

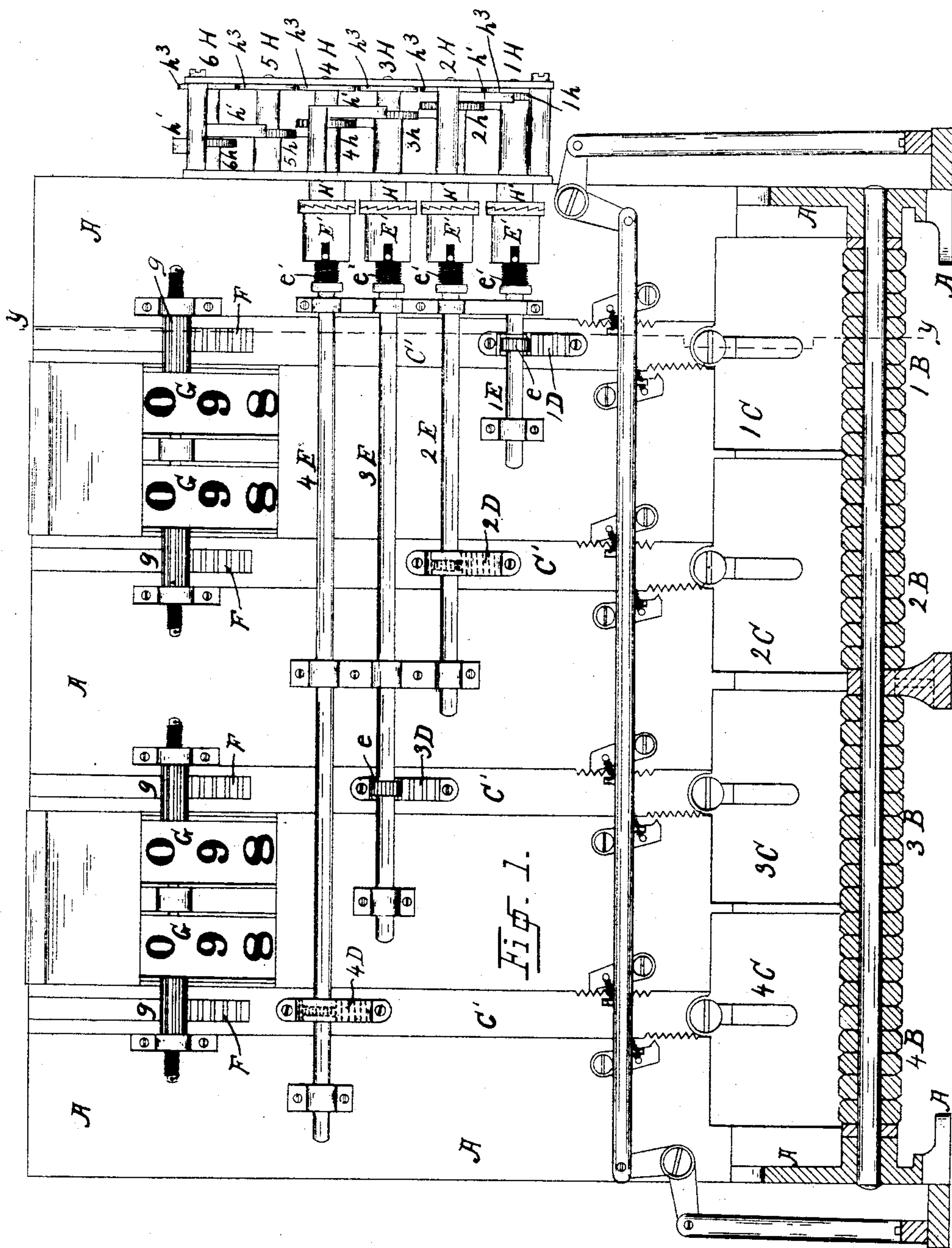
(No Model.)

3 Sheets—Sheet 1.

M. N. LOVELL.
CASH REGISTER AND INDICATOR.

No. 445,960.

Patented Feb. 3, 1891.



Witnesses.

E. D. Ellis.

Cyrus F. Dean.

Inventor.

