F. W. DE TRAY.

TELEGRAPH KEY.

APPLICATION FILED AUG. 15, 1907.

916,538.

Patented Mar. 30, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

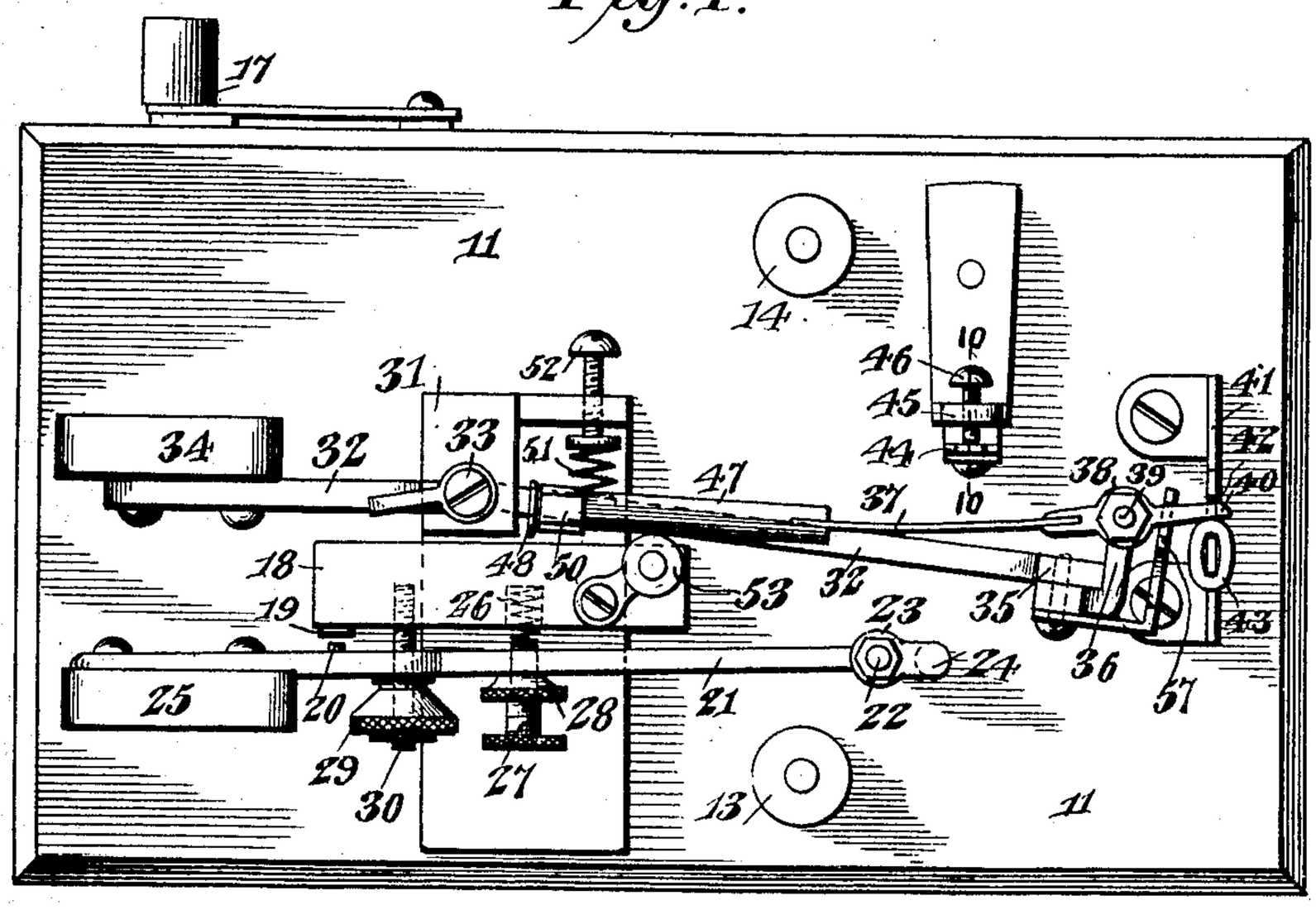
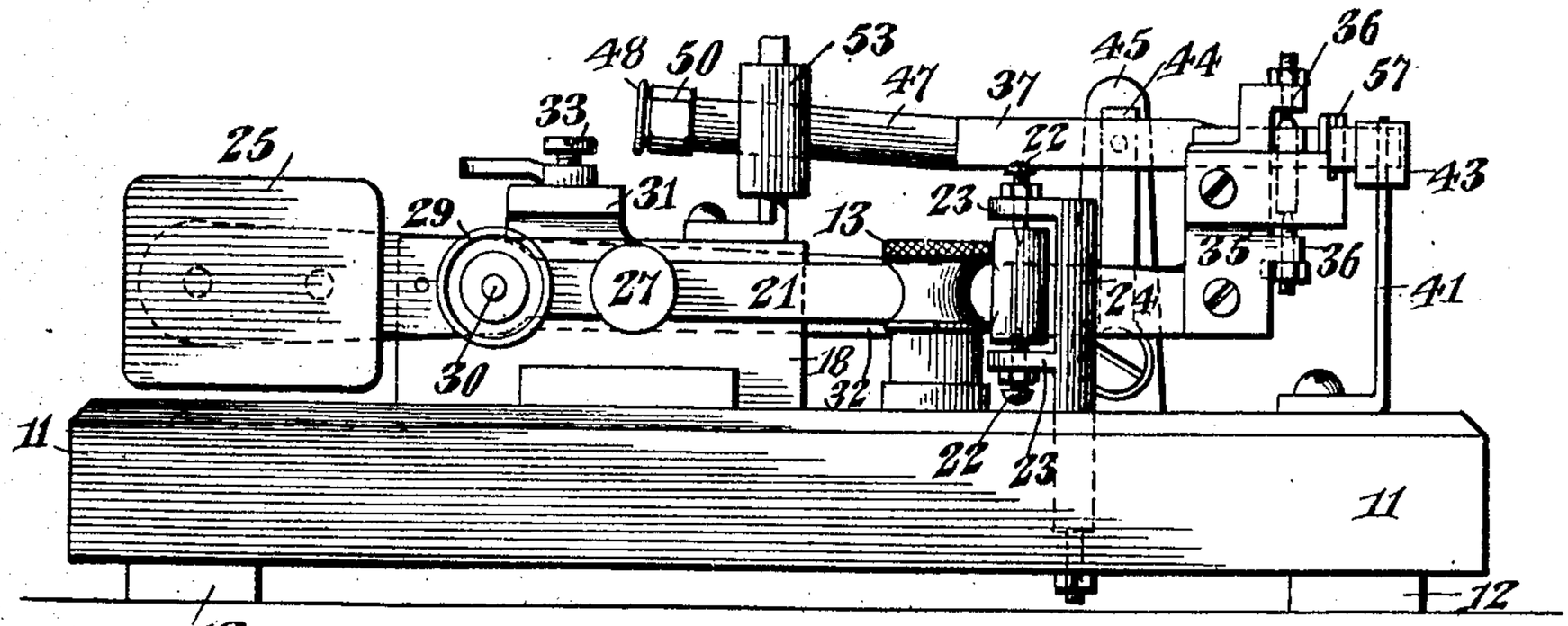


