119,818

PATENT SPECIFICATION

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COMPLETE SPECIFICATION.

Improvements in Adding Machines.

I, HAROLD GEORGE CRUIKSHANK FAIRWEATHER, of 65—66, Chancery Lane, London, W.C. 2, and 62, Saint Vincent Street, Glasgow, Chartered Patent Agent, do hereby declare the nature of this invention (a communication from Oscar Adolf Kristian Printz, of Södra Vägen 16, Kalmar, Sweden, Mechanical Engineer) 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 adding machines of the type in which the number wheels are set by means of slidable toothed bars or the like.

The object of the invention is to provide a simple and reliable device for adding machines of the said kind by means of which both single items and totals may be recorded or printed so as to effect a check upon the numbers added.

The invention consists, chiefly, in this that the actuating members for the indicating wheels are provided with figure-types so arranged that in setting any figure the corresponding type will be brought into position for printing.

The construction of the checking device will according to this invention be very simple inasmuch as the intermediate mechanism used in adding machines as heretofore known, as well as the intermediate wheels for the printing types will be unnecessary.

In the accompanying drawing is shown an example of an adding machine constructed according to this invention. Fig. 1 shows a longitudinal section of the adding-machine showing the same in a position in which a number already set is being printed. Fig. 2 shows a longitudinal section of the adding machine at the moment at which the frame with the paper strip, on which the figures are to be printed is in its upper position, the printing done, and at which the slidable bars are just about to return to their normal position as the locking levers have been lifted by the action of the pawl 16, mounted on the frame 6, and the cams 18. Fig. 3 is a plan view of the adding machine.

With reference to the drawing, the adding machine involves in well known manner a series of indicating wheels 2 mounted on a common shaft 1, and a corresponding number of slidably mounted toothed bars 20 for actuating said indicating wheels. Said toothed bars are adapted to be manually operated by means of a suitably pointed instrument, such as a pencil or the like, and are to this end provided with teeth 21 in their upper surface, said teeth being marked in order with the numbers 0 to 9. To limit the movement of said bars in setting numbers, a stationary transversely extending stop bar 3 is provided in the well known manner.

Formed on the lower end of the upper surface of the bars 20 are also figure types, arranged in the same order as the numbers marked in the teeth 21 of the bars 20.

[*Price 6d.*]

Mounted on a transverse shaft 23 attached to the frame of the machine at one end thereof is a manually operated lever formed as a frame 6. Said frame carries a printing device which consists of a paper supporting roller 9 mounted in the frame, a printing roller 4, likewise mounted in the frame, a guiding roller 8 for the paper 7, and an ink-roller 5, carried by an arm 11, pivotally mounted at 10 in the frame 6. The printing roller 4 is rigidly connected to a ratchet wheel 14, cooperating with a pawl 13 mounted in the arm 11. The mutual arrangement of the numbers of the teeth 21, the types 22, and the printing device is such that a type will be in position for printing when the tooth 21 marked with the corresponding number is at the stop 3.

The frame 6 is acted upon by a spring 12 tending to maintain the frame in raised position. On the frame 6 is a pawl 16 pivotally mounted. For each slidable bar is provided a locking lever 15, pivotally mounted on the shaft 24 and under a downward pressure from the spring 25. Each locking lever is acted upon by a cam disk 18 fastened to a rock shaft 26 which also carries an arm 17 adapted to be operated upon by the said pawl 16.

The operation of the machine described is as follows:

The supporting frame 6 of the printing device is normally in raised position in which the ink-roller only bears against the toothed bars.

If it is desired, for instance, to add the number 5, the desired toothed bar is displaced longitudinally in well known manner towards the indicating wheels, till the tooth marked with the number 5 reaches the stop 3. By this movement the indicating wheel meshing with the actuated toothed bar will be caused to turn correspondingly so as to add 5 to the sum appearing on the indicating wheels. While the toothed bar is thus displaced, the types 22 thereof will be coated with ink when passing below the ink-roller 5, situated in front of the printing place. When the number 5 has been set in the above described manner, the type 5 will be in printing position. By thereupon depressing the normally raised frame 6, the roller 5 will be moved so as to give place for the printing roller 4, and by further depressing said frame the printing roller 4 will press the paper against the type so that the number set will be printed on the paper.

Upon the depression of the frame 6, the pawl 13 moves the ratchet wheel 14 rigidly attached to the printing roller 4 so that said ratchet wheel and consequently also the printing roller is turned through a certain angle thereby moving the paper 7 to present a clean surface for receiving the next number to be printed.

