

No. 608,509.

Patented Aug. 2, 1898.

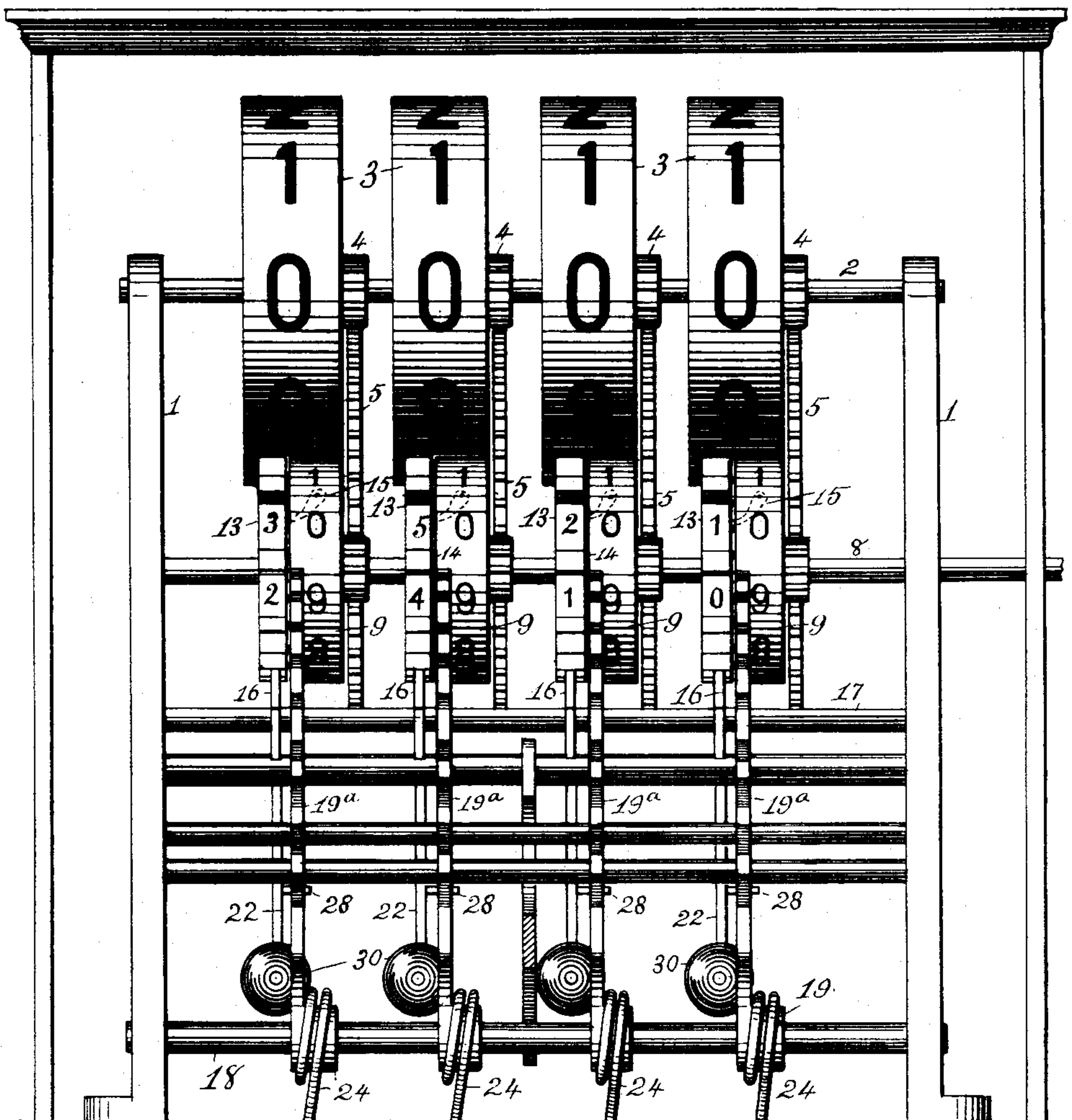
L. S. BURRIDGE.
CASH REGISTER AND INDICATOR.

(Application filed Feb. 8, 1897.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.