Melvin N. Lovell

By Atty's - Hullock & Hallett

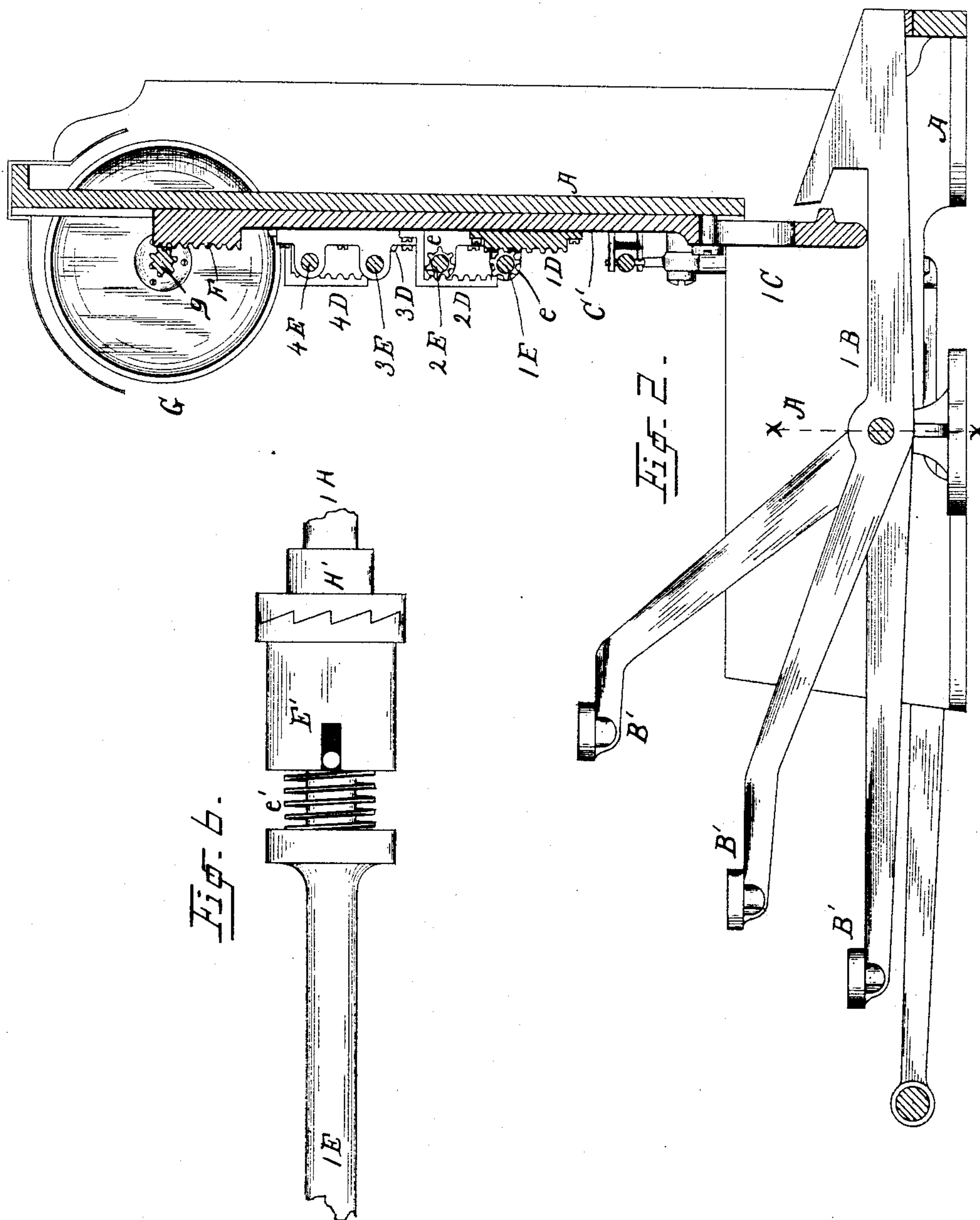
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3 Sheets—Sheet 2.

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Patented Feb. 3, 1891.



Witnesses—

E. H. Willis.

Cyrus F. Dean.

Inventor.

Melvin N. Lovell

By AAty's—Hallowell & Hallowell

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3 Sheets—Sheet 3.

