

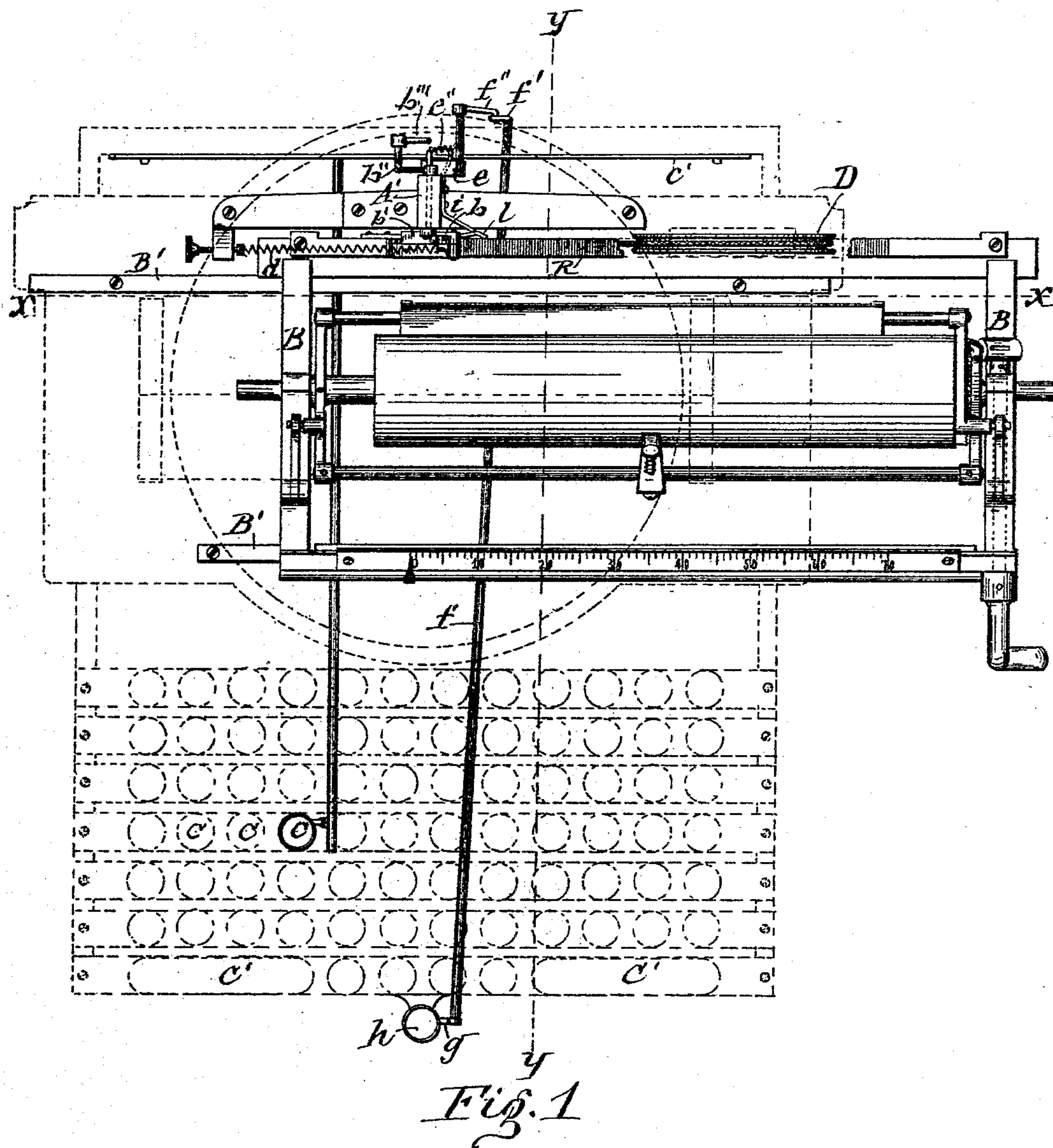
(No Model.)

3 Sheets—Sheet 1.

A. LARSEN.
TYPE WRITING MACHINE.

No. 515,710.

Patented Feb. 27, 1894.



