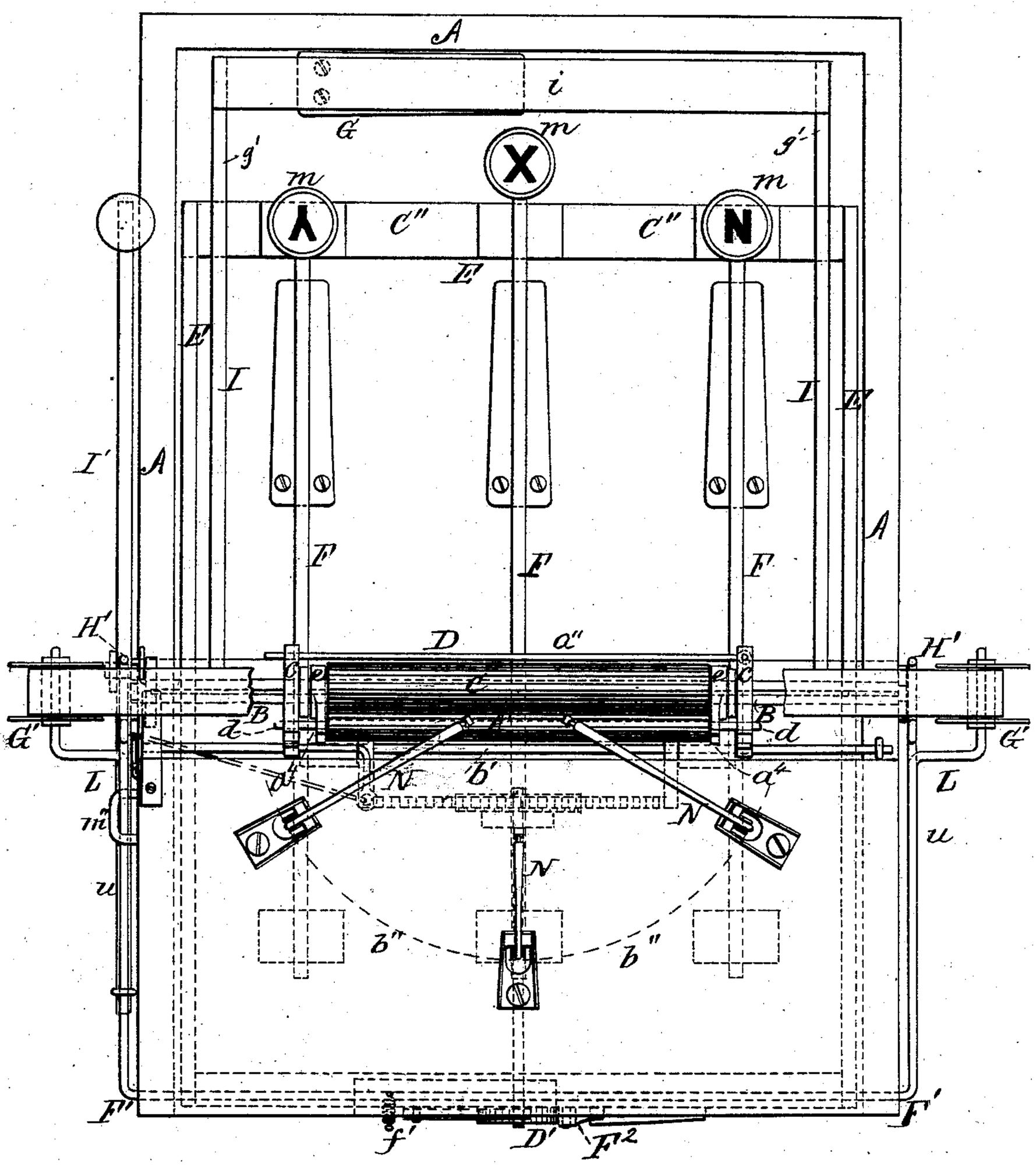
4 Sheets—Sheet 1.

F. SHOLES.
Type-Writing Machine.

No. 225,078. Patented Mar. 2, 1880.

Fig. 1.



Witnesses.

Henry T. Parker.

William R. Whitney

Inventor.

Frederick Sholes.

by James A Whitney

Attorney.

4 Sheets—Sheet 2.

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Fig. 2.

