(No Model.) 3 Sheets—Sheet 1.

E. H. BERRY.

TYPE WRITING MACHINE.

No. 498,100. Patented May 23, 1893.

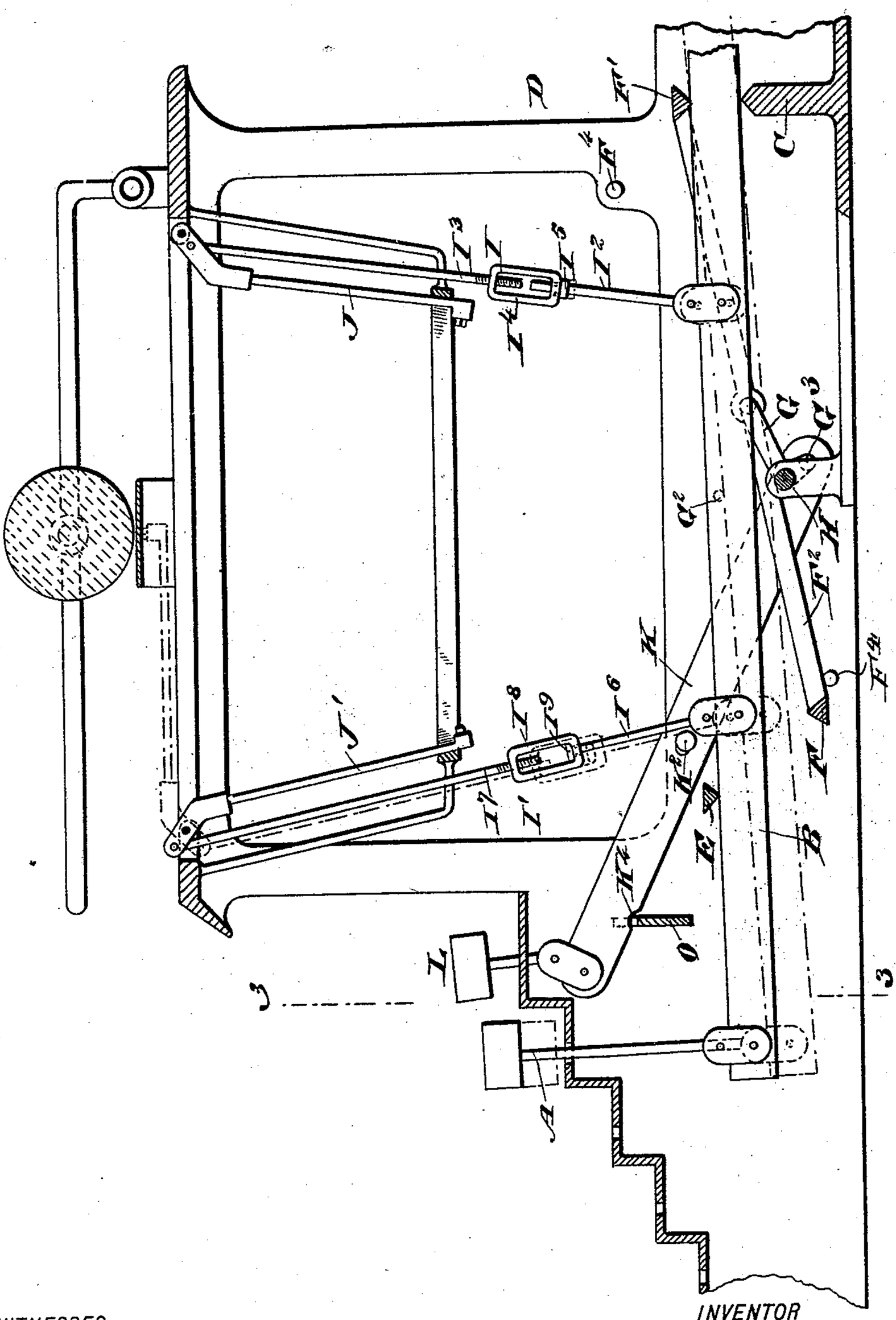

Fig. 1.