Fig. 2.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 4.

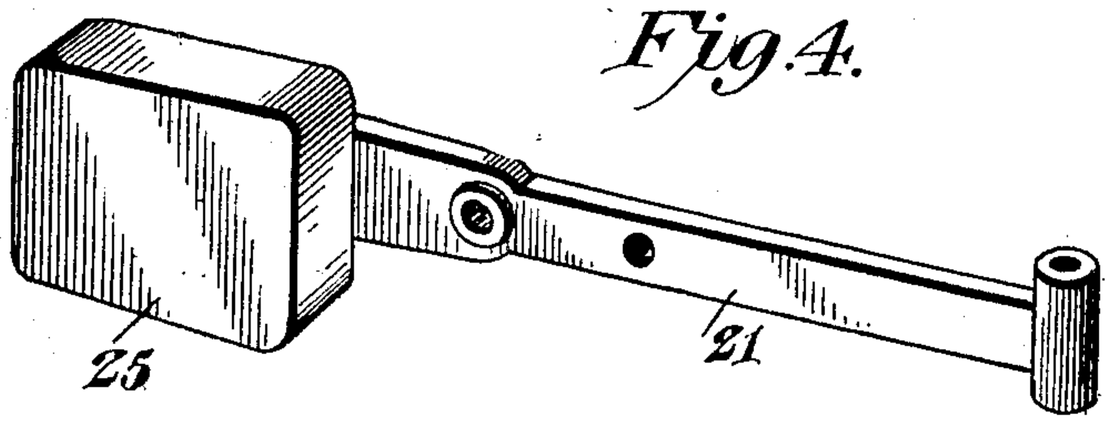


Fig. 5.

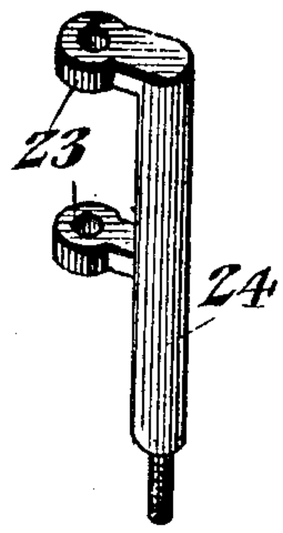


Fig. 6.

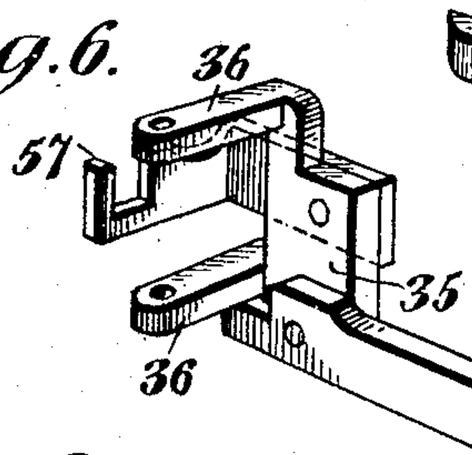


Fig. 7.

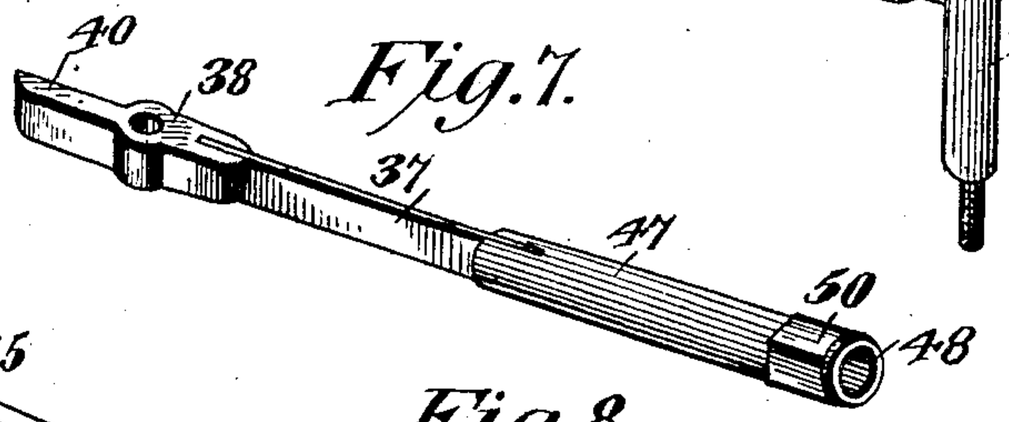


Fig. 8.