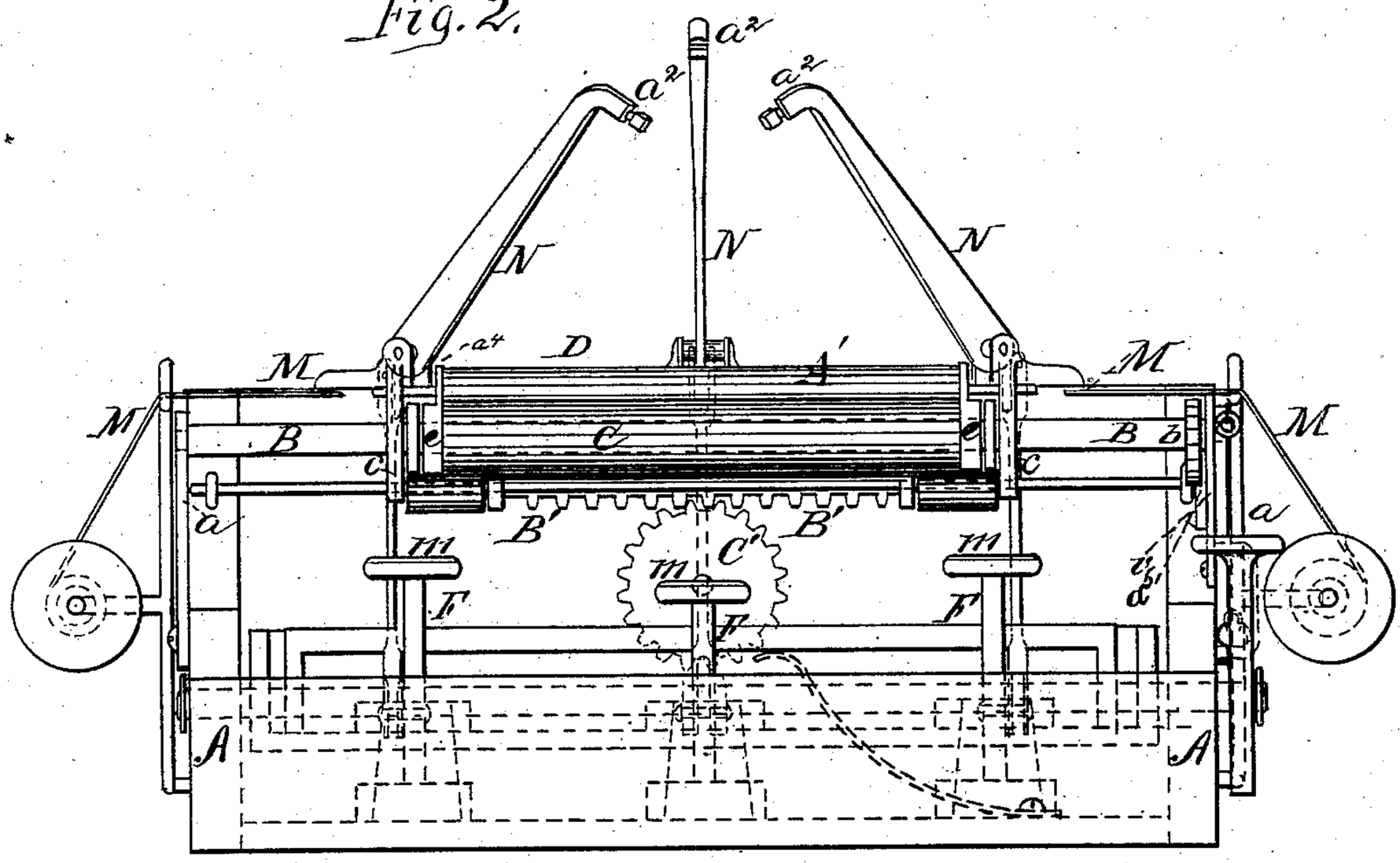
