PATENT SPECIFICATION

526,068

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COMPLETE SPECIFICATION

Improvements in and relating to Item Indicators for Ten-key Adding Machines

We, OLIVETTI S.A.M.O.A., a Body Corporate organised and existing under the laws of Italy, of Via Clerici 4, Milan, Italy, and RICCARDO LEVI, an Italian subject, of Via Bezzecca 11, Torino, Italy, 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:—

The invention relates to an item indicator for the control of the number impressed on a ten-key adding machine which is simpler, surer and of smaller size in comparison to those of known machines. In the improved machine there is a slide with stops having the characteristics common to all ten-key adding machines. The stops are disposed in columns and the slide is caused by means of a pawl and rack mechanism, to advance one denomination after the lowering of each key of the key-board, so that the stops of one of the columns are brought in front of one of the successive racks of the totaliser. By pushing the key, the corresponding stop of the column is caused to project so that it determines the displacement of the racks. The machine is provided with a mechanism for the indication of the figure which has been impressed.

Ten-key adding machines are known wherein the same stop projecting from the slide serves always with its front face to determine the displacements of the racks, whilst by its rear face it determines the position of the indicator. This construction, however, represents a constructional complication. In other adding machines the sliding element is connected with the rack of the totaliser when the same is brought back to its initial position, the rack being thus displaced not under the action of a spring, but under a direct control. The elements of the indicator, after being brought back to their initial position, are disengaged from the racks, which thus become free to return to the starting position. This device, however, also requires more space and is more complex than the present invention.

[*Price* 1/-]

In still other adding machines, an indicator element having a sector shaped part bearing appropriate symbols on its periphery is arranged to rock about the axis of this sector to bring the symbols into view beneath a window, this symbol carrying part being moved as a result of the direct engagement of a toothed sector fast thereon with the teeth of a movable rack which carries a series of displaceable stop members actuated by the keys of the keyboard.

The rack in the position which it takes up, forms the stop member for the totaliser racks.

This arrangement involves in addition to the totaliser racks a further complete series of racks of a corresponding length each furnished with a series of stops movable with the related rack, and is therefore somewhat complicated and cumbersome.

In accordance with the present invention there is provided an item indicator for ten-key adding machines in which a sliding element sliding in a guide slot, is held at rest against a stop movable to a release position upon operation of any one of the keys, and is subjected to the action of a spring which after said release displaces said sliding element until it is brought to rest either against another stop moved into the stopping position by the operation of a corresponding number key or against the end of the guide slot in the case of the number "nine", characterised by the fact that the said sliding element is connected through a link to a plate carrying the indicating figure rim, a spring being tensioned between the link and the plate in such a manner as to produce a rotation of the plate and a displacement of the link and sliding element until the latter engages the last mentioned stop, in which position it serves itself as the stop for the correponding rack of the totaliser.

Another advantage of the present invention consists in the fact that, while in other constructions the sliding element of the indicator which is under the control of a spring is kept normally in place by a pawl which is disengaged

by the key, in the present construction there are no pawls and the sliding elements are disengaged by means of the stops corresponding to the zero (00 and 000).

A further advantage of the invention, which is specially remarkable when the two zero and three zero keys are also mounted on the machine, consists in the fact that by impressing the zero, only the rack mechanism is actuated, no other element of the slide being moved.

The invention is illustrated diagrammatically in the accompanying drawing, in which

Fig. I represents a sectional side elevation of the slide, all the parts being in their rest position.

Fig. II is a similar sectional side view of the slide with the units denomination of the indicator in the position corresponding to the figure 3 impressed.

Fig. III is a plan view of the slide with the units denomination of the indicator also in the position corresponding to the figure 3 impressed.

The slide 1 is guided in its movement by the shaft 2 and a guide bar 3 fixed to the frame of the machine, moving thereon through sliding guides 4 and a small roller 5 respectively. A rack 6 engages with a pawl mechanism (not shown) so that, after pushing any of the keys 7 the slide moves, under the action of a spring, through one pitch (or in the case of the keys 00 and 000 respectively twice or three times as far).

The slide is provided with stops 8 guided in the plates thereof, on which the keys 7 can act. These stops have projections 9 engaging with flat springs 10, and this arrangement provides that the stop 8, if displaced, will snap from one position to the other and is kept steady in either one of the two possible positions.

