

J. G. VINCENT.
 ADDING MACHINE.
 APPLICATION FILED OCT. 29, 1906.

3 SHEETS—SHEET 1.



WITNESSES.

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3 SHEETS—SHEET 2.

932,073.

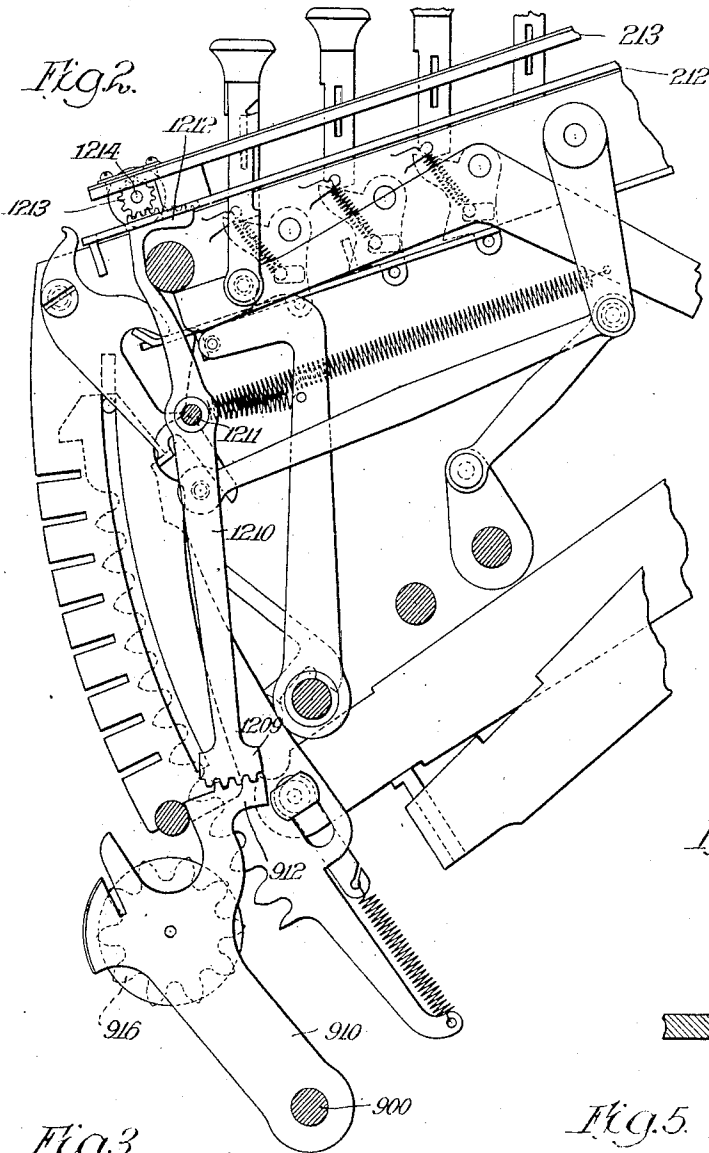


Fig. 6.

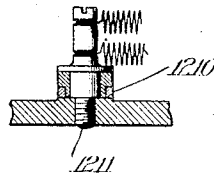


Fig. 5.

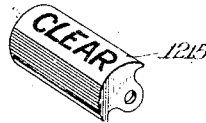
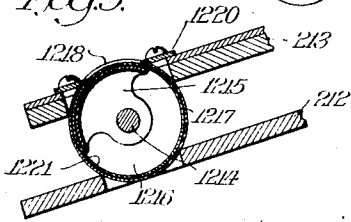


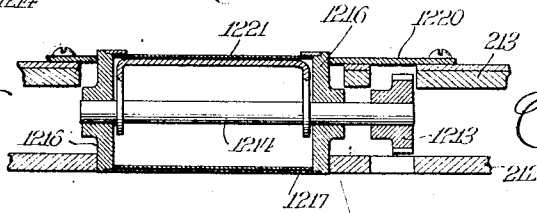
Fig. 3.



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Fig. 4.



