N° 4783 A.D. 1899

Date of Application, 4th Mar., 1899

Complete Specification Left, 2nd Dec., 1899—Accepted, 20th Jan., 1900

PROVISIONAL SPECIFICATION.

Improvements in or relating to Calculating or Tabulating Apparatus.

I, WILLIAM FYFFE, of 36, Park Avenue, Dundee, in the County of Forfar, Cashier, do hereby declare the nature of this invention to be as follows:—

This invention relates to calculating or tabulating apparatus of the type used in reckoning or computing wages, aggregate values or quantities and the like; the object of the said invention being to mechanically adjust or co-relate the factors of these in a more simple and expeditious manner than hitherto, while rendering the finding or inspection of the product more ready and convenient and less liable to error.

In carrying my invention into effect or practice, I provide two or more scales or tables of figures, of which the one, hereinafter called the index, or case scale,—is more or less permanently carried by, and visible upon, the outside of the containing case or box of my improved apparatus; while the other,—hereinafter called the table, or disc scale,—is one of a series, printed or otherwise formed or exhibited on or in the sectors of a rotating disc. My apparatus consists essentially of such a disc divided by radial lines into the said sectors, and a case for containing the same together with the means for its rotation. The containing case is substantially a shallow box, whose face or faces parallel to the plane of rotation of the contained disc, are pierced with an opening or openings of the same form and magnitude as the said disc sectors, and so that only one such sector is exposed at any moment. The index or case scale is carried upon the side or sides of such opening, adjacent to the radial lines forming the sectors.

In the application of my invention, say to the ascertaining of amounts of wages due for any number of hours at fixed rates per week or other period of a fixed number of hours, the index or case scale will show a series of hours ranging preferably from the minimum or fractions, at the inner or narrow end of the sector, to any desired maximum number at the outer or wider end. Each of the sectors of the rotating disc is devoted to one of the said fixed rates per week or period, and on its part and at distances outwards from the centre exactly corresponding to those on the index or case scale of hours, shows opposite each number or fraction, the value or amount due for such number or fraction, at the rate to which such sector is devoted. Thus, if it is desired to ascertain the amount of wages due to a workman who has wrought 49 hours out of a fixed week of 56 hours for which the fixed rate is 38/-, the disc is rotated by its mechanism until the sector devoted to that rate is exposed, when thereon and in juxtaposition to the number 49 on the fixed scale, the amount £1—13—3, will be read.

By the employment of suitably printed and prepared tables and indices, or disc and case scales, in conjunction one with the other as described, I am enabled to ascertain with similar readiness and certainty, aggregate amounts, values, quantities, and the like under varying given conditions, such as for example:—

[*Price* 8*d.*]

Wages for piecework; prices for numbers of articles at fixed rates per article, or per weight, or measurement; cubic and superficial contents or quantities; weights of constructive materials relative to dimensions; interest; discount; and other variable products of varying factors; and to tabulate data or statistics as desired. Discs may be interchangeable for any case and they may be printed on one or both sides and be provided with corresponding openings in the said case. More than one opening may be provided for one face of a disc if desired.

In actuating the disc to bring any desired sector to the required position I may employ any method convenient to the hand of the operator. Thus the spindle or carrier for the disc may bear a bevel wheel, and be rotated by a pinion on a shaft inside the case, whose further end outside the same, carries a milled wheel or nut. Such wheel or nut may bear numbers corresponding to those distinguishing each disc sector, to facilitate the finding of any sector, or it may be actuated by a hand bearing such numbers.

Dated this 28th day of February 1899.

WILLIAM FYFFE.

COMPLETE SPECIFICATION.

Improvements in or relating to Calculating or Tabulating Apparatus.

I, WILLIAM FYFFE, of 36, Park Avenue, Dundee, in the County of Forfar, Cashier, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to calculating or tabulating apparatus of the type used in reckoning or computing wages, aggregate values or quantities, and the like, the object being to mechanically adjust or co-relate the factors of these in a more simple and expeditious manner than hitherto, while rendering the finding or inspection of the product more ready and convenient and less liable to error.