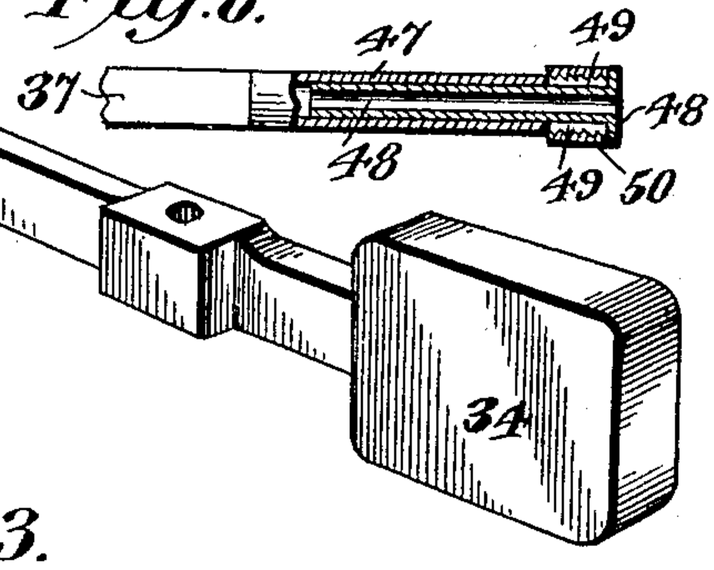


Fig. 9.

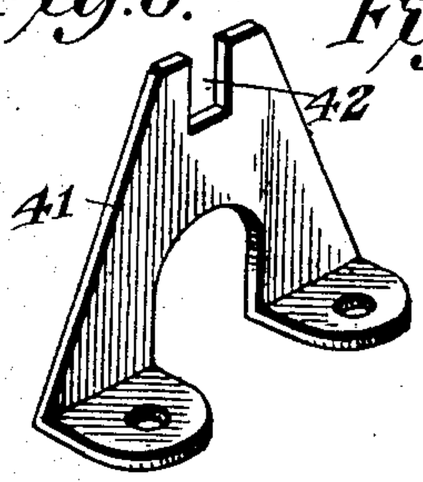


Fig. 10.

