Feb. 14, 1928. 1,659,246

R. S. DREW ET AL.

CALCULATING DEVICE

Filed June 21, 1926

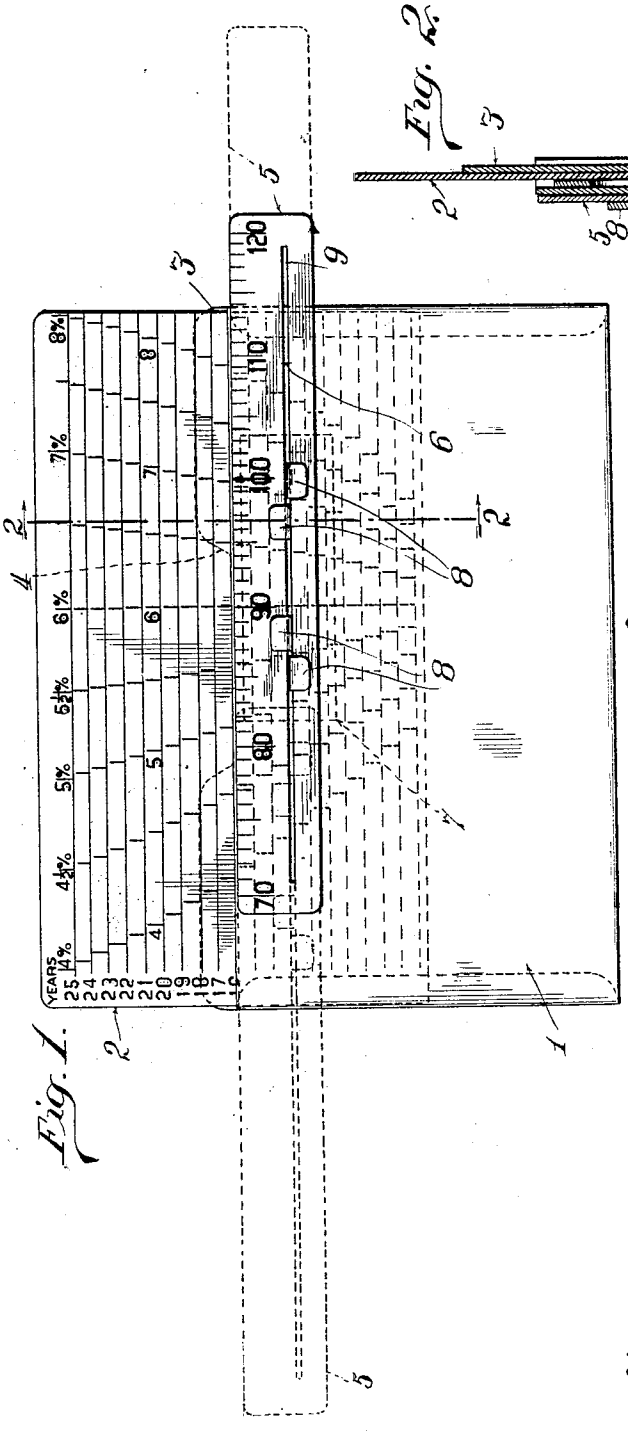


Fig. 1.

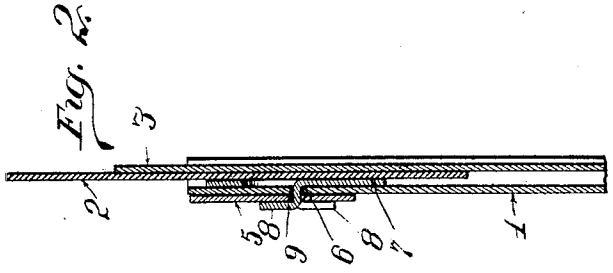


Fig. 2.

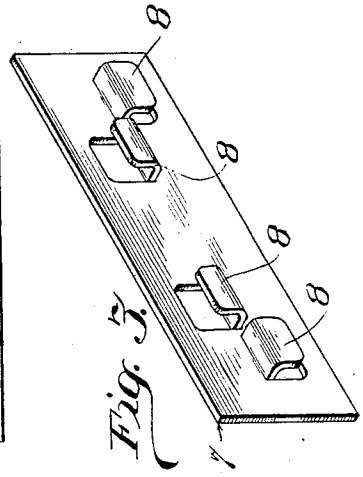


Fig. 3.