During the printing operation the toothed bars are maintained in displaced position by means of the locking levers 15 as is well known in machines of this character.

After the printing operation has taken place, the frame 6 is released and returned under the action of the spring 12 to its raised position. This movement releases the toothed bars 20 so as to permit the retraction thereof to their normal position. This releasing operation is accomplished by the pawl 16 raising the arm 17 on the upward movement of the frame 6 thereby causing the cam disks 18 to raise the locking levers 15 so as to bring the said levers out of engagement with the teeth 21 of the bars 20.

It will thus be evident that by means of a single lever (the frame 6) the following operations may be performed.

1. Displacement of the ink-roller;
2. Operation of the paper roller;
3. Printing of the numbers;
4. Releasing of the toothed bars for the purpose of returning them to their normal position.

If it is desired not only to print different figures, but also to print the final result, the toothed bars are displaced according to the sum appearing on the indicating wheels, whereupon said sum is printed in the same way as above

described with reference to the printing of a single figure. In order to ascertain that the sum shown in the totalizer, is correctly set the second time in order to be printed on the paper strip so that the printed total does not differ from the total added, the printed total is subtracted from the sum appearing in the totalizer after the second setting. The difference should then be equal to the printed total.

Assuming the sum of a plurality of set numbers be, for instance, 182, the toothed bars are displaced to set this sum, which is then printed. The indicating device should then show the sum 364, after the printing operation has taken place. If the indicating wheels should show another sum, as for instance 366, this will means that $366 - 182 = 184$ has been set and printed and an error has been made. The paper will in such a case show the number 184. The final sum is then corrected by subtracting the number 184 last printed from the number appearing on the indicating wheels, *viz.* 366. The remainder will then be 182 which is the correct final sum.

It should be understood, that the controlling device above described may also be used on adding machines having toothed wheels or chains instead of toothed bars, in which case the types should be provided on the said wheels or on the said chains. The invention may further be used in connection with adding machines, having toothed actuating bars each consisting of several parts, pivotally connected with each other.

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

1. An adding machine having rotatable indicating wheels and slidable bars for actuating said wheels, said slidable bars being provided with figure types, a pivotally mounted lever being provided carrying an ink-roller bearing constantly upon the types and a printing roller which can be moved towards and away from said types by operating said lever, said printing roller being designed to bring a paper strip in contact with the types for recording the number or numbers set.

2. An adding machine as claimed in Claim 1, in which the ink-roller is so mounted on the said lever as to be moved along the types on the operation of the lever.

3. An adding machine as claimed in Claim 1 in which the said lever also carries a feeding device for the printing roller, said feeding device turning the printing roller sufficiently before each printing operation to present a clean surface of the paper for receiving the number to be printed.

Dated this 20th day of March, 1918.

CRUIKSHANK & FAIRWEATHER, LIMITED,
HAROLD CRUIKSHANK FAIRWEATHER,
Director,
65—66, Chancery Lane, London, W.C. 2, and
62, Saint Vincent Street, Glasgow,
Agents for the Applicant.

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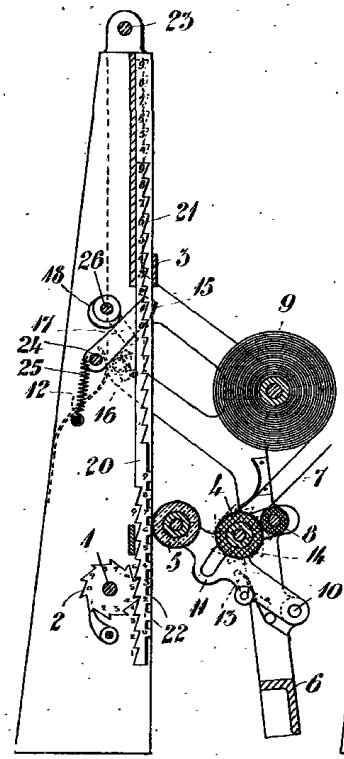
SHEET 1.

