C. A. MEILICKE.

CALCULATING MACHINE.

APPLICATION FILED MAR. 27, 1908.

943,984.

Patented Dec. 21, 1909.

5 SHEETS—SHEET 1.

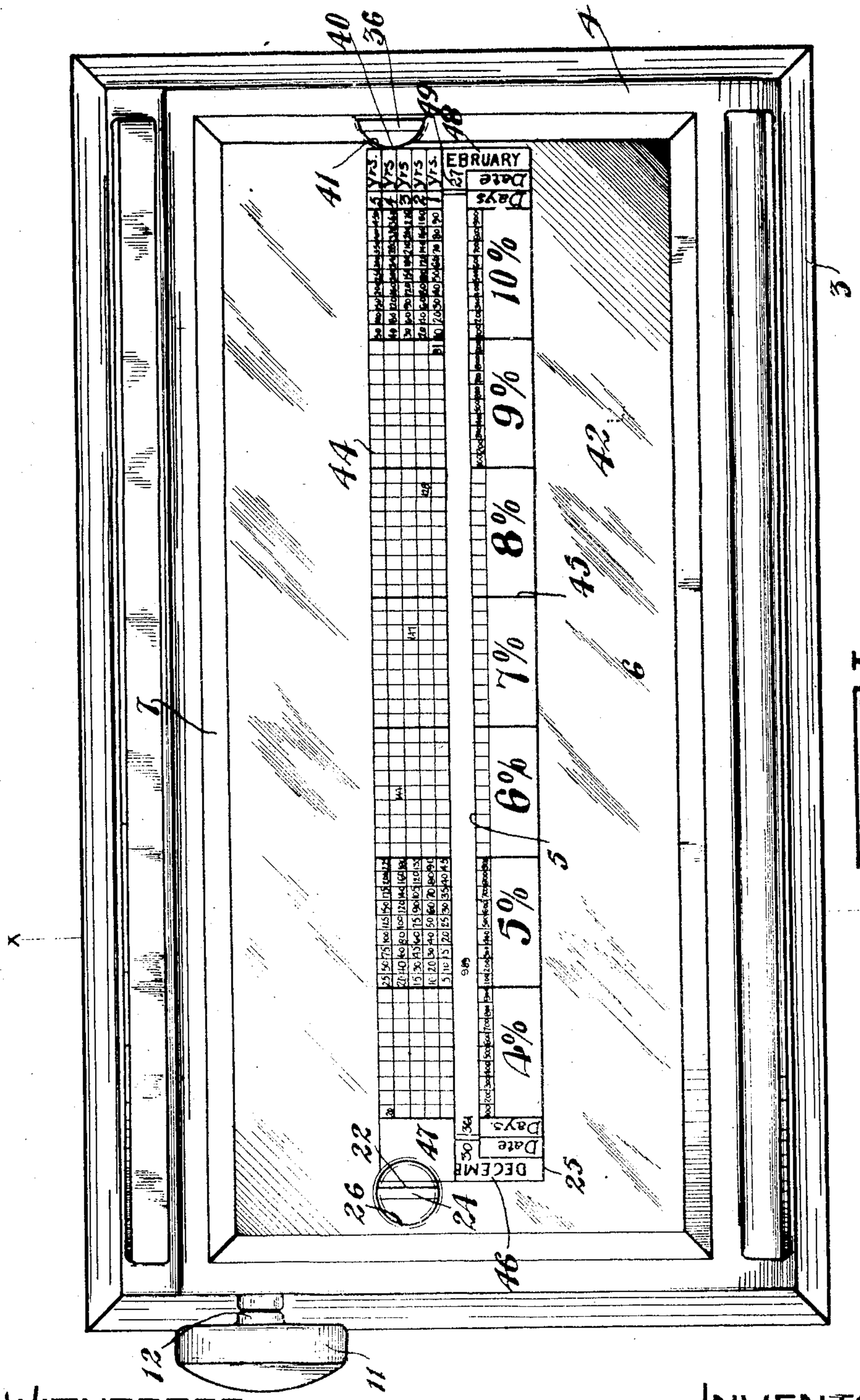


FIG. 1.

WITNESSES

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5 SHEETS—SHEET 2.

