

Aug. 4, 1925.

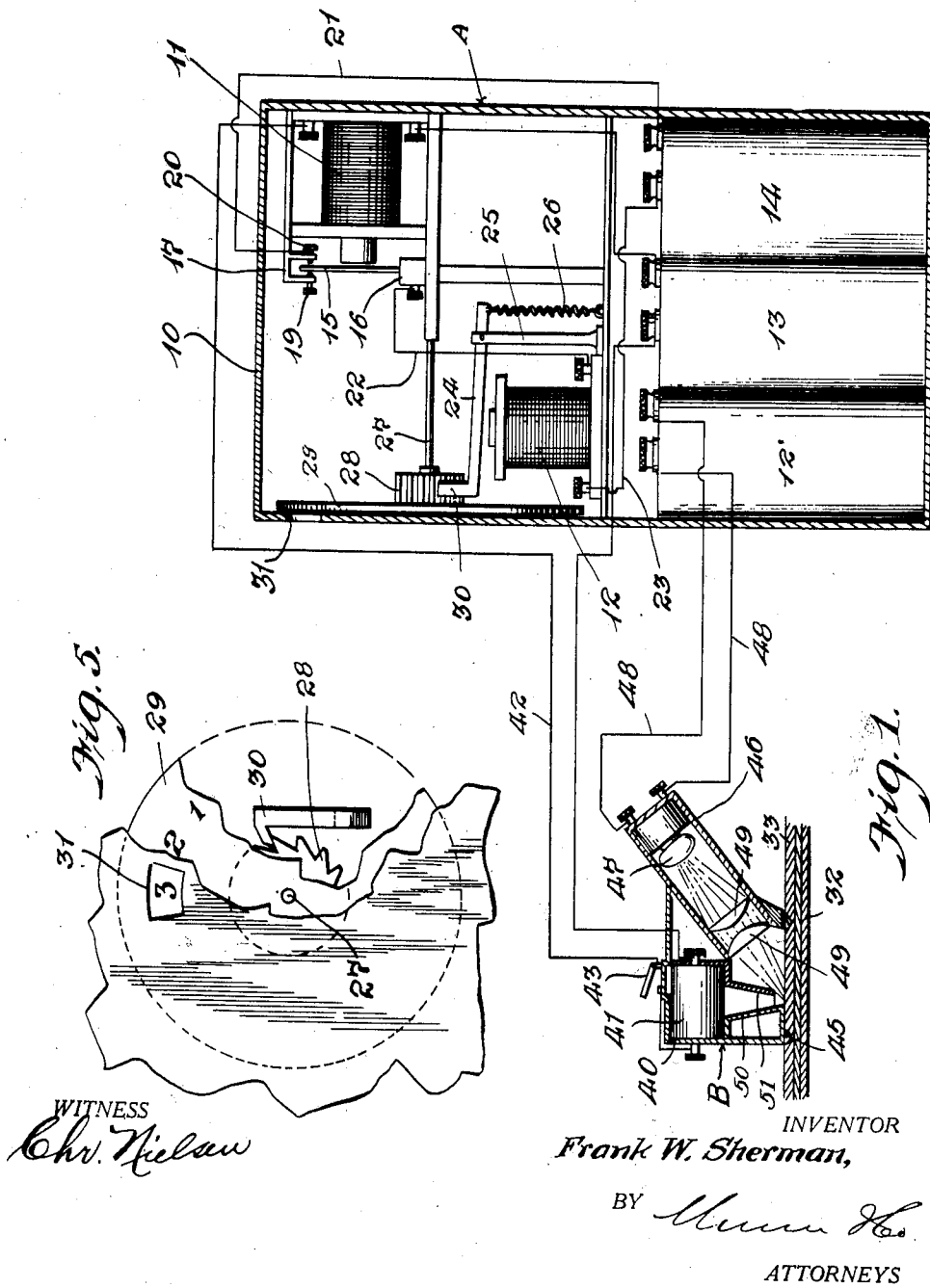
1,548,102

F. W. SHERMAN

COUNTING APPARATUS

Filed June 13, 1924

2 Sheets-Sheet 1



WITNESS
Chr. Nielsen

INVENTOR
Frank W. Sherman,
BY *Mum H.*
ATTORNEYS

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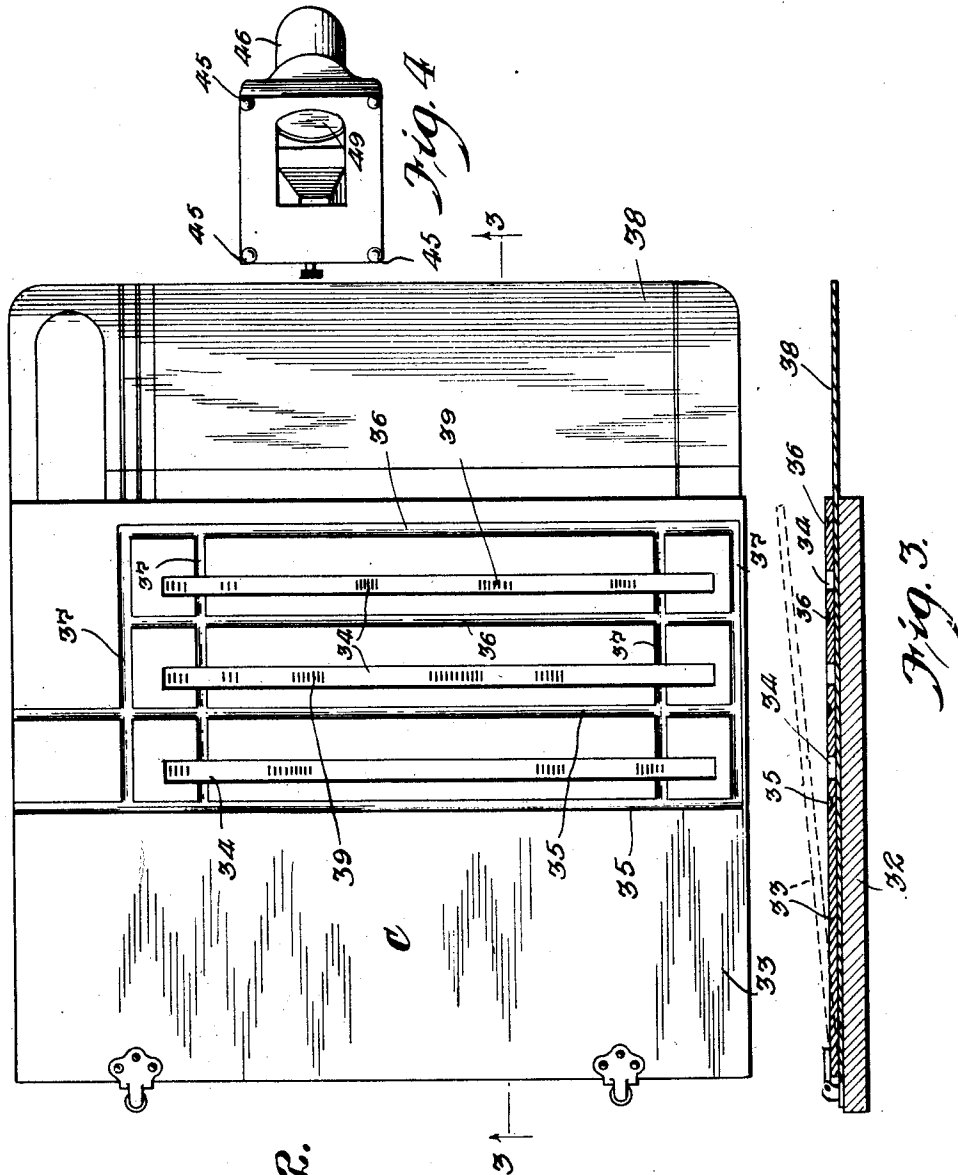
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2 Sheets-Sheet 2



WITNESS
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Fig. 2.

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UNITED STATES PATENT OFFICE.

FRANK WALTER SHERMAN, OF JACKSONVILLE, FLORIDA.

COUNTING APPARATUS.

Application filed June 13, 1924. Serial No. 719,827.

To all whom it may concern:

Be it known that I, FRANK W. SHERMAN, a citizen of the United States, and a resident of Jacksonville, in the county of Duval and State of Florida, have made certain new and useful Improvements in Counting Apparatus, of which the following is a specification.