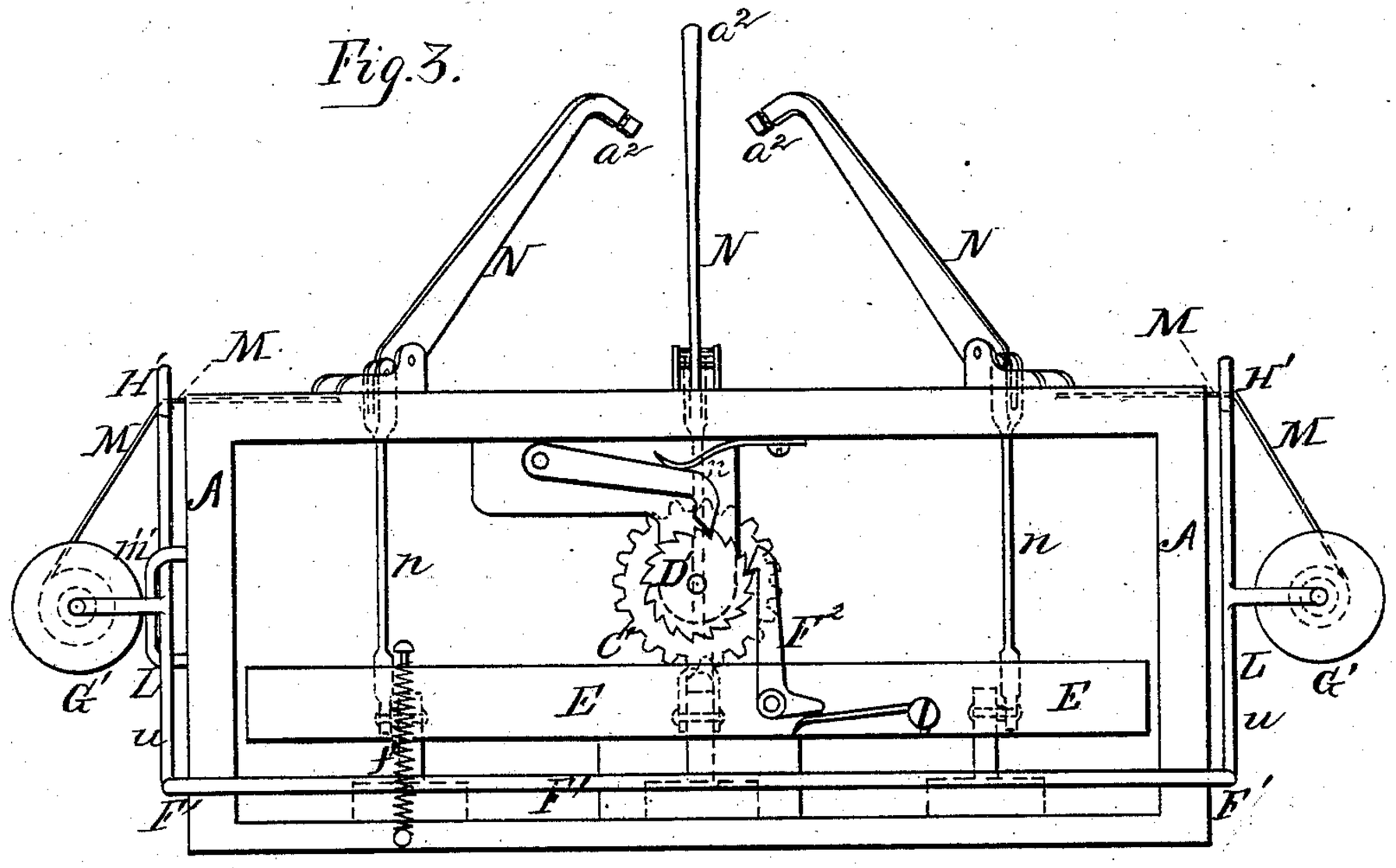