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Fig. 2.

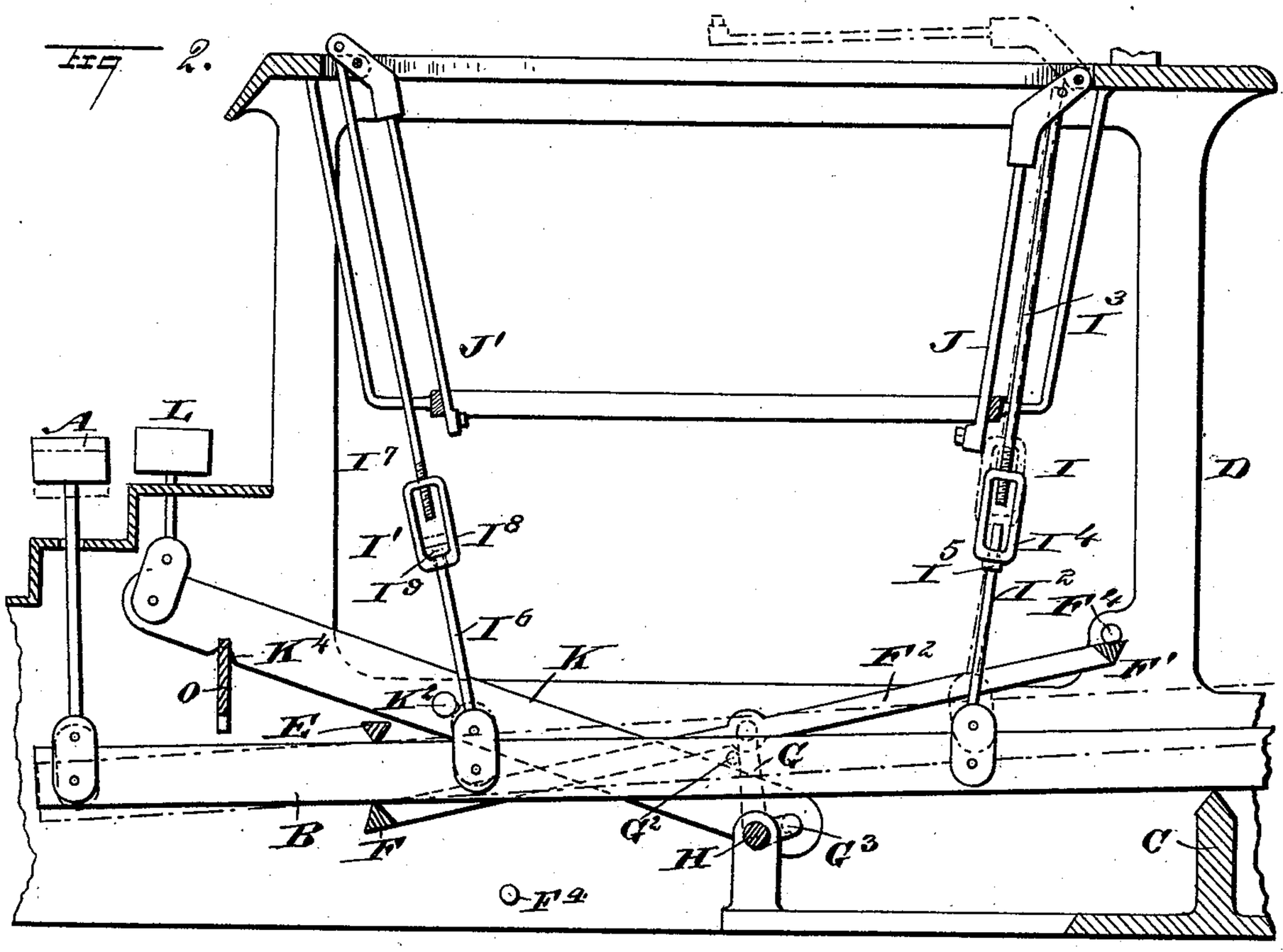
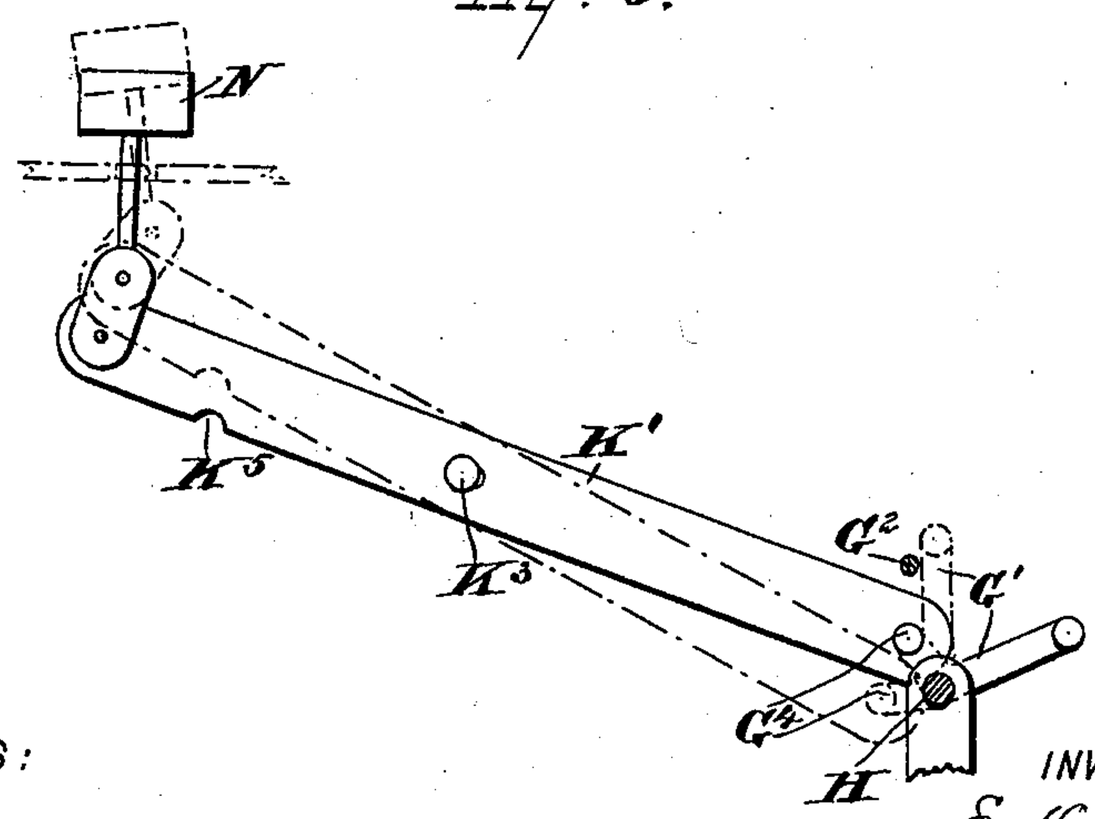


