

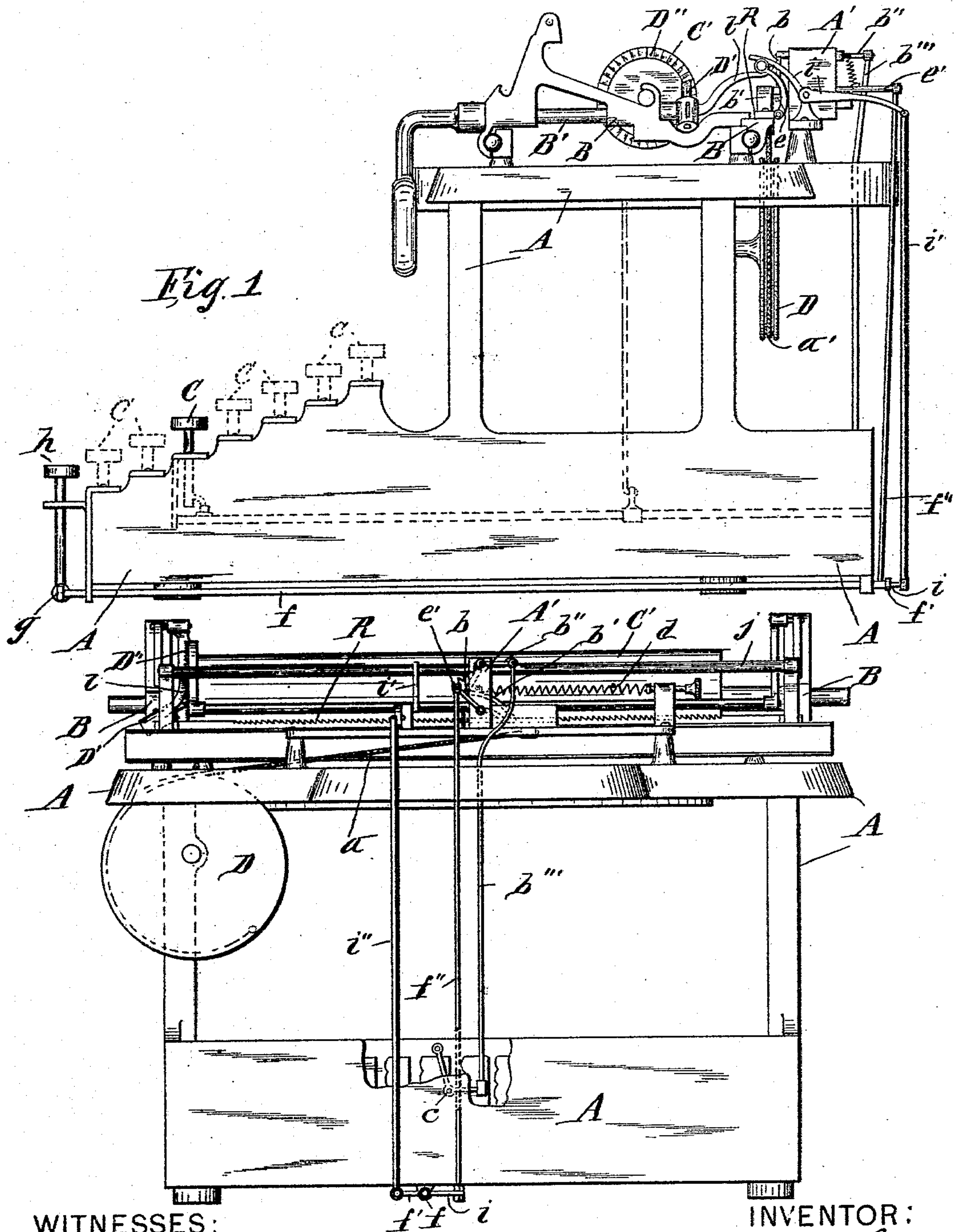
(No Model.)

2 Sheets—Sheet 1.

A. LARSEN.  
TYPE WRITING MACHINE.

No. 515,711.

Patented Feb. 27, 1894.