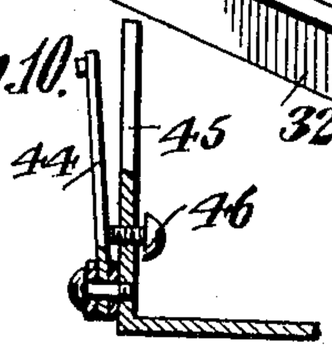
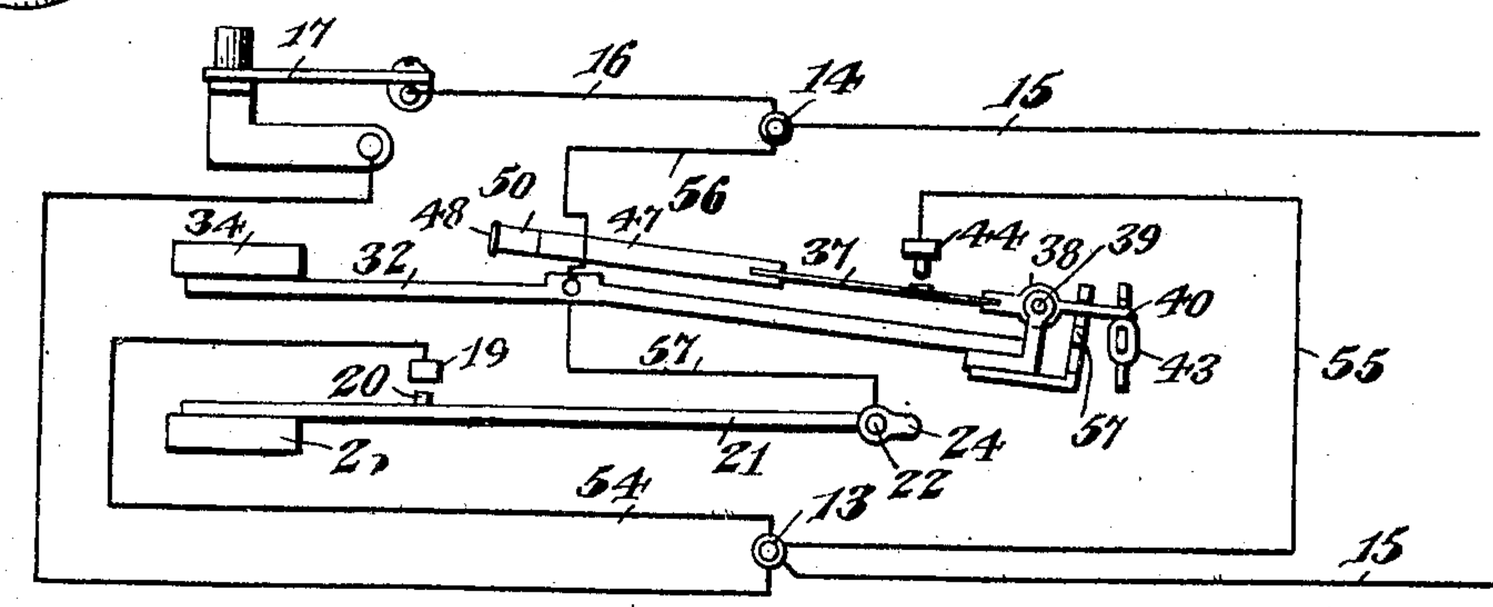


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

FLOYD WM. DE TRAY, OF AURORA, ILLINOIS, ASSIGNOR OF ONE-HALF TO WALDO DENNIS, OF CHICAGO, ILLINOIS.

TELEGRAPH-KEY.

No. 916,538. Specification of Letters Patent. Patented March 30, 1909.

Application filed August 15, 1907. Serial No. 388,698.

To all whom it may concern:

Be it known that I, FLOYD W. DE TRAY, a citizen of the United States, residing at Aurora, in the county of Kane and State of Illinois, have invented a new and useful Telegraph-Key, of which the following is a specification.

This invention relates to circuit closers, and more particularly to those employed as telegraph keys, though the features are perhaps useful in other analogous relations.

The primary object of the present invention is to provide an instrument with separate means for producing dashes and dots, the latter mechanism being so constructed that dashes cannot be produced thereon, thus materially reducing the chances of mistakes.

A further object is to provide an instrument that is convenient to operate so that accuracy and speed can be obtained.

A still further object is to provide mechanism that is readily adjustable to suit the desires or requirements of the individual operator.

The preferred embodiment of the invention is illustrated in the accompanying drawings, wherein:—

Figure 1 is a plan view of the instrument. Fig. 2 is a side elevation of the same. Fig. 3 is a diagrammatic view illustrating the electrical connections between the parts. Fig. 4 is a detail perspective view of one of the actuating levers. Fig. 5 is a view of the support therefor. Fig. 6 is a detail perspective view of the other actuating lever. Fig. 7 is a perspective view of the contact element operated by the lever illustrated in Fig. 6. Fig. 8 is a sectional view through the said contact element. Fig. 9 is a detail perspective view of the bearing for the contact element illustrated in Fig. 7. Fig. 10 is a detail sectional view on the line 10—10 of Fig. 1.

Similar reference numerals designate corresponding parts in all the figures of the drawings.

In the embodiment disclosed, a suitable base 11 is employed, which is supported on yielding cushions 12. Binding posts 13 and 14 are carried by the opposite portions of the base, and the leads 15, illustrated in Fig. 3, are connected thereto. A short circuit 16 for said leads is connected to the binding posts and includes the usual switch 17 pivotally mounted on one edge of the base 11, as illustrated in Fig. 1.