Inventors
Robert S. Drew
and Curtis L. Cruver
By Rudolph Sinn & Co
Attorney

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UNITED STATES PATENT OFFICE.

ROBERT S. DREW, OF EVANSTON, AND CURTIS L. CRUVER, OF OAK PARK, ILLINOIS, ASSIGNORS TO CRUVER MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

CALCULATING DEVICE.

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This invention has for its object to provide a simple and compact device for quickly and accurately ascertaining mathematical results such as the rate of per cent of dividends or interest yielded by securities at prices other than par where the fixed rate is based on par value, or to ascertain the yield to maturity of bonds from date of purchase based on price paid therefor and for similar purposes, the present invention relating solely to the structural characteristics of the device whereby compactness is obtained.

In the accompanying drawings illustrating the preferred embodiment of the invention:

Fig. 1 is a front elevation of a calculating device constructed in accordance with the invention.

Fig. 2 is a longitudinal section of the same on the line 2—2 of Fig. 1.

Fig. 3 is a perspective view of an operative element of the device.

The device comprises a pocket member 1, made preferably of a tough, flexible material such as pyroxilin, which is flat and is open only at the top. Said pocket member contains the card 2 which preferably is of greater length than said member 1, so that it projects from the latter sufficiently to be easily digitally engaged for extraction. The rear wall of the pocket member 1 is preferably provided with the projections 3 at opposite ends extending to such height as to bring their outer or top edges flush with the outer edge of the card 2 when the latter is disposed at the inner limit of its movement, the recess 4 midway between the said projections 3 permitting access to the rear face of the card for purposes of digital engagement as aforesaid. The projections 3 serve mainly to afford support for the projecting edge portion of the card 2 to minimize chance bending or breaking thereof.

The card 2 is provided on its front face with columns of figures and graduations printed or otherwise impressed thereon and disposed usually to substantially cover the entire surface thereof from one side edge to the other, the nature of these figures being dependent upon the particular nature of the information which the device is intended to yield.

Associated with the card 2 for purposes of yielding such information is a sliding member 5 consisting of a flat rectangular piece of material preferably of the same kind as that of which the members 1 and 2 are composed, the upper edge of said member 5 being preferably flush with the upper edge of the front wall of the member 1. The said front wall is provided with a transverse slot 6 extending from a point adjacent to and spaced from one side edge of said member 1 to a point adjacent and spaced from the other side edge thereof.

A plate 7 disposed within the member 1 and provided between its ends and side edges with two pairs of opposed L-shaped flanges 8, the shanks of which pass through the slot 6 and also through the longitudinal slot 9 of the member 5, serves to operatively associate the member 5 with the member 1. The slot 9 in the member 5 is of such length as to be slidable relatively to the plate 7 and the latter is slidable within the member 1, these movements being transversely of the columns of figures on the card 2 and of the direction of movement of the latter relatively to the member 1.

The member 5 is provided along its upper edge with a graduated scale, one of said graduations consisting of the representation of an arrow-head and constituting what may be termed the zero point from which the graduated scales at the right and left thereof begin. To ascertain quickly a given fact or the answer to a mathematical problem which the device is adapted for, the card 2 is extracted until a certain horizontal row of figures appears immediately above the upper edge of the member 5. The latter is then moved until the arrow-head thereon registers with a certain column of figures on the card 2, whereupon the result is given, the details of this calculation or operation being wholly immaterial to the structural characteristics of the invention and being partly described only to accentuate the important feature of the latter, which is, that by reason of the plate 7 connecting the member 5

with the member 1, the said member 5 can be moved sufficiently relatively to the member 1 to bring the arrow-head into register with either side edge of the card 2. Thus the length of the member 5 can be limited to equal the width of the member 1 and the card 2 be completely covered with columns of figures from one side edge to the other. If, however, the member 5 did not have such a long movement proportionate to its own length, then it would obviously necessitate a card 2 and container 1 of greater width and the waste of marginal spaces at the side edge portions of the card 1, or, as an alternative, the member 5 would have to be of such greater length than the width of the members 1 and 2 as to project at its ends beyond the side edges of said members. The disadvantages of the two last-mentioned requirements in event of omission of the plate 7 due to increase in size of members 1, 2 and 5, or of the member 5 only, is easily apparent.