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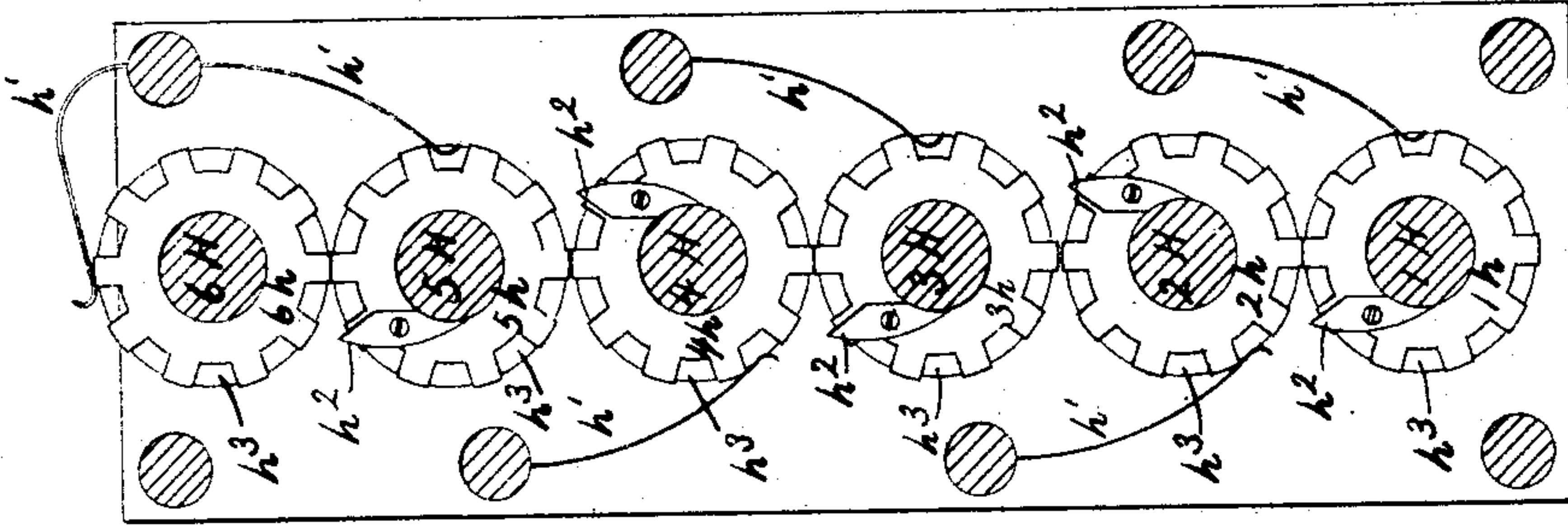