By pushing one of the keys from 1 to 9 (that is other than keys 0, 00, 000), a lever 11, provided with a pin 12 is lifted, and the said pin lifts the first stop 13 of special form (zero stop) which remains successively in its highest position. Meanwhile, one of the keys 7 (in this instance the one corresponding to number 3) is moved to depress its corresponding stop 8 and the latter stops in its lowered position (see Fig. 2).

A sliding element 16 slides in a slot 15 in a plate 14 fixed on the slide 1 and this sliding element 16 is connected by a rod 17 to a plate 18 mounted for rotation on a bush 22 mounted on a tube 21 fixed on the slide 1 and arranged coaxial with the guide shaft 2. The two parts 17 and 18 are connected by a spring 20 tending to diminish the angle between said two parts and to slide the sliding element 16 from right to left.

The plate 18 is provided with a rim 23 whereon the figures from 0 to 9 are engraved and these figures are visible through an aperture 24 in the casing of the machine.

By pushing one of the keys 7 (Fig. 2) in the manner described above the sliding element 16 is disengaged from the stop 13, and slides under the control of the spring 20, until it engages with the stop 8 which has been lowered. At the same time the figure rim 23 rotates to bring the figure corresponding to the lowered stop 8 under the aperture 24. (In the case of the stop 9, only the stop 13 of the zero is lifted, none of the stops 8 being lowered, and the sliding element stops at the end of the slot 15 in the plate 14.) The sliding element 16, during the operation of the adding machine, serves in turn as a stop for the racks of the totaliser 25 (Fig. II) when the same are disengaged by a suitable and known mechanism. The slide 1 is provided also with a plate 26, called zero plate, which can rock on a shaft 27 and serves as a stop keeping the rack 25 in its initial position in these denominations in which no key is depressed. Said plate is adapted to be tilted, thus permitting disengagement in the known manner, of the racks 25 for total taking operations.

When in a denomination the figure zero (or two or three zeros) only have been impressed, the stops 8 or 13 are not actuated, but only the pawl and rack mechanism of the slide is actuated, this being displaced by one, two or three pitches according to whether one, two or three zeros have been impressed. In this case the sliding elements 16 remain in their initial positions and also keep the rack 25 in its initial position.

A universal stirrup 28 serves at the end of the operation to bring the plates 18 and the sliding elements 16 back to their initial positions. Other devices common to other adding machines are provided for the return at the end of the operation of the racks 25 and the slide, and for bringing the stops 8 and 13 back to their places by means of inclined planes.

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

1. An item indicator for ten-key adding machines in which a sliding element (16) sliding in a guide slot, is held at rest against a stop (13) movable to a release

position upon operation of any one of the keys, and is subjected to the action of a spring (20) which after said release displaces said sliding element until it is brought to rest either against another stop (8) moved into the stopping position by the operation of a corresponding number key or against the end of the guide slot in the case of the number "nine", characterised by the fact that the said sliding element is connected through a link to a plate carrying the indicating figure rim, a spring being tensioned between the link and the plate is such a manner as to produce a rotation of the plate and a displacement of the link and sliding element until the latter engages the last mentioned stop (8), in which position it serves itself as the stop for the corresponding rack of the totaliser.

2. An item indicator as claimed in claim 1, wherein the resting position of the sliding element is determined by a stop carried by the slide in correspondence to the figure zero, said sliding element being released by the displacement of said stop.

3. An item indicator as claimed in claim 1 or 2, wherein the members impressing the zeros are formed and arranged so as to act only on the pawl device of the slide without displacing the stops of said slide.

Dated this 7th day of March, 1939.

