

No. 755,168.

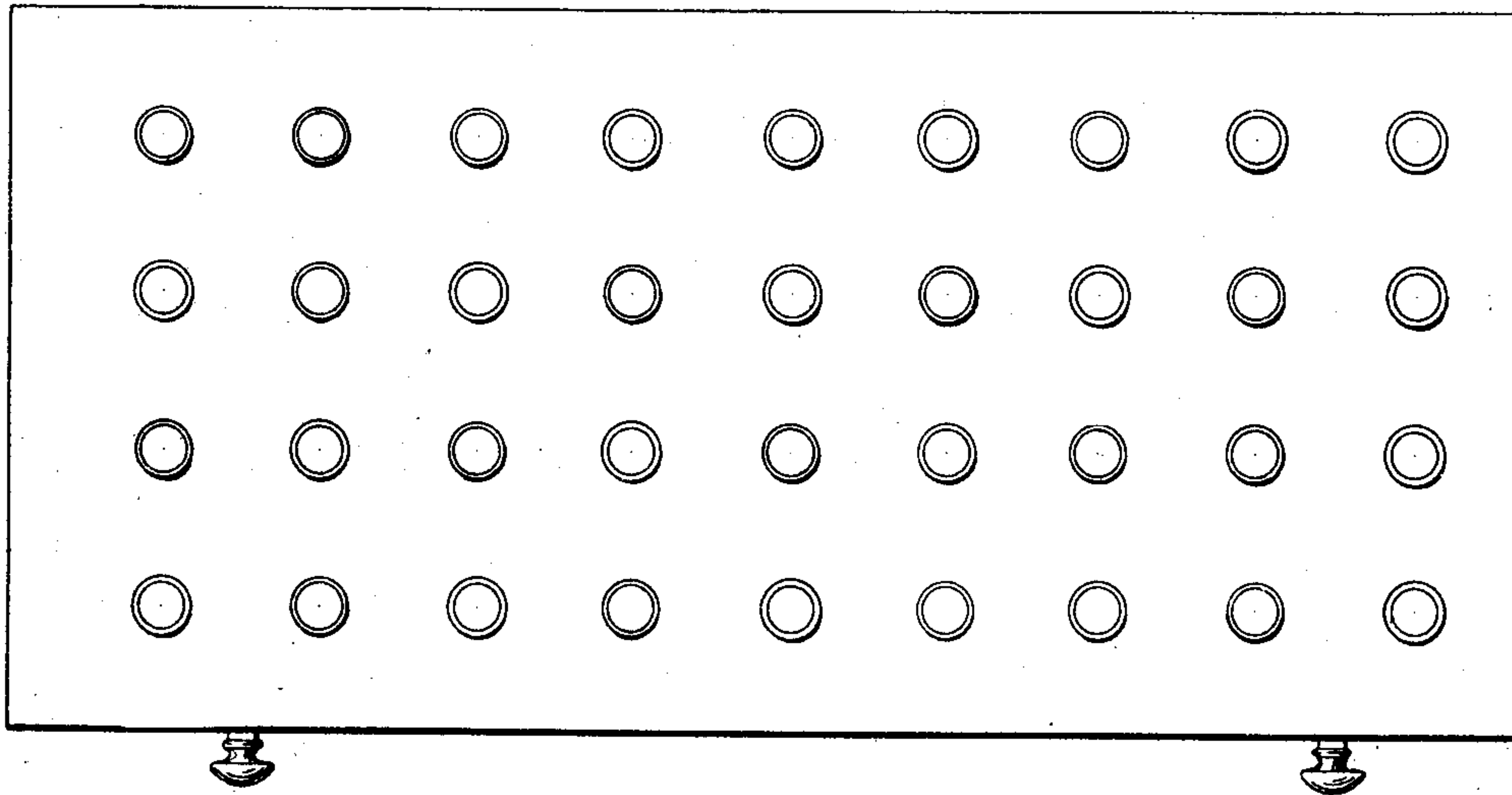
PATENTED MAR. 22, 1904.