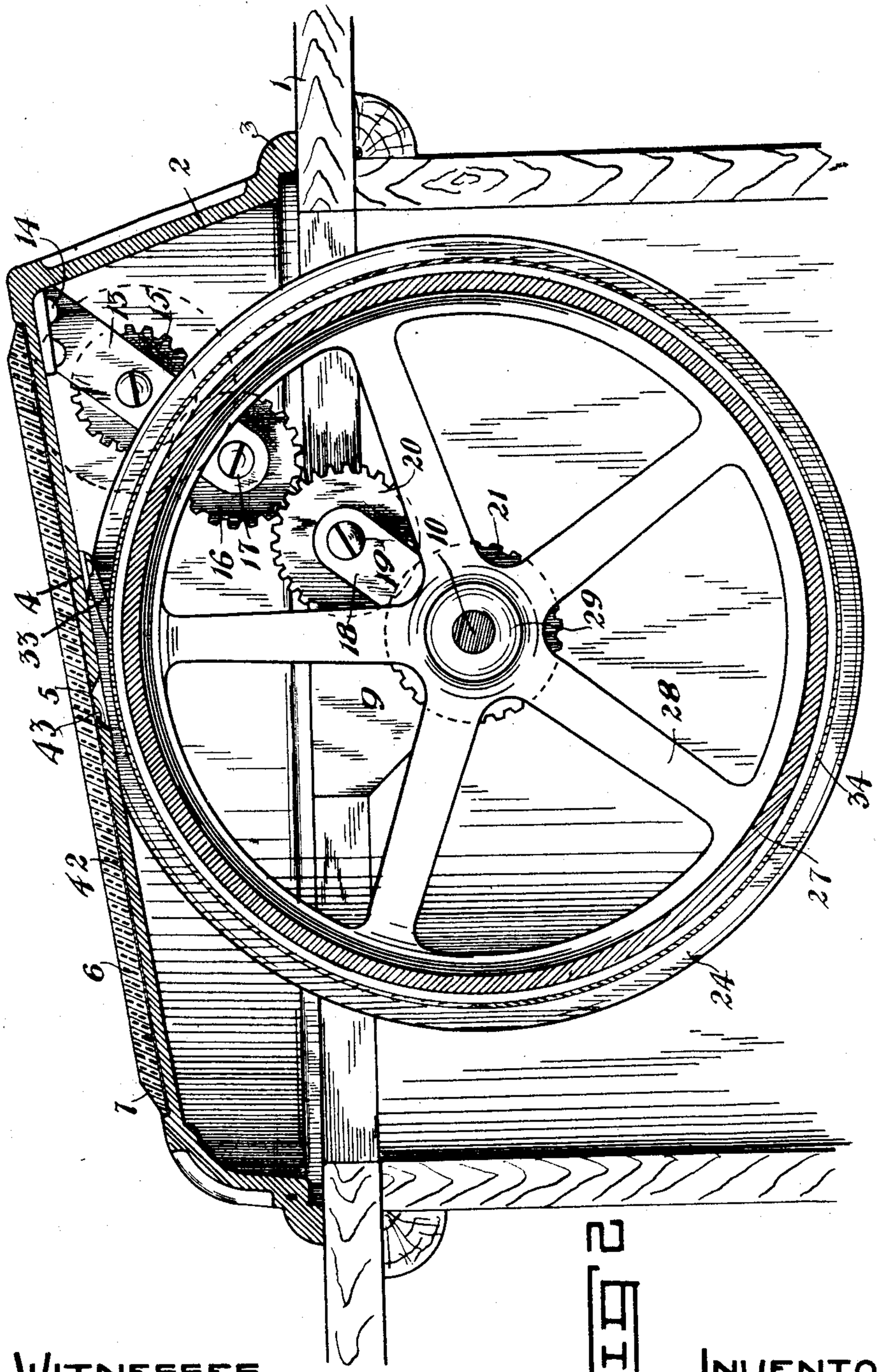


FIG. 2.

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5 SHEETS—SHEET 3.