WITNESSES:

J. J. Laass
C. A. Bendixen

INVENTOR:

August Larsen
By E. Laass
his ATTORNEY

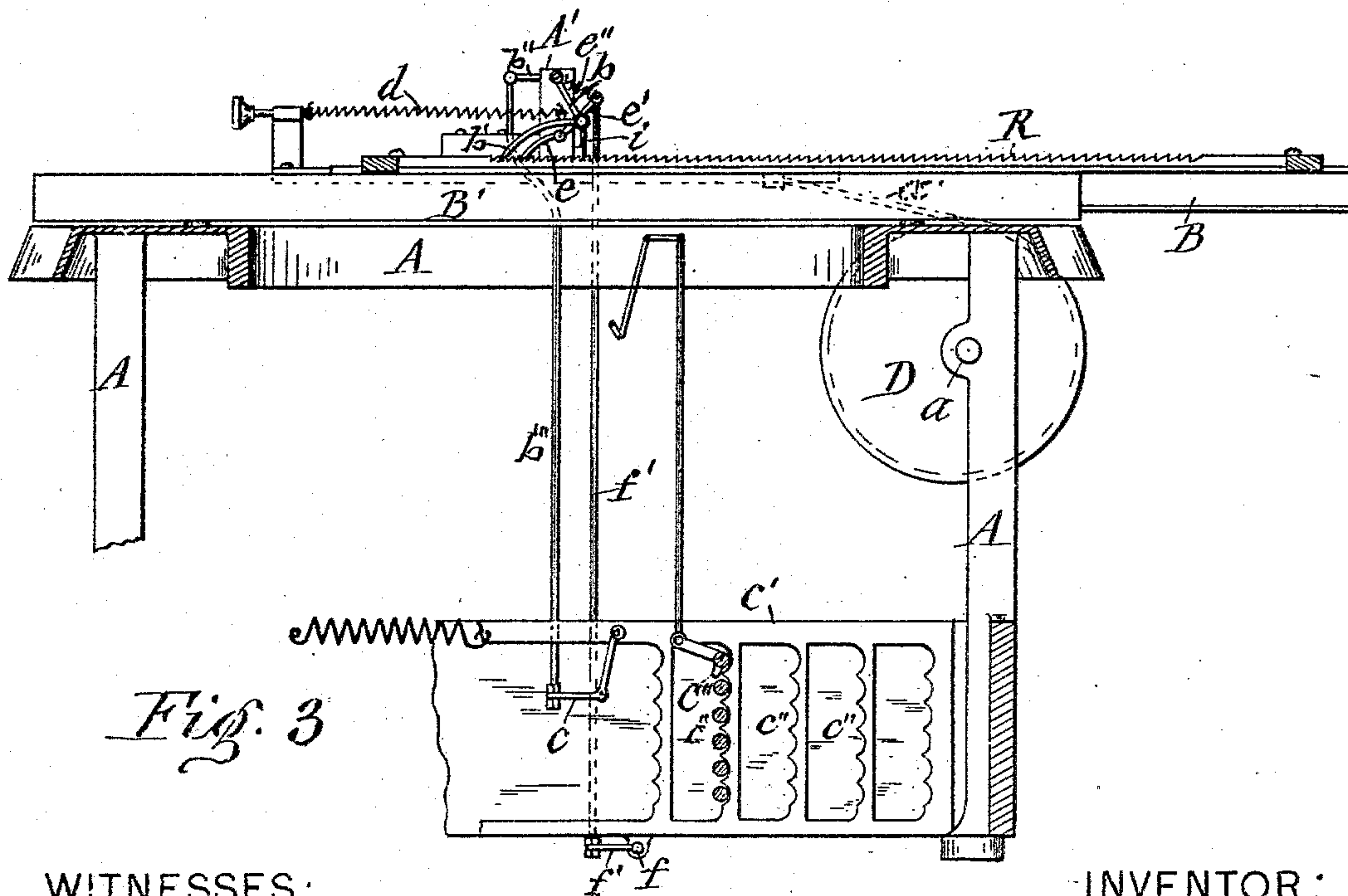