This invention relates to a counting apparatus.

The present apparatus is particularly adapted for counting dots or dashes.

Statements of account are provided by banks for depositors. These statements comprise different columns of figures showing deposits and withdrawals of the depositor. Each item in the withdrawal column is followed by a dash and such is also true with respect to the other columns upon the statement. In checking these statements it is necessary to count the items in the withdrawal column in order to ascertain if they correspond to the number of checks on file showing withdrawals. The deposit column is similarly checked.

The primary object of the present invention is to provide an apparatus by which the number of dashes in the different columns referred to may be counted and thus enable a quick and accurate checking of the number of items in each column with the number of checks or deposit slips on file.

It is further to be understood that while my invention is suited for the purpose heretofore specified, the same can be utilized for counting dots, dashes, marks, or the like used for other purposes.

The invention is illustrated by way of example in the accompanying drawings, in which:

Figure 1 is a schematic view showing in vertical section the different units employed in the apparatus and also the electrical wiring system therefor;

Figure 2 is a top plan view of the supporting means for the sheet bearing the dashes to be counted;

Figure 3 is a transverse sectional view of the same taken substantially on the line 3—3 of Figure 2;

Figure 4 is a bottom plan view of detector unit, and,

Figure 5 is a fragmentary front elevation of the counter unit, parts being broken away to show the structure of the counter dial employed and actuating means therefor.

Referring to the drawings more particularly, the counter unit is generally designated by the reference character A, the detector unit by reference character B, and the statement supporting unit by the reference character C.

The counter unit comprises a casing 10 in which there is suitably mounted the two electro-magnets 11 and 12. These magnets should be so arranged that sufficient space is provided therebeneath to accommodate the batteries 12', 13, 14.

The magnet 11 has associated therewith an armature 15 which is resilient and supported by a block 16. A U-shaped clip 17 is arranged to receive the free end of the armature 15. This clip carries an adjusting screw 19 to limit the outward movement of the armature 15, and also carries a contact screw 20 which is connected by lead 21 with battery 14. The block 16 for supporting the spring armature 15 is of current conducting material and electrically connected to one terminal of the winding constituting the electro-magnet 12, through a lead 22; the other terminal of said winding of electromagnet 12' being connected through lead 23 with battery 14.

An armature 24 is provided for the magnet 12, said armature being fulcrumed near its one end by post 25. A retractile spring 26 is employed to urge the armature 24 to swing from the magnet 12.

A rod 27 is suitably journaled within the casing 10 and this rod carries a ratchet wheel 28, and a dial 29 which has printed upon its front face a series of numbers arranged in circular formation as shown in Figure 5. The numbers should begin with the numeral one and proceed in consecutive order as shown in Figures 5. The free end of armature 24 carries a pawl 30 which is adapted to engage ratchet wheel 28 upon downward movement of the armature 24 and rotate the dial 29. The casing 10 has its front wall formed with an opening 31 through which the numbers on the dial 29 may be observed when brought into register with said opening.

The supporting unit C comprises a table 32 to which there is hinged a cover 33. The cover plate 33 is preferably of aluminum and adjacent its free edge there is provided a plurality of elongated slots 34. This end of the cover 33 is also provided with a pair of grooves 35 which extend substantially the

entire width of the plate. The plate is further provided with the parallel grooves 36 and the connecting grooves 37. As shown in Figure 2 a balance or statement sheet 38 may be placed beneath the cover plate 33 and the rows of dashes to be counted indicated at 39 brought to register with slots 34 of the cover 33.

The detector unit B comprises a casing 40 which may be of any desired shape and within the upper part of said casing there is suitably mounted a selenium cell 41. This cell is inserted in an electrical circuit 42 which also includes in series connection a switch 43, magnet 11 and battery 13.

The casing 40 is supported by rounded lugs 45 which are preferably four in number. The lugs are shaped to slide in the grooves 35 and thereby to bring the casing 40 to move over the slot 34 occurring between these slots in plate 33, also the connecting grooves 37 permit the casing to be positioned to move over either of the other slots 34 in plate 33 as is entirely apparent.