Fig. 3.



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4 Sheets—Sheet 3.

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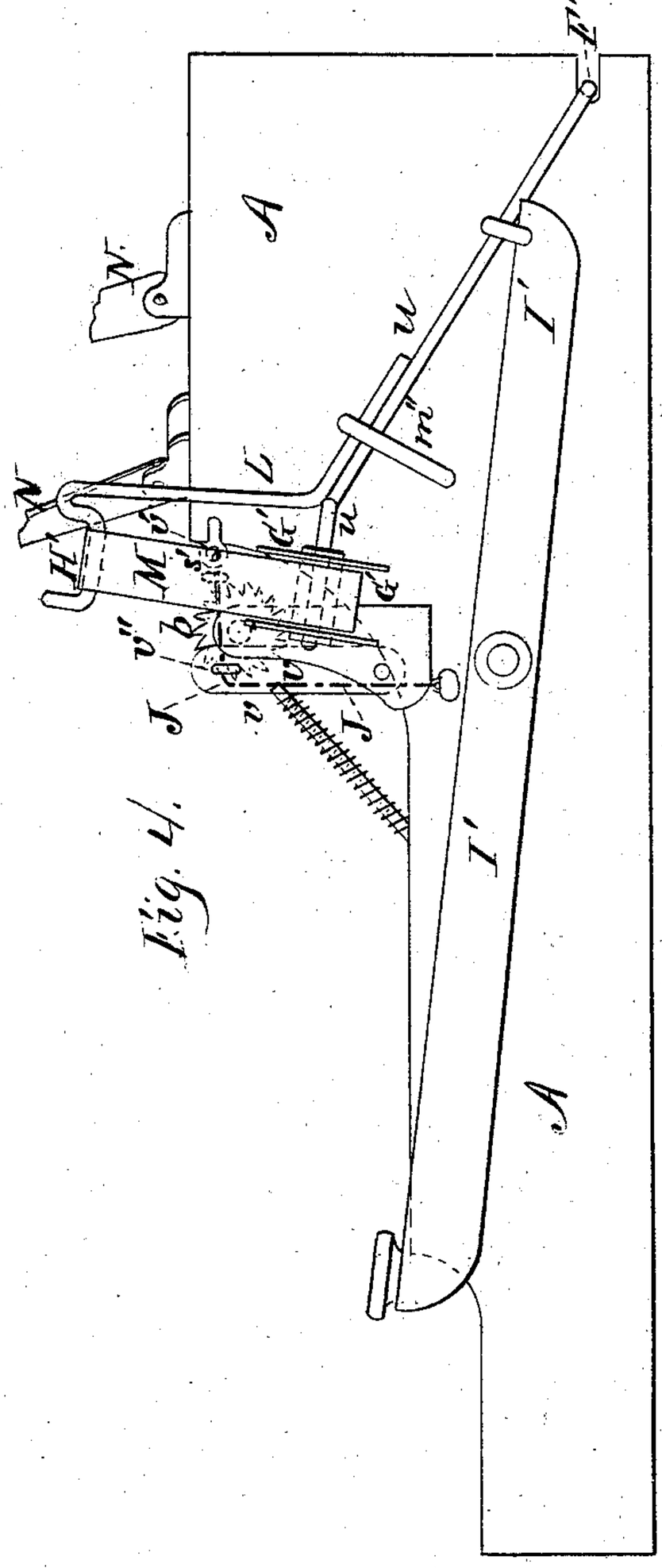

Fig. 4.

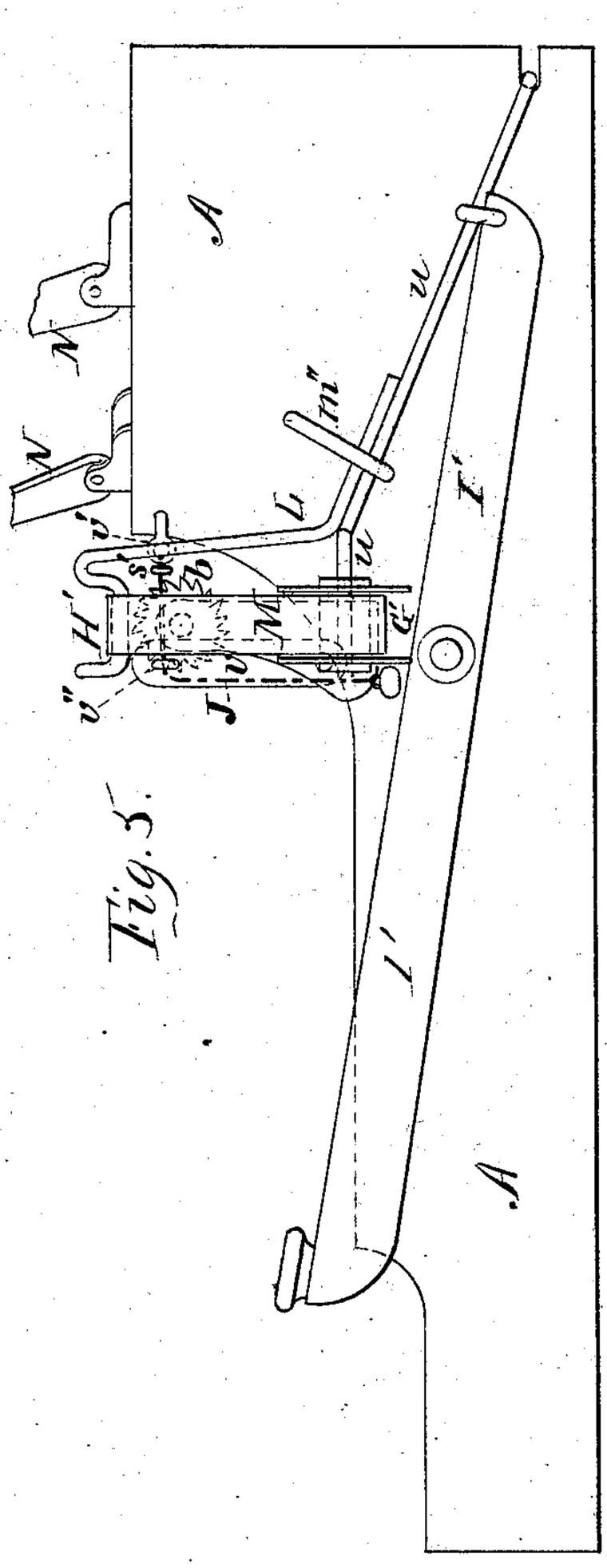

Fig. 5.

