No. 898,282. PATENTED SEPT. 8, 1908.

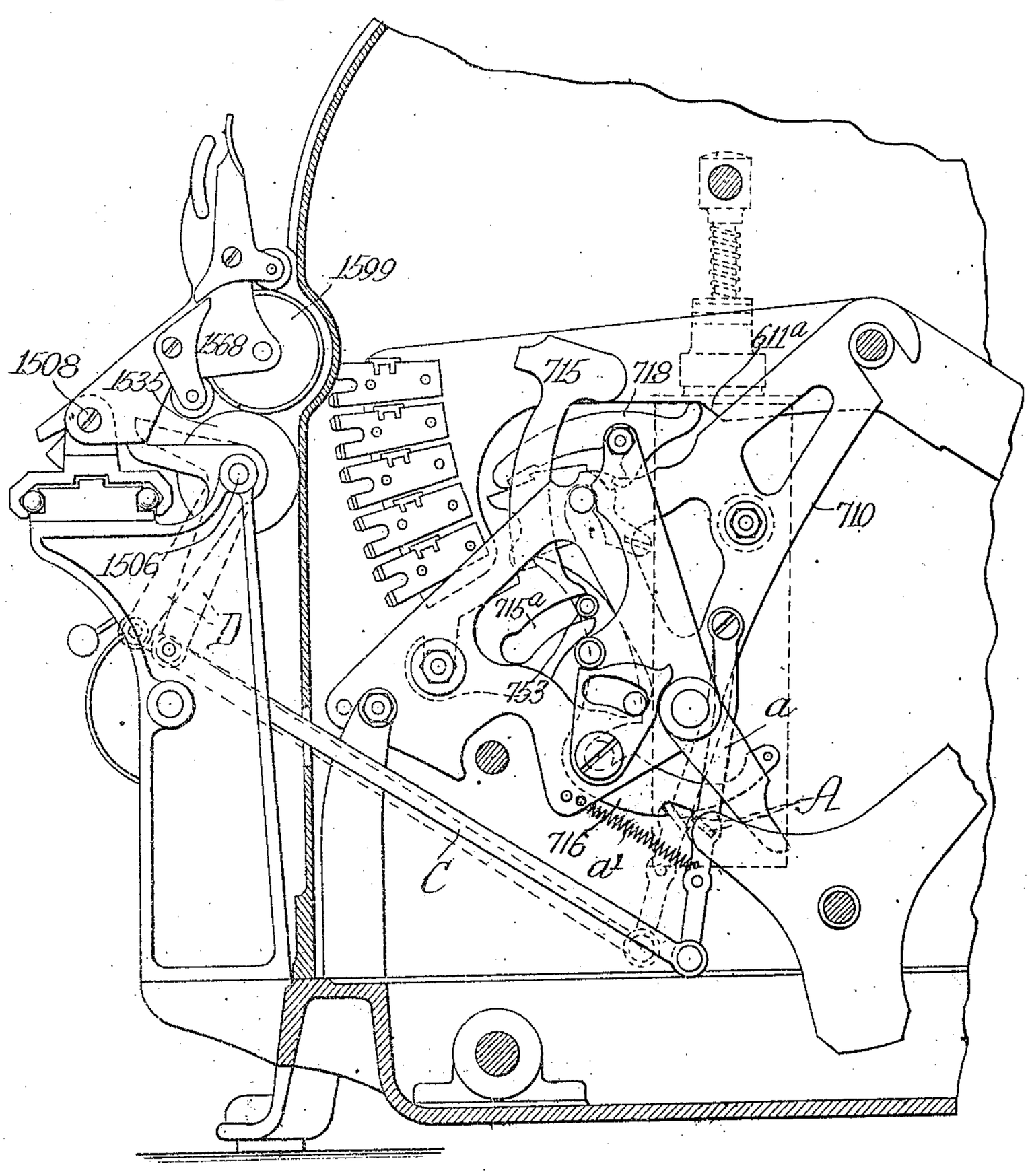
R. C. STREB.

ADDING MACHINE.

APPLICATION FILED JAN. 5, 1906.

2 SHEETS—SHEET 1.

Fig 1.