C. F. PIDGIN.  
APPARATUS FOR RECORDING STATISTICAL DATA.

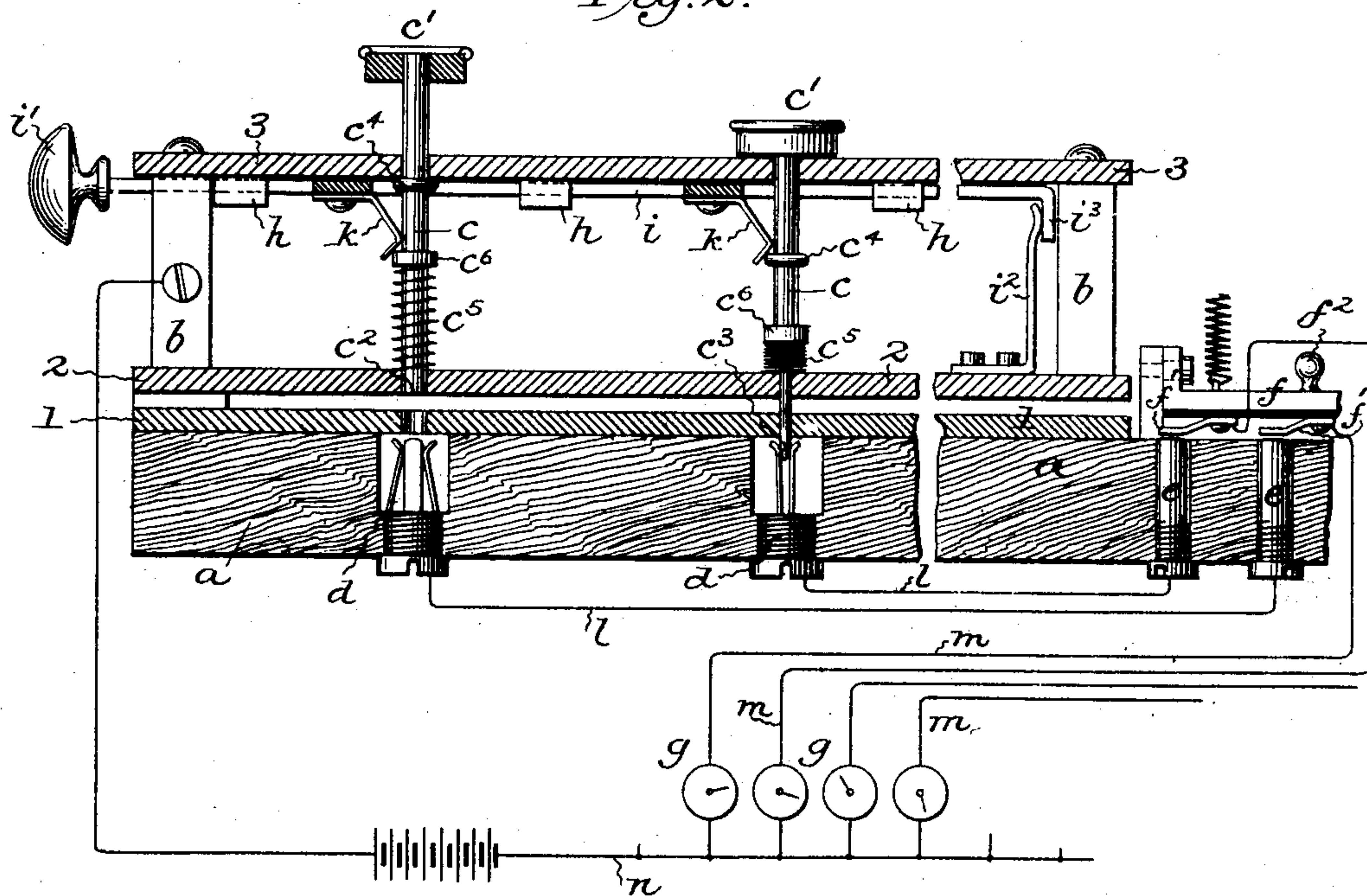
APPLICATION FILED AUG. 17, 1899.