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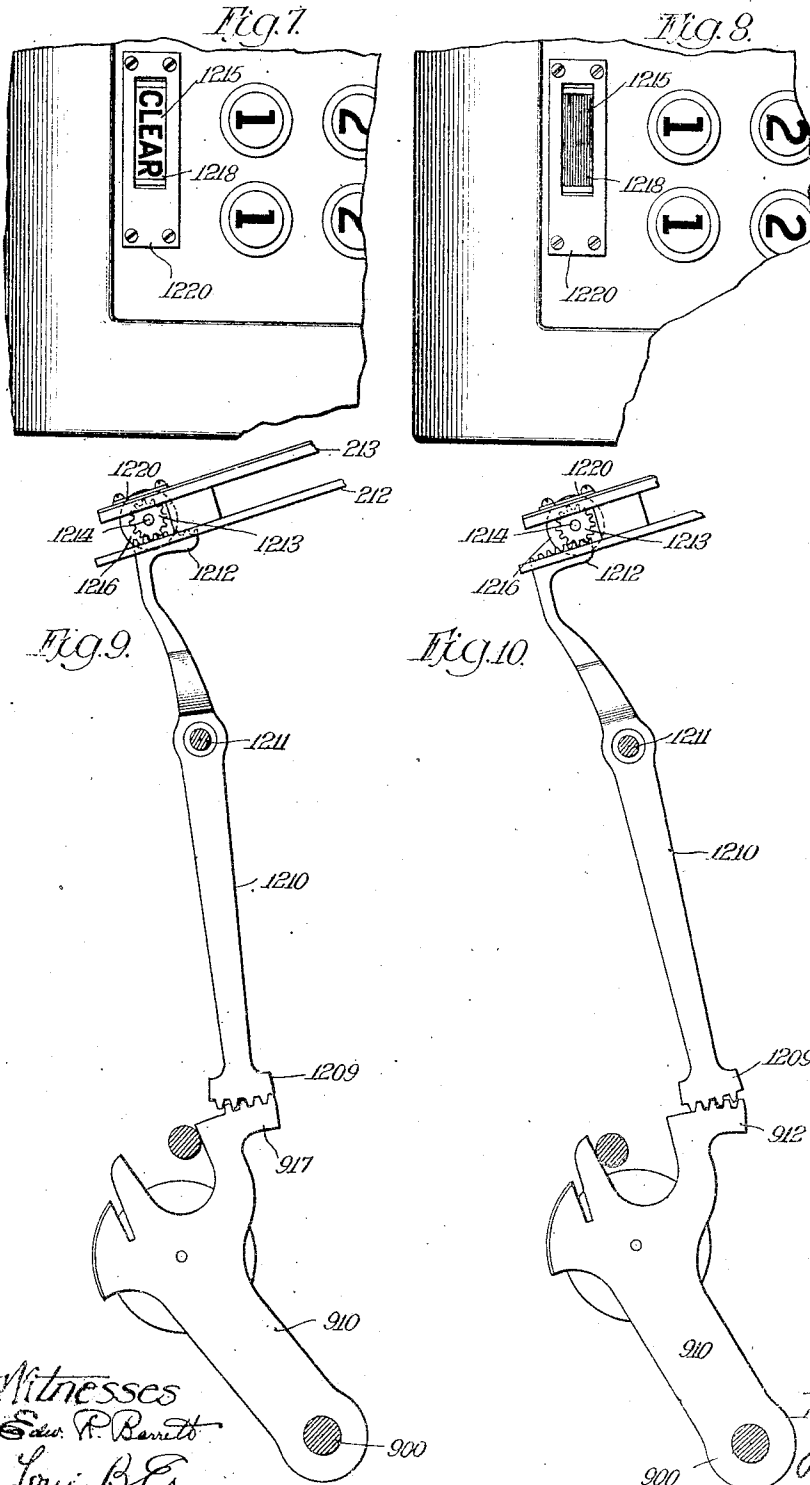
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Witnesses

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UNITED STATES PATENT OFFICE.

JESSE G. VINCENT, OF DETROIT, MICHIGAN, ASSIGNOR TO BURROUGHS ADDING MACHINE COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

ADDING-MACHINE.

932,073.

Specification of Letters Patent.

Patented Aug. 24, 1909.

Application filed October 29, 1906. Serial No. 341,058.

To all whom it may concern:

Be it known that I, JESSE G. VINCENT, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Adding-Machines, of which the following is a specification.

This invention relates to devices employed in adding and listing machines for indicating the condition of the machine to the operator after suspension or completion of accounting work and prior to resuming such work. It is important at such times that the operator shall know whether or not any accumulation is present in the machine and there have been employed heretofore devices in the nature of visual signals for displaying different signs automatically according as the accumulator of the machine stands at zero or is still registering an amount or an accumulation of amounts.