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Fig. I

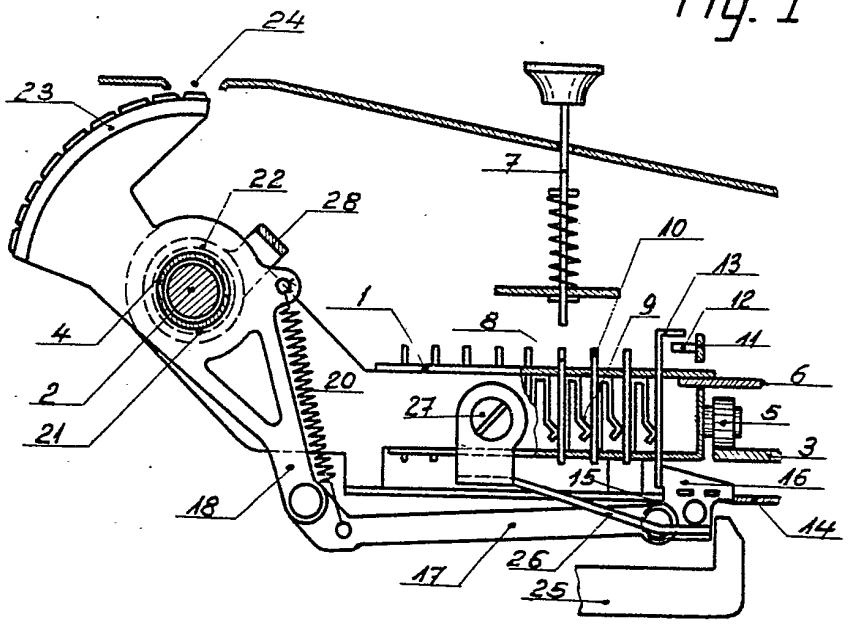


Fig. II

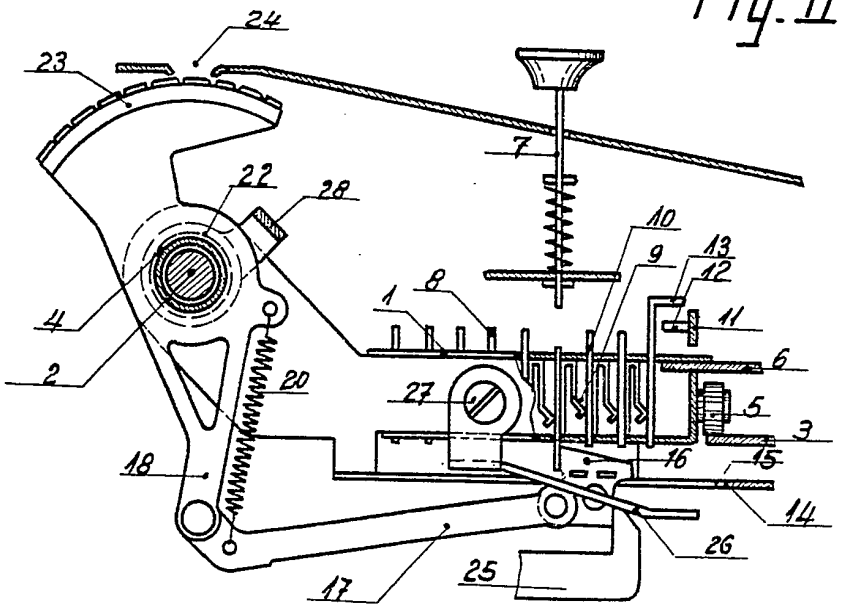
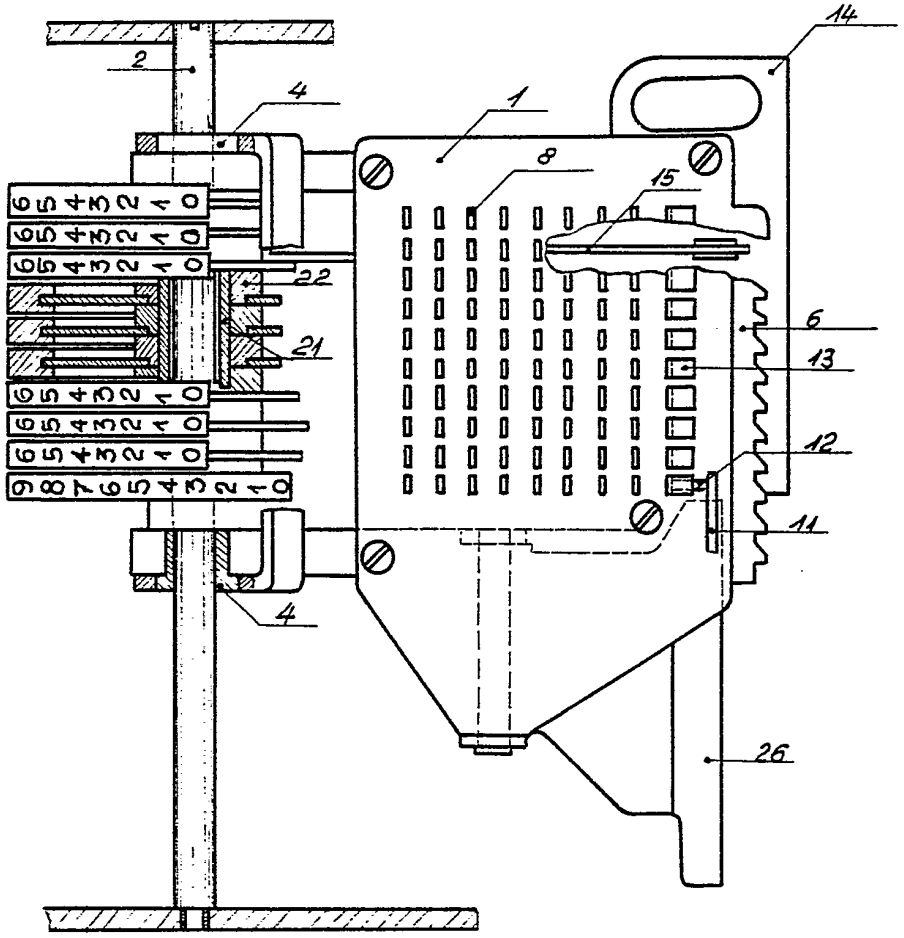