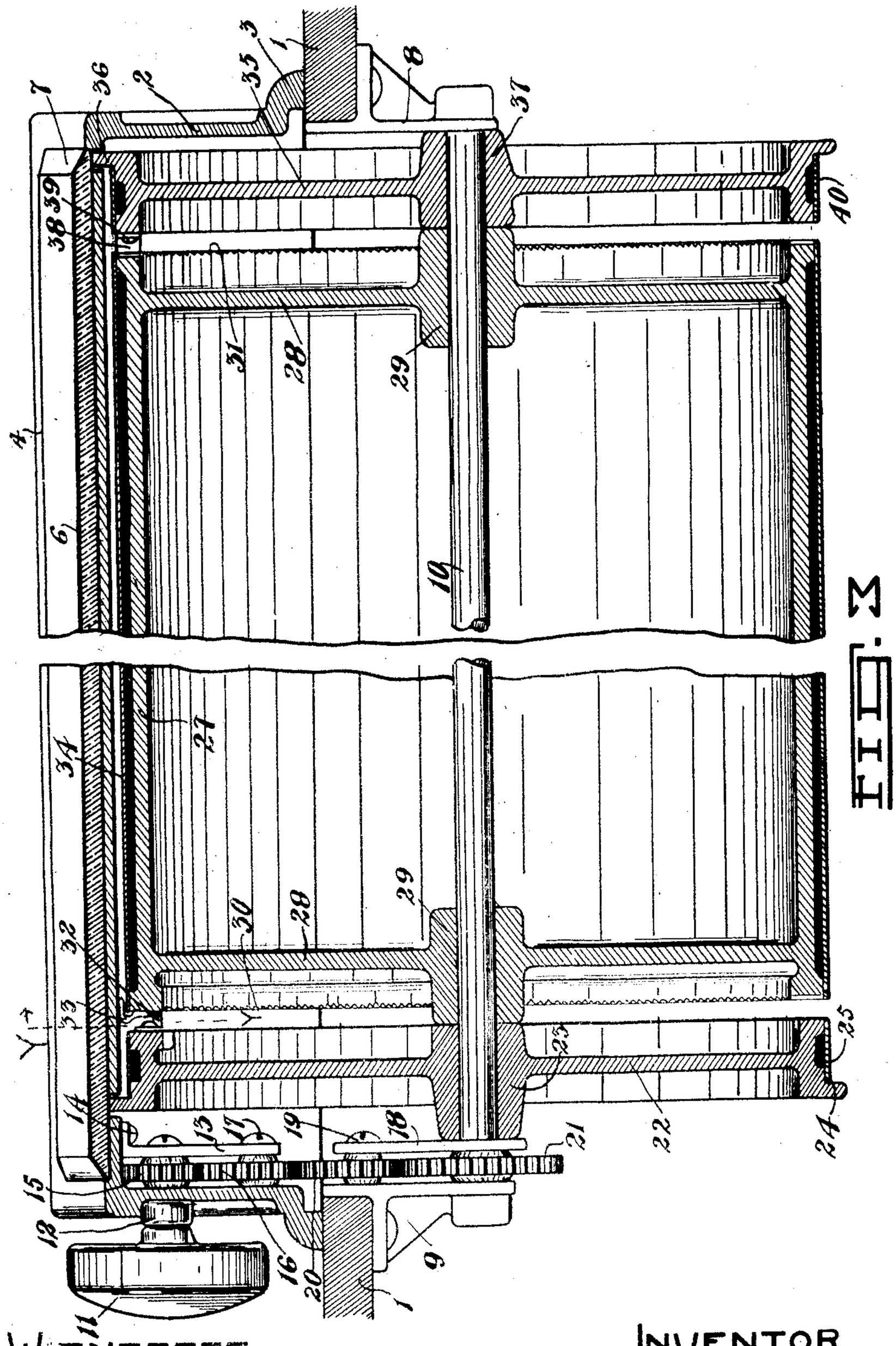


FIG. 3.

WITNESSES

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5 SHEETS—SHEET 4.