NO MODEL.

*Fig. 1.*



*Fig. 2.*



Witnesses

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# UNITED STATES PATENT OFFICE.

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## APPARATUS FOR RECORDING STATISTICAL DATA.

SPECIFICATION forming part of Letters Patent No. 755,168, dated March 22, 1904.

Application filed August 17, 1899. Serial No. 727,532. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES F. PIDGIN, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Apparatus for Recording Statistical Data, of which the following is a specification.

This invention relates to means for recording statistical data, and has particular reference to apparatus of the general type shown in my application filed June 17, 1899, Serial No. 720,995, in which application the method and means set forth provide for tabulating or compiling statistics, such as sociological or population statistics of a census, and in general this present invention may be referred to as an improvement upon or carrying forward of the invention described in said application; but the present invention has a wider scope of utility in that it is adapted to be embodied in machines for other purposes, such as for voting, as will be more fully described hereinafter.

One of the objects of the present invention is to provide a punch-board of the same general type as in said application, Serial No. 720,995, but so constructed that if an error is made by the operator it may be corrected before the count is made.

Another object is the provision of means for expeditiously and economically counting statistical data without the necessity of transferring the same from the original schedule by punching, stamping, or writing on individual cards or slips.

A further object of the invention is to provide means which can be utilized in connection with the "Australian ballot system" for instantaneously counting the votes for each candidate as soon as the voter or voters have completed their ballots.

A further object of the invention is the production of a machine adapted for general multiple counting or indicating and recording, the counting or indicating and the recording action of each of the plurality of mechanisms being simultaneous.

The invention consist in the means and in the construction and combination of parts for attaining these objects, as will be more fully

hereinafter set forth and then pointed out in the claims hereto appended.

In the accompanying drawings, which illustrate so much of the apparatus as is necessary to a clear understanding of the invention, Figure 1 represents a plan view of a keyboard constructed with thirty-six keys in four rows of nine each; but it is to be understood that the keys or punches may be indefinitely varied both as to number and arrangement of rows. Fig. 2 represents a vertical section of the keyboard enlarged from the scale of Fig. 1 and indicating some of the counters and the electrical connections in a conventional manner. It is to be understood that in practice the number of counters will equal the number of keys or punches and that said counters may be of the type shown and described in the application above referred to.

Similar reference characters indicate similar parts in both figures.

The keyboard comprises a base *a*, preferably of wood, in which is a metal plate 1 and suitable supports or standards *b* for the two plates 2 and 3. For convenience the plate 1 will be referred to as the "bottom" plate, plate 3 as the "top" plate, and plate 2 as the "middle" plate. The middle plate 2 is supported at a slight distance above the bottom plate 1, such as one-sixteenth of an inch or more, for a purpose hereinafter explained, while the top plate 3 is supported an inch or more above the middle plate. The three plates are provided with holes in alignment with each other, each plate of the size and capacity represented in the drawings, having four rows of holes and nine holes in a row.

A pin or plunger *c*, having a head or key *c'*, is mounted to reciprocate in each pair of aligned holes of the plates 2 and 3 and may be formed at its lower end either flat, as indicated at *c''* in Fig. 2, or pointed, as indicated at *c'''* in said figure. Each pin or plunger is provided with a collar *c''''*, adapted to limit the upward movement of the pin by contact with the under side of the top plate 3, and a spring *c''''''* is coiled about the pin and is confined between the top of the middle plate 2 and an annular abutment *c''''''''*, secured to said pin, said spring tending to hold the pin in the position shown at



the left in Fig. 2. At the upper end of each pin or plunger is a head or key  $c^7$ , having suitable means for bearing a distinguishing index or character on its upper face.