Fig. 4-

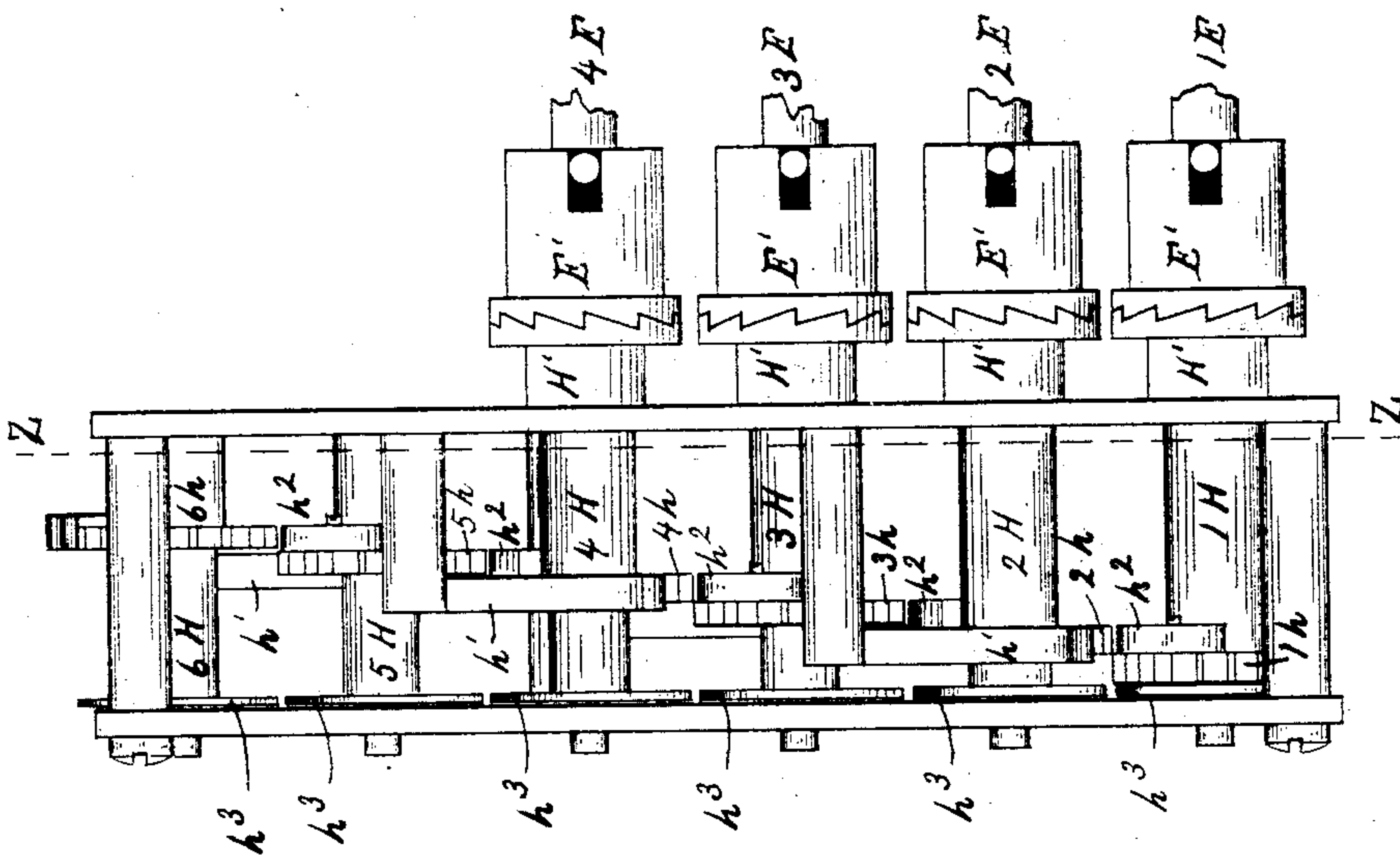


Fig. 3-

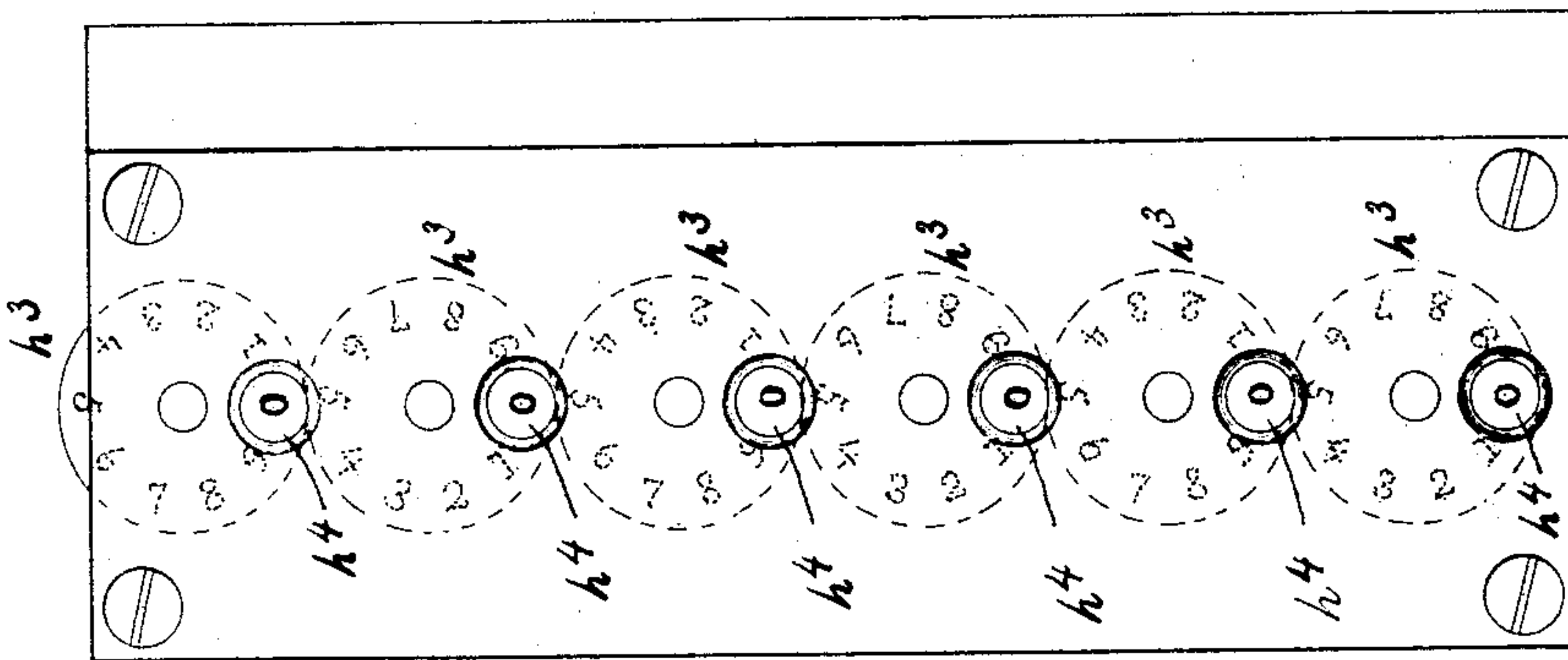


Fig. 5-

Witnesses-

Ed. Willis.