Witnesses.
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4 Sheets—Sheet 4.

F. SHOLES.

Type-Writing Machine.

No. 225,078. Patented Mar. 2, 1880.

Fig. 8.

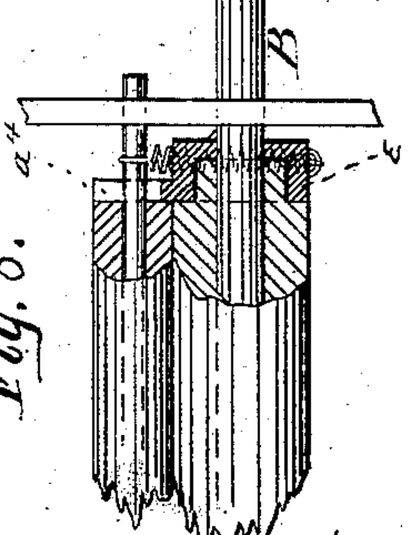


Fig. 7.

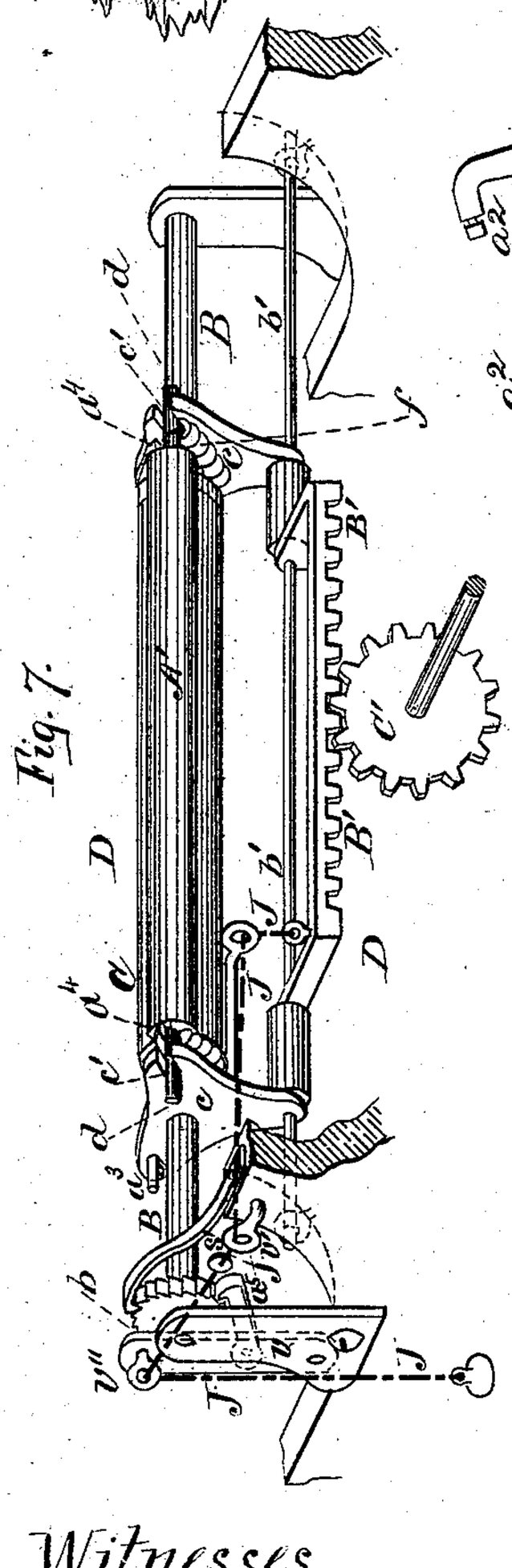
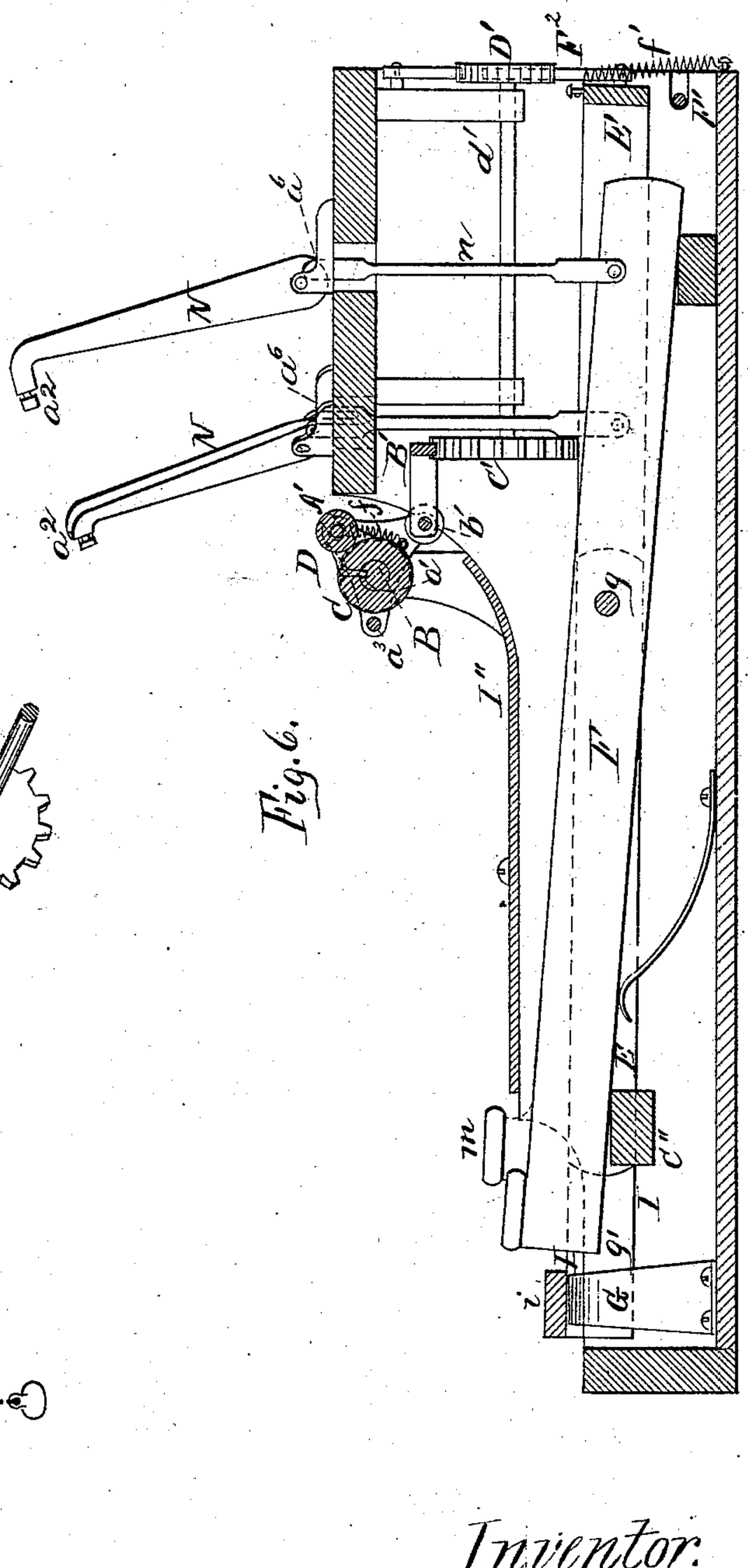


Fig. 6.



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William R. Whitney

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by James A Whitney.
Attorney.

UNITED STATES PATENT OFFICE.

FREDERICK SHOLES, OF NEW YORK, ASSIGNOR OF TWO-THIRDS OF HIS RIGHT TO WILLIAM C. PAGE, OF SAME PLACE, AND GEORGE W. CARR, OF BROOKLYN, N. Y.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 225,078, dated March 2, 1880.

Application filed June 5, 1879.

To all whom it may concern:

Be it known that I, FREDERICK SHOLES, of the city, county, and State of New York, have invented certain Improvements in Type-Writers, of which the following is a specification.

This invention comprises a type-writing machine in which the ink-ribbon is placed longitudinally above the roller or other support of the paper or like material while the same is being impressed or printed upon, the said ink-ribbon, moreover, being capable of being lifted at will from said roller or support by a lever suitably applied, by which means the progress of the printing may be inspected with much greater readiness and facility than is the case with type-writers hitherto in use.

The invention also comprises a carriage which carries the ink-ribbon, and which is placed lengthwise of the roller that sustains the paper while being printed upon, in combination with said ribbon, roller, a series of type-actuating levers, and mechanism for lifting and lowering the carriage, whereby provision is made for effectively putting into practice the feature of the invention first hereinbefore named.