Fig. 5.



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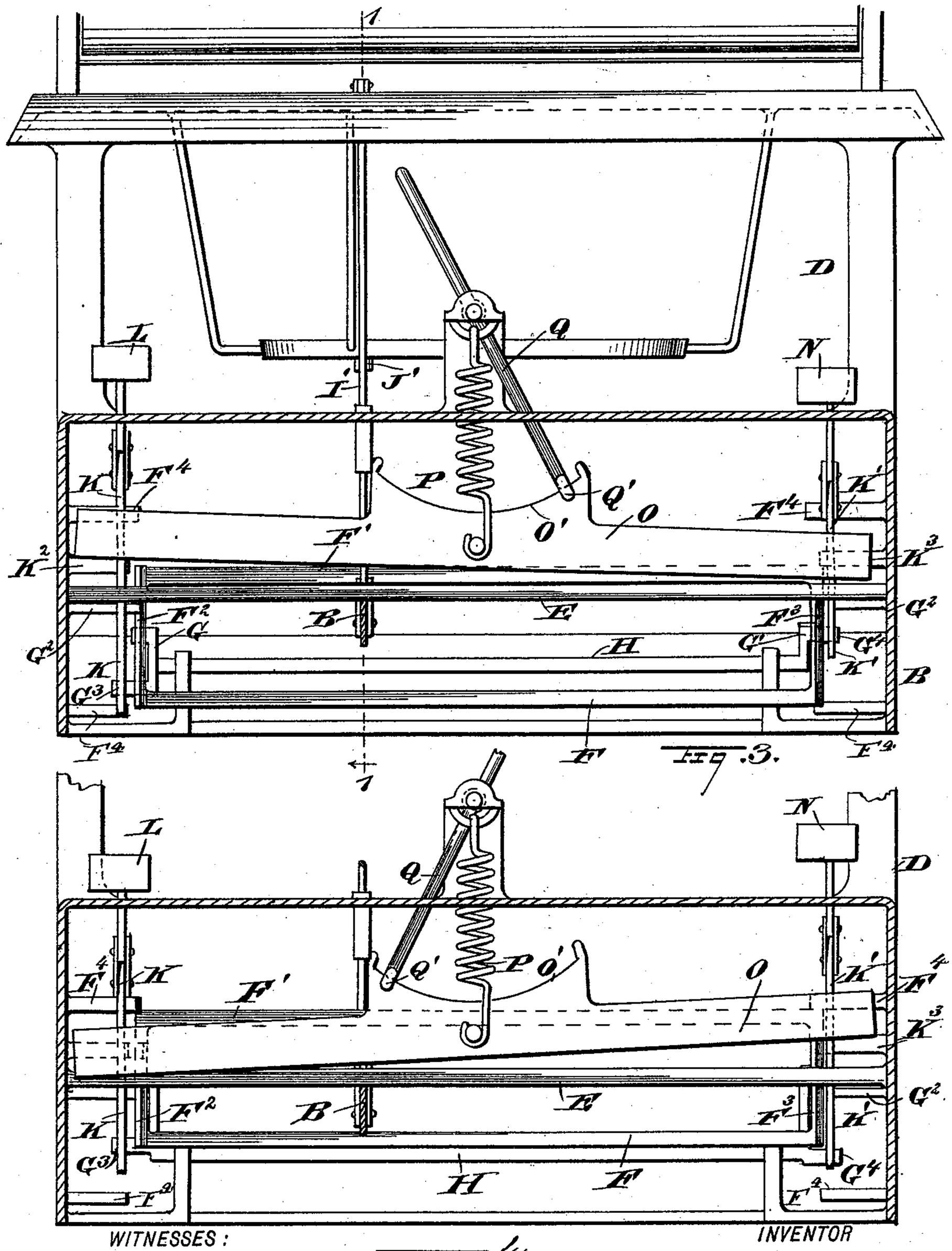

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UNITED STATES PATENT OFFICE.

EDGAR H. BERRY, OF NEW YORK, N. Y.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 498,100, dated May 23, 1893.

Application filed May 27, 1892. Serial No. 434,566. (No model.)

To all whom it may concern:

Be it known that I, EDGAR HENRY BERRY, of New York city, in the county and State of New York, have invented a new and Improved Type-Writing Machine, of which the following is a full, clear, and exact description.

The invention relates to that class of typewriting machines carrying the type on movable arms swinging to a common point.

The object of the invention is to provide a new and improved typewriting machine, which is simple and durable in construction, not liable to get out of order, and arranged to print two different type characters by the use of the same key.

The invention consists principally of a key lever connected with two type bars and having a changeable fulcrum.

The invention also consists of certain parts and details and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a transverse section of the improvement on the line 1—1 of Fig. 3. Fig. 2 is a like view of the same in a different position. Fig. 3 is a sectional front view of the same on the line 3—3 of Fig. 1. Fig. 4 is a similar view of the same in a different position; and Fig. 5 is a sectional side elevation of part of the shifting device.

As shown in the drawings only one key, its lever, and the two type bars operated from this lever, are represented, it being understood that a like arrangement is made for the keys representing various characters in the machine. The key A is pivotally connected with the key lever B supported at its rear end on a fulcrum C attached to or forming part of the frame D.