WITNESSES:

J. J. Laass.  
C. L. Bendixen

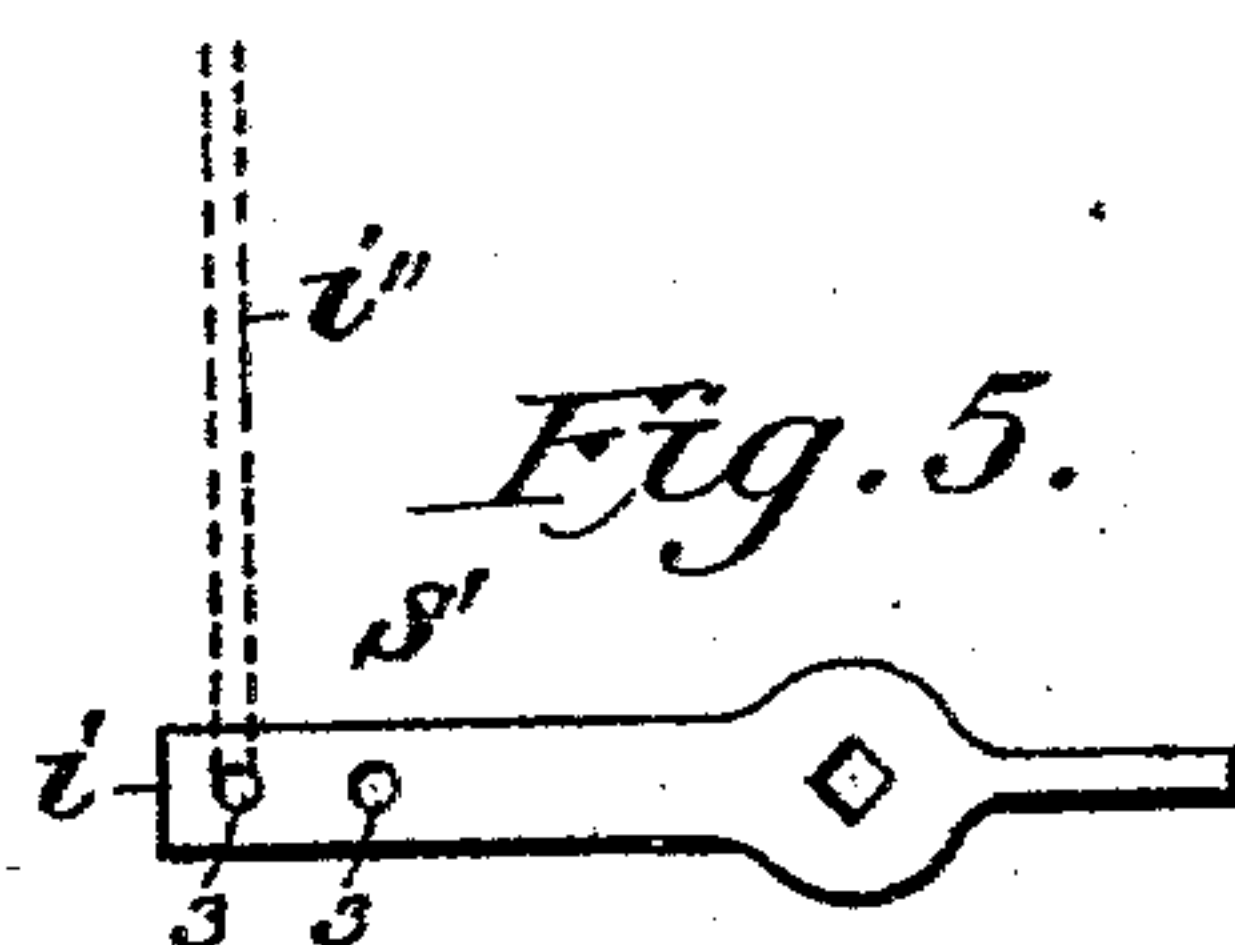
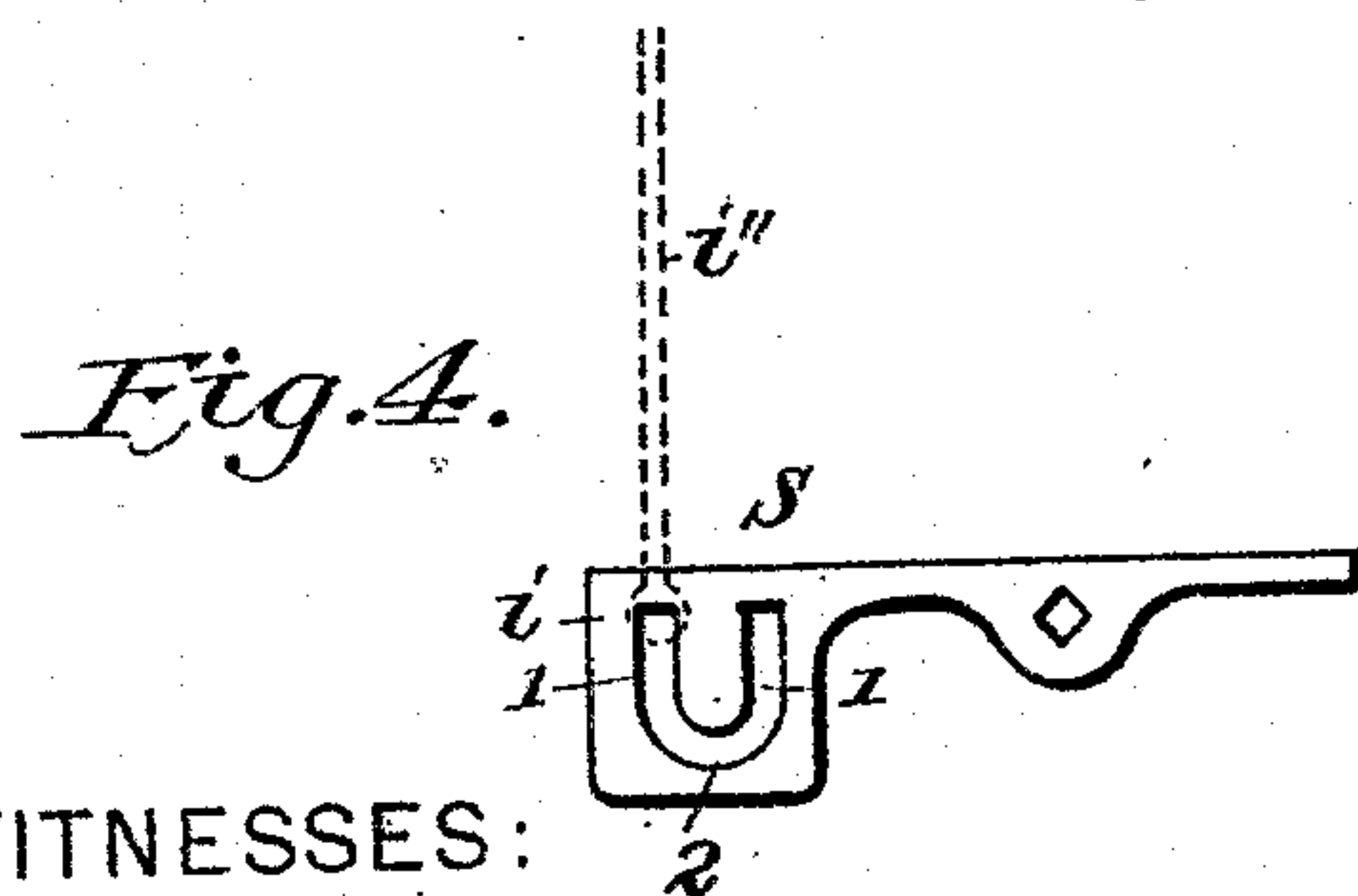