L. S. Burridge

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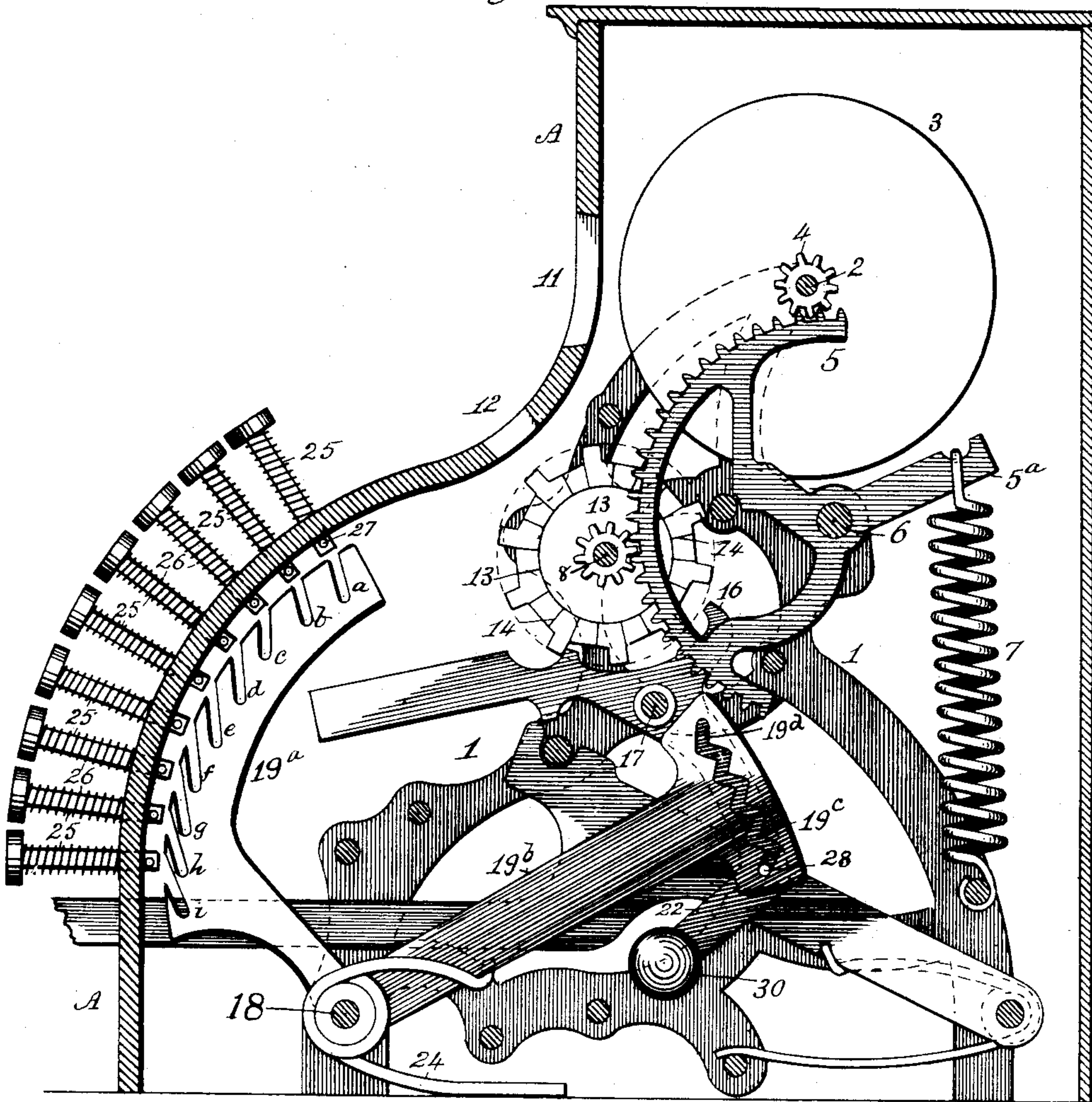
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Fig. 2.



