

N^o 4364



A.D. 1895

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Complete Specification Left, 20th Dec., 1895—Accepted, 22nd Feb., 1896

PROVISIONAL SPECIFICATION.

An Improved Calculating Apparatus.

A communication by EDMUND SCHNEIDER, of 12^A Plinganser Strasse, Munich, in the Empire of Germany, Wood Dealer.

I, WILLIAM PHILLIPS THOMPSON F.C.S., M.I.M.E. of The Agency for Foreign Patent Solicitors, 6 Lord Street, Liverpool and 6 Bank Street, Manchester, both in the County of Lancaster, 118 New Street, Birmingham in the County of Warwick and 31 High Holborn in the County of Middlesex, Civil Engineer, do hereby declare the nature of this invention to be as follows :—

This invention has for its object to afford an easy and convenient means of calculating or reading off cubic contents and the like. It consists essentially of a roller which has a peculiarly and suitably arranged table gummed or glued on its periphery, and revolves in a closed sheet metal case or box.

This sheet metal box or case, part of which may be opened and folded back like a lid if desired, has a long, longitudinal slot in the side, on which it is looked at, in which slot the desired results appear whilst the one known factor is arranged stationary under the actual corresponding result on the outside of the sheet metal case, and the other known factor revolves simultaneously with the desired result in the longitudinal slot.

The invention will now be described, taking as an example the calculation of round wood.—

An exactly mounted roller of about 6 centimetres diameter revolves in a sheet metal case and has a knob or thumb-piece at both ends, by which it may be revolved. The periphery of the roller is covered with a suitable cubic table, which preferably only contains such cubic contents as the inventor after many years' practice in the wood trade has been led to regard as generally useful. The sheet metal case or box has on the side which is inspected, a vertical or transverse slot, which allows the desired lengths to be seen, and a horizontal or longitudinal slot in which on the rotation of the roller the cubic contents for all diameters, simultaneously appear over a diameter scale arranged there.

As other lengths and cubic contents cannot appear in the slot, an easy certain and never failing calculation or reading off is thus possible, and the advantage is attained that when the lengths are equal, the roller does not need to be revolved, but all diameters with their corresponding cubic contents simultaneously appear before the eye.

The speed of rotation of the roller is, owing to its small diameter, very great, and experiments have shown an effective capability of over 1000 calculations in an hour without causing the least difficulty or weariness; writing may be done with one hand and the apparatus revolved with the other.

Whilst for small tables a single roller suffices, it is necessary in other cases, in order to retain the apparatus within handy limits, to employ two rollers, the table being in the form of a band wound off one roller on to the other. The two rollers are connected with one another by means of cog wheels or friction-gearing in order to hold the paper tight during rotation.

In complicated apparatuses it may become necessary to employ four rollers which are then connected in pairs, and round which the paper is wound in the form

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of an "S" (this is also possible when two rollers are employed) so that both sides of the paper may be printed, and on each roller at the point of contact with the sheet metal case the desired rows of figures will be visible through the above-mentioned slot. It is a matter only of greater convenience whether the machine lies horizontally or stands vertically.

The invention may be adapted as an interest calculating apparatus with (for instance) 8 rates of interest with capital figures from (for instance in the case of German coinage) a pfennig up to 100,000 marks, and from 1 up to 360 days, arranged in the form of a cylinder, (the sheet metal case) which revolves on its vertical axis on a foot or base block and contains in its interior two pairs of rollers which again revolve on their own axes. The slots in the sheet metal case are in this form of construction vertical so that the interest on 1000 marks, 2000 marks, and so forth, or 100 marks, 200 marks, 300 marks and so forth, or 10 marks, 20 marks and so forth, or 1 mark, 2 marks, 3 marks, 4 marks and so forth, may be immediately added therefrom, because they stand one under the other if the roller be revolved to a suitable rate of interest and number of days. In order to facilitate the reading off an arrangement is made, in this case, by which all the figures, which appear in the slot, are each covered by a flap, each of which turns on a hinge and may be opened separately. In order for instance to find the interest for 6483 marks at 4 % for 165 days, it is merely necessary to revolve the roller which contains the rate of interest at 4 % to the column corresponding to 165 days, and then to open the flaps for the figures 6000, 4000, 80 and 3 marks, and there appear then successively one under the other the figures 165, 11, 2.20 and .08 marks, which when added together mentally yield the sum of 178.28 marks. This method when the apparatus hereinbefore described is employed is characterized not only by great rapidity but also great certainty.