Fig: 2



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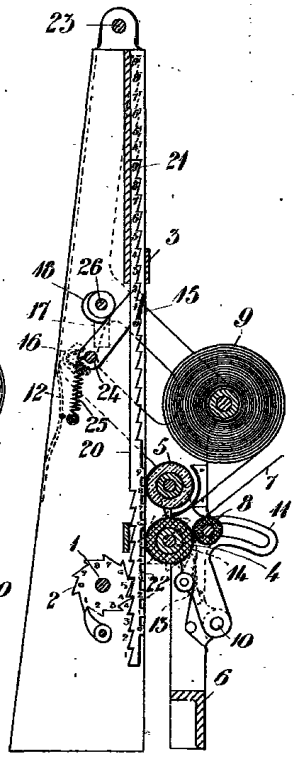
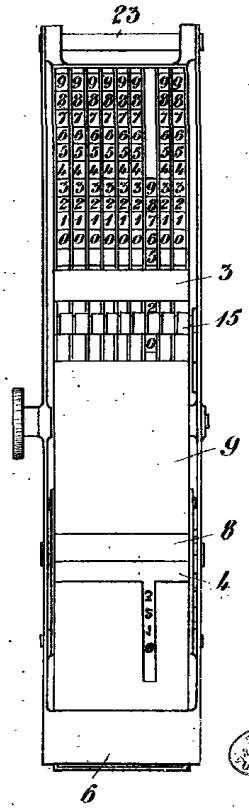


SHEET 2.

Fig: 3.



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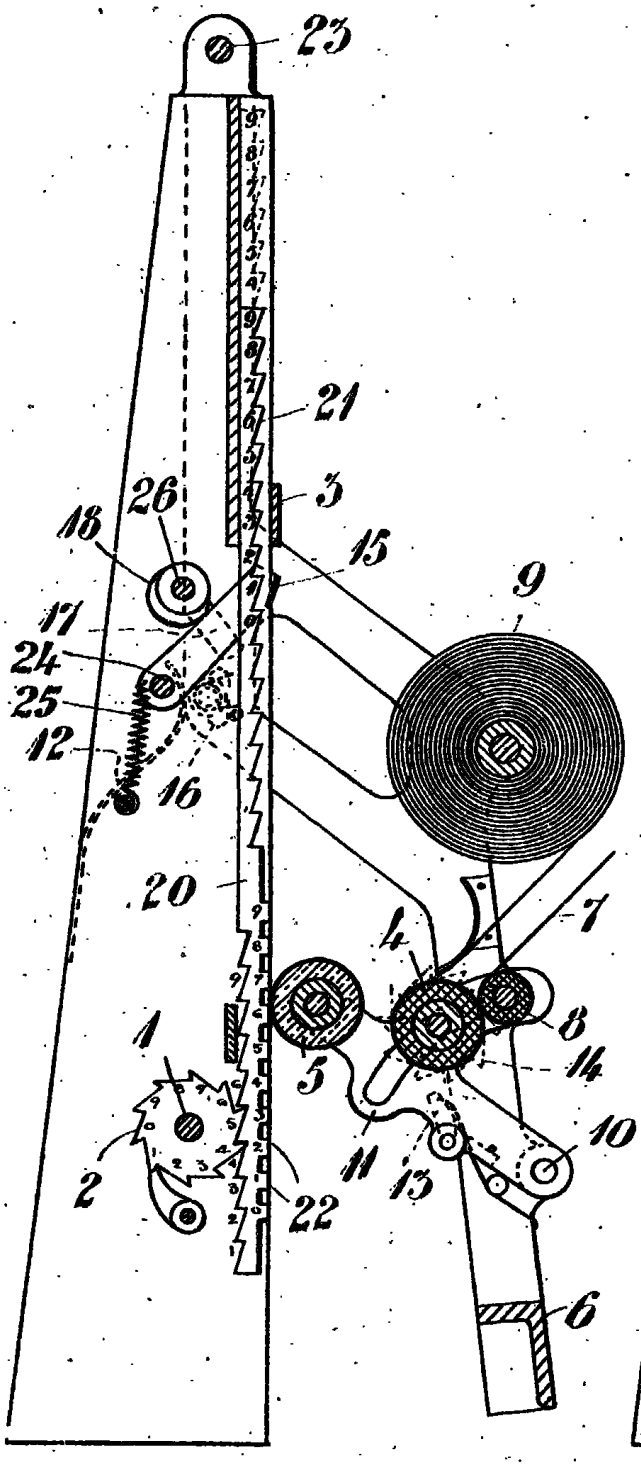
[This Drawing is a reproduction of the Original on a reduced scale.]