Witnesses
Edw. P. Barrett
Louis B. Erwin

Inventor
Richard C. Streb
By Rector & Hibben
His Attys

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2 SHEETS—SHEET 2.

Fig 2.

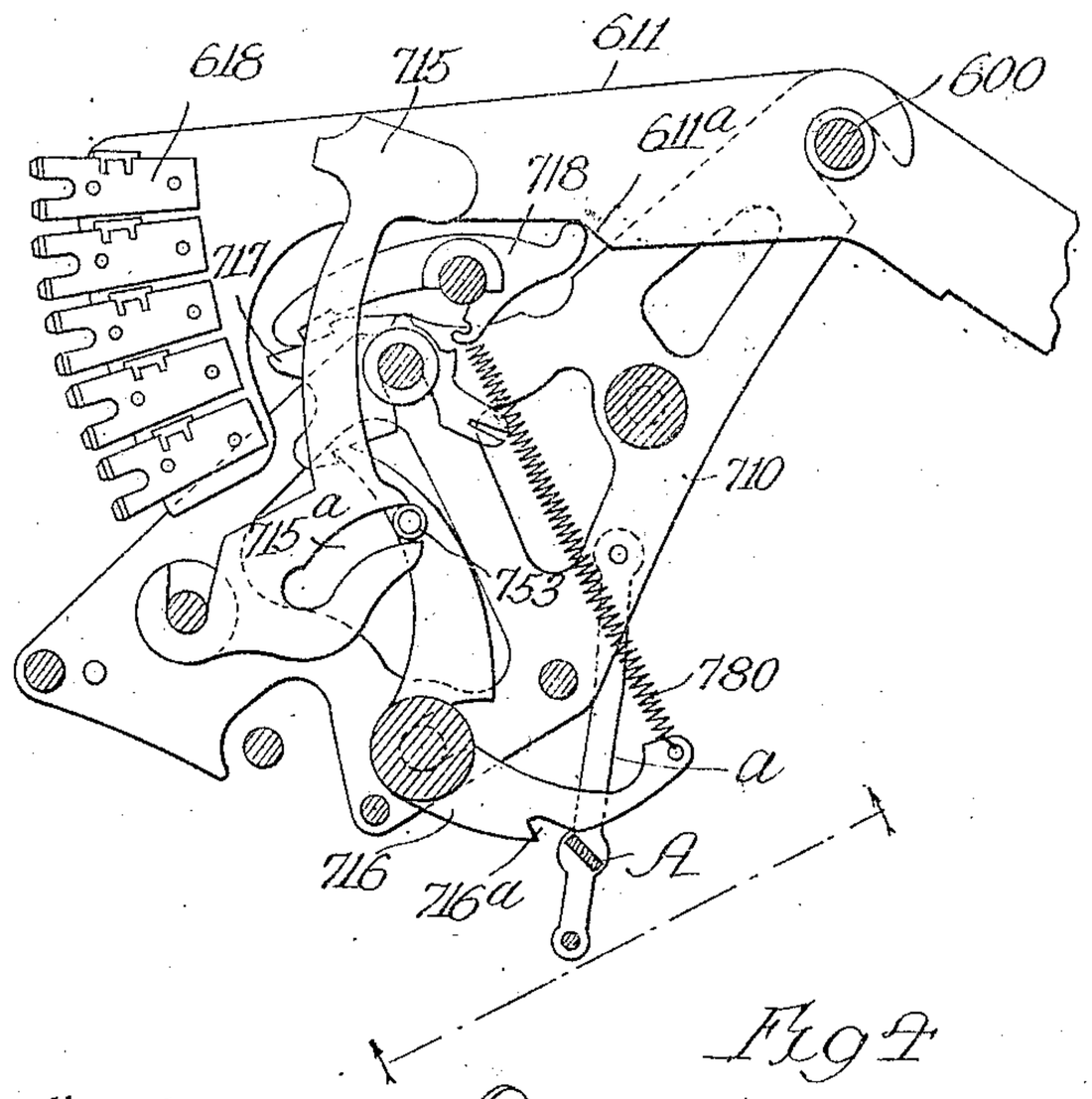


Fig 3.