Dated this 27th day of February 1895.

WM. P. THOMPSON & Co.,
Agents.

COMPLETE SPECIFICATION.

An Improved Calculating Apparatus.

A communication by EDMUND SCHNEIDER, of 12^A Plinganser Strasse, Munich, in the Empire of Germany, Wood Dealer.

I, WILLIAM PHILLIPS THOMPSON F.C.S., M.I.M.E., of The Agency for Foreign Patent Solicitors, 6 Lord Street Liverpool, and 6, Bank Street, Manchester, both in the County of Lancaster 118 New Street, Birmingham in the County of Warwick, and 31 High Holborn in the County of Middlesex, Civil Engineer, 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 has for its object to afford an easy and convenient means of calculating or reading off cubic contents and the like. It consists essentially of a roller which has a peculiarly and suitably arranged table gummed or glued on its periphery, and revolves in a closed sheet metal case or box.

This sheet metal box or case, part of which may be opened and folded back like a lid if desired, has a long, longitudinal slot in the side on which it is looked at, in which slot the desired results appear, whilst the one known factor is arranged stationary under the actual corresponding result on the outside of the sheet metal case, and the other known factor revolves simultaneously with the desired result in the longitudinal slot.

The invention will now be described, taking as an example the calculation of round wood.—

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In the accompanying drawing

Figure 1 is a perspective view of the calculating apparatus and

Figure 1^A is an end view of the same with the sheet metal lid opened and laid back.

5 Figure 2 shows a view in perspective of a modification of the calculating apparatus in which two rollers are employed; and

Figure 2^A is an end view of the same with the cover or lid opened and laid back;

10 Figure 3 is a front elevation of a larger form of the apparatus in which the casing stands vertically and is cylindrical in form and

Figure 3^A is a transverse section of the same.

15 An exactly mounted roller *a* of about 6 centimetres diameter revolves in a sheet metal case *b*, and has a knob or thumb-piece at both ends, by which it may be revolved. The periphery of the roller is covered with a suitable cubic table, which preferably only contains such cubic contents as the inventor after many years' practice in the wood trade has been led to regard as generally useful. The sheet metal case or box has on the side which is inspected, a vertical or transverse slot *d*, which allows the desired lengths to be seen, and a horizontal or longitudinal slot *c* in which on the rotation of the roller the cubic contents for all diameters, 20 simultaneously appear over a diameter scale arranged there.

As other lengths and cubic contents cannot appear in the slot, an easy, certain and never failing calculation or reading off is thus possible, and the advantage is attained that when the lengths are equal, the roller does not need to be revolved but all diameters with their corresponding cubic contents simultaneously appear 25 before the eye.

The speed of rotation of the roller is, owing to its small diameter, very great, and experiments have shown an effective capability of over 1000 calculations in an hour without causing the least difficulty or weariness; writing may be done with one hand and the apparatus revolved with the other.

30 Whilst for small tables a single roller suffices, it is necessary in other cases, in order to retain the apparatus within handy limits, to employ two rollers, the table being in the form of a band wound off one roller on to the other. The two rollers are connected with one another by means of cog wheels or friction-gearing in order to hold the paper tight during rotation. This arrangement is shown in 35 Figures 2 and 2^A.