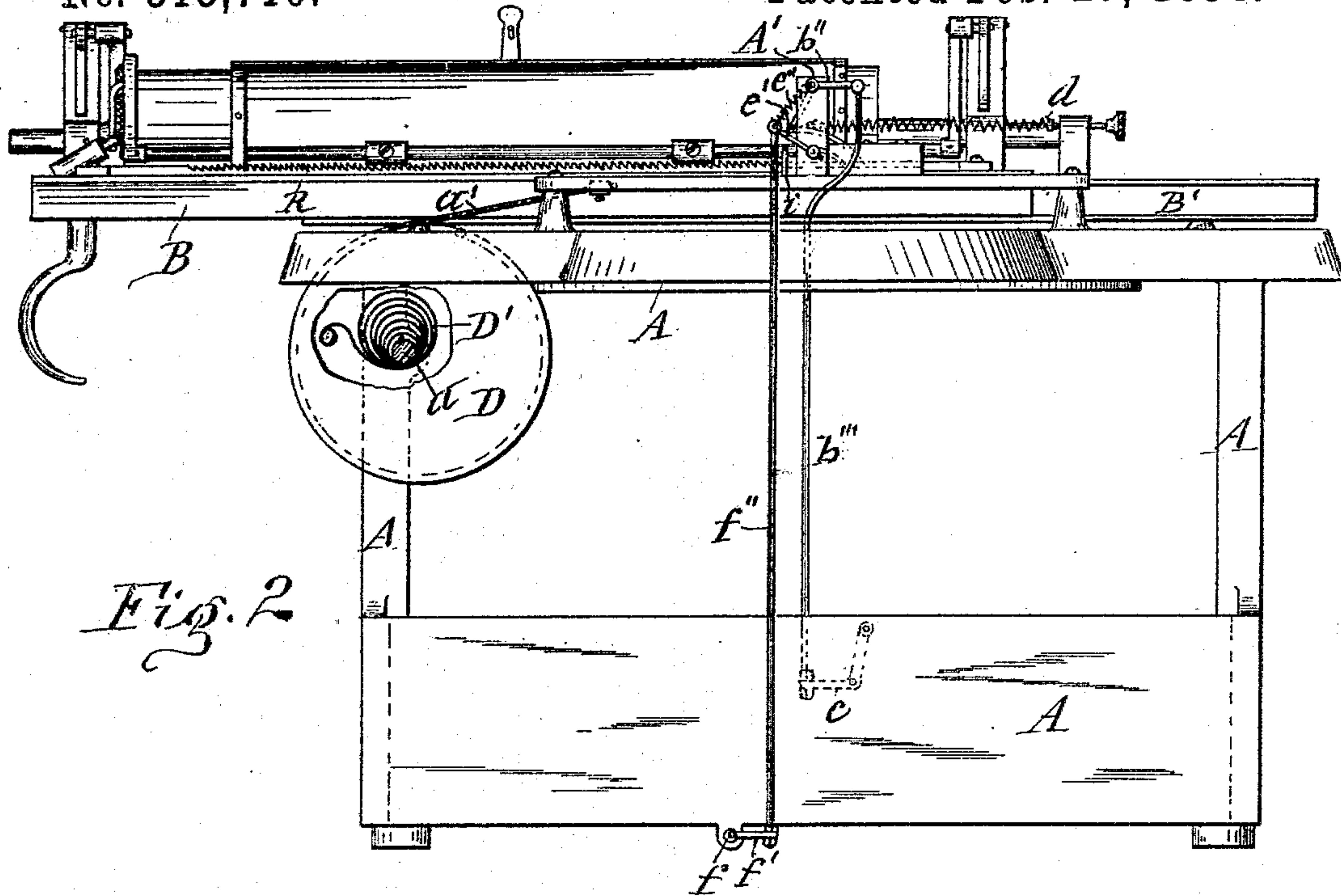
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3 Sheets—Sheet 2.