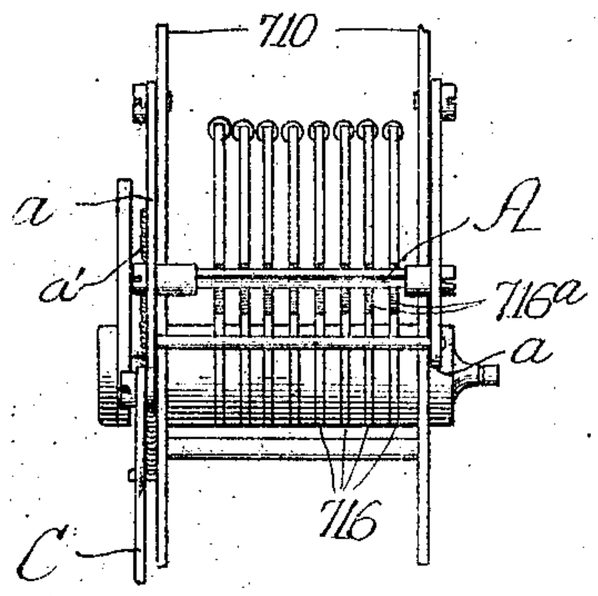
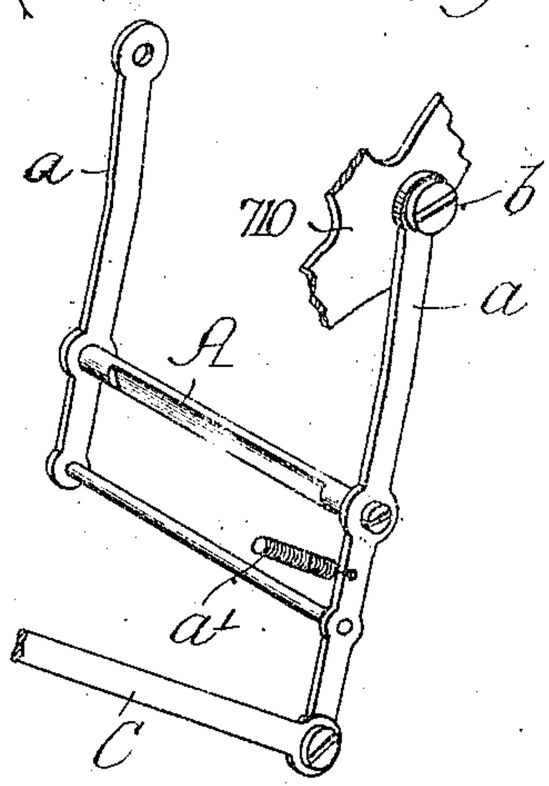


Fig 4.



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UNITED STATES PATENT OFFICE.

RICHARD C. STREB, OF BUFFALO, NEW YORK, ASSIGNOR TO BURROUGHS ADDING MACHINE COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

ADDING-MACHINE.

No. 898,282. Specification of Letters Patent. Patented Sept. 8, 1908.

Application filed January 5, 1906. Serial No. 294,772.

To all whom it may concern:

Be it known that I, RICHARD C. STREB, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Adding-Machines, of which the following is a specification.

My invention relates to adding machines of that class or type which are adapted to print, list and accumulate individual items and to print the total thereof at the will of the operator, and which are provided with a paper support or platen to carry the paper receiving the impressions and arranged to be rocked or swung toward and away from the printing mechanism.

The object of my invention is to provide a novel and efficient means, under the control of the movements of such paper support or platen for controlling, in turn, the printing action of the printing mechanism, with the result that by the provision of such means the printing mechanism is operative or inoperative according to the particular position of the platen, that is to say, when the platen or paper support is in proper position to receive the impressions, the printing mechanism is operative and the hammers are capable of delivering their blows upon the type and when the paper support or platen is swung rearwardly away from the printing position to a non-printing position, the printing mechanism is rendered inoperative and the hammers are arrested and thereby prevented from delivering their blows upon the type. As a result of this construction and arrangement, any possible injury to the type otherwise struck by the hammers when the paper support or platen is in a non-printing position and the knocking of such type off of their sectors is entirely overcome, inasmuch as the type cannot receive any blow at all from the hammers unless the paper support or platen is in position to receive impressions from the type.