In complicated apparatuses it may become necessary to employ four rollers which are then connected in pairs, and round which the paper is wound in the form of an "S" (this is also possible when two rollers are employed) so that both sides of the paper may be printed, and on each roller at the point of contact with the sheet metal case the desired rows of figures will be visible through the above-mentioned slot. It is a matter only of greater convenience whether the machine 40 lies horizontally or stands vertically.

The invention may be adapted as an interest calculating apparatus with (for instance) 8 rates of interest for capital sums from (for instance in the case of 45 German coinage) a pfennig up to 100,000 marks and from 1 up to 360 days, arranged in the form of a cylinder (the sheet metal case as shown in Figure 3) which cylinder revolves on its vertical axis on a foot or base block and contains in its interior two pairs of rollers *a* (Figure 3^A) which again revolve on their own axes. The slots in the sheet metal case are in this form of construction vertical so that 50 the interest on 1000 marks, 2000 marks, and so forth, or 100 marks, 200 marks, 300 marks and so forth, or 10 marks, 20 marks and so forth or 1 mark, 2 marks, 3 marks, 4 marks and so forth, may be immediately added therefrom because they stand one under the other if the roller be revolved to a suitable rate of interest and number of days. In order to facilitate the reading-off an arrangement is made, in this case, 55 by which all the figures which appear in the slot are each covered by a flap *k* each of which turns on a hinge and may be opened separately. In order for instance to find the interest for 6483 marks at 4 % for 165 days, it is merely necessary to

Thompson's Improved Calculating Apparatus.

revolve the roller which contains the rate of interest at 4 % to the column corresponding to 165 days, and then to open the flaps for the figures 6000, 400, 80 and 3 marks, and there appear then successively one under the other the figures 165, 11, 2·20 and ·08 marks which when added together mentally yield the sum of 178·28 marks. This method when the apparatus hereinbefore described is employed is characterized not only by great rapidity but also great certainty. 5

Having now particularly described and ascertained the nature of the said invention and in what manner the same is to be performed, as communicated to me by my foreign correspondent, I declare that what I claim is:—

An improved calculating apparatus consisting of one or more rollers mounted 10
 revolubly on their axes horizontally or vertically in a case which is preferably formed of sheet metal and which may itself be stationary or revoluble and horizontal or vertical, said rollers being provided with factors and results either printed thereon or gummed thereon, or having paper or like tables which are wound and unwound on the rollers, whilst other factors are placed stationary on 15
 the sheet metal casing respectively opposite to their related results, said casing being formed with a slot which may be provided with a series of flaps whereby the results may be observed through the slot, or individually by opening a flap in the slot substantially as hereinbefore described and shown in the accompanying 20
 drawings.

Dated this 19th day of December 1895.

WM. P. THOMPSON & Co.,
 Agents.