Fig. III



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SHEET 1

2 SHEETS
SHEET 2

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

Fig. I

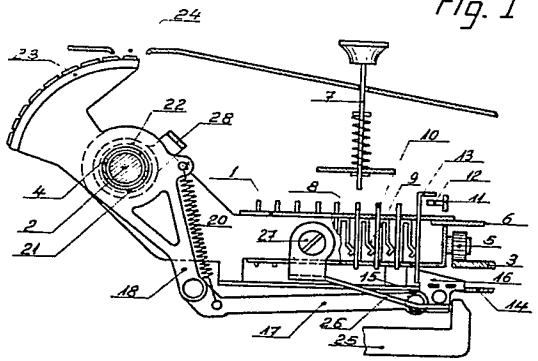


Fig. II

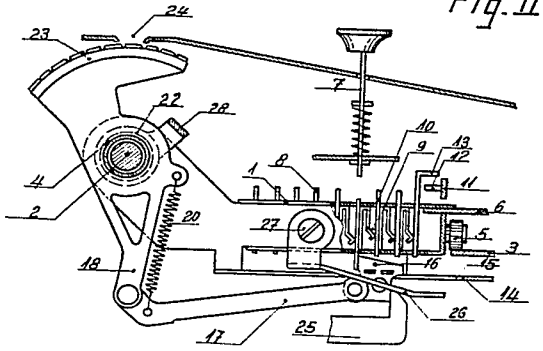
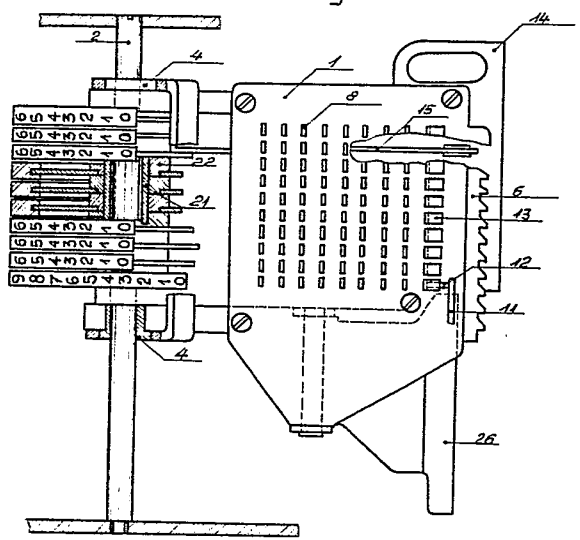


Fig. III



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