In the present instance, I have shown and described my invention in connection with the well known Burroughs adding machine, constructed in substantial accordance with Burroughs Patents No. 504,963 and 505,078, issued on September 12, 1893, but it will be understood that my invention is not limited thereto, but that it may be applied to other machines of the same general character and used for the same general purpose.

In the drawings, Figure 1 is an elevation of a portion of the left hand side of a Burroughs adding machine, with the attachment or improvements constituting my invention applied thereto; Fig. 2 a side elevation of the printing mechanism; Fig. 3 a front elevation of a portion of such printing mechanism the view being taken looking towards the arrows in Fig. 2; and Fig. 4 a view in perspective of the parts which directly coöperate with the hammer mechanism.

Inasmuch as the Burroughs adding machine is so well known and described in detail in said patents, and as my invention conrerns the printing mechanism only and the control thereof by the paper support or platen, only such printing mechanism and paper support need be described for a complete understanding and comprehension of my present invention.

As herein shown, Figs. 1 and 2, the movable type plates 618, each bearing two type, are mounted to slide on the rearward ends of the series of main levers or sectors 611, which are hung upon the cross shaft 600 of the machine, there being as many of these sectors as there are denominations represented on the keyboard of the machine. As is well known, the sectors are oscillated upwardly as to their rearward end distances according to the particular keys depressed in their corresponding rows of keys, with the result that the type corresponding in value to the keys depressed are presented to the printing line of the platen or paper support.

The hammer mechanism comprises a series of hammers 715, one for each sector 611 and each arranged to be driven in the well known manner by its driver 716, through the medium of the stud 753, which is adapted to enter the slot 715ª in its hammer. Each driver is restrained against rearward movement towards which it is impelled by its spring 780 by means of a latch 717 mounted to oscillate and under the control of a pivoted and also swinging pawl 718. In the operation of the machine the pawl 718 is rocked upwardly as to its rearward end by means of the inclined edge or shoulder 611ª on the lower edge of its corresponding sector, unless such sector has been operated, that is oscillated upwardly, in which event, the removal of such inclined shoulder from the path of movement of the tail of the pawl permits its pawl to engage its latch and thereby trip the

driver and cause its hammer to deliver the blow. Ordinarily the drivers are tripped and the hammers thereby caused to deliver their blows whenever an item is accumulated in the machine or a total is printed, regardless of whether the paper support or platen is in a position to permit the paper thereon to receive the impression, but it is the object of my invention to arrest the hammers and to retain them against the action of their drivers unless the paper support or platen is in position to receive the impression, this control of the printing mechanism being automatic in character, and dependent upon the particular position of the paper support.

The paper support is the usual one used on the Burroughs adding machine comprising the platen 1599 which carries and presents the paper to the printing line and which is mounted in a frame 1568 constituting a part of the usual laterally movable paper carriage. As is well known, the platen and its frame are arranged to be rocked rearwardly on the shaft or axis 1508 at which time the platen is removed from printing position.

Referring now to the parts constituting my attachment or improvements, I provide means for interfering with and arresting the hammer action, which means consists, in the present instance, of a swinging rod or bail A, which is arranged to directly coöperate with the drivers 716 and to enter notches 716ª therein, when permitted by the moving or swinging of the platen, to a non-printing position. As herein shown, this rod or bail is a part of a frame having parallel arms *a*, *a* and pivoted at their upper ends to the parallel side plates or frame 710 of the printing mechansim. As herein shown, the rod or bail is held towards the drivers with a yielding pressure by means of a spring a^1, with the result that such bail has a tendency to move rearwardly and to thereby engage the notches 716ª of the drivers. For the purpose of controlling the position and action of the rod or bail by means of the paper support or platen, I provide the left hand parallel arm *a* with a downward extension, and to the lower end of it the forward end of a link C, the rear end of which is pivotally connected with a bell crank D mounted to rock upon the cross shaft 1506 which carries the feed rollers 1535. The depending arm of this bell crank is the one which is pivotally connected with the link C, while the other or rearwardly extending arm thereof is in such position as to be acted upon by the frame 1568 of the platen. This rearwardly extending arm of the bell crank is held depressed by the platen frame, when such platen is in its printing position, that is a position to receive the impressions from the printing mechanism of the adding machine as indicated in full lines in Fig. 1. This bell crank is thus held depressed against a yielding pressure caused by the spring a^1, which tends to rock the bell crank in a clockwise direction, with the result that upon the rocking of the platen rearwardly in the usual manner the bell crank and the operating connections governed thereby take the position indicated in dotted lines in said Fig. 1.