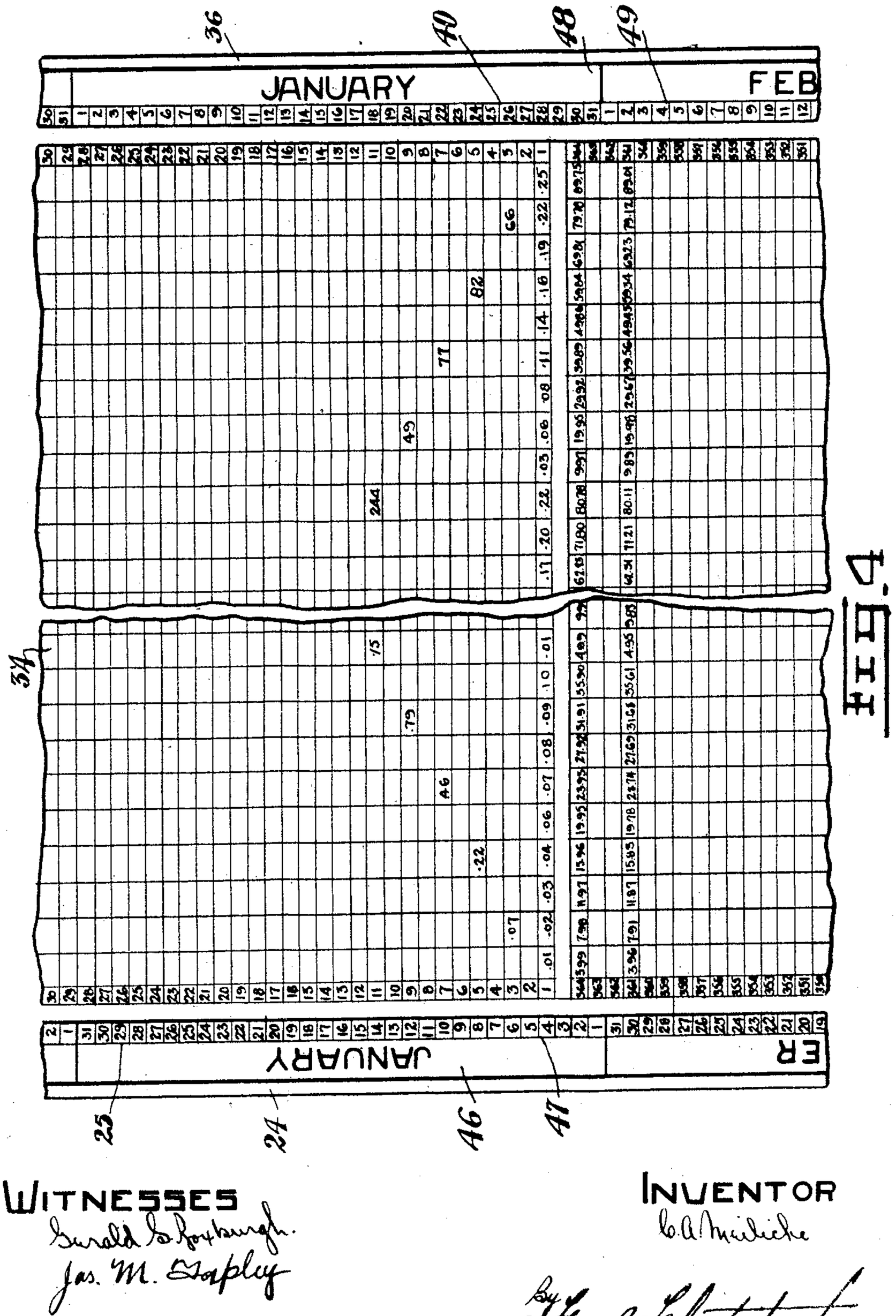


FIG 4

WITNESSES

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943,984.

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5 SHEETS—SHEET 5.