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

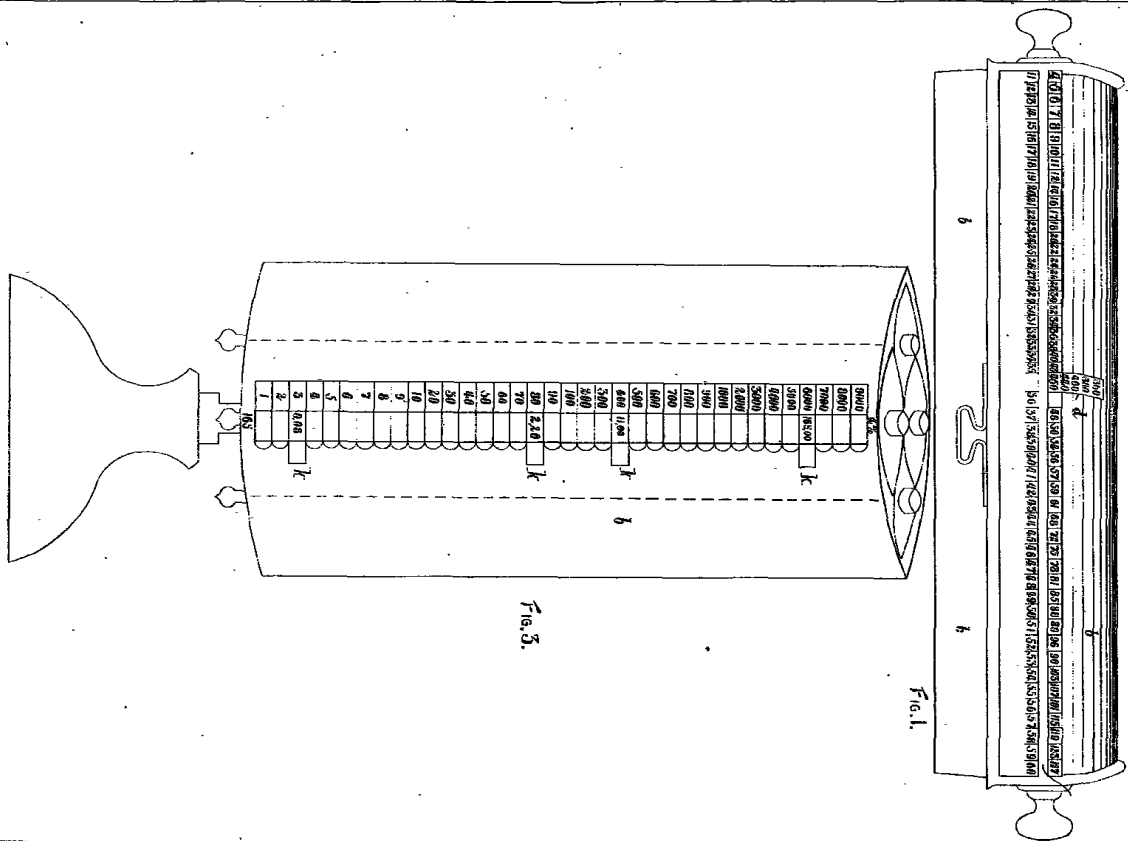
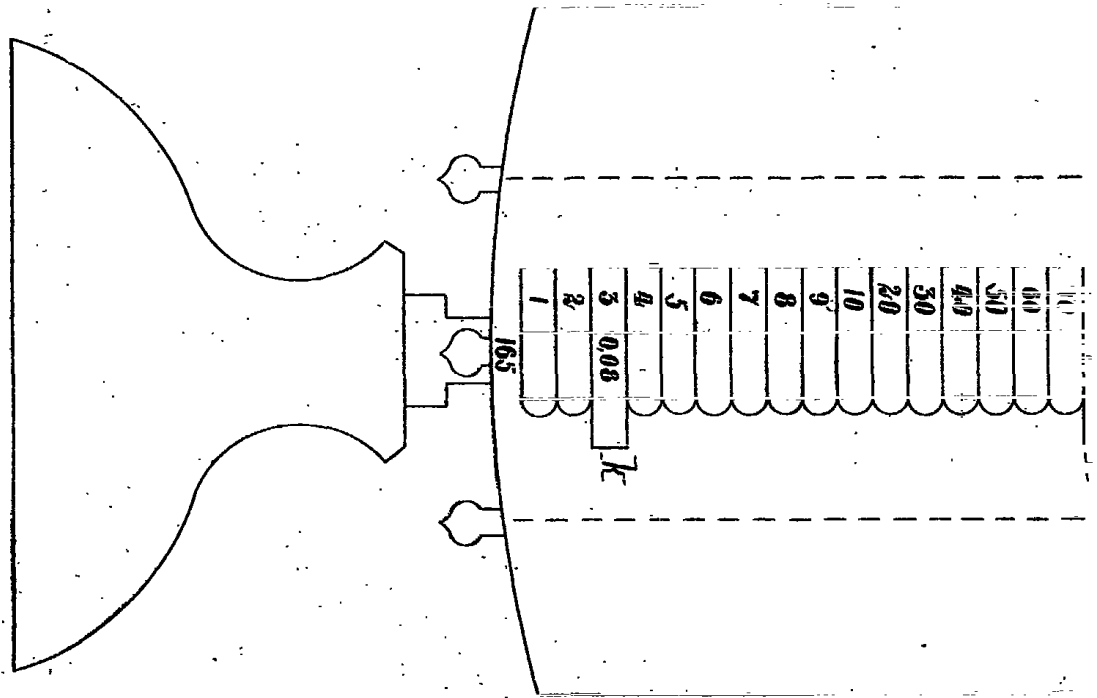