The purpose of the present invention is to provide means for such purpose notable for a minimum number of parts all of which will be capable of production in large numbers by simple and economical processes of manufacture and capable of being readily assembled; also for accuracy of operation and reliability in use.

To this end the invention consists in certain novel features of construction and combinations of parts the essential elements whereof are recited in the appended claims and a preferred form of embodiment of which is described in detail hereinafter and fully illustrated in the accompanying drawings forming part of this specification.

Of said drawings Figure 1 represents in left-side elevation the interior parts of the well-known Burroughs adding and listing machine, the inclosing casing thereof and cross-shafts and supporting studs being shown in section as well as the laterally shifting paper carriage attachment at the rear; Fig. 2 represents a portion of the interior parts of said machine in right-side elevation with the improvements of the present invention applied thereto; Fig. 3 represents a cross sectional detail of the visual signal device; Fig. 4 represents a longitudinal section of the same; Fig. 5 represents the signal proper detached in perspective; Fig. 6 represents a sectional detail of certain parts of the signal operating connections and associated parts; Figs. 7 and 8 represent frag-

mentary top plan views of the key-board of the machine illustrating the two different adjustments of the signal; and Figs. 9 and 10 represent in right-side elevation the parts immediately concerned with the present invention illustrating the different adjustments thereof for differently displaying the signs.

The invention is illustrated in the present instance as applied to a Burroughs adding and listing machine for the details of which reference may be had to the William S. Burroughs patents Nos. 504,963 and 505,078 issued June 12, 1893. It will not be necessary to describe this well-known machine throughout and reference will only be made to such working parts thereof as are immediately concerned with the workings of the signal mechanism of the present invention. Amount keys 291 operate as usual to set stops for segmental racks 610 carried by arms or levers 611 independently pivoted upon a shaft 600 and these racks are adapted to mesh with pinions 916 independently journaled in the upper part of a rocking frame composed of side-pieces 910, the left-hand one of which carries a pair of studs 958 above and below the pivot shaft 900. A pitman 914 is formed with upper and lower branches at its forward end for cooperation respectively with said studs, the upper branch being formed with a triangular frame-like portion embracing the upper stud and the lower branch being notched for engagement with the lower stud. Normally the upper stud lies in a notch at the base of said frame-like portion so that reciprocations of the pitman will rock the said frame to and fro. The pitman is joined at its rear end to a three-armed lever 913 carrying a pair of studs 961 with which cooperates a wipe-pawl 821 pivotally mounted and spring-held at the upper end of a swinging arm or lever 813 carried by a rock-shaft 800. This swinging arm or lever is moved back and forth in every operation of the machine and normally the wipe-pawl acts at the outset of an operation of the machine to thrust the pitman 914 forward, the wipe-pawl then leaving the forward stud 961 and passing rearwardly for cooperation with the companion stud 961 to thrust the pitman rearward when the arm 813 starts forward. The pitman is connected through a link 911 with a bell crank lever 227 carrying a total

key-button 293 whose depression results in transferring the point of engagement between the pitman and the rocking frame from the upper to the lower side of the latter's pivot. Then no movement of the frame takes place during the rearward swing of the arm 813 but in this part of the operation the notched lower branch of the pitman becomes interlocked with the lower stud 958 so that when said arm 813 starts forward the resultant rearward movement of the pitman rocks the frame to disengage the pinions 913 from the racks 610.

Heretofore means have been employed for causing the pinions to reengage the racks at the conclusion of a totalizing operation but in carrying out the present invention it is proposed to leave said pinions disengaged from the racks under such circumstances. Fig. 1 illustrates the effect of dispensing with the means for restoring the pinions to engagement with the racks at the conclusion of a totalizing operation. While this might be called the normal condition of parts because of existing after a clearing operation and prior to the commencement of a series of operations for accumulating and listing amounts, yet it must be understood that the parts are left in their usual relation to each other after an amount has been set up on the key-board and the machine put through an accumulating and listing operation; that is to say the pinions remain in mesh with the racks. The order of operation of parts in accumulating and listing is therefore the same as usual, the pinions being first disengaged from the racks and the latter then dropping to the positions determined by depressed amount keys after which the pinions return to engagement with the racks and are operated thereby in their restoration to normal.