FIG. 5

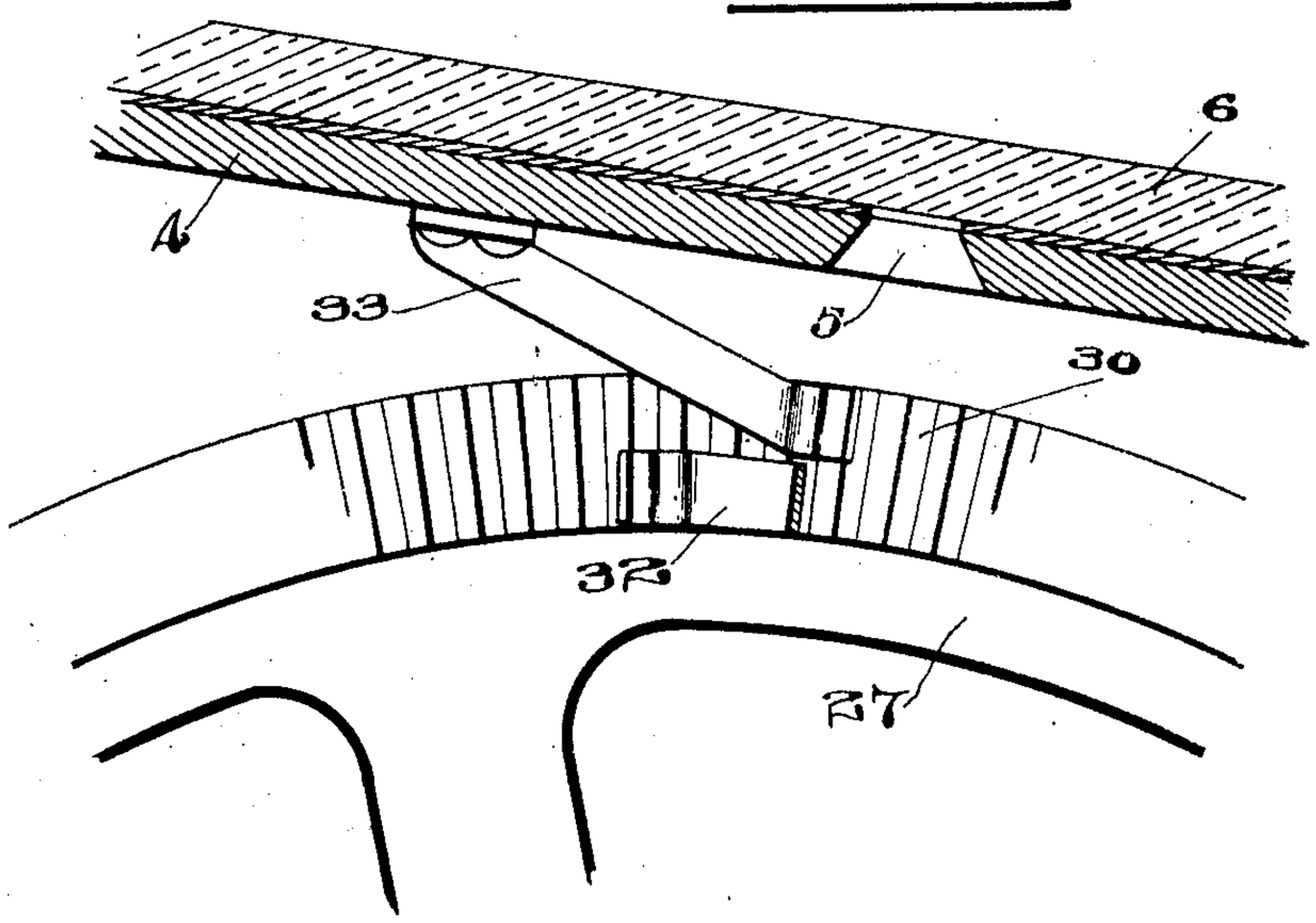
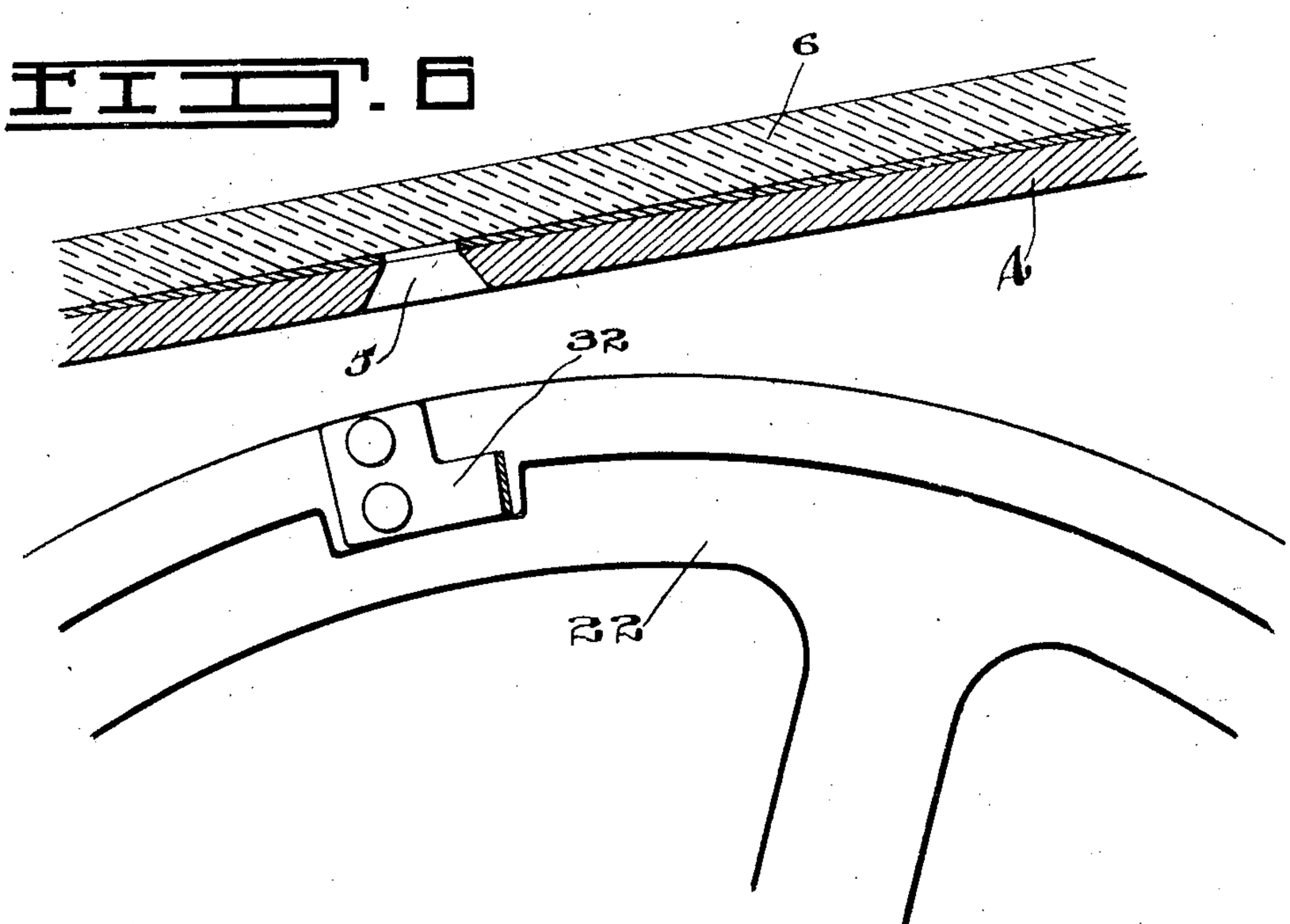