Fig. 3.

Fig. 1.

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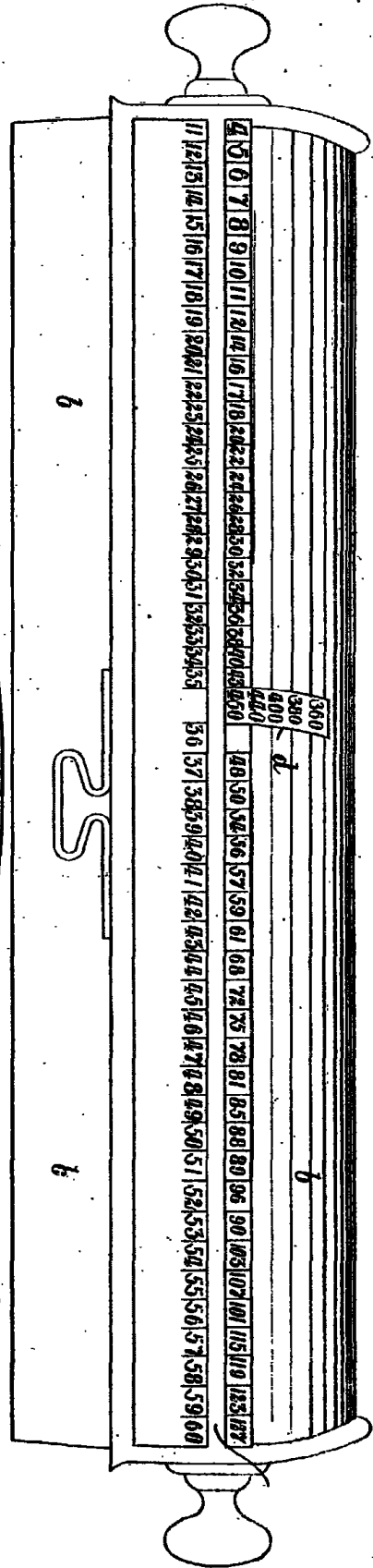