The signal for indicating the condition of the machine is located as usual at the front of the key-board and in the present instance consists of a segment of a cylinder 1215 whose peripheral surface is divided longitudinally, the word "Clear" being inscribed upon one division of this surface and the other division being differently characterized as for example by contrasted coloring (see Fig. 5). This signal device is secured at its ends upon a rock-shaft 1214 journaled in bearings 1216 suitably affixed between the upper and lower plates 213 and 212 of the key-board (see Fig. 4). These bearings constitute heads of a cylindrical inclosing casing for the signal comprising besides said heads a tabular shell 1217 secured to the same and having a longitudinal opening 1218 in the upper side through which the signal may be displayed. The sight opening is circumscribed by a rectangular plate 1220 screwed to the top of the upper key-board plate 213 as shown in Figs. 7 and 8. The

cylindrical inclosing casing is preferably provided with a transparent lining 1221 which may be composed of celluloid, isinglass or like material. This lining constitutes a transparent closure for the opening 1218 to exclude dirt and dust from the signal. It will be obvious that by rocking the shaft 1214 one division or the other of the signal may be displayed through said opening.

The circumstance hereinbefore noted that after a clearing operation the accumulator pinions are disengaged from the racks whereas after an itemizing operation these pinions remain in mesh with the racks is taken advantage of to automatically control the above described signal device. To this end the right-hand side plate 910 of the accumulator frame is extended rearwardly at its upper rear portion to form a gear segment 912 and there is pivotally mounted intermediate its ends upon a suitable stud 1211 an arm or lever 1210 which at its lower end takes the form of a gear segment 1209 meshing with the gear segment 912. At its upper end said arm or lever is formed with a gear segment 1212 which meshes with a small gear wheel or pinion 1213 secured to the rock-shaft 1214 of the signal device.

It will be apparent that through the above described gear connections the signal will be rocked synchronously with the accumulator frame. Thus when said frame stands in its outward position with the accumulator pinions disengaged from their racks that division of the signal will be displayed which shows the word "Clear" whereas when the accumulator frame stands at its inward or rearward position with the accumulator pinions in mesh with their racks the colored division of the signal will be displayed. As the first-mentioned position of the accumulator frame obtains after a total has been taken and the machine cleared this condition of the machine will be thus indicated to the operator. On the other hand whenever there is an accumulation in the machine the display of the colored or "danger" sign indicates that condition of the machine and serves to notify the operator that a new list or series of amounts must not be started without first performing a clearing operation. Of course it will be understood that the taking of a sub-total is not a clearing operation and that the accumulator pinions remain in mesh with their racks in such case so that there is no change in the signal display.

It is true that with every itemizing operation there is a forward or outward movement of the accumulator and a changing of the signal but with the conclusion of such operation the accumulator is left in its inner position so that the signal gives the proper display. Of course the signal is only to be consulted when operations upon the machine

have concluded and the user must not be governed by what the signal may show during an operation of the machine.

It will now be seen that the construction shown and described is well adapted to thoroughly accomplish the object primarily stated. At the same time it is to be understood that this construction is susceptible of various modifications within the scope of the invention.

What is claimed is:

1. In a machine of the character described, the combination with operating racks, accumulator pinions, and a carrier for the latter movable toward and from the racks to carry the pinions into and out of mesh therewith; of a signal device operatively connected with said carrier.

2. In a machine of the character described, the combination with operating racks, accumulator pinions, a carrier for the latter movable toward and from the racks to carry the pinions into and out of mesh therewith, and means for moving the carrier adjustable to vary the periods of engagement and disengagement of racks and pinions; of a signal device operatively connected with said carrier.

3. In a machine of the character described, the combination with operating racks, accumulator pinions, and a carrier for the latter movable toward and from the racks to carry the pinions into and out of mesh therewith; of a signal device, and gearing connecting the same with the said carrier.

4. In a machine of the character described, the combination with operating racks, accumulator pinions, a carrier for the latter movable toward and from the racks to carry the pinions into and out of mesh therewith, and means for moving the carrier adjustable to vary the periods of engagement and disengagement of racks and pinions; of a signal device, and gearing connecting the same with the said carrier.

5. In a machine of the character described, the combination with operating racks, accumulator pinions, and a carrier for the latter movable toward and from the racks to carry the pinions into and out of mesh therewith; of an oscillatory signal device operatively connected with said carrier.

6. In a machine of the character described, the combination with operating racks, accumulator pinions, a carrier for the latter movable toward and from the racks to carry the pinions into and out of mesh therewith, and means for moving the carrier adjustable to vary the periods of engagement and disengagement of racks and pinions; of an oscillatory signal device operatively connected with said carrier.