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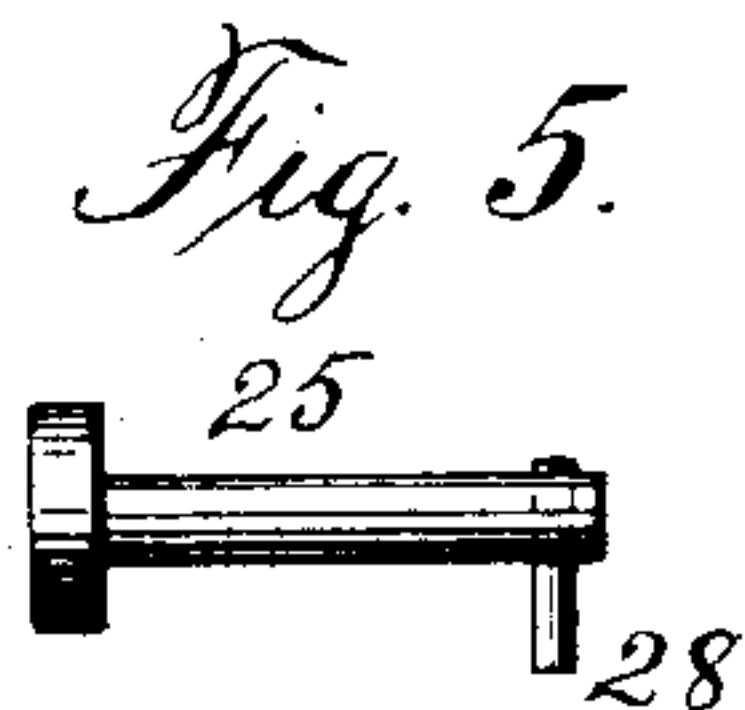