5 The base  $a$  is provided with a suitable electrical socket-contact  $d$  below and in line with each hole in the plate 1, which contact may be of the type shown in the application above referred to or which may consist, as here  
10 shown, of a plug having two or more springs adapted to coact with the pin or plunger when the latter is depressed to complete an electrical circuit, said pin or plunger acting, therefore, as a switch. Each contact  $d$  is electrically connected with a plug  $e$  in the base  $a$ , and  
15 above the series of plugs  $e$  is a yieldingly-supported bar  $f$ , having a series of springs  $f'$  insulated from each other and having a button  $f^2$ , by means of which all of the springs  $f'$  may be simultaneously pressed in contact  
20 with the plugs  $e$ . Each spring  $f'$  is electrically connected with one of a series of counters  $g$ , which, as above stated, may be of the type shown in the application referred to.

25 On the under side of the top plate 3 there are secured two or more strips  $h$ , between which and the under side of the plate a frame  $i$  is adapted to slide, said frame consisting of two or more bars having a projecting handle  
30 or handles  $i'$ , by means of which the said frame may be drawn slightly outward against the stress of the spring  $i^2$ , secured to the top of the middle plate 2 and bearing against a lug  $i^3$  at the inner end of the frame. Spring detents  
35 or pawls  $k$  are secured to the frame  $i$ , one for each of the pins or plungers  $c$ . Each of said spring-detents bears against the side of its respective pin  $c$  and has its lower end slightly beveled or inclined for a purpose which will  
40 be presently described. When a pin  $c$  is depressed to the position shown at the right in Fig. 2, so that its lower end will make the electrical contact hereinbefore described, the collar  $c^4$  of said pin moves the spring  $k$  to  
45 one side until said collar catches below said spring, whereby the pin will be held in its depressed position. If the operator should, however, make an error and depress the wrong key, it can be forcibly pulled upward, the inclined  
50 lower end of the detent permitting the collar  $c^4$  to pass it in an upward direction, or, if desired, as when errors have been made, all of the pins which have been depressed may be released, so as to be forced upward by their  
55 springs  $c^5$  by grasping the handle or handles  $i'$  of the frame  $i$  and pulling said frame outward, so that all of the detents  $k$  may be withdrawn from their positions above the collars  $c^4$ .

Referring to Fig. 2, it will be seen that the  
60 hole at the left in the bottom plate 1 is reamed, so as to enable the pin  $c$  to readily pass into and through said hole; but, if desired, said hole in the plate 1 may be formed with cutting edges to cooperate with the lower end  
65 of the pin to punch a well-defined hole in a

sheet of paper or card interposed between the plates 1 and 2. The pin  $c$  (shown at the right in Fig. 2) is pointed, so as to easily make a small perforation in such a sheet of card.

When the apparatus described is employed 70 merely for counting the items making up statistical data, the keys, which are provided with suitable index characters, are depressed according to the data to be counted. The said keys are held in their depressed positions by 75 the detents; but no counting is yet effected, for the reason that the electrical circuits are still broken between  $e$  and  $f'$ . Therefore, if an error has been made, either one or all of the pins or plungers may be elevated, as  
80 hereinbefore described. By simply depressing the button  $f^2$  the particular counters will be simultaneously operated one step according to the particular pins which are depressed. By then simply sliding the frame  $i$  outward 85 all of the pins are released and are automatically raised ready for the next operation. When it is desired to make a permanent record of the statistical or other data desired, a sheet of paper or cardboard properly divided into 90 squares or spaces and otherwise marked, if desired, is inserted between the plates 1 and 2, the pins when in their normal elevated positions having their lower ends above the space between said plates. When the pins are de- 95 pressed or pushed down, as above described, they first pass through and perforate the sheet of paper or card and then pass to the contacts  $d$ , as above described. The rest of the operation as to the counting remains the same. 100

By omitting to depress the button  $f^2$  or by omitting the counters altogether the apparatus may be used for simply making a permanent record in a sheet or card.