Near the front end of the key lever B and on top of the same, is arranged a longitudinally extending bar E adapted to form, in conjunction with the second bar F arranged below the said key lever, a fulcrum for the latter. The bar F is connected at its ends with a second bar F′ extending parallel to the bar F, but arranged above the key lever B, as will be readily understood by reference to Figs. 1 and 2. The two bars F and F′ have their end connections F^2 and F^3 pivotally connected with arms G and G′ respectively, projecting from a shaft H mounted to turn in suitable bearings on the frame D, the said shaft extending under the key lever B. The swinging motion of the bars F F′ is limited by stops F^4 projecting from the ends of the frame D. In a like manner the inward swinging motion of the arms G is limited by stops G^2 also projecting from the ends of the frame, see Figs. 3 and 4. Now it will be seen that when the connected bars F and F′ are in the position shown in Fig. 1, then the bar F′ is located directly above the fixed bar C, the sharp edge of the bar resting on top of the lever B, so that the latter swings from the said bar F′ and the fixed bar C as the fulcrum. When the shaft H is turned so that the arms G and G′ swing upward until they strike against the stops G^2, see Fig. 2, then the bar F′ rests against the stops F^4, while the other bar F is moved into contact with the bottom of the lever B directly under the fixed bar E. The two bars E and F then form the fulcrum for the lever B near the front end connected with the key A.

The key lever B is connected by links I and I′ with the type bars J and J′ respectively, each carrying a type moved to the same point when the type arms swing upward, as illustrated in dotted lines in Figs. 1 and 2. The connections of the links I and I′ with the lever B are on opposite sides of the shaft H; that is, the link I is pivotally connected with the lever B near the rear fulcrum, while the other link I′ is connected with the lever near the front fulcrum formed by the bars E and F. The link I is composed of the rods I^2 and I^3, connected with each other by a turn buckle I^4 in such a manner that the rod I^3 screws in the upper end of the turn buckle, while the rod I^2 is loosely connected with the lower end of the turn buckle and is formed with a collar I^5 abutting against the under side of the said turn buckle. The link I′ is similarly constructed and composed of rods I^6 and I^7 connected with each other by a turnbuckle I^8. The rod I^6 is provided with a collar I^9 engaging the inside of the lower end of the turn-

buckle I^8 so that when the lever B swings upward, the rod I^6 passes loosely upward in the turnbuckle without pushing the rod I^7 upward but when the lever B swings downward the collar I^9 engages the lower end of the turnbuckle I^8 and consequently exerts a pull thereon so that the rod I^7 imparts a swinging motion to the type arm J′ to cause the type of the latter to make the impression. When the lever B is pressed downward with the parts arranged as in Fig. 1, the rod I^2 of the link I slides loosely in its turn buckle I^4, so that the rod I^3 remains at a standstill and consequently does not affect the arm J, but when the lever B swings upward with the parts arranged as in Fig. 2, then the collar I^5 abutting against the under side of the turn buckle I^4 pushes the latter and the rod I^3 in an upward direction so as to impart a swinging motion to the type arm J to cause the type of the latter to make the impression. Now, it will be seen that when the several parts are in the position shown in Fig. 1; that is, the fulcrum of the lever B is near the rear end of the same between the bars C and F′ and the key A is pressed, then the type arm J remains at a standstill while the link I′ pulls on the type arm J′, thus causing the type end of the latter to swing upward to make an impression. When the shaft H is turned to change the fulcrum of the lever B to the front end of the same, as shown in Fig. 2, and the key A is pressed, then the rear end of the lever B swings upward and gives a push to the link I, which by its connection with the type arm J, causes the type end of the latter to swing upward to make the impression, while the other type bar J′ remains at a standstill, owing to the sliding of the rod I^6 of the link I′ in the turn buckle I^8. Thus, according to the position of the fulcrum of the lever B, either of the type bars J or J′, with which the said lever is connected, is actuated to make an impression, while the other remains at a standstill.