A. LARSEN.
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Patented Feb. 27, 1894.



WITNESSES:

J. J. Laass
C. L. Bendixon

INVENTOR:

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A. LARSEN.
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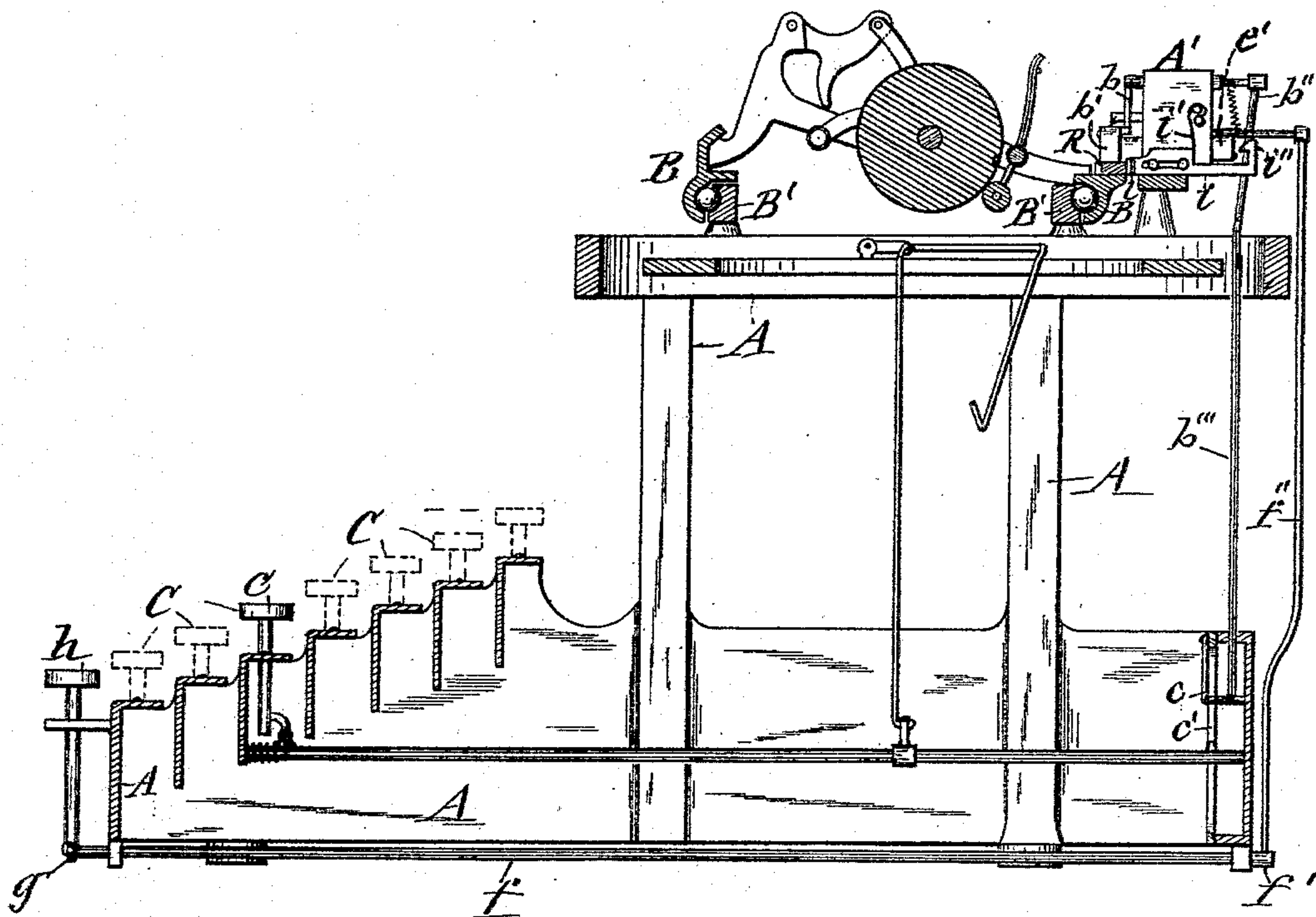


Fig. 4

WITNESSES:

J. J. Laass
C. L. Bendixon

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UNITED STATES PATENT OFFICE.

AUGUST LARSEN, OF SYRACUSE, NEW YORK, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF THREE-FOURTHS TO LEONARD G. ABBOTT, HENRY M. CHASE, AND FRANK H. WELLS, OF SAME PLACE, AND ERASTUS JONES, OF HOMER, NEW YORK.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 515,710, dated February 27, 1894.