The invention further comprises certain novel combinations of parts for insuring the proper relation of the ink-ribbon with the series of types, actuating-levers, and the rollers which support and move the paper with reference to said types for conveniently raising and depressing the ink-ribbon, as hereinbefore indicated, for insuring the rapid and forcible operation of the system of types and actuating-levers, and for otherwise insuring, in general and in detail, the effective operation and convenient manipulation of the machine.

Figure 1 is a plan view, Fig. 2 is a front view, and Fig. 3 a rear view, of an apparatus embracing my said invention. Figs. 4 and 5 are side views of the same. Fig. 6 is a vertical longitudinal sectional view of the same. Figs. 7 and 8 are detached detail views of certain parts thereof, Fig. 8 being on a larger scale than the others.

Upon a frame-work, A, of rectangular or other suitable shape, are two standards or bearings, *a*, for the support of a shaft, B, grooved along its length, and provided at one end with a ratchet-wheel, *b*, the purpose of which is hereinafter fully set forth. Upon this shaft B is a roller, C, which, by means of a suitable spline, *a'*, (shown in Fig. 6,) projecting therefrom into the aforesaid groove of the shaft, is caused to rotate with, but not on, said shaft, and is at the same time rendered capable of longitudinal movement upon the same.

D is a carrier composed of two end pieces, *c*, one at each end of the roller C, connected by rods or braces a^3 *b'*. Each of the end pieces, *c*, is radially notched or slotted, as shown at *c'* in Fig. 7. These notches *c'* receive the ends of the shaft *d* of a secondary roller, A', which is kept coincident in position with the roller C by means of slotted lugs a^4 on washers *e*, which are interposed on the shaft B between the end pieces, *c*, of the carrier and the adjacent extremities of the roller C.

Inasmuch as the shaft *d* passes through the lugs of the aforesaid washers, it follows that the latter, like the carrier itself, cannot turn with or upon the shaft B. Springs *f*, extending from the washers to the shaft *d*, and suitably collared on the latter, draw the roller A' to or against the roller C.

Attached to the lower rod or brace, *b'*, of the carrier is a rack, B', which rests upon and gears with a pinion, C', the shaft *d'* of which has upon its opposite extremity a ratchet-wheel, D'.

Placed within the frame-work A is a rectangular horizontal frame, E, pivoted on a transverse rod, as shown at *g*, and having at its rear end a pawl, F^2, which acts in conjunction with the ratchet-wheel D'. The rearmost end of the frame E is drawn downward by a spring, *f'*. When the forward end of said frame is depressed the rear is elevated to bring the pawl into gripe with a tooth of the ratchet-wheel D', so that when the said frame is released, its rear end being brought downward by the spring *f'*, said pawl turns the said ratchet-wheel a fraction of a revolution, and thereby, through the pinion C' and rack B', gives longitudinal movement for a certain dis-

tance to the carrier D and the rollers carried thereby.

F are the keys from which both the carrier and the series of types are primarily worked. Each key is composed of a lever of the first order, having at its forward end a knob, *m*, upon which is provided a letter, figure, or sign corresponding to that of the type to be actuated by it, and each also having its rear end connected by a rod, *n*, with the short arm a^6 of a type-bearing lever, N, of the first order, the type-bearing levers having their fulcra arranged on the arc of a circle, as indicated by the dotted line *b''* in Fig. 1, so that the free or type ends a^2 of all the levers, when depressed, will invariably strike at the same point in space, the type-levers, of course, being operated one after another. The forward end of each key is moreover extended over the cross-bar C'' of the frame E, so that when any one of the keys has its forward end depressed to actuate a type-lever to bring downward its type the frame has its rear elevated to enable the pawl F^2 to catch upon a tooth above it of the ratchet-wheel D', and so that when the key is released the reverse movement of the said frame, occasioned by its spring *f'*, will cause the said ratchet-wheel to be partially turned by the said pawl, and thereby, as hereinbefore explained, move the carrier and its rollers longitudinally a certain distance, this distance being that required between the letters of words imprinted by the successive action of the several types, the frame, and of course the paper or material sustained thereon, as hereinafter explained, being thus automatically moved a sufficient distance after the impression of one letter or sign, and before that of the succeeding one.