When the bell crank is held in its depressed position by the action of the platen frame, in the manner just explained, the link C is swung to its forward position, and consequently the bail A moved thereby is held to a position of non-interference with the drivers 716 so that the bail is held forwardly and away from the notches 716ª of such drivers. However, just as soon as the platen and its frame are rocked rearwardly and the restraint upon the bell crank thereby removed, the bail A is by that act and in automatic manner swung rearwardly to a position of interference with the drivers 716, inasmuch as such bail is thereby swung into the notches 716ª of the drivers, as shown in dotted lines in Fig. 1. It results from this latter position of the bail A that the drivers are prevented from moving upwardly as to their forward ends and from exerting any influence upon the hammers which remain in their normal position, as indicated in full lines in Fig. 1. The hammers are thus arrested or restrained from movement, being held in said normal position, notwithstanding the usual operation of the machine in other respects, because of the restraining and arresting of their drivers. Just as soon as the platen and its frame are rocked back to a position to receive impressions from the printing mechanism of the adding machine, the bell crank D is depressed, that is rocked in an anti-clockwise direction, with the result that the bail or rod A is by that act and in automatic manner, rocked forwardly to an inoperative position, so that the printing mechanism will operate in the usual and well known manner.

By the means and in the manner above described, the printing mechanism of the adding machine is placed under the control of the paper support or platen upon whose position of printing or non-printing the hammer action depends. Moreover, the means employed are very simple and can be applied to the ordinary Burroughs adding machine, for instance as an attachment, without alteration to the regular machine, except the forming of the notches 716ª in the drivers.

I claim:

1. In an adding machine, the combination, with the printing mechanism, including hammers, and with a paper support arranged to swing into and out of position for receiving the impression impact, of means under the control of the paper support for preventing the movement of the hammers when the paper support is out of position to receive impressions from the printing mechanism.

2. In an adding machine, the combination with the printing mechanism, including hammers, and with a paper support arranged to swing, of means under the control of the paper support for preventing the movement of the hammers unless the paper support is in a position to receive impressions from the printing mechanism, said means tending to prevent movement of the hammers but restrained by the paper support when in position to receive impressions.

3. In an adding machine, the combination, with the printing mechanism, including hammers, and with a paper support arranged to swing, of means under the control of the paper support for preventing the movement of the hammers unless the paper support is in a position to receive impressions from the printing mechanism, said means being spring pressed towards a position to prevent the movement of the hammers but restrained by the paper support when in position to receive impressions.

4. In an adding machine, the combination, with the printing mechanism having type, hammers for striking said type and drivers for such hammers, and with a paper support arranged to swing, of means controlled by the paper support and arranged to arrest the movement of the drivers and thereby prevent hammer action unless the paper support is in a position to receive impressions from the printing mechanism.

5. In an adding machine, the combination, with the printing mechanism having type, hammers for striking said type and drivers for such hammers, and with a paper support arranged to swing, of means controlled by the paper support and arranged to arrest the movement of the drivers and thereby prevent hammer action unless the paper support is in a position to receive impressions from the printing mechanism, said means being held with a yielding pressure towards a position to arrest such drivers but restrained by the paper support.

6. In an adding machine, the combination, with the printing mechanism having type, hammers for striking said type and drivers for such hammers, and with a paper support arranged to swing, of means controlled by the paper support and arranged to arrest the movement of the drivers and thereby prevent hammer action unless the paper support is in a position to receive impressions from the printing mechanism, and a spring tending to move said means to a position of interference with said drivers.