A block 18 of insulating material is mounted on the top of the base, and a contact element 19 is secured to one side of the same. Another contact element 20, carried by a lever 21, is movable into and out of engagement with the element 19. The lever 21 is fulcrumed at its rear end, as shown at 22 to the offset ears 23 of a post 24 fixed to the base, and the front end of said lever is provided with a suitable thumb or finger piece 25. It will thus be seen that the lever has a horizontal swinging movement to carry the contact element 20 into and out of engagement with the contact element 19. The movement into such engagement is effected by a finger pressure against the finger piece 25, but the opposite movement out of engagement is obtained by means of a spring 26 that is embedded in one side of the block 18, and bears against a tension varying screw 27 threaded through the lever 21, and having a jam nut 28 mounted thereon. The outward movement of the lever is limited by an adjustable stop nut 29 threaded upon a pin 30, said pin passing through the lever 21, and being fixed in the block 18. The lever slides freely upon the pin.

On the opposite side of the block to the above described mechanism is a bracket 31, and another actuating lever 32 is fulcrumed between its ends, as shown at 33 in said bracket. The outer end of the lever is provided with a thumb or finger piece 34 disposed on the opposite side of said lever to the thumb or finger piece 25. The rear end of the lever 32 is provided with a bracket 35 having spaced offset ears 36, and a contact element comprising a leaf spring 37, has at its rear end an eye 38 pivoted as shown at 39, to and between the ears 36. Said eye is provided with a rearwardly projecting finger 40, and an upstanding plate 41 secured to the base, has a notch 42 in which the finger 40 bears. A cushion 43, preferably surrounds one of the upstanding terminals of the plate 41, and is borne against by the finger 40. A fourth contact element, in the form of a spring 44, is disposed in the path of movement of the spring contact element 37, and is secured at its lower end to the lower end of a post 45 fastened upon the base. An adjusting screw 46, threaded through the post, engages the rear side of the spring 44. Mounted on the free end of the leaf spring 37, is an extensible weight comprising tele-

scoped sections 47 and 48, the latter sliding within the former. The free end of the section 47 is longitudinally slitted, as shown at 49, and a clamping nut 50, threaded thereon, serves to contract the split end in order to cause it to clamp upon the section 48. The spring arm 37 is normally out of engagement with the contact spring 44, and is yieldingly maintained out of such engagement by means of a spring 51 bearing against a screw 52 that is threaded through the upstanding portion of the bracket 31, the other end of said spring bearing against the lever 32. An adjustable cushioned stop 53, mounted on the top of the block 18, serves to limit the movement of the spring 37.

The electrical connections between the various parts will be seen in Fig. 3. The binding post 13 is connected to the contact elements 19 and 44 by wires respectively designated 54 and 55, and the binding post 14 is connected to the levers 32 and 21 by the wire 56 so that the contact elements 20 and 37 are thus in electrical communication with said binding post 14.

As long as the switch 17 is closed, the instrument will be short circuited in a manner well understood, but if such switch is opened, the circuit through the instrument will be broken until either one of the levers 21 and 32 is operated. The lever 21 is used for making the dashes in the ordinary manner. It will be evident that if the finger piece 25 is pressed, the contact elements 19 and 20 will be brought into engagement, thus closing the circuit. On the other hand, if the thumb or finger piece 34 is pressed, the rear end of the lever will be swung outwardly. This will cause the spring arm 37 to swing toward the contact element 44. The movement of the parts is limited by a stop hook 57 secured to the rear end of the lever and engaging the finger 40, but the momentum imparted to the weight 47 will cause the spring 37 to flex so that said spring 37 will engage the contact spring 44. Immediately, however, the spring will rebound due to the return of the weight 47, thus carrying it out of engagement with the spring 44, and immediately breaking the contact. With this device, therefore, a dot is produced and a dash cannot be formed, inasmuch as the contact will be automatically broken by the return of the weight and the straightening of the spring. The operator therefore in using the instrument places a finger against the piece 25, and a thumb against the part 34, so that in operating these parts, he can respectively form dashes and dots. With a little practice great speed and thorough accuracy can be obtained, and moreover, it will be evident that inasmuch as the various parts can be adjusted, the requirement of the individual operator may be suited.