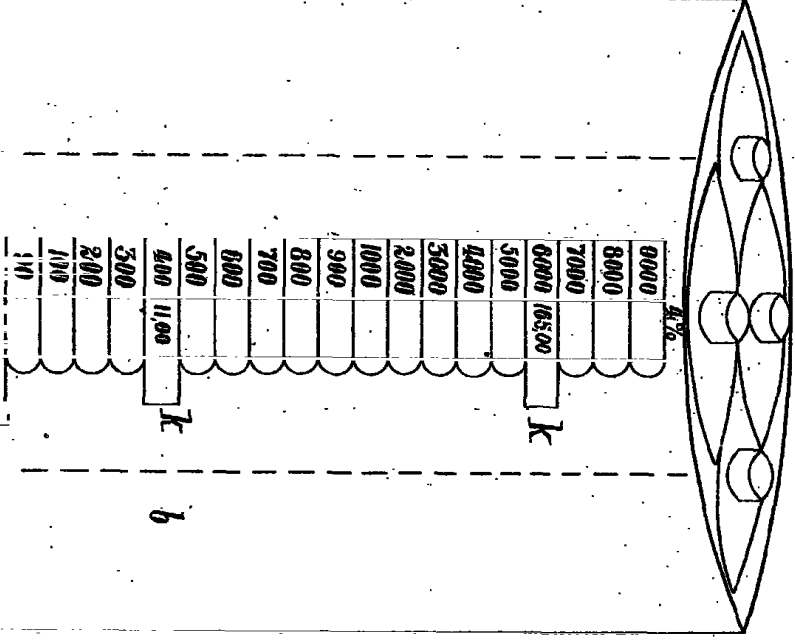
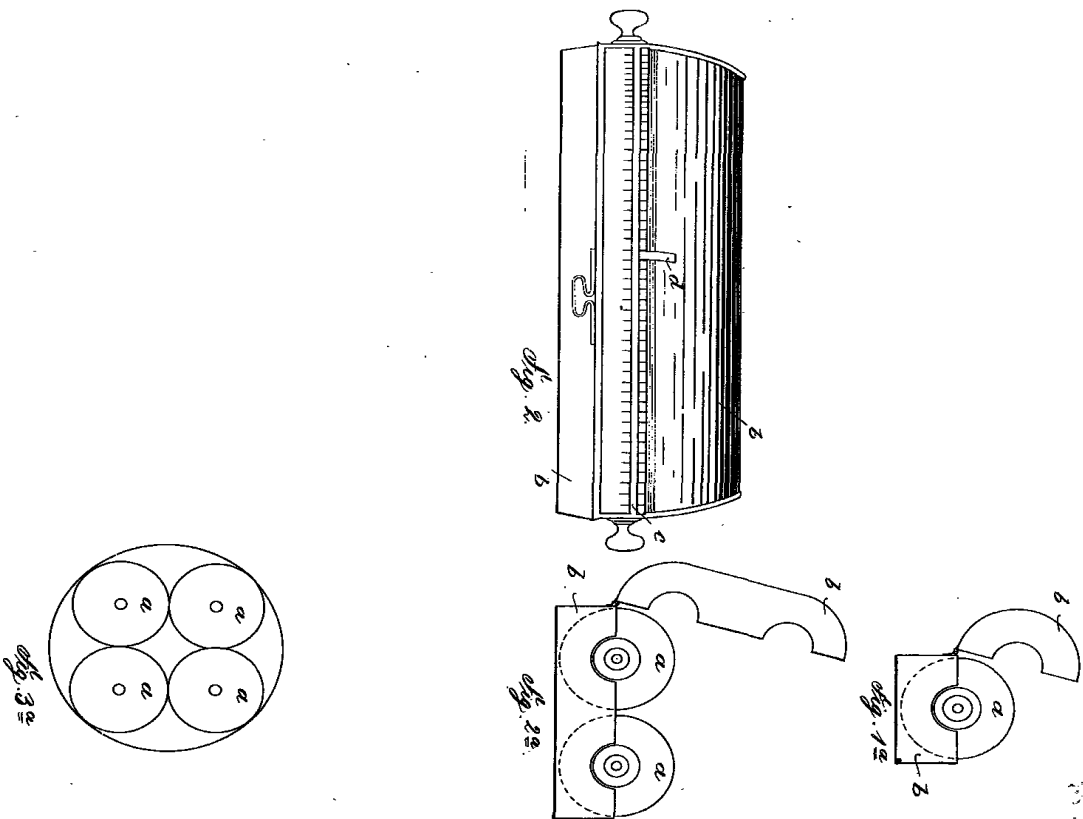


Fig. 1.