Application filed May 11, 1893. Serial No. 473,816. (No model.)

To all whom it may concern:

Be it known that I, AUGUST LARSEN, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful
5 Improvements in Type-Writing Machines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to the class of "type writing machines" in which the paper carriage is automatically returned to its starting position and propelled during the operation of writing by means of mechanism actuated by the printing keys, and the invention consists in an improved construction and combination of parts as hereinafter described and set forth in the claims.

In the annexed drawings, Figure 1 is a plan view of a type-writing machine embodying
20 my invention, portions thereof being either omitted or merely indicated by dotted lines to more clearly show the essential parts of my invention. Fig. 2 is a rear face view of the same. Fig. 3 is a vertical transverse section
25 on line *x, x*, in Fig. 1. Fig. 4 is a vertical section on line *y, y*, in Fig. 1 viewed toward the rear of the machine.

Similar letters of reference indicate corresponding parts.

30 A—represents the frame of the type-writing machine, B—the paper carriage, and C—C—the printing keys, all of which parts are arranged in the usual and well known manner, and are essential to the application
35 of my invention.

The paper-carriage B—I cause to be drawn automatically to its starting position by means of a suitable motor connected to the machine, and move said carriage in opposition
40 to the motor by suitable propelling mechanism operated by the printing keys C—C—or spacing keys C'—as may be required in the process of writing. To arrest the advance movement of the carriage when desired I employ
45 suitable tripping mechanism which releases the carriage from the propelling mechanism and allows the carriage to automati-

cally return to its starting position. Said motor, as well as the propelling mechanism and tripping mechanism is susceptible of
50 many modifications and I therefore do not wish to be limited specifically to the construction and combination of parts hereinafter described, which, however, represents my preferred plans of construction.

For the motor for automatically returning the carriage B—I prefer to employ the drum or wheel D—which is pivoted on a spindle or gudgeon *a*—projecting from the frame A—at or near the side from which
60 the carriage is started in the process of writing. A coil-spring D'—is attached at one end to the spindle *a*—and at the opposite end to the periphery of the drum. A cord
65 *a'*—is wound upon and secured at one end to the drum and at the opposite end to the carriage. The spring D'—is wound in such a direction as to resist the draft of the cord *a'*—in the operation of moving the carriage from its starting position.

To compensate for the increase in the tension of the spring during the movement of the carriage from its starting position I pivot the drum eccentrically so as to present gradually increasing radii to the portion of the
75 drum paying out the cord *a'*. The carriage B—rides on the usual tracks or ways B'—B'—which guide it in its movements.

For propelling the carriage B—I prefer to employ a suitable pawl and ratchet mechanism operated by the printing keys, and preferably attach the ratchet R—to top of the rear portion of the carriage.

To the adjacent portion of the frame A—or a bracket A'—secured thereto I pivot
85 the rock-arm *b*—to the free end of which is pivoted the primary pawl *b'*—which is held in engagement with the ratchet R—and at the same time drawn in opposite direction from that of the draft of the cord
90 *a'*—, by means of the spiral spring *d*—connected at one end to the top of the pawl and at the opposite end to the frame at or near the side farthest from the starting po-

sition of the carriage. To the axis or shaft of the rock-arm —b— is also fastened another arm —b''— which is connected by a rod —b'''— with one of the limbs of an elbow-lever —c— pivoted to the lower portion of the frame —A—. The other limb of said lever is pivoted to a longitudinally sliding bar —c'— which receives a reciprocating motion in common from all the printing keys —C—C— by means of cams —C''— on the horizontal shafts of said keys working in slots c'' in the bar —c'. Hence in operating any one of the said printing keys the lever —c— receives an oscillatory motion which, by means of the rod —b'''— and arm —b''—, is transmitted to the rock-arm —b—, the motion of which latter, together with the aid of the spring —d—, causes the pawl —b'— to push the ratchet —R— in opposition to the spring —D'— which latter tends to force the carriage —B— toward its starting position.