From the foregoing, it is thought that the construction, operation, and many advantages of the herein described invention will be apparent to those skilled in the art, without further description, and it will be understood that various changes in the size, shape, proportion, and minor details of construction, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

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

1. In an instrument of the character set forth, the combination with a contact element, of a pivotally mounted contact element movable into and out of coaction with the same, and a swinging actuating device for the pivotally mounted contact element having a separate pivotal mounting, the pivot axes of the pivotally mounted contact element and the actuating device being substantially parallel, and the pivot axis of the pivotally mounted contact element being shiftable and being shifted upon the movement of the actuating device.

2. In an instrument of the character set forth, the combination with a contact element, of an actuating device, a second contact element movably supported on the actuating device, and means engaging the second contact element to effect its movement on the actuating device when said actuating device is operated.

3. In an instrument of the character set forth, the combination with a contact element, of an actuating device, a second contact element pivotally supported on the actuating device, and means engaging the second contact element to effect its swinging movement on the actuating device when said actuating device is operated.

4. In an instrument of the character set forth, the combination with a contact element, of an actuating device, a second contact element pivotally supported between its ends on the actuating device, and means engaging one end portion of the second contact element to effect its swinging movement on the actuating device and the engagement and disengagement of the other end portion with the first contact element when said actuating device is operated.

5. In an instrument of the character set forth, the combination with a contact element, of a swinging actuating lever, a second contact element having a pivotal mounting on the actuating lever, and a stationary bearing for the second element that effects its swinging movement on the lever when said lever is operated.

6. In an instrument of the character set forth, the combination with a contact element, of an actuating device, and a second contact element having a stationary pivotal bearing, and a pivotal bearing on the actuat-

ing device, said second contact element including a weighted spring having a portion that is movable into and out of engagement with the first mentioned contact element.

7. In an instrument of the character set forth, the combination with a contact element, of an actuating lever, a contact element pivoted between its ends on the actuating lever, and a stationary bracket in which one arm of the contact element is engaged, the other arm being a spring and being movable into coaction with the first mentioned contact element.

8. In an instrument of the character set forth, the combination with a contact element, of a movable actuating device, a second contact element pivoted between its ends on the actuating device, and cushions located in the path of movement of the second contact element and engaging portions of the same on opposite sides of its pivot axis.

9. In an instrument of the character set forth, the combination with a contact element, of a swinging actuating lever, a second contact element pivotally supported between its ends on the lever, a bracket in which one end of the second contact element is engaged, the portion of said element on the opposite side of the pivot to the bracket being movable into and out of engagement with the first mentioned contact element, cushions engaging the second contact element on opposite sides of its pivot, one of said cushions being carried by the bracket, and means engaging the actuating lever for normally maintaining the second contact element against the cushions.

10. In an instrument of the character set forth, the combination with a contact element, of a flexible swinging element movable into and out of engagement therewith, an actuating device for the swinging element pivotally engaged therewith, and a stop that engages the swinging element when operated by the actuating device to cause it to flex, and thereby move into engagement with the first mentioned contact element.

11. In an instrument of the character set forth, the combination with an actuating lever, of a contact element pivotally supported thereon, and means engaging the element to effect its swinging movement on the lever when said lever is actuated.

12. In an instrument of the character set forth, the combination with an actuating lever fulcrumed between its ends, of a contact element comprising a swinging arm pivotally supported on the rear end of the actuating lever, and a stationary bearing, said arm having an engagement with the bearing at one side of its pivot support.