In order to impart a turning motion to the shaft H to obtain the desired position of the fulcrum for the lever B, the following device is provided:—On the shaft H, at its ends, are formed the arms G^3 and G^4 standing approximately at right angles to the arms G and G′ respectively. The arms G^3 and G^4 are pivotally connected with levers K and K′ respectively, fulcrumed at K^2 and K^3 on the ends of the frame D of the typewriting machine. The front ends of the levers K and K′ are pivotally connected with keys L and N respectively, located in the rear of the first row of ordinary keys A and on the sides of the machine, as will be readily understood by reference to the drawings. The front ends of the levers K and K′ are formed on their under sides with notches K^4 and K^5 respectively, adapted to be engaged by a longitudinally extending plate O, hung at its middle on a spring P supported with its upper end on a suitable bracket arranged on the frame D. On the top of the plate O and at the middle of the same is arranged a segmental offset O′ engaged by the forked end Q′ of a shifting lever Q, pivoted on the bracket for the spring P and adapted to be shifted by the operator, either from the position shown in Fig. 3 to the one illustrated in Fig. 4, or vice versa, so as to depress either end of the plate O to hold up, by the other raised end of the said plate, the respective lever K or K′, see Figs. 3 and 4. When the shifting lever Q is in the position illustrated in Fig. 3, then the left-hand end of the plate O is in an uppermost position, thus holding the lever K and its key L raised, as shown in Fig. 1, whereby the shaft H is held in the position indicated in the said Fig. 1, that is, the arms G and G′ are in the lowermost position, holding the bar F′ over the lever B directly above the fixed bar C, so that the fulcrum of the lever B is at the rear end of the same. Now when the keys A are pressed, only the type arms J′ connected with the front ends of the levers B are actuated, the said type arms J′ being preferably formed with capital letters representing the upper case. When the shifting lever Q is moved to the position shown in Fig. 4, then the right-hand end of the plate O swings upward, thus imparting a swinging motion to the lever K′, whereby the position of the shaft H is changed; that is, the arms G and G′ swing upward into the position shown in Fig. 2. The fulcrum for the levers B is now between the bars E and F, and when one of the keys A is pressed the type arms J are actuated, as before described. These type arms J carry small letters and represent the lower case. When the device is in this position, only small letters are printed, but when it is desired to print a capital letter, then the operator temporarily presses the key L so as to impart a downward swinging motion to the front end of the lever K, thereby changing the position of the shaft H whereby the fulcrum for the levers B is made at the rear ends of the same between the fixed bar C and the bar F′. As soon as the operator now presses the desired key, the type arm J′, carrying the desired capital letter, makes an impression, and as soon as this is done, the operator releases both keys A and L so that the spring P returns the plate O to its former position, shown in Fig. 4, thus reversing the position of the shaft H to that it previously had, to permit of printing small letters only when the keys A are pressed. In a like manner when the upper case only is used; that is, when the plate O is in the position shown in Fig. 4, and it is desired to print a small letter, then the operator temporarily presses the key N to change the position of the shaft H to throw the fulcrum for the lever B to the front end between the bars E and F. As soon as the desired small letter has been printed, by pressing the respective key, the operator releases the pressure on the key N so that the spring P returns the plate O to its normal position. It is understood that the

forked end Q′ forms the fulcrum for the plate O to swing on when either of the keys L and N is pressed, and the said lever Q is in a left or right-hand position. It is further understood that when one of the keys is temporarily pressed to change from upper case to lower case, then the spring P tilts sufficiently to permit pressing that end of the plate downward to change the position of the shaft H, as above described.

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

1. The combination, with two type bars pivoted oppositely and adapted to act on the same impression cylinder, or surface, of a single key-lever and two rods connected with the latter on opposite sides of its fulcrum and pivoted at their upper ends to the said type-bars on opposite sides of the fulcra of the latter, respectively, as shown and described, for the purpose specified.

2. In a type writing machine, the combination with a key lever having a double fulcrum of two type bars connected with the said lever, substantially as shown and described.