The casing has integrally formed therewith a tubular extension 46 which is disposed substantially as shown in Figure 1 and which carries an electric lamp 47. The lamp 47 is connected to battery 12 by wires 48. The tubular extension also carries concentrating lenses 49 which are adapted to direct the rays of light emanating from the lamp 47 upon the portion of paper of sheet 38 which is exposed through slot 34 over which the casing 40 may be disposed.

Within the casing 40 there is mounted in any suitable manner baffle plates 50 and 51 which restrict the area of the cell 41 that may be subjected to the rays of light reflected from the sheet 38.

In the use of the present device the balance sheet 38 is positioned as best illustrated in Figures 2 and 3 and thus expose a row of dashes to be counted through one of the slots 34 in the cover plate 33. The casing 40 is now positioned, so that the rays of light projected from the lamp 47 and lenses 49 will strike the exposed portion of paper disposed in the slot over which the casing 40 is positioned. Light will be reflected from the paper upon the selenium cell and thereby lower the resistance of the cell sufficiently to permit current to flow through said cell from battery 13. This current will also flow through the electro-magnet 11. The magnet 11 will draw its armature 15 to engage contact 20 and thereby establish a circuit through the electromagnet 12 which will draw downward upon the fulcrumed armature 24 and rotate the dial 29 to bring one of the numbers upon said dial into register with opening 30' in casing 10. If the casing 40 is moved over the plate 33 the different dashes in register with the slot 34 over which the casing is moved will come

into register with the rays of light projected from the lamp 47 and lenses 49. Each dash will cast or reflect a shadow upon the cell 41 and thereby increase its resistance to the flow of electric current in circuit 42. The decrease of current in this circuit will cause the electro-magnet 11 to release its armature 15 and thereby break the circuit through the magnet 12. The armature 24 will assume its normal position under the influence of spring 26. Each dash upon the balance sheet 38 causes the armature 24 to assume its normal position, viz, away from the electro-magnet as shown in Fig. 1. Between successive dashes the armature 24 will be drawn to the magnet 12 and the dial 29 moved to bring the next successive number in register. The number of dashes are in this manner registered by the dial 29.

It should be noted that the selenium cell could be substituted by any other element or device which would act to vary current flow similar to that described for the selenium cell. Also in case the marks or dashes to be counted are red or other color instead of the usual black, then the action upon the selenium cell would be different and the current circuits would be arranged accordingly. It is further noted that in case the currents controlled by the selenium cell are not strong enough for operating the relay described, then an amplifier for weak currents could be inserted in the circuit between the relay and cell.

While I have shown and described the preferred form of my invention, I wish it to be understood that I am aware of the fact that changes may be made in the general construction, combination and arrangement of parts without departing from the spirit of my invention as indicated by the appended claims.

I claim:—

1. A counter device comprising a casing having a restricted opening in the bottom thereof, means for supporting the casing to slide upon a surface, a selenium cell within the casing, a second casing attached to the first named casing and extending at an angle thereto, a light and lenses within the second casing, whereby a beam of light may be focused upon a point intersecting an axial line projected from the opening in the first named casing.

2. In an apparatus of the character described, a sheet of light reflecting material having marks thereon arranged in rows, a cover for the sheet having slots with which the rows of marks may register, a casing having a restricted opening, and adapted to be manually moved over the cover with its opening in register with a slot, a selenium cell in the casing, means whereby light may be directed upon the surface of the sheet material over which the casing is moved, and

thereby cause a shadow to be reflected upon the selenium cell with each mark brought into register with its opening.

3. In an apparatus of the character described, a table, a sheet of light reflecting material upon the table, marks upon the sheet arranged in a row, a cover for the table having a slot with which the row of marks may register, a selenium cell, a mounting therefor including a source of light adapted to concentrate the rays emanating therefrom to strike the portion of sheet material exposed through the slot of said cover and be reflected upon the cell and to cast a shadow upon the cell when said

light strikes a mark upon the sheet, whereby with movement of the light and cell over the slot in the cover the shadows of the marks will be successively cast upon said cell for the purpose described.

4. A counter device comprising a casing having a restricted opening, a selenium cell within the casing, means whereby the casing may be supported for moving the same over a surface, a light carried by the casing, and lenses whereby the light can be focused upon a point intersecting an axial line projected from the opening in said casing.

FRANK WALTER SHERMAN.