In order that my invention may be the better understood, I have hereunto appended two explanatory sheets of drawings in which the same reference numerals are used to denote the same or like parts where shown.

Fig. 1, (Sheet 1,) is a front elevation of one form or modification of my invention and Figs. 2, and 3, vertical sections at A, A, of the same, while Fig. 4, illustrates the disc actuating mechanism therefor.

Figs. 5, and 6, are respectively front elevation and vertical section at B, B, of another form or modification, while Figs. 7, 8, and 9, illustrate details thereof hereinafter described.

Figs. 11 and 12, are enlarged detail drawings of my table or disc scale, and my index or case scale respectively, while Figs. 13, and 14, illustrate their relation, the one to the other in actual use.

In carrying my invention into effect or practice, I provide two or more scales or tables of figures, of which the one 20, hereinafter called the index or case scale,—is more or less permanently carried by and visible upon the outside of the containing case or box 21, of my improved apparatus; while the other 22, hereinafter called the table or disc scale,—is one of a series printed or otherwise formed or exhibited on or in the sectors 23, of a revolving disc 24. My apparatus consists essentially of such a disc divided by radial lines into the said sectors 23, in the manner shown more particularly by Fig. 11, and a case 21, for containing the same together with the means for its rotation.

The containing case is substantially a shallow box whose sides may be

enclosed as shown in Figs. 1, 2, and 3, or left open as shown by Figs. 5, and 6, and whose face or faces parallel to the plane of rotation of the contained disc, are pierced with an opening or openings 25, of the same form and magnitude as the said disc sectors, and so that only one such sector is exposed at any moment as shown by Fig. 13. The index or case scale 20, is carried upon the side or sides 26, of such opening 25, adjacent to the radial lines forming the sectors 23, as shown by Fig. 12.

In the application of my invention, say to the ascertaining of amounts of wages due for any number of hours at fixed rates per week or other period of a fixed number of hours, the index or case scale 20, will show a series of hours ranging preferably from the minimum or fractions, at the inner or narrow end of the sector 23, to any desired maximum number at the outer or wider end. Each of the sectors of the rotating disc 24, is devoted as shown by Fig. 11, to one of the said fixed rates per week or period, and on its part and at distances outwards from the centre 27, exactly corresponding to those on the index or case scale of hours 20, shows opposite each number or fraction, the value or amount due for such number or fraction, at the rate to which such sector is devoted.

Thus if it is desired to ascertain the amount of wages due to a workman who has wrought 49 hours out of a fixed week of 56 hours for which the fixed rate is 38/-, the disc 24, is rotated until the sector devoted to that rate is exposed, when thereon and in juxtaposition to the number 49, on the fixed scale, the amount 1—13—3, will be read.

For purposes of particular illustration I have shown in Fig. 13, the application of my invention in connection with the ascertaining of proportions due for hours or fractions of hours of a 54 hours week at 38/-, per week, while in Fig. 14, I have shown its application in ascertaining the weight per superficial area of steel plates $^{9}/_{20}$ of an inch thick. From these illustrations will be seen the peculiar adaptability of my sector method of division and arrangement to the increased space required for the increasing values.

By the employment of suitably printed and prepared tables and indices, or disc and case scales, in conjunction one with the other as described and illustrated, I am enabled to ascertain with similar readiness and certainty aggregate amounts, values, quantities, and the like under varying given conditions, such as for example:—Wages for piecework; prices for numbers of articles at fixed rates per article, or per weight or measurement; cubic and superficial contents or quantities; interest; discount; and other variable products of varying factors; and to tabulate co-relatable data or statistics as desired. Discs may be interchangeable for any case and they may be printed on one or both sides, (or the equivalent in the form of two single faced discs employed as in Fig. 3,) and be provided with corresponding openings 25, in the said case. More than one such opening may be provided for one face of a disc if desired.