13. In an instrument of the character set forth, the combination with a base, of an actuating lever fulcrumed between its ends on the base and having a finger-piece at one end, a contact element comprising an arm pivotally supported between its ends on the other end of the lever, a bracket secured to the base and having a notch in which the arm is engaged, and a stop carried by the lever and coöperating with the arm.

14. In an instrument of the character set forth, the combination with a contact element, of a flexible contact element movable into and out of coaction therewith, an actuating device for the flexible element, and means mounted on the actuating device and engaging the flexible element for causing it to flex.

15. In an instrument of the character set forth, the combination with a contact element, of a flexible contact element movable into and out of coaction therewith, an actuating device connecting the flexible element, and a stop mounted on the actuating device and engaging the movable contact element for limiting the movement thereof by said actuating device and the consequent flexing of said element.

16. In an instrument of the character set forth, the combination with a contact element, of an actuating device, and a flexible contact element movably associated with the actuating device, said device and flexible element being provided one with a stop and the other with a portion located in the path of movement of the stop to limit the movement of the contact element by the actuating device and to cause the consequent flexing of said element.

17. In an instrument of the character set forth, the combination with a base, of a post mounted on the base, a yielding contact element connected to the post, a lever, a spring arm pivoted to the lever and movable into and out of engagement with a portion of the yielding contact element, and means engaging another portion of the yielding contact element to adjust the same and hold it in different positions.

18. In an instrument of the character set forth, the combination with a contact element, of an actuating lever, a flexible contact element pivotally mounted on the lever, means for causing the flexible element to swing upon the lever when said lever is actuated, and a stop carried by the lever and movable into engagement with the element to limit the movement of said element by the lever and cause the flexing of the element.

19. In an instrument of the character set forth, the combination with a contact element, of an actuating lever, a second contact element pivoted between its ends on the actuating lever, said element having a substantially unyielding arm and a flexible arm, the latter being movable into and out of engagement with the first mentioned contact element, a stationary bracket engaging the unyielding arm to cause the swinging move-

ment of the element on the lever when said lever is operated, and a stop hook carried by the lever and having a portion disposed in the path of movement of the unyielding arm.

20. In an instrument of the character set forth, the combination with a yielding contact element, of an actuating lever fulcrumed between its ends, a spring contact element pivoted to the lever and movable into engagement with the yielding contact element, a bearing for said arm engaging the same at one side of its pivotal connection with the lever, and a weight mounted on the free end of the arm.

21. In an instrument of the character set forth, the combination with a contact element, of a swinging spring arm movable into and out of engagement therewith and including a tubular outer end portion having a compressible end and constituting a weight section, another weight section slidably mounted within the first mentioned section, and means for compressing the end of the tubular portion upon the slidable section and securing said slidable section in different positions and against movement.

22. In an instrument of the character set forth, the combination with a contact element, of a swinging spring arm movable into and out of engagement therewith, means for swinging the arm, and an extensible weight mounted on said arm, said weight comprising slidably telescoped sections and a clamping device carried by one section and engaging them to hold the sections in different relative positions.

23. In an instrument of the character set forth, the combination with a base, of a post mounted thereon, a yielding contact element disposed alongside the post, an adjusting screw threaded through the post and engaging the contact element, another yielding element movable into and out of engagement with the first mentioned yielding element, and means for operating the second yielding element.

24. In an instrument of the character set forth, the combination with a base, of separate oppositely and substantially horizontally swinging actuating levers spaced apart and separately fulcrumed on said base, said levers having separate finger pieces, a set of coacting contact elements, one of which is mounted on the base between the levers, the other being mounted on one of the levers, another contact element mounted on the base, and a flexible contact element movable into and out of coaction with the latter contact element and operated by the other lever.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

FLOYD WM. DE TRAY.

Witnesses:
I. B. CHATTLE,
O. A. HOLCOMB.