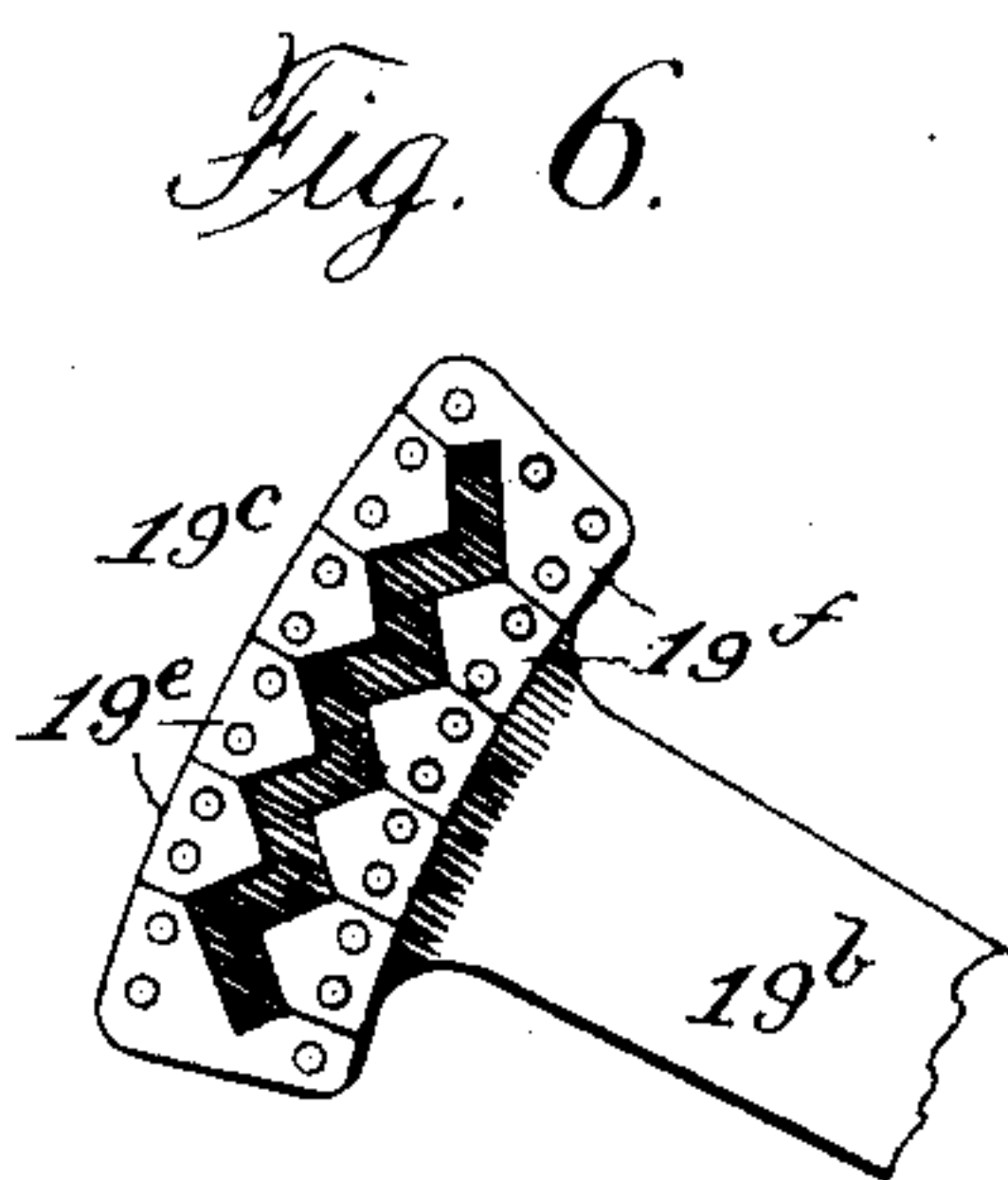
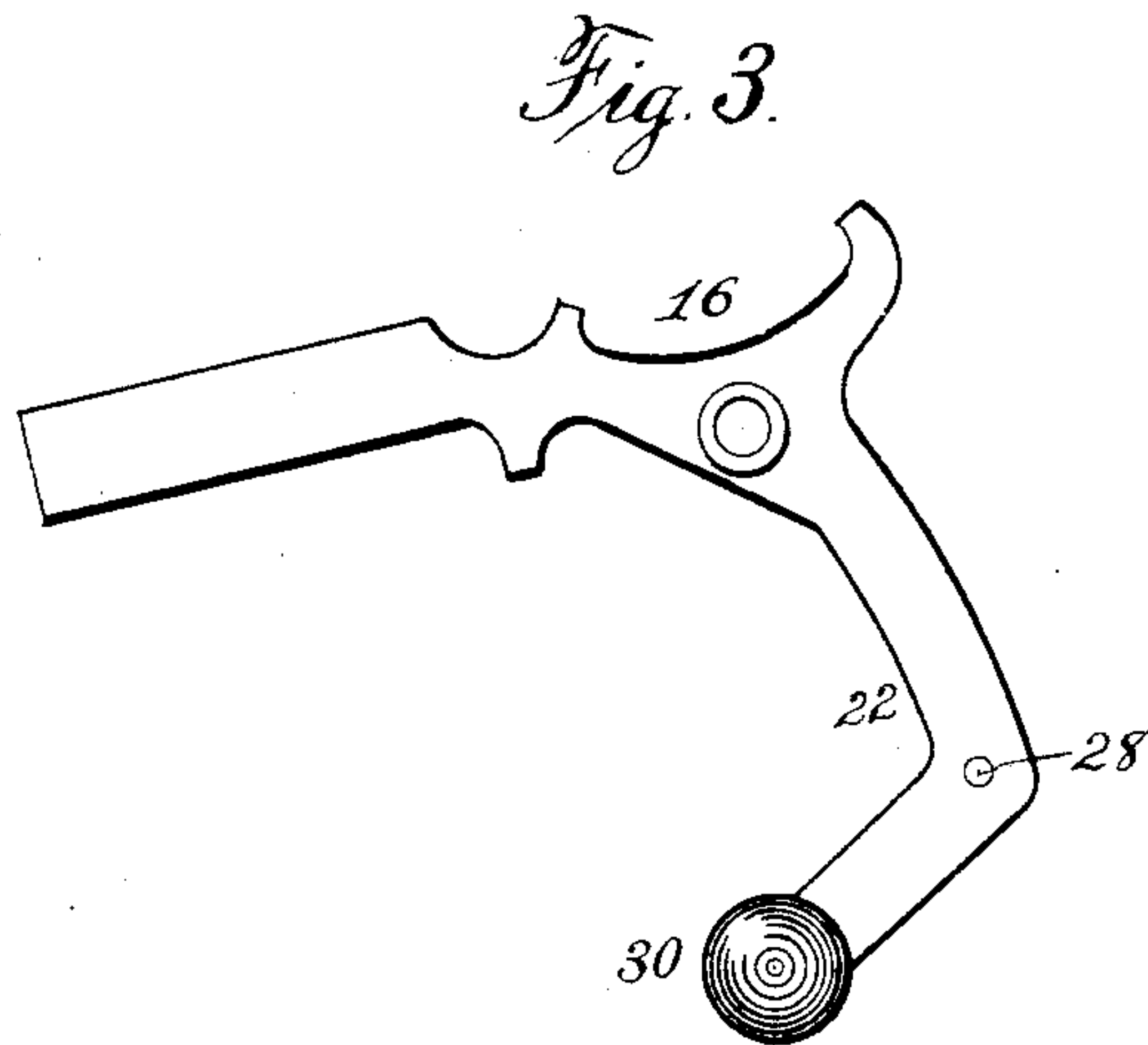
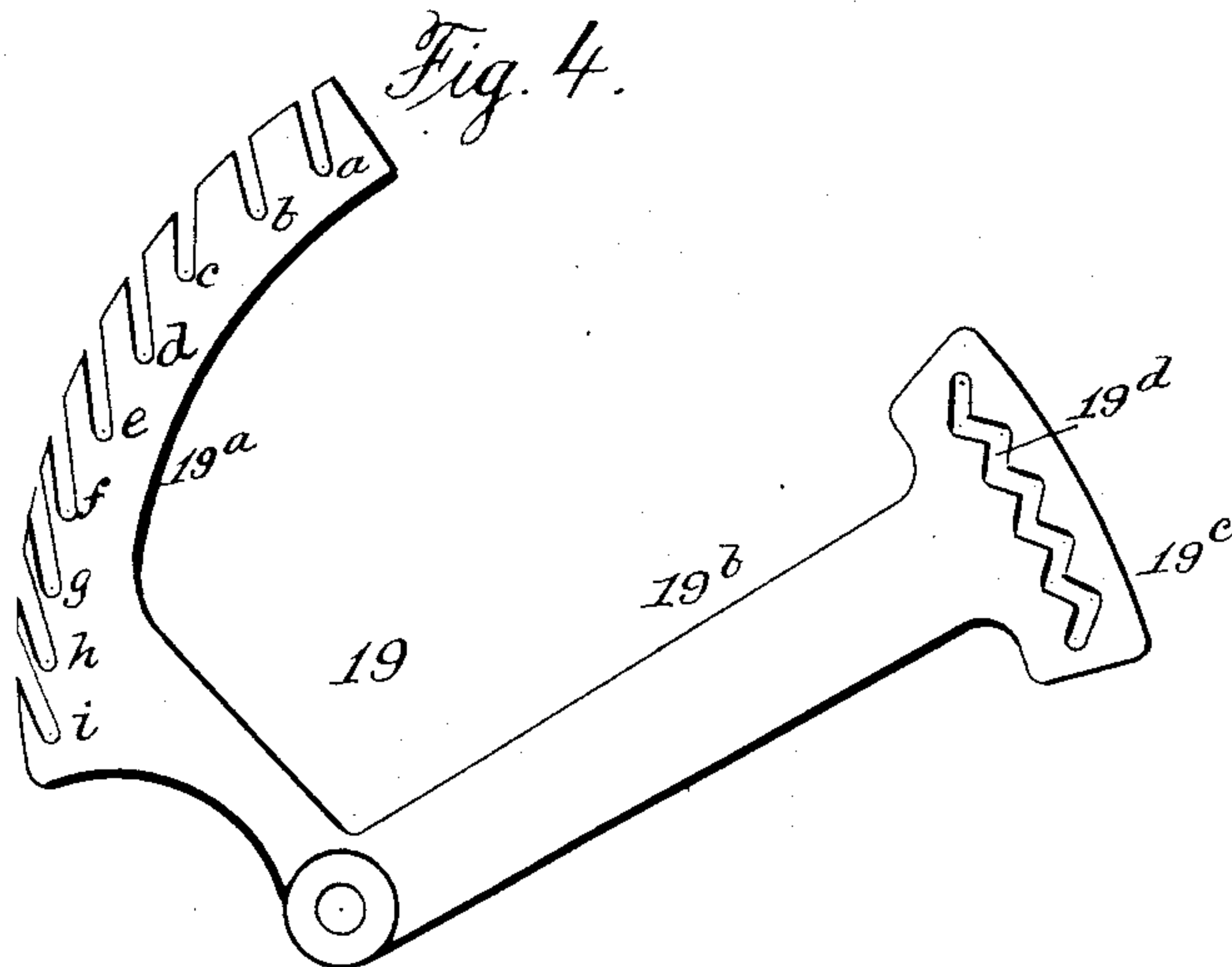
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3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