Cyrus J. Dean.

Inventor-

Melvin N. Lovell

By Atty's - Hallock & Hallock

UNITED STATES PATENT OFFICE.

MELVIN N. LOVELL, OF ERIE, PENNSYLVANIA, ASSIGNOR TO THE LOVELL MANUFACTURING COMPANY, LIMITED, OF SAME PLACE.

CASH REGISTER AND INDICATOR.

SPECIFICATION forming part of Letters Patent No. 445,960, dated February 3, 1891.

Application filed June 26, 1890, Serial No. 356,815. (No model.)

To all whom it may concern:

Be it known that I, MELVIN N. LOVELL, a citizen of the United States, residing at Erie, in the county of Erie and State of Pennsylvania, have invented certain new and useful Improvements in Cash Registering and Indicating Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to cash registers and indicators; and it consists in certain improvements in the construction of the same, as will be herein fully set forth, and pointed out in the claims.

My device is illustrated in the accompanying drawings as follows:

Figure 1 shows the machine in vertical longitudinal section on the line xx in Fig. 2, with parts at the right of said line in elevation. Fig. 2 shows the machine in vertical transverse section on the line yy in Fig. 1, with the parts at the left of said line in elevation. Fig. 3 is an elevation view of the registering mechanism, looking from the right of Fig. 5. Fig. 4 is a vertical transverse section of the registering mechanism on the line zz in Fig. 3, with parts at the left of said line in elevation. Fig. 5 is a front elevation of the registering device, looking from the left of Fig. 3. Fig. 6 shows one of the registering shafts 1^E and its clutch connection with the registering mechanism.

The construction and operation are as follows:

Adjusted within a supporting frame-work A there are four groups of key-levers, each containing nine key-levers. These groups are marked 1^B , 2^B , 3^B , and 4^B . Each of these groups of key-levers act upon vertically-movable blocks 1^C , 2^C , 3^C , and 4^C , and each block is the foot of a rack-bar C' . The action of each key-lever in each group will raise the superimposed block a certain fixed distance, and these distances are varied in gradative succession from right to left, so that the right-hand key-lever of each group will lift the block the minimum distance and the left-hand key-lever the maximum distance. Each

rack-bar C' has a rack F , which engages a pinion g on the shaft of an indicator-wheel G , on the face of which are the ordinals, so spaced that for each degree of upward movement given to the rack-bar a different ordinal is displayed.

The construction so far described is not my invention and will not be claimed as such. On each of the rack-bars C' I place an additional rack, marked, respectively, 1^D , 2^D , 3^D , and 4^D . These racks are placed on the rack-bars C' at regularly-increasing distances from the key-levers, the one nearest the key-levers being at the right of the machine and the one farthest being at the left of the machine, as shown, or the order may be reversed, if desired. These racks are also alternated in position. Thus, as shown, the rack at the right of the machine 1^D has its cog-teeth facing outwardly from the rack-bar. The next 2^D is on a strap attached to the rack-bar and has its cog-teeth facing toward the rack-bar. A series of horizontal shafts 1^E , 2^E , 3^E , and 4^E are journaled in suitable bearing-blocks attached to the frame-work A , so as to lie parallel and at regular distances apart. On each of these shafts is a pinion e , which engages the proper rack 1^D , &c. The result of this arrangement is that when any one of the rack-bars C' is raised the horizontal shaft connecting therewith is rotated in degree as the rack-bar is raised.

