

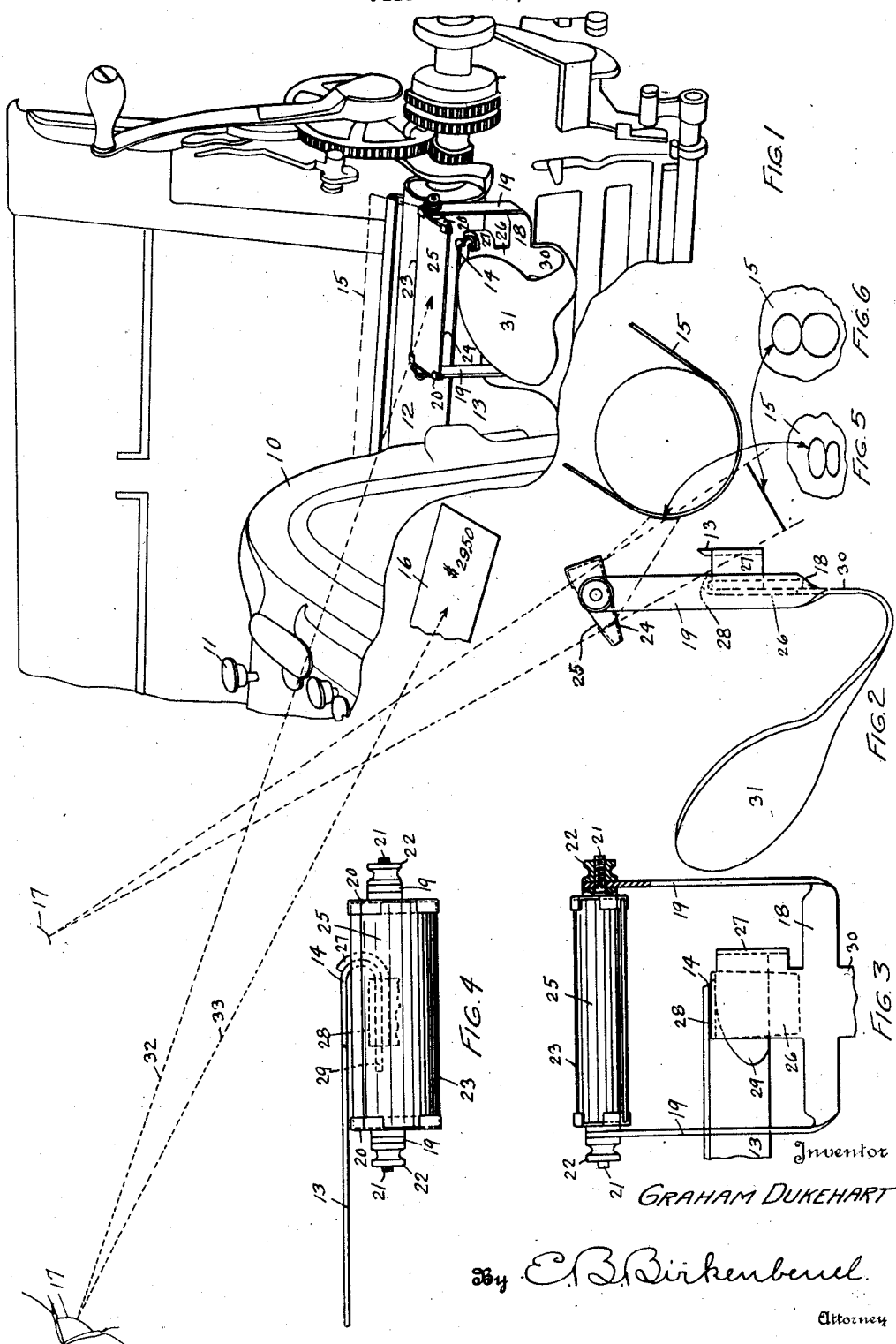
Sept. 21, 1926.

1,600,808

G. DUKEHART

LENS AND REFLECTOR FOR ADDING MACHINES

Filed Feb. 18, 1925



UNITED STATES PATENT OFFICE.

GRAHAM DUKEHART, OF PORTLAND, OREGON.

LENS AND REFLECTOR FOR ADDING MACHINES.

Application filed February 18, 1925. Serial No. 9,910.