7. In an adding machine, the combination, with the printing mechanism having type, hammers for striking said type and drivers for such hammers, and with a paper support arranged to swing, of means controlled by the paper support and arranged to arrest the movement of the drivers and thereby prevent hammer action unless the paper support is in a position to receive impressions from the printing mechanism, said means comprising a rod arranged to be swung to a position to engage and retain said drivers against movement, and an operating connection between the rod and the paper support.

8. In an adding machine, the combination, with the printing mechanism having type, hammers for striking said type and drivers for such hammers, and with a paper support arranged to swing, of a bail arranged to be swung to engage and retain said drivers, and an operating connection between the bail and paper support.

9. In an adding machine, the combination, with the printing mechanism having type, hammers for striking said type and drivers for such hammers, and with a paper support arranged to swing, said drivers having notches, of a bail controlled by the paper support and arranged to be swung to a position to engage in said notches and thereby prevent movement of the drivers.

10. In an adding machine, the combination, with the printing mechanism having type, hammers for striking said type and drivers for such hammers, and with a paper support arranged to swing, of a bail arranged to be swung to engage and retain said drivers, and an operating connection between the bail and paper support comprising a bell crank arranged to be rocked by the paper support when in position to receive impressions, and a link connected with said bail.

11. In an adding machine, the combination, with the printing mechanism having type, hammers for striking said type and drivers for such hammers, and with a paper support arranged to swing, of a bail arranged to be swung to engage and retain said drivers, and an operating connection between the bail and paper support comprising a bell crank arranged to be rocked by the paper support when in position to receive impressions, and a link connecting the bell crank and crank arm.

12. In an adding machine, the combination, with the printing mechanism having type, hammers for striking said type and drivers for such hammers, and with a paper support arranged to swing, of a bail arranged to be swung to engage and retain said drivers, and an operating connection between the bail and paper support comprising a bell crank, one of whose arms is held with a yielding pressure in the path of movement of the paper support when rocked, and connections between the bell crank and bail.

13. In an adding machine, the combination, with the printing mechanism having type, hammers for striking said type and drivers for such hammers, and with a paper support arranged to swing, of a bail arranged to be swung to engage and retain said drivers, and an operating connection between the bail

and paper support comprising a bell crank, one of whose arms is spring pressed to a position in the path of movement of the paper support when rocked, and a link between the bell crank and crank arm.

14. In an adding machine, the combination, with the printing mechanism having type, hammers for striking said type and drivers for such hammers, and with a paper support arranged to swing, of a bail arranged to be swung to engage and retain said drivers, and an operating connection between the bail and paper support comprising a bell crank having one arm in the path of movement of the paper support when rocked, a link between the bell crank and the bail, and a spring connected with the bail tending to move the same to a position to engage and prevent movement of the hammers.

15. In an adding machine, the combination, with the printing mechanism having type, hammers for striking said type and drivers for such hammers, and with a paper support arranged to swing, said drivers having notches 716[a] on one edge, of a bail A arranged to be swung to a position to engage in said notches, side arms *a* supporting the bail, a bell crank D having a substantially horizontal arm arranged in the path of movement of the paper support when rocked and having a depending or substantially vertical arm, a link pivotally connected to said depending arm and side arm, respectively, and a spring a^1 connected with the bail.

16. In an adding machine, the combination with the printing mechanism and with a paper support movable to and from a position for receiving the printing impact of said mechanism, of means for blocking the latter when the paper support is out of position for receiving the impression impact.

17. In an adding machine, the combination with the printing mechanism and with a paper support movable to and from a position for receiving the printing impact of said mechanism, of means under the control of the paper support for blocking the printing mechanism when the paper support is out of position to receive an impression from the printing mechanism.

18. In an adding machine, the combination, with the printing mechanism and with a movable paper support, of means tending to block said printing mechanism to render it inoperative when the paper support is in position to receive an impression from the printing mechanism.

19. In an adding machine, the combination, with the printing mechanism and with a movable paper support, of means spring pressed to an operative position for blocking the printing mechanism to render it inoperative when the paper support is in position to receive an impression from the printing mechanism.

RICHARD C. STREB.

Witnesses:
THOMAS J. CAVANAUGH,
H. J. AUL.