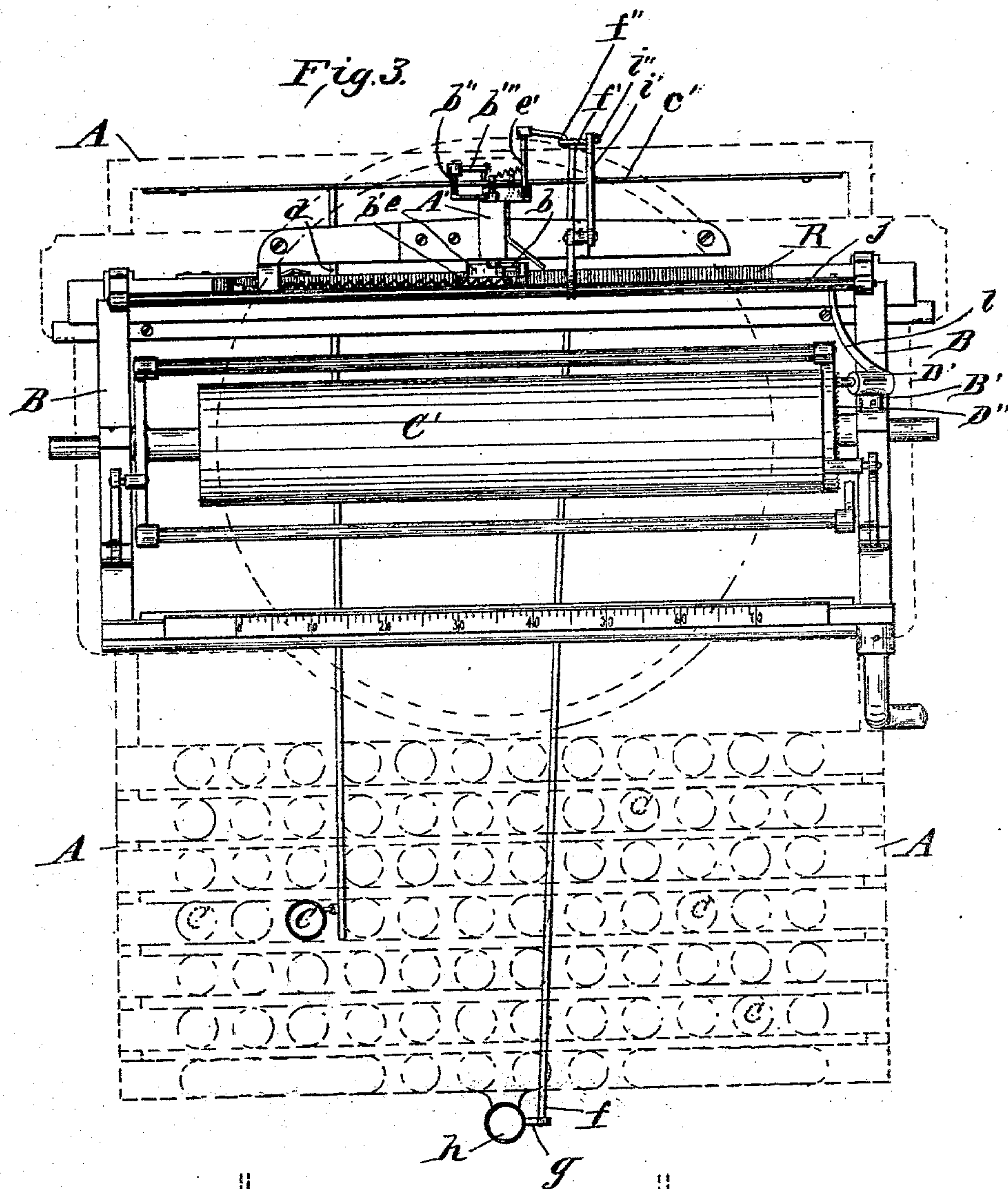
INVENTOR:

August Larsen  
By C. Laass  
ATTORNEY.

2 Sheets—Sheet 2.

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WITNESSES:

J. J. Laessz  
C. L. Bendixon

**INVENTOR:**

August Larsen  
By E. Larsen

ATTORNEY.



# 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. 515,711, dated February 27, 1894.

Application filed May 26, 1893. Serial No. 475,653. (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 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 mechanisms employed on type-writing machines for the purpose of turning the paper-carrying roller so as to space the lines of writing.

The invention is more particularly designed to be used in connection with an automatic retrograding paper-carriage. And it consists in a novel organization of mechanisms by means of which the aforesaid line-spacing is effected in a more convenient manner, and by the same finger-key or key-lever which releases the carriage from its propelling mechanism and allows the same to run back automatically to its starting position, all as hereinafter more fully described and set forth in the claims.

In the annexed drawings Figure 1 is an end elevation of a type-writing machine embodying my invention, those parts which are not essential to the operation of my invention being omitted. Fig. 2 is a rear elevation of the same. Fig. 3 is a top plan view, and Figs. 4 and 5 present detail views of the means for increasing or reducing the movement of the line spacing mechanism.

Similar letters and figures of reference indicate corresponding parts.

A—represents the frame of the type-writing machine which may be of any suitable and well known form.

B—denotes the paper-carriage on which is mounted the usual paper-carrying roller—C'. One end of this roller has affixed to it the annular ratchet—D'—, and to a rock-arm—B'—mounted on the carriage is connected the pawl—D'—which, in its engagement with the ratchet, turns the roller—C'—, and thereby moves the paper the distance required between the lines of writing.

The spacing mechanism with an automatically retrograding paper carriage has heretofore been effected by a key-lever separate and distinct from another key-lever which re-

leased the carriage from its propelling mechanism.

To render the machine more convenient in its operation I prefer to employ means for automatically drawing the carriage back to its starting position and at the same time turning the paper-carrying roller.

For automatically drawing the carriage back I prefer to employ the mechanism shown in my application for United States Patent, Serial No. 473,816, filed May 11, 1893, and which consists essentially of the spring-actuated drum or wheel—D—which is connected with the carriage by a cord or band—a'—, and has its spring wound in such direction as to exert its power in opposition to the movement of the carriage produced by the propelling mechanism actuated by the printing keys. Said propelling mechanism consisting of the ratchet—R—attached to the top of the carriage—B. To a bracket—A'—on the frame—A—is pivoted the rock-arm—b—to the free end of which is connected the primary pawl—b'—which is held in engagement with the ratchet by the spiral spring—d. To the 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 the longitudinally sliding bar—c'—which receives a reciprocating motion from the printing keys—C—C—in the usual and well known manner and as shown in my prior application hereinbefore referred to. The lever—c—thus receives an oscillatory movement which by means of the rod—b'''—and arm—b''—is transmitted to the rock-arm—b—, the motion of which latter with the aid of the spring—d—causes the pawl—b'—to push the ratchet toward the left hand side of the machine. To release the carriage from said propelling mechanism and allow it to run back to its starting position I employ the tripping mechanism consisting of the secondary pawl—e—which is pivoted to the bracket—A'. To the shaft of this latter pawl is attached the crank—e'—and the pawl is held normally in engagement with the ratchet by a suitable spring.

On the base of the frame—A—is journaled



a rock-shaft  $f$  which extends from the front to the rear of the frame and has fixed to its rear end an arm  $f'$  which is connected by a rod  $f''$  to the crank  $e'$ .  
 5 The front end of the rock-shaft  $f$  is provided with an arm  $g$  to which is connected the finger-key  $h$ . By depressing this key the shaft  $f$  is turned and thus the arm  $f'$  is caused to draw down the  
 10 crank  $e'$ . This lifts the secondary pawl  $e$  out of the ratchet  $R$  and causes said pawl to also throw the primary pawl  $b'$  out of the ratchet. The carriage is thus released and allowed to be drawn back  
 15 to its starting position by the spring-actuated drum or wheel  $D$ . For turning the paper-carrying roller  $C'$ , to space the lines of writing simultaneously with the retrograde movement of the carriage, I employ the same  
 20 finger-key  $h$  on the front end of the rock-shaft  $f$ , to the rear end of which latter I affix the arm  $i$  preferably formed in one piece with the arm  $f'$ . Upon the top of the rear portion of the frame  $A$  I mount  
 25 the rock-arm or two armed lever  $i'$ , one end of which is connected with the arm  $i$  by a rod  $i''$ , and the other end bears on the top of the rocking-bar  $j$  mounted on the carriage  $B$  and extending lengthwise  
 30 thereof. The rocking-bar bears on a lever  $l$  attached to the pawl  $D'$  which is held normally out of engagement with the ratchet  $D''$  of the roller  $C'$  by a suitable spring in the usual and well known  
 35 manner, not necessary to be here shown. In the operation of the machine the depression of the finger  $h$  turns the rock-shaft  $f$  and causes the two arms  $i$  and  $f'$  to rock. The arm  $f'$  actuates the tripping mechanism which allows the carriage to automatically  
 40 run back to its starting position as hereinbefore described. At the same time the arm  $i$  actuates the rock-arm  $i'$  and causes the same to depress the rocking-bar  $j$   
 45 which, by its downward pressure on the lever  $l$ , throws the pawl  $D'$  into engagement with the ratchet  $D''$  and thus turns the paper-carrying roller  $C'$ . In order to permit said motion of the roller to be regulated  
 50 for either increasing or diminishing the space between the lines of writing, I provide the rock-arm  $i$  with two or more means for attaching the rod  $i''$  at different distances from the fulcrum of said arm, as shown in  
 55 Fig. 2 of the drawings.