In actuating the disc 24, to bring any desired sector to the required position, I may employ any method convenient to the hand of the operator. Thus in Fig. 5, where the box is fully enclosed, the spindle or carrier 28, for the disc, as shown by Figs. 2, and 4, or discs as shown by Fig. 3, and dotted lines in Fig. 4, may bear a bevel wheel 29, and be rotated by a pinion 30, on a shaft 31, inside the case 21, whose further end outside the same carries a milled wheel or nut 32. Such wheel or nut may bear numbers corresponding to those distinguishing each sector, to facilitate the finding of any sector as shown by Fig. 4. In the simpler and cheaper form illustrated by Figs. 5, and 6, this mechanism may be omitted and the disc rotated merely by the operator grasping the projecting portions 33.

In this form also which has no sides the tendency of the faces to crush or jam their contained disc may be prevented by the use of the nuts 34, screwed against such faces as shown by Figs. 7, and 8, or by small distance pieces 35, inserted at the edges between the faces as shown by Fig. 9. Discs may be removed or inserted by opening one side of the case upon its hinges 36.

Fyffe's Improvements in or relating to Calculating or Tabulating Apparatus.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I wish it to be clearly understood that I do not limit myself to the precise details of construction herein set forth and illustrated in the appended sheets of drawings, but that I hold myself free to make such modifications thereof as conform with the spirit and scope of my said invention and I declare that what I claim is:—

The combination of parts forming a tabulator or calculator consisting of a sectoral adjustable rotating table scale or scales, in conjunction with a relatively fixed index scale or scales, arranged to mechanically co-relate factors and their products for ready inspection or to tabulate or relatively arrange co-relatable data or statistics substantially in the manner and for the purposes hereinbefore described and illustrated in the appended sheets of drawings.

Dated this 1st day of December 1899.

WILLIAM FYFFE.

Redhill: Printed for Her Majesty's Stationery Office, by Malcomson & Co., Ltd.—1900.

A.D. 1899. March 4. No. 4783.
FYFFE'S Complete Specification.

(2 SHEETS)
SHEET 1.

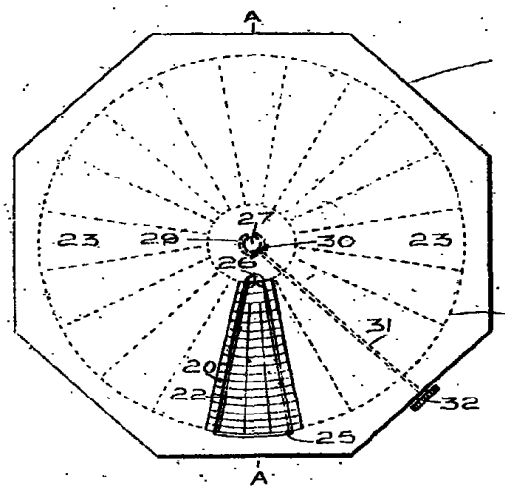


FIG. 1.

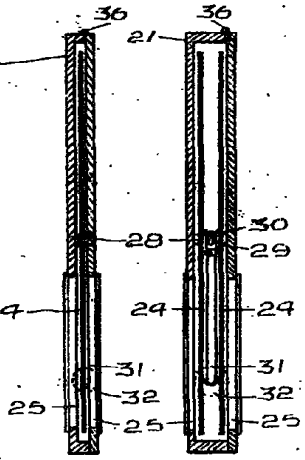


FIG. 2.

FIG. 3.

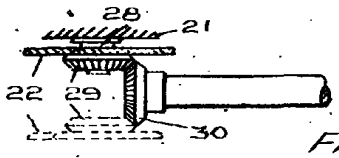
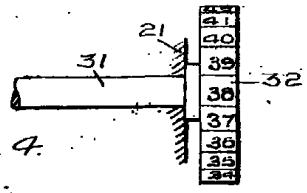


FIG. 4.



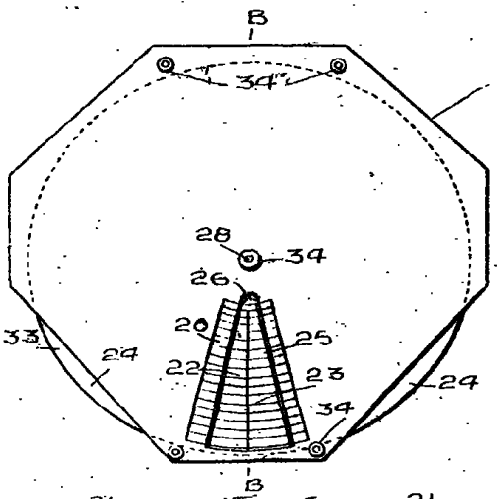


FIG. 5.