Fig: 2



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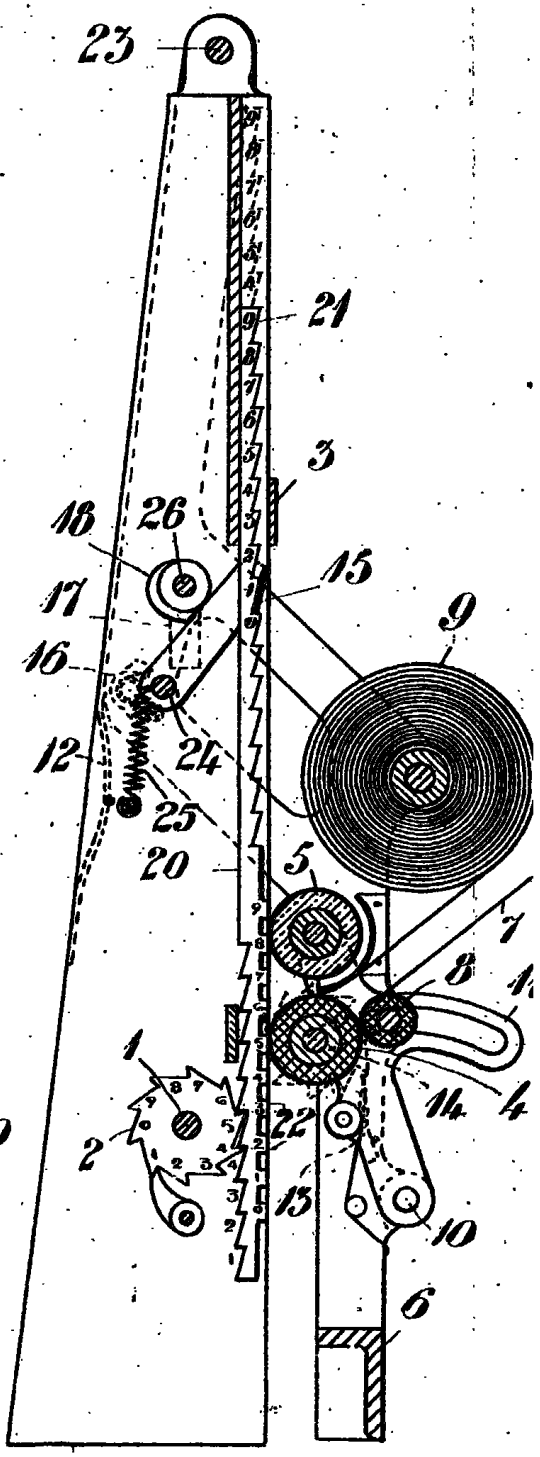
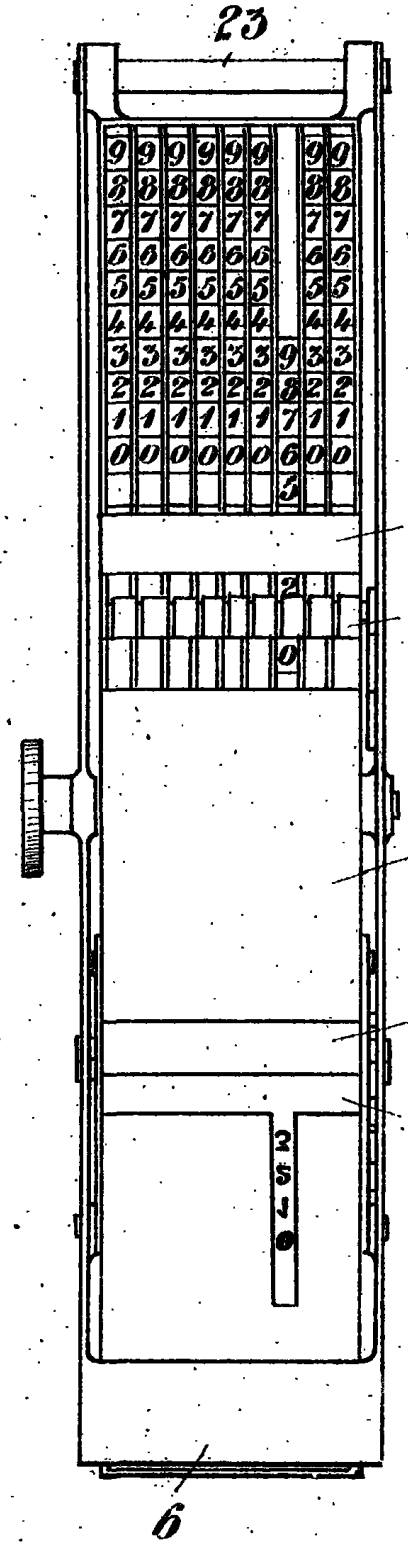


(2 SHEETS)

SHEET 1.

SHEET 2.

Fig: 3.



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