FIG. 6




WITNESSES

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# UNITED STATES PATENT OFFICE.

CARL ARNO MEILICKE, OF HANLEY, SASKATCHEWAN, CANADA.

## CALCULATING-MACHINE.

943,984. Specification of Letters Patent. Patented Dec. 21, 1909.

Application filed March 27, 1908. Serial No. 423,758.

*To all whom it may concern:*

Be it known that I, CARL ARNO MEILICKE, of the town of Hanley, in the Province of Saskatchewan, Canada, have invented certain new and useful Improvements in Calculating-Machines, of which the following is the invention.

My invention relates to improvements in calculating machines, and the object of the invention is to produce a simple mechanism which will enable charges or accounts of different kinds to be easily computed.

The invention is especially applicable in computing the number of days from one date to another, either past or future, and in finding the interest on a note for the given number of days.

The invention consists in the construction and combination of parts to be described more fully hereinafter and definitely set forth in the claim.

Figure 1 is a plan view of the machine. Fig. 2 is a vertical cross sectional view through the machine, the section being taken in the plane denoted by the line X X′, Fig. 1. Fig. 3 is a longitudinal vertical sectional view of the machine, certain parts being shown in side elevation. Fig. 4 represents a portion of the chart carried by the drum, also a set of calendars which coöperate therewith. Fig. 5 is a vertical sectional view through the casing in the plane, denoted by the line Y, Y on Fig. 3 and looking in the direction of the arrow. Fig. 6 is a similar view to that shown in Fig. 5, but looking in the reverse direction.

In the drawings like characters of reference indicate corresponding parts in each figure.

Referring more particularly to the parts, 1 represents a horizontal support such as a table, desk, or shelf.

2 represents a rectangular-shaped casing which has its base suitably formed at 3 to rest on the desk. The upper part or face 4 of the casing inclines slightly to the plane of the desk in order that the face may be more easily seen by a person when sitting at the desk.

5 is an elongated slot or sight opening which passes both centrally and longitudinally across the face 4 of the casing.

6 is a transparent plate of material such as glass having its edges beveled at 7 and fitting in the casing face.

8 and 9 are a set of brackets or hangers fastened to the under side of the desk, one at either side. These hangers form the support for a horizontal shaft 10 which is free also to turn in bearings formed in the hangers.

11 is a thumb head having its shank 12 passing through the side wall of the casing 2. The end of the shank rests or is journaled in a plate 13 which is fastened at 14 to the inner side of the casing face. The plate is parallel with the side wall through which the shank enters.

15 is a gear wheel on the shank between the plate and the casing wall, and such wheel turns with the shank. 16 is a second gear wheel immediately beneath and meshing with the latter gear wheel, and it is supported by a pin shaft 17 passing between the plate and the casing wall. This latter gear is free to rotate on its shaft and is simply an idler.

