided with two circular contacting faces, substantially as described.

Signed by me in New York city, New York, 70 this 10th day of August, 1900.

FREDERIC W. HILLARD.

Witnesses:

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