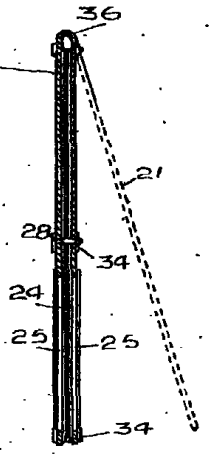


FIG. 6.

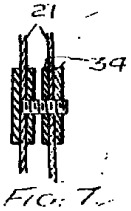


FIG. 7.

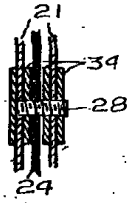


FIG. 8.

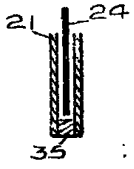


FIG. 9.

[This Drawing is a reproduction of the Original on a reduced scale.]

Malby & Sons, Photo-Litho.

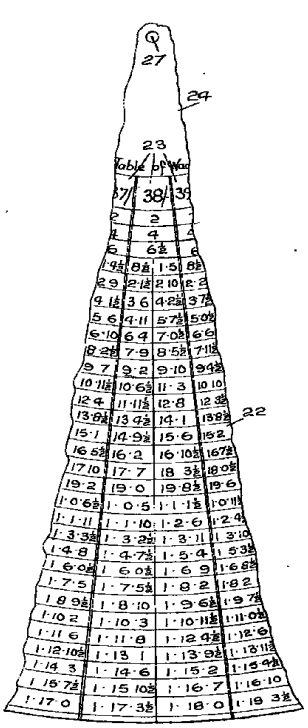


Fig. 11.

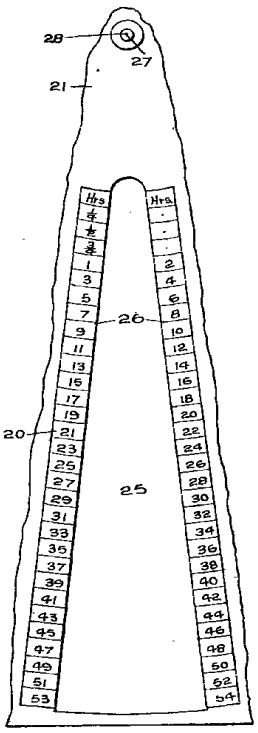


Fig. 12.

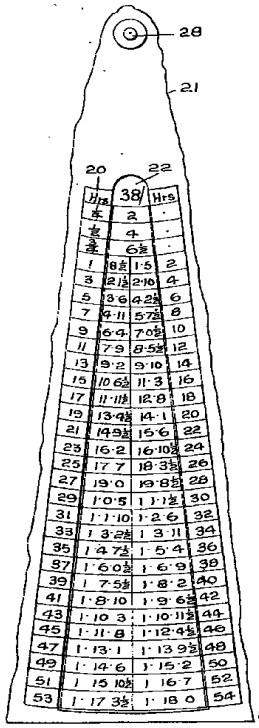


Fig. 13.

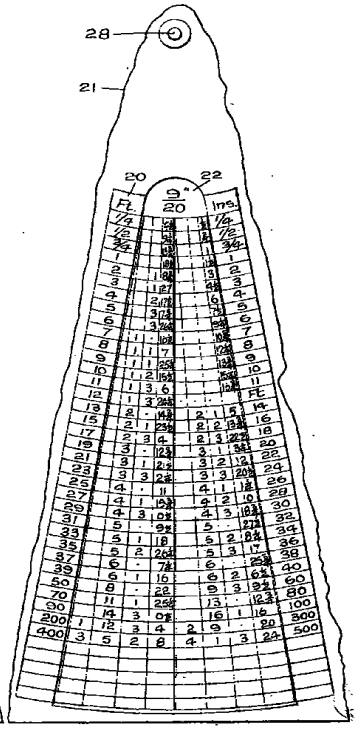


Fig. 14.