18 is a second plate centered at its one end on the shaft 10 and having its other end connected by a pin shaft 19 to the hanger 9, such pin shaft supporting a gear wheel 20, which is adapted to mesh with the gear wheel 16.

21 is a gear wheel on the main shaft 10 and in mesh with the wheel 20.

With the construction I have shown it is possible to lift the casing 2 from the desk it being only necessary when replacing it to have the gears 16 and 20 mesh the one with the other. If the casing were made stationary with the desk top then it would be unnecessary to have the two plates 13 and 18, one in such case being sufficient.

22 is a disk wheel centered on the shaft 10 and with its hub 23 resting against the plates 18. The wheel has a peripheral flange 24 to the side which is toward the thumb wheel. The radius of the disk wheel is practically the distance from the center of the shaft 10 to the sight opening, or in other words the disk wheel in its rotation just passes beneath the upper face 4 at the sight opening. The disk wheel is free to rotate on the shaft 10 and has arranged on its face a calendar strip 25, which will shortly be explained.

26 is an opening passing through the glass plate 6 and the face 4 of the casing. The flange 24 on the disk wheel passes immediately beneath the opening in such a manner that if the finger or thumb be inserted the motion of the wheel can be stopped at will.

27 is a drum of cylindrical form rigidly fastened to the shaft 10 by means of radial ribs or spokes 28 passing to hubs 29 which in turn are connected to the shaft. The diameter of the drum is the same as that of the body of the disk wheel already described, and the drum is positioned on the shaft immediately to the side of the disk wheel. In this way the plate 18 and one of the hubs 29 prevent the disk wheel from having longitudinal movement or play on the shaft. The ends of the drum are toothed completely around as at 30 and 31 and immediately adjacent on the face of the disk wheel 22 is a spring 32. The spring is fastened securely to the disk and designed to have its free end play on the teeth of the drum.

In the drawing (Fig. 3) it is seen that the spring 32 operates on only half the length of each tooth, and that directly above it there is a second spring 33 fastened permanently to the under side of the face 4 of the casing and which has its free end operating on the other half. In this way the drum and disk wheel can be rotated together or individually, for if there be no pressure applied on the face of the disk wheel through the opening 26 then the spring will cause the drum to carry the wheel with it. If pressure be applied through the opening the drum can be rotated separately as the spring 32 will pass or click over the teeth. The spring 33 prevents the drum in all cases from stopping in rotation irregularly and it also retards its motion when being rotated; in this way making it a great deal easier to stop at a definite position.

34 is a chart on the drum which will be described more fully hereinafter.

35 is a complementary disk wheel to that of 22 and at the opposite end of the drum, and it is supplied with a peripheral flange 36 at the side away from the drum, in the same manner as the other. The hub 37 of the wheel is free to rotate on the shaft 10 and is prevented from longitudinal displacement on the shaft by the other adjoining hub 29 of the drum, and the hanger 8.

38 is a spring corresponding to the spring 32 and it has its one end fastened securely at 39 to the side of the disk wheel 35 adjacent to the drum. The other or free end operates on the teeth 31 of the drum in the same manner as does the spring 32 on the teeth 30.

40 is a calendar strip fastened on the face of the disk wheel 35 and it is formed as later described.

41 is a second opening passing through the glass plate 6 and the face 4 of the casing, and the flange on the disk wheel 35 passes immediately across the opening so that a finger or thumb can be easily placed on the flange from above. This latter opening corresponds with the opening 26.

On account of the spring 38 I can rotate the drum and the disk wheel 35 either together or separately, as, if no pressure be applied to the surface of the wheel through the opening 41 the wheel will necessarily rotate with the drum when it is rotated. If pressure be applied the spring will simply pass or click over the teeth.

42 is a strip of paper or other such material placed immediately beneath the plate 6, and 43 is a longitudinal slot cut in the paper, the slot registering with the sight opening 5 already described. Directly above the slot is a computed interest table 44 and below is a second table 45. These two tables are absolutely the same as the tables carried on the plate (22) which I have described in a concurrent patent application for an improvement in calculating machines, dated the 4th day of February, 1908. At the end of the lower table 45 I have placed the words "Date" and "Days" each in a column which passes across the table.

The interest chart on the drum is computed in absolutely the same manner as a certain chart (28) which I have already described minutely in the specification in which I have explained the tables on the plate (25) above referred to. An addition however is made on the chart in that a second set of numbers 1, 2, 3,—to 364 has been placed at the opposite side, as will appear if reference be made to Fig. 4, where it will be seen there are two boundary columns, each bearing the numbers above referred to. This additional feature however is not absolutely necessary as it is only used as a convenience for reading.