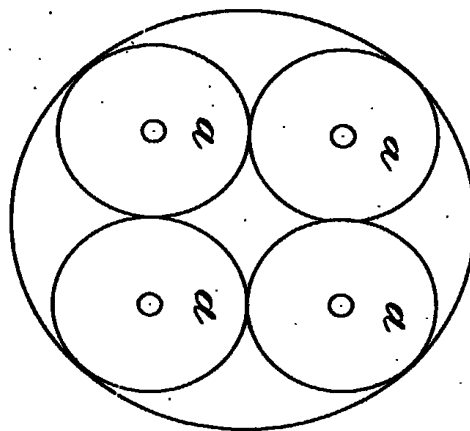
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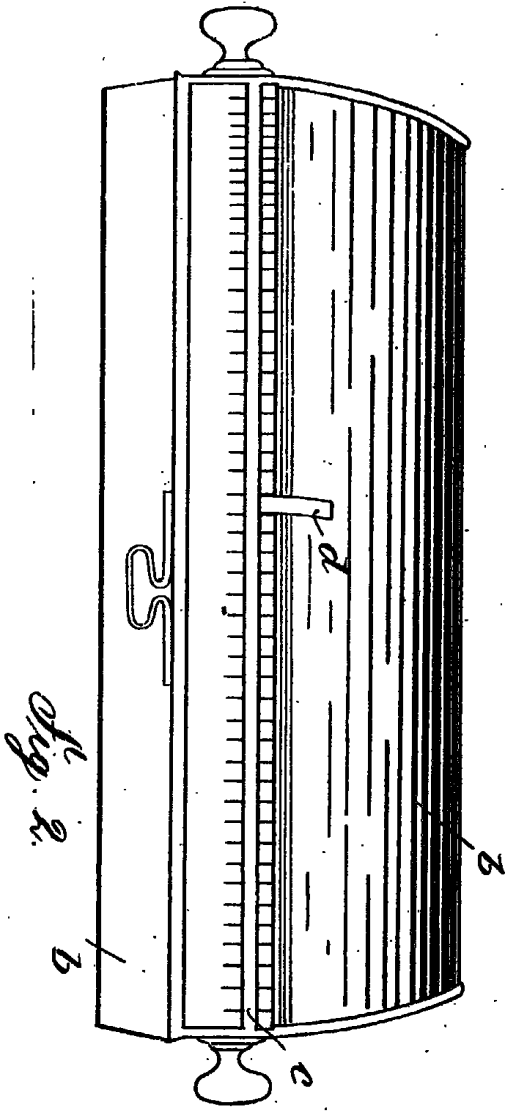


Fig. 2.

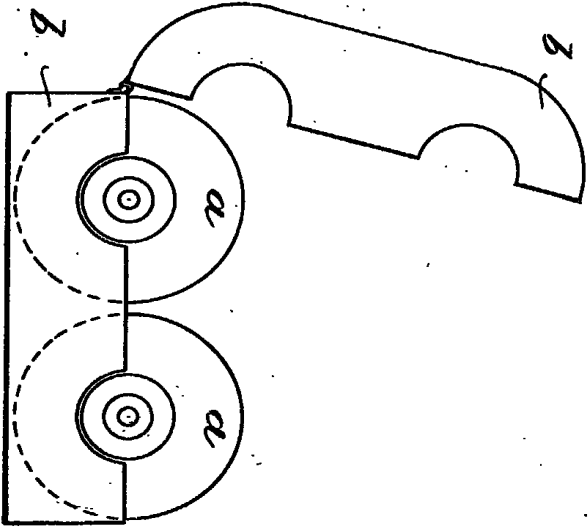


Fig. 2a.

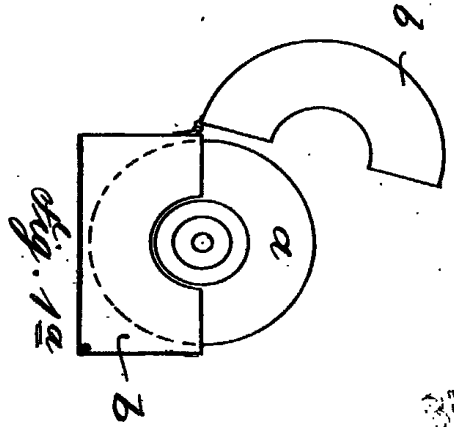


Fig. 1a.

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