3. A typewriting machine, comprising key levers each having a double fulcrum, two type bars connected with each key lever, and means for shifting the fulcrum of the said key levers, substantially as shown and described.

4. A typewriting machine, comprising upper and lower case type bars, and a key lever connected with two corresponding type bars carrying corresponding upper and lower case letters, the said lever having a double fulcrum so that either of the type bars connected with the lever is actuated according to the position of the fulcrum when the lever is pressed, substantially as shown and described.

5. A typewriting machine, comprising upper and lower case type bars, a key lever connected with two corresponding type bars carrying corresponding upper and lower case letters, the said lever having a double fulcrum so that either of the type bars connected with the lever is actuated according to the position of the fulcrum when the lever is pressed, and means, substantially as described, for changing the position of the fulcrum, so that either upper case type bars or lower case type bars only are actuated when the levers are pressed, as set forth.

6. In a typewriting machine, the combination with a key lever having a double fulcrum, of links connected with the said key lever, and type bars connected with the said links, substantially as shown and described.

7. In a typewriting machine, the combination with a key lever having a double fulcrum, of two links pivotally connected with the said key lever, and arranged in such a manner that when the key is pressed one of the links is pushed while the other is stationary and the other pulled while the first one remains stationary, according to the position of the fulcrum, and type bars connected with the said links, substantially as shown and described.

8. A type writing machine comprising a key lever having a double fulcrum, two type bars, two links connecting the said lever with the said two type bars each link comprising two rods and a turnbuckle rigidly connected with one rod and loosely connected with the other rod, substantially as shown and described.

9. In a typewriting machine, the combination with two fixed bars, of two movable bars adapted to alternately form, with the said fixed bars, different fulcrums for the key levers, substantially as shown and described.

10. In a typewriting machine, the combination with the key levers, of fixed bars engaging the tops and bottoms of the said key levers near the front and rear ends of the same respectively, and two connected bars adapted to be alternately moved opposite the fixed bars below and above the key levers, so as to change the fulcrums of the latter from the front to the rear, or vice versa, and means, substantially as described, for changing the positions of the said connected movable bars, as set forth.

11. In a typewriting machine, the combination with the key levers, of fixed bars engaging the tops and bottoms of the said key levers near the front and rear ends of the same respectively, and two connected bars adapted to be alternately moved opposite the fixed bars below and above the key levers, so as to change the fulcrums of the latter from the front to the rear, or vice versa, a shaft mounted to turn and provided with arms pivotally connected with the connected movable bars, levers pivotally connected with crank arms on the said shaft, and keys connected with the said levers for imparting a turning motion to the said shaft to change the position of the movable bars, substantially as shown and described.

12. In a typewriting machine, the combination with the key levers, of fixed bars engaging the tops and bottoms of the said key levers near the front and rear ends of the same respectively, and two connected bars adapted to be alternately moved opposite the fixed bars below and above the key levers, so as to change the fulcrums of the latter from the front to the rear, or vice versa, a shaft mounted to turn and provided with arms pivotally connected with the connected movable bars, levers pivotally connected with crank arms on the said shaft, keys connected with the said levers for imparting a turning motion to the said shaft to change the position of the movable bars, and a spring-pressed plate having a double fulcrum and adapted to engage the said levers to hold the same in position, substantially as shown and described.

13. In a typewriting machine, the combination with the key levers, of fixed bars engaging the tops and bottoms of the said key levers near the front and rear ends of the same

respectively, and two connected bars adapted to be alternately moved opposite the fixed bars below and above the key levers, so as to change the fulcrum of the latter from the front to the rear, or vice versa, a shaft mounted to turn and provided with arms pivotally connected with the connected movable bars, levers pivotally connected with crank arms on the said shaft, keys connected with the said levers for imparting a turning motion to the said shaft to change the position of the movable bars, a spring-pressed plate having a double fulcrum and adapted to engage the said levers to hold the same in position, and a shifting lever for changing the fulcrum of the said plate, as set forth.

EDGAR H. BERRY.

Witnesses:
JULIUS RISCH,
MATHILDE RISCH.