[This Drawing is a reproduction of the Original on a reduced scale.]

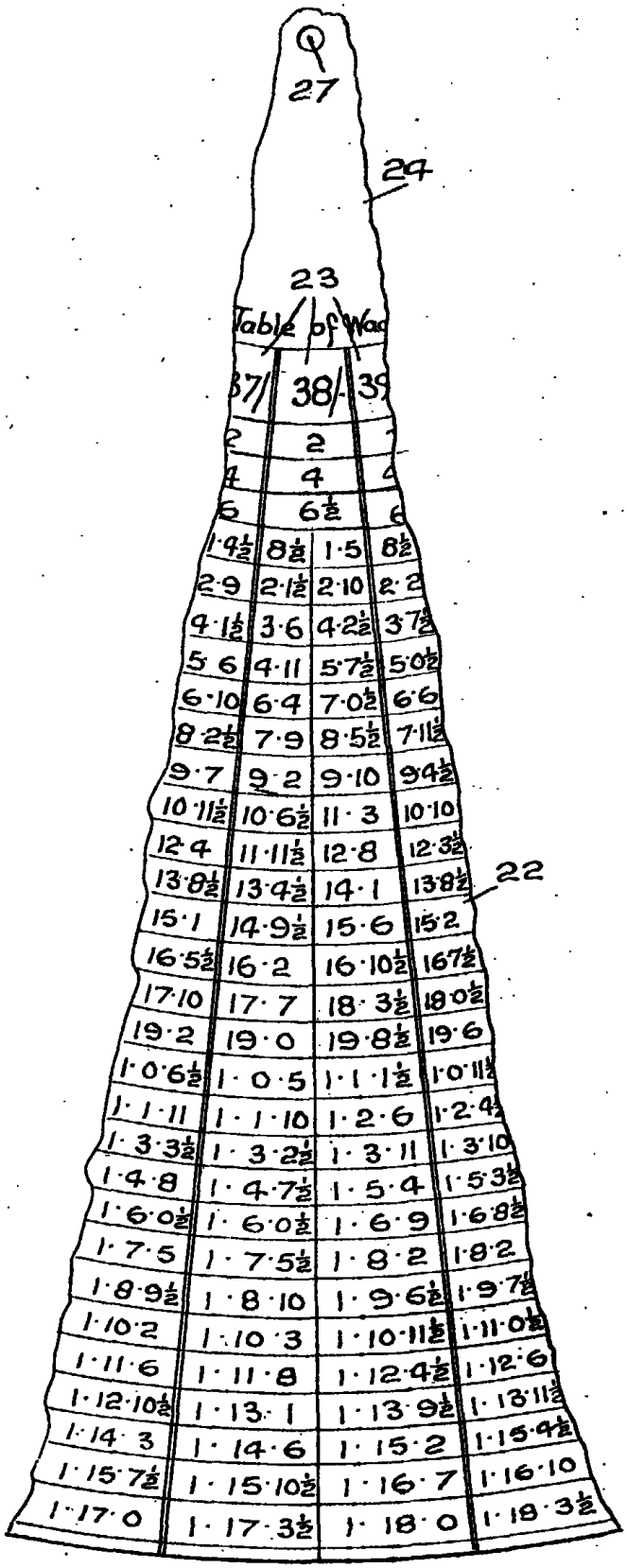


Fig. 11.