When the card 2 is disposed at the inner limit of its movement and the member 5 disposed with its end edges flush with the side edges of the member 1, the device is thin, flat and rectangular, so as to be easily carried in a coat pocket without danger of distortion or breakage.

We claim as our invention:

1. In combination, a receptacle open at one side, a card containing columns of figures fitting said receptacle and adapted to be caused to project therefrom to bring any desired figure or figures to view immediately above the open end of the receptacle, and a sliding element bearing a graduated scale mounted on the receptacle for movement transversely of the said card and having its upper edge disposed substantially flush with the open side of the receptacle to thereby permit any desired graduation of the said scale into register with any desired figure on the card.

2. In combination, a flat envelope-like receptacle open at one side, a card bearing columns of figures covering the entire surface thereof, snugly fitting said receptacle and adapted to be caused to project therefrom to bring any desired figure on said card into position immediately outwardly the open side of the receptacle, a member bearing a graduated scale along one edge disposed externally of said receptacle with the last-named edge thereof substantially flush with the open end of said receptacle, said member being of no greater length than the width of said receptacle and slidably associated with the latter for movement transversely of the movement of said card, the limits of sliding movement of said member being such that a given graduation between the ends of the same may be brought to register with any figure on the card.

3. In combination, a flat envelope-like receptacle open at one side, a card bearing columns of figures covering the entire surface thereof, snugly fitting said receptacle and adapted to be caused to project therefrom to bring any desired figure on said card into position immediately outwardly the open side of the receptacle, a member bearing a graduated scale along one edge disposed externally of said receptacle with the last-named edge thereof substantially flush with the open end of said receptacle, said member being of no greater length than the width of said receptacle, means operatively engaged with said member and said receptacle for slidably associating said member with the latter for movement transversely of said card and providing a length of movement sufficient to bring a given graduation of said member into register with any desired figure on said card.

4. The combination with a receptacle and card of the kind specified, of a device slidably associated with the receptacle for movement transversely of the direction of movement of said card, and a member for co-operation with the card slidably associated with the said device for movement in the same direction as the latter.

5. The combination with a receptacle and card of the kind specified, the receptacle provided in one wall with a slot parallel with the open end thereof, of a plate disposed within the receptacle, L-shaped flanges on said plate having their shanks projecting through said slot and co-operating with the latter to guide said plate in reciprocatory movement relatively to the receptacle, and a longitudinally slotted member engaged with said flanges and disposed externally of said receptacle for movement relatively to the latter and said plate.

6. The combination with a card of the kind specified, and an envelope-like receptacle therefor open at the top, of a member disposed externally of the receptacle for movement parallel with the open end of the latter, there being aligned guide slots in said member and a wall of the receptacle, a plate disposed within the latter, and L-shaped flanges on said plate having their shanks projecting through and co-operating with both said slots for guiding said member, the outer end portions of said flanges engaging the outer face of said member.

7. The combination with a card of the kind specified, and an envelope-like receptacle therefor open at the top, of a member disposed externally of the receptacle for movement parallel with the open end of the latter, there being aligned guide slots in said member and a wall of the receptacle, a plate disposed within the latter, and L-shaped flanges on said plate having their shanks projecting through and co-operating with

both said slots for guiding said member, the outer end portions of said flanges engaging the outer face of said member, the length of said member being no greater than the width of the receptacle and the flanges of said plate spaced and arranged, and the length of said slots being relatively such that by co-operation with said flanges said member may be moved to bring a given point between the ends thereof into register with either side edge of said card.

ROBERT S. DREW.
CURTIS L. CRUVER.