On the sides of the machine is a registering device, which, as shown, consists of six shafts 1^H , 2^H , 3^H , 4^H , 5^H , and 6^H , carrying gears 1^H , 2^H , 3^H , &c., and dials h^3 , each of the shafts 1^H , &c., having on it a carrying-wheel and a dial. The first four of the shafts 1^H , &c., are connected, respectively, with the four horizontal shafts 1^E , &c., by a spring ratchet-clutch device e' , E' , and H' , whereby as any one of the horizontal shafts 1^E , &c., is revolved by an upward movement of its connecting rack-bar C' the register-shaft 1^H , &c., connecting therewith, will be revolved the same distance; but when the horizontal shaft 1^E , &c., is revolved by the downward movement of its connecting rack-bar the register-shaft will not be moved. Retarding or brake springs h' are employed to prevent momentive

action disturbing the operation of the registering device, and these springs also act as pawls to prevent back movement of the wheels on which they act. Each of the register-wheels has nine teeth, and on the side of each of said wheels, except the top one 6^h, there is a carrying-pawl which engages the next adjacent wheel above it, so that whenever any one wheel (except 6^h) has been turned once around it will move the next higher wheel one tooth forward. Now let the first group of key-levers 1^B represent units, the next tens, the next hundreds, and the last thousands; or where the machine is used as a cash-register the first group of keys 1^B will represent cents, the next dimes, the next dollars, and the last tens of dollars. Now if the first key-lever on the right of the first group 1^B is depressed the first foot-block 1^C will be raised one degree of its total traverse, and that will carry up the first rack-bar C' the same distance, and that will move the first indicator-wheel so as to display the figure 1, and the first horizontal shaft 1^E will be moved one degree, and that will display the figure 1 on the first dial h³. If in place of the first key-lever being depressed it had been the fifth, the operation would have been the same, only the parts would have moved farther, and the figure 5 would be displayed on the indicator-wheel and the register-disk. Whichever key-lever of any group may be depressed the corresponding action will occur. As soon as the parts are released after any action (by a proper releasing mechanism not a part of the present invention and not necessary to describe) they will return to the normal condition, except the registering parts, which are not permitted to react, the spring ratchet-clutches E' H' allowing the shafts 1^E, &c., to react without reacting the shafts 1^H, &c. Therefore it will be seen that if key 1 of the group 1^B be again depressed the indicator-wheel will again display the figure 1, but the registering-disk on the shaft 1^H will display the figure 2. Each shaft of the register device is free to be turned independent of the others; but whenever it has been turned one complete revolution its carrying-pawl h² will move the next higher shaft one degree. The result of this arrangement is that as the keys of any group are operated the register-shaft 1^H, &c., connected with that group is turned to the extent proper to register the sum of the amounts indicated, and as soon as the said shaft has been turned one complete revolution the next higher shaft is moved one degree. So it is that while the action of the keys of each group is carried by its connecting-shaft 1^E, &c., into the register independently of the action of the keys of the other groups, the register will indicate the sum of the amounts represented by all of the keys as they may have been operated upon. The register-shafts 5^H

and 6^H operate the same as the others, except that they have no direct connection with the keys, but are moved only by the carrying-pawls. They enable the register to record tens of thousands and hundreds of thousands.

What I claim as new is—

1. In a machine of the class herein named, the combination of a series of groups of key-levers, a series of reciprocating racks, each of which is moved by the action of the keys of one of said groups, a series of parallel shafts, each of which is moved rotatively in an opposite direction from the next contiguous shaft by the action of one of said racks, a series of register-shafts, each of which is so connected with one of said parallel shafts as to be moved in one direction only thereby, and gearing on each of said register-shafts, by which as either of said shafts has made a complete revolution the next higher shaft in numerical order will be moved one space.

2. In a machine of the class herein named, the combination of a series of groups of key-levers, a series of reciprocating rack-bars, each of which is moved by the keys of one of said groups more or less, according to which key of said group is operated, a series of indicator-wheels, each of which is moved by one of said rack-bars more or less as said rack-bar is moved, a series of parallel shafts, each of which is moved rotatively in an opposite direction from the next contiguous shaft by the action of one of said rack-bars, a series of register-shafts, each of which is so connected with one of said parallel shafts as to be moved in one direction only thereby, and gearing on each of said register-shafts, by which as either of said shafts has made a complete revolution the next higher shaft in numerical order will be moved one space.

3. In a machine of the class herein named, the combination of a series of groups of key-levers, a series of reciprocating rack-bars, each of which is moved by the keys of one of said groups more or less, according to which key of said group is operated, a series of parallel shafts, each of which is moved rotatively in an opposite direction from the next contiguous shaft by the action of one of said rack-bars, a series of register-shafts, each of which is so connected with one of said parallel shafts as to be moved in one direction only thereby, and gearing on each of said register-shafts, by which as either of said shafts has made a complete revolution the next higher shaft in numerical order will be moved one space.

In testimony whereof I affix my signature in presence of two witnesses.

MELVIN N. LOVELL.

Witnesses:

JNO. K. HALLOCK,
FRANK P. ARBUCKLE.