7. In a machine of the character described, the combination with operating racks, accumulator pinions, and a carrier for the

latter movable toward and from the racks to carry the pinions into and out of mesh therewith; of an oscillatory signal device, and gearing connecting the same with the said carrier.

8. In a machine of the character described, the combination with operating racks, accumulator pinions, a carrier for the latter movable toward and from the racks to carry the pinions into and out of mesh therewith, and means for moving the carrier adjustable to vary the periods of engagement and disengagement of racks and pinions; of an oscillatory signal device, and gearing connecting the same with the said carrier.

9. In a machine of the character described, the combination with operating racks, accumulator pinions, and a rocking carrier for the latter movable toward and from the racks to carry the pinions into and out of mesh therewith; of a signal device operatively connected with said carrier.

10. In a machine of the character described, the combination with operating racks, accumulator pinions, a rocking carrier for the latter movable toward and from the racks to carry the pinions into and out of mesh therewith, and means for moving the carrier adjustable to vary the periods of engagement and disengagement of racks and pinions; of a signal device operatively connected with said carrier.

11. In a machine of the character described, the combination with operating racks, accumulator pinions, and a rocking carrier for the latter movable toward and from the racks to carry the pinions into and out of mesh therewith; of a signal device, and gearing connecting the same with the said carrier.

12. In a machine of the character described, the combination with operating racks, accumulator pinions, a rocking carrier for the latter movable toward and from the racks to carry the pinions into and out of mesh therewith, and means for moving the carrier adjustable to vary the periods of engagement and disengagement of racks and pinions; of a signal device, and gearing connecting the same with the said carrier.

13. In a machine of the character described, the combination with operating racks, accumulator pinions, and a rocking carrier for the latter movable toward and from the racks to carry the pinions into and out of mesh therewith; of an oscillatory signal device operatively connected with said carrier.

14. In a machine of the character described, the combination with operating racks, accumulator pinions, a rocking carrier for the latter movable toward and from the racks to carry the pinions into and out of mesh therewith, and means for moving the carrier adjustable to vary the periods of

engagement and disengagement of racks and pinions; of an oscillatory signal device operatively connected with said carrier.

15. In a machine of the character described, the combination with operating racks, accumulator pinions, and a rocking carrier for the latter movable toward and from the racks to carry the pinions into and out of mesh therewith; of an oscillatory signal device, and gearing connecting the same with the said carrier.

16. In a machine of the character described, the combination with operating racks, accumulator pinions, a rocking carrier for the latter movable toward and from the racks to carry the pinions into and out of mesh therewith, and means for moving the carrier adjustable to vary the periods of engagement and disengagement of racks and pinions; of an oscillatory signal device, and gearing connecting the same with the said carrier.

17. In a machine of the character described, the combination with operating racks, accumulator pinions, and a rocking carrier for the latter movable toward and from the racks to carry the pinions into and out of mesh therewith and having a gear segment; of an oscillatory signal device having a gear segment meshing with that of the pinion carrier.

18. In a machine of the character described, the combination with operating racks, accumulator pinions, and a rocking carrier for the latter movable toward and from the racks to carry the pinions into and out of mesh therewith and having a gear segment; of an oscillatory signal device having a gear wheel, and a lever pivoted intermediate its ends and having gear segments at

its ends meshing with the gear wheel and carrier segment respectively.

19. In a machine of the character described, the combination with operating racks, accumulator pinions, and a carrier for the latter movable toward and from the racks to carry the pinions into and out of mesh therewith, the pinions normally being disengaged from the racks during initial movement of the latter and engaged therewith during return movement, and means for moving the carrier adjustable to reverse said order of engagement and disengagement; and a signal device operatively connected with the carrier to indicate whether the machine has last operated under one adjustment or the other.

20. In a machine of the character described, a clear signal device comprising a cylindrical inclosing casing having a longitudinal opening in one side with a transparent closure therefor, and an oscillatory segment of a cylinder within said inclosing cylinder.

21. In a machine of the character described, the combination with accumulator and actuators adapted for coöperative and non-coöperative relationship, of a signal controlled as to its indication by the existing relationship of accumulator and actuators.

22. In a machine of the character described, the combination with an accumulator and actuator engageable and disengageable, of a signal device controlled by the engagement and disengagement of said accumulator and actuator.

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Witnesses:

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