LEE S. BURRIDGE, OF NEW YORK, N. Y.

CASH REGISTER AND INDICATOR.

SPECIFICATION forming part of Letters Patent No. 608,509, dated August 2, 1898.

Application filed February 3, 1897. Serial No. 622,579. (No model.)

To all whom it may concern:

Be it known that I, LEE S. BURRIDGE, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Cash Registers and Indicators; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to that style or variety of cash-registers having rotary spring-impelled indicator-wheels controlled by escapements, the operation of which permits step-by-step movements of the wheels under the influence of the driving-springs. Heretofore the escapements were provided with lever-arms arranged and adapted to be operated directly by hand, several movements of the hand being required to effect more than a single-step movement of the wheel. I now propose to dispense with said lever-arms and to operate the escapements by means of push-pins and intermediate devices constructed and arranged to produce the requisite number of vibrations of an escapement by a single reciprocation of any push-pin arranged to operate the same. The invention comprehends the means whereby this is effected.

In the accompanying drawings, Figure 1 represents a front view of the machine, the front of the case being removed to show the mechanism. Fig. 2 is a vertical section through the machine from front to rear. Fig. 3 is a side view of one of the escapements. Fig. 4 is a similar view of one of the escapement-operating levers, and Fig. 5 is a plan view of one of the push-pins. Fig. 6 is a view of the end of lever, showing zigzag slot.

With the view of avoiding confusion I have limited the drawings to so much of a register as is necessary to illustrate my invention, omitting such parts as are unnecessary to an understanding of the same.

Referring to the drawings, 1 1 are the frame-standards, which, together with the several rods and shafts on which the operating mech-

anisms are mounted, constitute the frame of the machine.

The machine in connection with which I have chosen to illustrate my invention has two sets of indicators, one set to indicate to the customer and to others in the establishment the amount registered as the result of a sale or transaction and the other to serve as a guide for the operator to show when the proper amount has been set up. There are shown four wheels in each set, which, beginning at the right, are intended to indicate, respectively, units of cents, tens of cents, units of dollars, and tens of dollars, giving the machine an indicating capacity of ninety-nine dollars and ninety-nine cents, (\$99.99.) The main indicators (marked 3) are loosely mounted on a rod 2 at the top of the machine, and they are each provided with a pinion 4, fixed thereto. The other set of indicators (marked 9) is loosely mounted on a shaft 8 in front of and below the rod 2, and they are each provided with a pinion 10, corresponding in size with the pinions 4 of the upper indicators. Corresponding wheels of the two sets of indicators are geared together by segment-gears 5, loosely mounted on a rod or shaft 6 and meshing with the pinions 4 and 10. Springs 7 are applied to the gears 5 to turn them backward, whereby the indicators are turned forward. The two wheels thus geared together must move in unison under the influence of the actuating-springs, and the pinions 4 and 10 being of the same size any movement of the gear 5 must produce corresponding angular movements of the two indicators actuated thereby.

Loosely mounted on the shaft 8 at the sides of and in close proximity to the respective indicators 9 are four register-wheels 13, though a greater number may be employed if it be desired to increase the registering capacity of the machine. These register-wheels are made in the shape of escapement-wheels, with ten teeth, and they are controlled by anchor-escapements 16, mounted on an axis 17. Each register-wheel has on the side thereof toward the adjacent indicator-wheel ratchet-teeth 14, which are engaged by pawls 15, pivoted within the indicator-wheels on the rims thereof, (see broken lines in Fig. 1,) the arrangement being such that when the indicators turn for-

ward under the influence of the springs 7 the pawls carry forward also the register-wheels and such that the indicators may turn backward independently of the register-wheels.