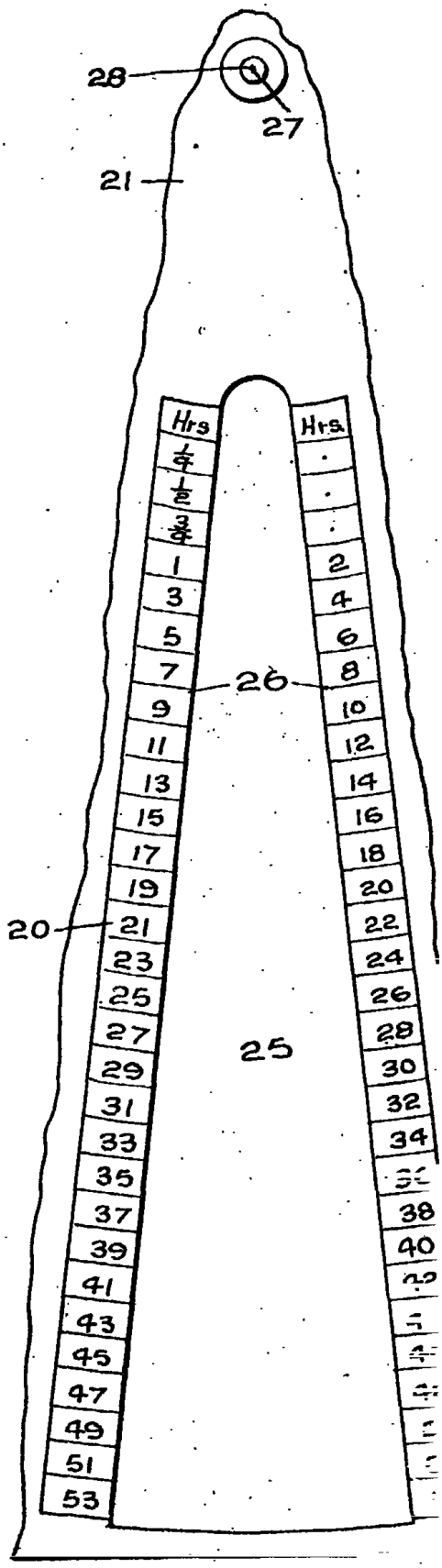


Fig. 12.

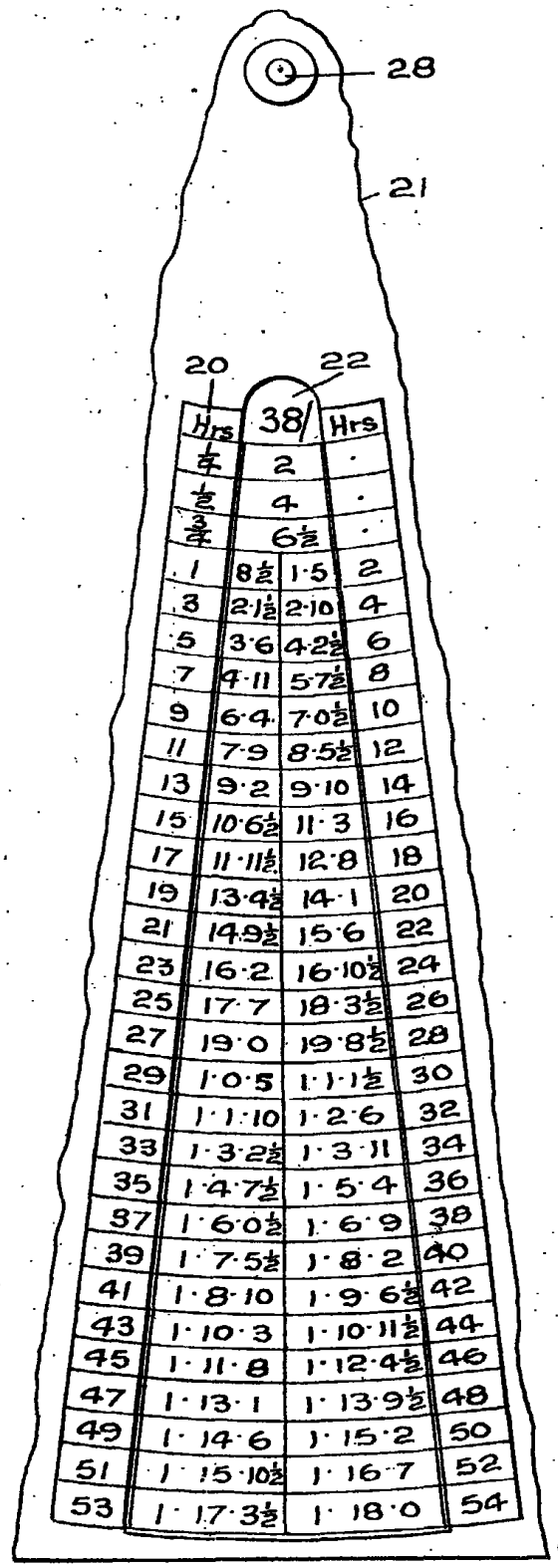


FIG. 13.