In order to provide for giving a like movement to the carrier when a simple space is desired, as between sentences or the words of a sentence, an adjunctive lever, I, is pivoted to the rod which provides the fulcra of the keys. This lever I is normally pushed upward by a spring, G, and preferably composed of two side bars, *g'*, and a cross-piece, *i*, which latter lies in such position as to be readily depressed by the hand of the operator, so that the side bars, depressing the forward end of the frame E, actuate the carrier in the same manner as is done by the movement of the keys, as hereinbefore explained. The carrier, being thus operated while a line of printing is being formed on the paper, stops when the limit of lateral movement is reached, and requires to be then drawn backward preparatory to a repetition of said movement. This is done by a cord, J, which extends from the carrier to and through a fixed eye, *v'*, then to and through an eye, *v''*, in the swinging bar *v*, which carries the pawl a^5 and its spring, which pawl acts in contact with a ratchet-wheel, *b*, on the adjacent end of the shaft B to partially turn the same at intervals, as hereinafter more fully explained.

Upon the cord J, at a suitable point along the length thereof, is a knot or stop, *s'*, which, from its size, is incapable of passing through the eye *v''* of the bar *v*. By simply pulling upon this cord the carrier is drawn back, as and for the purpose just indicated. When toward the end of the pull on the cord the stop *s'* strikes the bar *v*, and, tilting the same forward, causes the pawl a^5 to turn the ratchet-wheel *b*, and consequently the shaft B and the roller C thereon, a distance sufficient to feed the paper the distance required for the printing or impressing of another line, whereupon the successive operation of the keys causes a repetition of the intermittent movement of the carrier and the requisite operation of the types to form another line printed or impressed upon the paper. Of course there is provided to the ratchet-wheel *b*, as also to the ratchet-wheel D', a suitable stop-pawl for preventing any backward action of the said ratchet-wheels.

The keys, apart from their knobs *m*, are covered by a sheet-metal plate, I'', which is fixed upon the frame-work A, and the rear part of which is curved upward toward the carrier D.

The paper or material to be printed upon is first passed upward between the roller C and the roller A', and thence passes, in the operation of the apparatus, down the curved surface of the plate I'', and then upon the flat main portion of the same.

L is the pivoted carriage of the inking-ribbon M, said carriage consisting of two lateral arms, *u*, as indicated in Fig. 4, attached at their rear ends to a pivoted rod, F'. Upon the forward or free end of each arm *u* of said carriage is a reel, G, from one to the other of which extends the inking-ribbon M, which latter is of the character ordinarily used in type-writing machines. Guides H' are provided on the just-mentioned free ends of the arms *u* in such manner that the ribbon is stretched horizontally over and upon the roller C, so that when the types a^2 descend they will fall upon the ribbon, and by such impact cause the impression of ink or color from the ribbon to be formed upon the paper supported below said ribbon by and on the roller C.

At one side of the frame-work A is a lever, I', the rear end of which is connected with the adjacent arm *u* of the carriage L, so that by depressing the forward end of said lever the carriage will be elevated to lift the inking-ribbon clear of the roller C, or, in other words, clear of the paper upon which the printing is being impressed, to a distance which permits the inspection at a glance of said paper, and, consequently, the easy rectification of any mistake. At *m''* are guides attached to the frame-work A, and which steady the arms *u* against lateral displacement.

What I claim as my invention is—

1. In a type-writing machine, a vertically-movable ink-ribbon placed longitudinally above the support which, during the action of the type, holds the paper or material to be marked, in combination with a lever for operating it, substantially as and for the purpose herein set forth.

2. The ink-ribbon carriage placed astride of the length of the roller C, in combination with said roller, the ink-ribbon above the same, the series of type-operating levers, and the mechanism for lifting and lowering the carriage, substantially as and for the purpose herein set forth.

3. The lever I′, in combination with the ink-ribbon carriage L, which carries the ink-ribbon in the herein-described relation with the rollers C A′, and the series of type-operating levers, substantially as and for the purpose herein set forth.

4. The combination of the tilting frame E, having the pawl F^2, the ratchet-wheel D′, connected by gearing with the rack B′ of the carrier D, and the series of keys constructed and applied to actuate the series of type-operating levers, whereby a positive movement is given to the carriage, substantially as and for the purpose herein set forth.

5. The carrier D, constructed with the slotted or recessed bearings c', in combination with the shaft d of the roller A′, lugs a^4 of washers e, and the shaft of the roller c, and the springs attached to the washers and to the shaft of the roller A′, in combination with the ink-ribbon and series of type-operating levers and mechanism for operating the same, substantially as and for the purpose herein set forth.

6. The pawl a^5 and ratchet-wheel b, in combination with the shaft B of the roller C, the roller A′, carrier D, and cord J, having the stop s', substantially as and for the purpose herein set forth.

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Witnesses:
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WILLIAM R. WHITNEY.