This invention relates particularly to adding machines such as are used at banks for bookkeeping and preparing statements of accounts.

5 The first object of this invention is to provide a special form of lens which will have the properties of a prism and which will present an image of a figure normally held at an angle to the line of sight so that it will
10 appear to be perpendicular to the line of sight.

The second object is to equalize the focal plane sufficiently to overcome the present difference in distance between the eye of the
15 operator of an adding machine and objects between which the focus is constantly changing, that is—the checks or other data from which the values are being transferred to the keys and the platen of the adding machine which carries a statement whose last
20 balance it is necessary for the operator to read.

The third object is to increase the efficiency of the operator by greatly reducing the eye
25 strain by increasing his capacity for work with less fatigue, and reducing the liability for errors with the attendant loss of time required to correct such errors.

The fourth object is to eliminate the distortion of figures in the balance column on the statement placed on the platen.

The fifth object is the more economical use of statement forms by permitting the vertical spacings to more nearly approach
35 the line finder and thereby increasing the number of lines which may be entered on a given length of statement.

The sixth object is to economize on the amount of light consumed, where artificial
40 light is employed, and to do so with the appreciable decrease in eye strain on the part of the operator.

The seventh object is to combine a reflector with the lens above mentioned in order to
45 enable the operator to avail himself of sufficient light to easily read amounts under the lens without the necessity of overillumination at any point, with its attendant glare on the keys and shiny portions of the adding
50 machine.

These results are accomplished in the manner set forth in the following specification as illustrated in the accompanying drawing, in which:

55 Figure 1 is a fragmentary perspective view of the right side of an adding machine

showing the device in place. Figure 2 is a side elevation of the device showing the approximate lines of refraction, the relative position of the eye of the operator, and the
60 relation which this device bears to the platen of the adding machine. Figure 3 is a front elevation of Figure 2 of which Figure 4 is a plan. Figure 5 is a view showing the appearance of an ordinary typewritten character on a statement which has been placed on the platen, when viewed by the operator in his normal position, as indicated in Figure
65 2. Figure 6 is a view showing the same character under the same conditions, but whose image has been corrected by the device about to be described.

Similar numbers of reference refer to the same parts throughout the several views.

Referring more particularly to the drawing, the device is shown in connection with
75 an ordinary adding machine 10 of the bookkeeping type provided with the usual keys 11, platen 12 and line finder 13 having a curled end 14 on which this device is mounted.
80 A statement 15 is indicated on the platen 12 and a check 16 is also indicated, to better illustrate the use of the invention and the distances between which the eye 17 must be focused.

Turning now to the device itself it will be seen to consist of a U-shaped frame comprising a somewhat horizontal lower portion 18 and vertical arms 19 on whose upper
85 ends are pivotally mounted the holders 20 on the screws 21 by means of the nuts 22. Between the holders 20 is placed a prismatic lens 23 whose upper side is sufficiently curved to provide the desired amount of magnification, and whose under side 24
90 forms a prism with its curved side 25, thereby overcoming the foreshortening of the figures on the statement 15, owing to the elevated position of the eye 17.

Formed on the member 18 is an upright
100 tongue 26 having an outturned ear 27 which is adapted to curl around the end 14 of the line finder 13. Also formed on the tongue 26 is a downturned ear 28 which hooks over the end 29 of the line finder 13.
105

Formed integral with the member 18, or attached thereto, is a depending arm 30 which supports a reflector 31. The arm 30 is preferably of a pliable material adapted to permit same to be bent or twisted so that
110 the reflector 31 will reflect the best light possible above the statement sheet on the platen

in the balance column of figures when said platen is in its furthestmost right hand position, and preferably reflect this light between the members 19 under the lens 23.

5 In Figures 5 and 6 is illustrated the images or likenesses of a balance figure with and without using this device. In Figure 5 it will be observed that the upper portion of the numeral 8 is large and the lower portion
10 is small, and both are less than their proportional height. In Figure 6 it will be observed that the upper portion of the 8 is practically the same width as in Figure 5, but the lower portion is much larger, and
15 both the upper and lower portions are correspondingly taller, making the reading of same a comparatively easy matter, notwithstanding the fact that the figures on the statement on the platen are considerably further removed than are the figures on the
20 check 16, or other paper from which values are being taken. In Figure 2 can be seen the approximate lines of refraction and the reason why a corrected image is necessary on
25 machines of this type to overcome the enormous aggregate of eye strain usually undergone by operators of this type of adding machine.