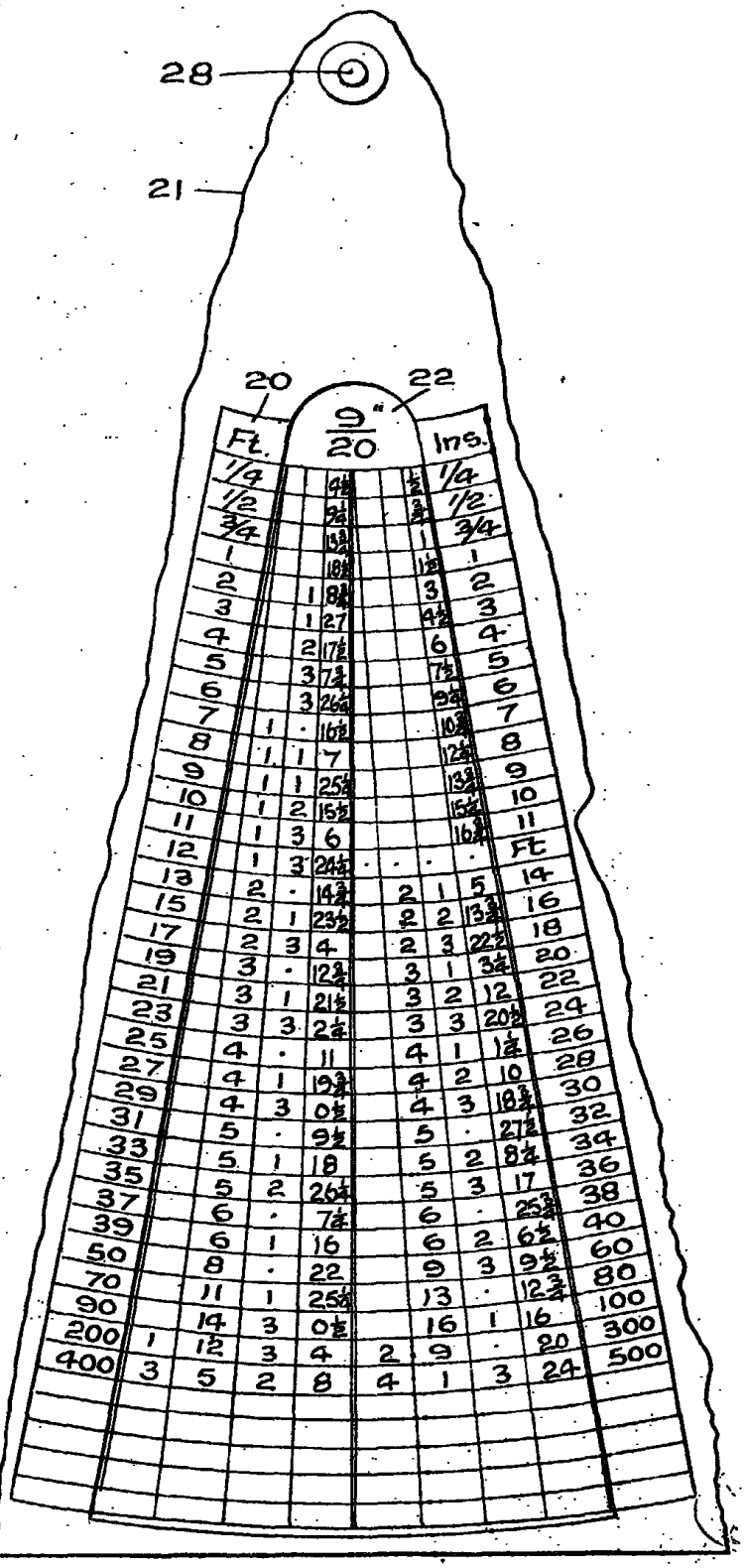


FIG. 14

Mealby & Sons, Photo-Litho.