5 On a rod 18 at the front of the machine near the base thereof are mounted angular levers 19, one for each escapement, the arms of which extend forward and upward and backward and upward, respectively. These
10 levers are capable of rocking back and forth on their axis and are normally held forward by springs 24. The forwardly-extending arms (marked 19^a) are curved to conform to the curvature of the front of the case A, and in
15 normal position they stand close to the case.

Projecting through the front of the case are push-pins 25, which are arranged in vertical series in close proximity to the arms 19^a, there being a series of nine pins for each arm, the
20 several pins representing different values and running in regular numerical order from the top downward. Each series of pins may be arranged in a single row at one side of the arm 19^a, or they may be arranged in two rows
25 at opposite sides in "staggered" order, as may be found expedient or desirable. They are normally held out by springs 26. At their inner ends, within the case A, the pins 25 carry cross-pins 27, which extend across the arms
30 19^a and when the push-pins 25 are pushed in engage said arms and carry them back.

The escapements 16 are provided with depending arms 22, as represented in detached view, Fig. 3. These arms have operative con-
35 nection with the angular levers 19, as follows: The arms 19^b of the levers 19 have on their free ends heads 19^c, in which are formed zig-zag slots or grooves 19^d, running, in general direction, in curved paths described from the
40 center on which the levers 19 are mounted and on which they turn. These grooves 19^d are made up of nine short sections arranged in angular relation to each other, as shown. The arms 22 of the escapements carry later-
45 ally-projecting pins 28, which extend into the grooves 19^d, the effect of which is that when the levers 19 are rocked on their axis the arms 22 are thrown back and forth and the escapements vibrated to permit movement of the
50 register and indicator wheels. The pins 28 are so located on the arms 22 that when the levers 19 are in normal position they (the said pins) are at the lower ends of the grooves 19^d. Downward movement of the arm 19^b will then
55 cause the escapement to vibrate, the arm 22 being thrown back and forth as the pin 28 follows the angles of the groove.

It will be understood that in setting up an indication and making a registration the in-
60 dicator-wheels will start from the zero position and that nine full step-by-step movements are required to bring it around to the highest position, and it will also be noted that a double movement of the escapement is re-
65 quired to effect one full movement of the wheel. Now it is also to be noted that when the lever 19 is rocked backward single move-

ments of the escapement are effected by the movement of the pin 28 through one of the angular sections of the groove 19^d, that nine
70 such single movements are effected by a full movement of the lever 19, and that the return movement of the lever 19 under the influence of its spring 24 produces nine more single
75 movements of the escapement, making in all eighteen half-movements or nine double movements, whereby the register and indicator wheels are advanced nine full steps, the in-
80 dicator-wheel then standing in the "9" position. So, similarly, whatever amount is to be set up on any wheel, one half the requisite number of vibrations of the escapement are effected by the movement of the lever 19 in
85 one direction and the other half by its return movement. In order to set up different amounts, it therefore becomes necessary to regulate or determine the angular movement of the lever 19. This is effected as follows; The arms 19^a are formed with slots *a b*, &c.,
90 to *i*, open at the front and running backward and downward, as shown in Figs. 2 and 4, into which slots the pins 27 enter when the push-pins 25 are pressed in. The pins 27, working against the upper sides of the slots, rock the lever 19 backward, and thereby im-
95 part movement to the escapement, as already explained. Inasmuch as the different push-pins 25 represent different values from "1" to "9," it is requisite that the lever 19 be moved
100 different distances by the operation of different pins. Hence the different slots *a b*, &c., are made of varying depth and inclination, as shown. Any pin 25 having been pressed
105 in, it is clear that no other pin of that series can be operated until after the first returns to normal position, for the reason that until such return all the other slots are out of coinci-
110 dence with the other pins 27, so that the latter cannot enter. Also, any pin 25 having been pressed in it is clear that it cannot re-
115 turn to normal position without also returning the lever 19. Therefore should the spring 24 break or become inoperative a pull on the operated push-pin would complete the registering and indicating operation and re-
120 store the parts to their normal positions. It is further to be observed that when any pin 27 reaches the bottom of its slot in the lever 19 it forms a positive stop for the latter, thus limiting the range of movement and prevent-
125 ing overthrow by the momentum given the lever by violent operation of the push-pin. I regard this as an important feature of the invention, because it insures absolute accu-
racy of operation.