In voting according to the Australian bal- 105 lot system the method of use would be as follows: Upon the top plate a copy of the ballot would be suitably placed under glass, and at the end of each line where the "X" mark is usually made there would be a detent or key. 110 The voter would take his ballot and place it between the plates 1 and 2 and then record his vote by pushing down the keys opposite the names of those for whom he desired to cast his ballot. The pins would perforate the 115 ballot, thus forming a record for subsequent use or examination. The ballot being complete, he would inform the warden or elections officer, who would push the button  $f^2$ . Each vote would then be instantaneously counted 120 upon its respective counter for each candidate voted for. The officer would then pull the handles  $i'$ , thus releasing the perforated ballot, which the voter would then deposit in the ballot-box, as usual. In case the voter made 125 a mistake by voting for the wrong person or voting for two candidates for the same office when he should have voted for but one the officer can release the ballot by means of the handles  $i'$ , marking the same void, and sup- 130



ply the voter with a new ballot. When the polls close, the officer can open the doors, which are kept locked during the voting hours, and disclose the counters bearing the names of the candidates, and the votes for each candidate can be taken down immediately and supplied to the public press without loss of time in counting ballots. Later the ballots may be examined, and if it is found that a voter has voted for more candidates for a certain office than he is entitled to the officers can take the same course that they now do with ballots improperly checked and revise their count. Where the names of parties are written upon blank lines upon the ballot, they would be counted altogether under a head which might be termed "Scattering" or "Miscellaneous." Thus a vote might be announced "Jones, 682; Walker, 457; scattering, 31." When the perforated ballots are examined, it might be ascertained that of the scattering votes twenty-five were for John Smith and six for Richard Roe, and these names could appear in the revised count.

If the paper or card to be perforated is of a nature which prevents an easy punching by means of the plungers, such as shown at the left in Fig. 2, by the ordinary pressure of the finger, any suitable power-increasing device might be employed to enable the operator or voter to apply sufficient power to the punch.

The electrical connections between the sockets *d* and plugs *e* are indicated at *l* and the electrical connections between the switch-springs *f'* and the counters *g* are indicated at *m*.

*n* represents an electrical connection from the plurality of counters through a battery and to one of the standards *b* or any other suitable part of the apparatus to enable each of the pins *c* to act as a switch, as above described.

It will be observed that each of the socket-contacts *d* is entirely insulated from any of the metallic parts above it.

Having now described my invention sufficiently to enable the same to be understood, although without attempting to set forth all of

the modifications of which the machine is capable or all of its modes of use, I declare that what I claim is—

1. An apparatus of the character described comprising a plurality of counters, a suitable support for a sheet such as paper, a plurality of electrical contacts below said support each of said contacts being adapted to be put into electrical connection with a counter, manually-movable devices adapted to perforate the sheet and complete the circuit through said contacts, and a normally open switch for simultaneously connecting a plurality of counters with a plurality of manually-movable devices.

2. An apparatus of the character described, comprising a base, a paper-guide mounted thereon, a plurality of counters, a plurality of contacts in circuit with said counters and located below said guide, and a corresponding number of pins or plungers having penetrating ends arranged to perforate a card or paper in said guide, said pins or plungers being adapted to close the circuits through said contacts.

3. An apparatus of the character described, comprising a base, a paper-guide mounted thereon, a plurality of counters, a plurality of contacts in circuit with said counters and located below said guide, and a corresponding number of pins or plungers having penetrating ends arranged to perforate a card or paper in said guide, said pins or plungers being adapted to close the circuits through said contacts, collars located on said pins or plungers, springs for normally retaining said pins or plungers in a raised position, detents arranged to engage said collars and hold said pins or plungers against the action of said springs, and a normally open switch for simultaneously connecting a plurality of counters with a plurality of said pins or plungers.

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

CHARLES F. PIDGIN.

Witnesses:

WILLIAM G. GRUNDY,  
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