In Figure 1 the line 32 represents the focal
30 distance when reading values on the platen, and line 33 the much shorter distance from the eye 17 to a check usually under the left hand of the operator.

The operation of the device is as follows:
35 Having mounted the device on the end of the line finder, as illustrated, the next step is to adjust the angular position of the lens 23 under the control of the nuts 22, the tall operator naturally requiring a different angle
40 than a shorter operator. Instead of the operator seeing a group of characters, as illustrated in Figure 5, he now sees them as shown in Figure 6, and since they are much enlarged over the actual figures on the
45 statement there need be no change of focus when shifting the eyes from the platen to the check.

In case the illumination is insufficient to make the reading of figures through this lens
50 a matter of extreme ease, available light, either natural or artificial, may be directed to the area under the lens by properly bending the arm of the reflector 31. This will enable the operator to avoid the use of over-
55 illumination of other parts of the machine in order to secure sufficient illumination of the remote characters under the lens.

It will be understood, of course, that the operator is interested in reading the value
60 under the lens only immediately following the insertion of the statement in the machine, and at no other time. It is for this reason that the device is made stationary with relation to the platen.

65 In many instances the use of the reflector

may be dispensed with, and in other instances it may be desirable to incorporate the lens holder with the line finder itself, use having been made of the present line finder merely because of its convenience in attaching the device to the present adding machine without the necessity of altering the machine or the employment of more than ordinary skill. However, by employing this type of holder, which includes the ears 27
70 and 28, it is evident that the device cannot move in any direction except upwardly, against which movement it is held by gravity.

Attention is drawn to my United States
Patent No. 1,528,198, over which this device is an improvement.

I am aware that various forms of reflectors have been employed for adding machines, typewriters, etc. in the past, I there-
85 fore do not claim such devices broadly but I do intend to cover all such forms of my device as fall fairly within the appended claims.

I claim:

1. In an adding machine, the combination of a platen; a line finder in front of said platen; and a prismatic lens mounted above and in front of said line finder.

2. The combination of a cylindrical platen
95 with a line finder in front of said platen; a prismatic lens adapted to correct distortion of characters on a paper on said platen above said line finder; a frame for supporting said lens; and means for adjusting the position
100 of said lens with relation to said line finder.

3. The combination of a cylindrical platen; a line finder mounted near the horizontal center of said platen; and a prismatic
105 magnifying lens mounted in front of and above said line finder adapted to rectify and enlarge images of characters appearing just above said line finder for an eye above and in front of said lens.

4. The combination of a line finder adapted to be mounted in front of a platen of an adding machine with a U-shaped bracket supported near the outer end of said line
110 finder; a prismatic lens held between the open ends of said bracket, said lens being
115 capable of adjustment on an axis parallel with said platen and so shaped that the image of a character used upon said line finder will be magnified and corrected for distortion for an eye positioned above and in front
120 of said lens.

5. In an adding machine, the combination of a line finder; a U-shaped frame mounted in front of said line finder; a prismatic lens
125 pivotally mounted between the open ends of said frame; and a reflector adjustably mounted in front of said frame adapted to reflect light under said lens above said line finder.

6. In an adding machine, the combina-
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tion of a U-shaped frame having an upwardly extending arm formed on its lower side, said arm having a laterally and backwardly turning ear and a downwardly and backwardly turning ear formed at its top end, both of said ears forming means for attaching said frame to the curved end of a line finder of an adding machine; a prismatic lens pivotally mounted between the upper end of said frame, said pivots having locking nuts placed thereon, said lens having its upper face slightly convex and having its lower face forming an angle with the chord of said curved side.

7. In an adding machine, the combination

of a U-shaped frame having an upwardly extending arm formed on its lower side, said arm having means for attaching same to the line finder of an adding machine; a prismatic lens pivotally mounted between the upper ends of said frame; nuts for clamping said lens in a desired position on its pivots; and a reflector supported by said U-shaped frame adapted to reflect light through said frame under said lens in a manner to illuminate the space over the right hand end of said line finder within the focus of said lens.

GRAHAM DUKEHART.