It is obvious that the means of adjustment may be made in various ways as shown in Figs. 4 and 5 of the drawings which present two forms, one of which consists of vertical  
 60 slots  $1-1$  united at the base by a transverse slot  $2$  in the arm  $i$  as shown at  $S$  in Fig. 4 in which case the lower end of the rod  $i''$  is provided with a hook or stud passing through one of the vertical slots  
 65 and adapted to be shifted from said slot through the horizontal slot  $2$  to the other vertical slot. Or the arm  $i$  may be pro-

vided with two or more holes  $3-3$  for the reception of the pin by which the rod  $i''$  is connected to said arm as shown at  $S'$  70 in Fig. 5 of the drawings.

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

1. In combination with the frame, paper-carriage, paper-carrying roller, and pawl and ratchet-mechanism turning said roller, a rock-shaft pivoted to the frame, an arm on said shaft, and a rod connected to said arm adjustably in its distance from the fulcrum 80 thereof and transmitting motion to the aforesaid pawl as set forth.

2. In combination with the frame, paper-carriage, paper-carrying roller, and pawl and ratchet-mechanism turning said roller, a rock-shaft pivoted to the frame, an arm on said shaft, a rocking bar mounted on the carriage and actuating the pawl, a rock-arm mounted on the frame actuating the rocking bar, and a rod transmitting motion from the arm of 90 the rock-shaft to the aforesaid rock-arm and connected to one of said arms adjustably in its distance from the fulcrum thereof as and for the purpose set forth.

3. In combination with the frame, paper-carriage, paper-carrying roller and pawl and ratchet-mechanism turning said roller, a rock-shaft extending from front to the rear of the frame, a finger-key on the front of the frame actuating said rock-shaft, an arm on the rear 100 end of said shaft, a rock-arm on the top of the rear portion of the frame, a rod transmitting motion from the arm of the rock-shaft to the aforesaid rock-arm and connected to one of said arms adjustably in its distance from 105 the fulcrum thereof, a rocking bar mounted on the carriage and actuated by said rock-arm, and an arm transmitting motion from said bar to the aforesaid pawl, as set forth.

4. In combination with the paper-carriage, 110 paper-carrying roller and pawl and ratchet mechanism turning said roller, a spring drawing the carriage to its starting position, mechanism propelling the carriage from said position, key-levers operating said propelling 115 mechanism, tripping mechanism releasing the carriage from its propelling mechanism, a rock-shaft pivoted to the frame, a finger-key operating said rock-shaft, an arm fixed to said shaft, a rock-arm mounted on the frame, 120 rods connecting the arm of the rock-shaft respectively with the aforesaid tripping mechanism and rock-arm, a rocking-bar mounted on the carriage and extending lengthwise thereof and operated by said rock-arm, and 125 an arm transmitting motion from the rocking bar to the aforesaid pawl, as set forth.

In testimony whereof I have hereunto signed my name.

AUGUST LARSEN. [L. s.]

Witnesses:

J. J. LAASS,

C. L. BENDIXON.