The calendar strip 25 is as now described. On the strip are arranged the months of the year successively in a longitudinal column 46 and directly to the side of this latter column and toward the drum is a second column 47 which has the days of the month notated thereon. The months appear in what might be termed a clock-wise rotation, and the numbers representing the days of the month progress also in the same rotation.

The calendar strip 40 is of the same form as that 25 save that it is practically reversed. There are two longitudinal columns 48 and 49 respectively, that 48 being first from the drum and bearing the names of the months of the year in rotation. However in this case the months are arranged beginning with January, in what might be termed (in respect to the other strip 25) a counter clock-wise rotation. In the column

49 the days of each month are notated directly opposite the months to which they belong and the numbers representing the days progress in a counter clock-wise rotation as to the other strip.

I have in this case, as I had in the application above referred to, a vacant longitudinal row on the drum chart, which when counted with the other three hundred and sixty-four rows, gives altogether three hundred and sixty-five longitudinal rows on the drum. For this reason it will be seen that there is a row on the drum corresponding to each date on the disk wheels as there are three hundred and sixty-five days in the year. In order that the manner of making calculation may be better understood I will now give an example. In order to avoid prolixity I will take the same examples as were given in the specification of the other application already referred to in which it was required to compute the interest on a note which matures on December 30th; the present date being considered as January the 3rd.

My first operation is to turn the thumb head 11 which will rotate the drum. The drum on account of the spring 32 will carry the disk 25 with it, and I keep on turning until the present date, *i. e.*, January 3rd, appears through the sight opening. As soon as it appears the finger is placed on the disk through the opening 26 and it is held; the drum being rotated till the blank longitudinal row appears through the sight opening opposite the present date. This state or position of the disk and drum is shown in Fig. 4 of the drawings.

The next operation is to release the pressure of the finger on the disk and to allow both the disk and drum to rotate together, continuing the rotation until the date on which the note matures (December 30th) appears through the sight opening. Directly opposite this date on the drum are found the figures "361", and this is the number of days from January the 3rd to December the 30th, of the present year.

Having found the number of days the next operation is to find the interest for the number of days at whatever the rate of per cent. in any particular case may be. The computation from this point is the same as in my other machine. If the interest be stated at five per cent., and the amount of the note be two hundred dollars, we simply look on the lower table 45, and we find the rate of interest, "5%",—also a number "200", and directly above "200" on the drum appears a number "9.89". This is the interest on $200.00, for 361 days at 5%. Consequently, as before, the amount necessary to meet the note when it matures will be $209.89.

In order to compute both the time and interest on a note which has matured I do it by means of the second calendar strip 42. As an example, suppose the note was taken on February 2nd of last year, and matures on January 29th of this year, which is taken as the present date. To find the number of days between these dates turn the thumb head 11 and the drum rotates carrying with it the disk wheel 35, on account of the spring 38. When the present date, *i. e.* January 29th, appears in the sight opening the finger is inserted through the opening 41 and the disk is prevented from rotating by finger pressure. The drum is rotated till the blank row on the chart appears in the sight opening, as before, and then the finger pressure being released both drum and disk are rotated till the date "February 2nd," appears through the sight opening. Directly opposite this latter date on the drum appears in the first column the figures "361", which represent the number of days between the dates given.

The manner in which the interest is computed on any amount for this number of days is the same as has been just described in the other example.

What I claim as my invention is:

In a machine of the class described, the combination with a horizontal support, of a rectangular casing formed with an open bottom and having a longitudinal slot in its face; a set of hangers fastened to and extending downwardly from the support; a drum having a tabulated chart thereon mounted on a horizontal shaft carried by the hangers, the ends of the drum being toothed, a thumb head having a shank passing into and through the casing, a train of gears inter-connecting the thumb head shank with the drum shaft; a set of disk wheels rotatably mounted on the drum shaft, one at each end of the drum; said wheels having each a calendar strip thereon adapted to coöperate with the drum chart; a spring fastened to the face of the disk wheels adjacent the drum, the said springs being adapted to have their free end operate on the teeth of the drum; and means which will allow of pressure to be applied to the faces of the disk wheels, as and for the purpose specified.

Signed at Toronto, in the Province of Ontario this 25 day of February 1908.

CARL ARNO MEILICKE.

Witnesses:
O. HAINES,
R. COBAIN.