To prevent violent or injurious manipulation of the machine, I apply weights 30 to the lower ends of the arms 22 of the escapements, the effect of which is to prevent violent op-
130 eration of the escapements by quick movements of the lever 19, such as would be produced by striking or otherwise violently operating a push-pin 25.

Obvious changes and modifications will

suggest themselves to the skilled mechanic, and I do not, therefore, wish to be understood as limiting or confining myself to the exact details of construction as described. For in-

stance, instead of the sinuous or zigzag groove 19^d formed in the head 19^c I may apply oppositely-facing and alternating cams 19^e and 19^f to the sides of the head, as shown in Fig. 6. Also, instead of forming the groove 19^d in or applying the cams to the head 19^c I may reverse the arrangement and form the groove in or apply the cams to the arm 22 of the escapement and place the pin 28 on the arm 19^b, in which case the head 19^c might be omitted. All such obvious changes and modifications I wish to have regarded as falling within the scope of my invention.

Having now described my invention, I claim—

1. In a register of the character described, the combination of a spring-impelled indicator-wheel, an escapement for controlling the movements thereof, a push-pin, mechanism operated thereby for vibrating the escapement, and a connection between the push-pin and the escapement-operating mechanism for positively limiting the movement of the latter to prevent overthrow.

2. In a register having rotary indicators, a spring-actuating mechanism for driving the same, an escapement operating to effect step-by-step movements of the indicators, a series of longitudinally-movable pins or finger-keys representing different values, means actuated by said pins or keys to operate the escapement, and means for engaging the finger-keys with the escapement-operating mechanism to prevent movement of the latter beyond the range of movement of the operated key.

3. In a register having rotary indicators, an escapement for controlling the movements of the indicators, longitudinally-movable finger-keys representing different values, a pivoted lever adapted to be operated by said keys, connections between said lever and escapement for operating the latter, and means for coupling the finger-keys with the escapement-operating lever to limit the movement of the latter.

4. In a register having rotary indicators, the combination of a spring-actuated driving mechanism, an escapement to control the movements of the indicators, a series of longitudinally-movable finger-keys representing different values, a lever having operative connection with the escapement, and means for varying and limiting the movements of said lever by the operation of different pins.

5. In a register having rotary spring-impelled indicators, an escapement for controlling the movements of the same, a lever provided with cams for operating the escapement to permit movement of the indicators, and a series of finger-keys representing different

values and adapted respectively to move the lever different distances, and to interlock with the same to prevent overthrow.

6. The combination of a spring-impelled indicator-wheel, an escapement operating therewith to control the movement thereof, an arm on said escapement having a lateral projection, a lever having a series of cams adapted to operate on said projection and vibrate the escapement, and a series of longitudinally-movable finger-keys representing different values and adapted to move said lever to bring the cams thereon into action, and to engage and hold the same at the limit of their movement to prevent overthrow.

7. The combination of a spring-impelled wheel, an escapement to control the movements thereof, the said escapement having an arm with a lateral projection thereon, a lever-arm having a sinuous groove or channel into which the said projection extends, and a series of finger-keys representing different values and adapted, respectively to move the said lever-arm different distances, as and for the purposes described.

8. The combination with the spring-actuated register and indicator wheels, and with the escapement for controlling the movements thereof, of a lever operatively connected with the escapement to actuate the same, and a longitudinally-movable finger-key for operating said lever, the said key being adapted to engage the lever and positively limit the movement thereof to prevent overthrow.

9. The combination with the spring-actuated register and indicator wheels, and with the escapements for controlling the movements thereof, of a lever connected with the escapement to operate the same, said lever having a series of open slots *a*, *b*, &c., and a series of longitudinally-movable finger-keys for operating said lever, said keys having projections adapted to enter said slots and serving as positive stops to limit the movement of the lever.

10. The combination with the register and indicator wheels and with the escapement for controlling the movements thereof, of an angular lever having one arm operatively connected with the escapement to actuate the same, and having in the other arm a series of open slots *a*, *b*, &c., and longitudinally-movable finger-keys adapted to engage said slotted arm and operate the lever, said finger-keys having projections adapted to enter said slots and serving as positive stops to limit the movements of the lever.

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

LEE S. BURRIDGE.

Witnesses:

E. B. HESS,

D. B. GALLATIN.