The tripping mechanism for releasing the carriage from its propelling mechanism, I prefer to construct as follows: Under the primary pawl —b'— I place a secondary pawl —e— which is pivoted to the frame —A— or to the bracket to which the primary pawl is pivoted. To the shaft or axis of said secondary pawl I attach a crank —e'— which I connect with the bracket —A'— by a spiral spring —e''— to normally hold the secondary pawl in engagement with the ratchet —R— and thus prevent the carriage from running back while the primary pawl —b'— is lifted out of the ratchet to obtain a new hold thereon.

To the base of the frame —A— I journal a shaft —f— which extends from the front to the rear of the frame and has attached to its rear end an arm —f'—, the free end of which is connected to the crank —e'— by a rod —f''.

To the front end of the shaft —f— is attached an arm —g—, to the free end of which is pivotally connected a suitable key-lever —h— supported in a convenient position on the frame —A—. By depressing said key-lever the shaft —f— is turned and thus the arm —f'— is caused to draw down the crank —e'— by the rod —f''. Said movement of the crank lifts the secondary pawl —e— out of the ratchet —R— and causes said pawl to also throw the primary pawl —b'— out of engagement with the ratchet. The carriage —B— is thus released from its propelling mechanism and in order to allow it to be drawn back to its starting position by force of the spring —D', I connect to the bracket —A'— a horizontal movable detent —i— forced toward carriage —B— by a spring —i'— and provided with an inward projecting catch or hook —i''— which is adapted to engage and retain the crank —e'— in its depressed position and thus retain the pawl —e— and —b'— out of the ratchet —R—.

To the carriage —B— is attached a cam —l— which is in such a position as to strike the adjacent end of the detent —i— when the carriage has arrived at its starting position. In striking said detent the cam pushes the same rearward and thereby causes the hook —i''— to release the crank —e'— which is then immediately drawn up by the spring —e''. This throws the secondary pawl —e— into engagement with the ratchet —R—, and at the same time releases the primary pawl —b'— which also immediately drops into the ratchet. The propelling mechanism is thus again set for operating the carriage.

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

1. In combination with the frame and paper-carriage, a spring drawing the carriage to its starting position, a ratchet attached to the carriage, a rock-arm mounted on the frame, a primary pawl on said arm engaging the ratchet and moving the same in opposition to the aforesaid spring, a secondary pawl pivoted to the frame and engaging the ratchet under the primary pawl, a crank connected to said secondary pawl, a lever pivoted to the frame and actuated by the printing keys, a rod transmitting motion from said lever to the aforesaid rock-arm, a shaft pivoted to the base of the frame and extending from front to rear thereof, cranks on opposite ends of said shaft, a finger-key operating the crank on the front end of the shaft, a rod connecting the rear crank with the crank of the secondary pawl, and springs holding the pawls in engagement with the ratchet, as set forth.

2. In combination with the frame and paper-carriage, a spring drawing the carriage to its starting position, a ratchet attached to the carriage, a rock-arm mounted on the frame and actuated by the printing keys, a primary pawl on said rock-arm engaging the ratchet, a secondary pawl pivoted to the frame and engaging the ratchet under the primary pawl, a crank connected to said secondary pawl, a key lever actuating said crank, a detent adapted to engage said crank, and a cam on the carriage throwing the detent out of engagement at the end of the return movement of the carriage, as set forth.

3. In combination with the frame and paper-carriage, a spring drawing said carriage to its starting position, a ratchet attached to the carriage, a rock-arm mounted on the frame and actuated by the printing keys, a primary pawl on said rock-arm engaging the ratchet, a secondary pawl pivoted to the frame and engaging the ratchet under the primary pawl, a crank connected to the secondary pawl, a detent adapted to engage the crank and hold it in its depressed position, a cam on the carriage throwing the detent out of engagement at the end of the re-

turn movement of the carriage, a shaft piv-
oted to the base of the frame and extend-
ing from the front to the rear thereof, cranks
on opposite ends of said shaft, a finger-key
5 operating the front crank, and a rod connect-
ing the rear crank with the crank of the sec-
ondary pawl, substantially as described and
shown.

In testimony whereof I have hereunto
signed my name this 27th day of April, 1893.

AUGUST LARSEN. [L. s.]

Witnesses:

H. M. SEAMANS,
C. L. BENDIXON.