F. C. RINSCHE.

ADDING MACHINE.

APPLICATION FILED AUG. 17, 1906.

1,001,688.

Patented Aug. 29, 1911.

3 SHEETS—SHEET 1.

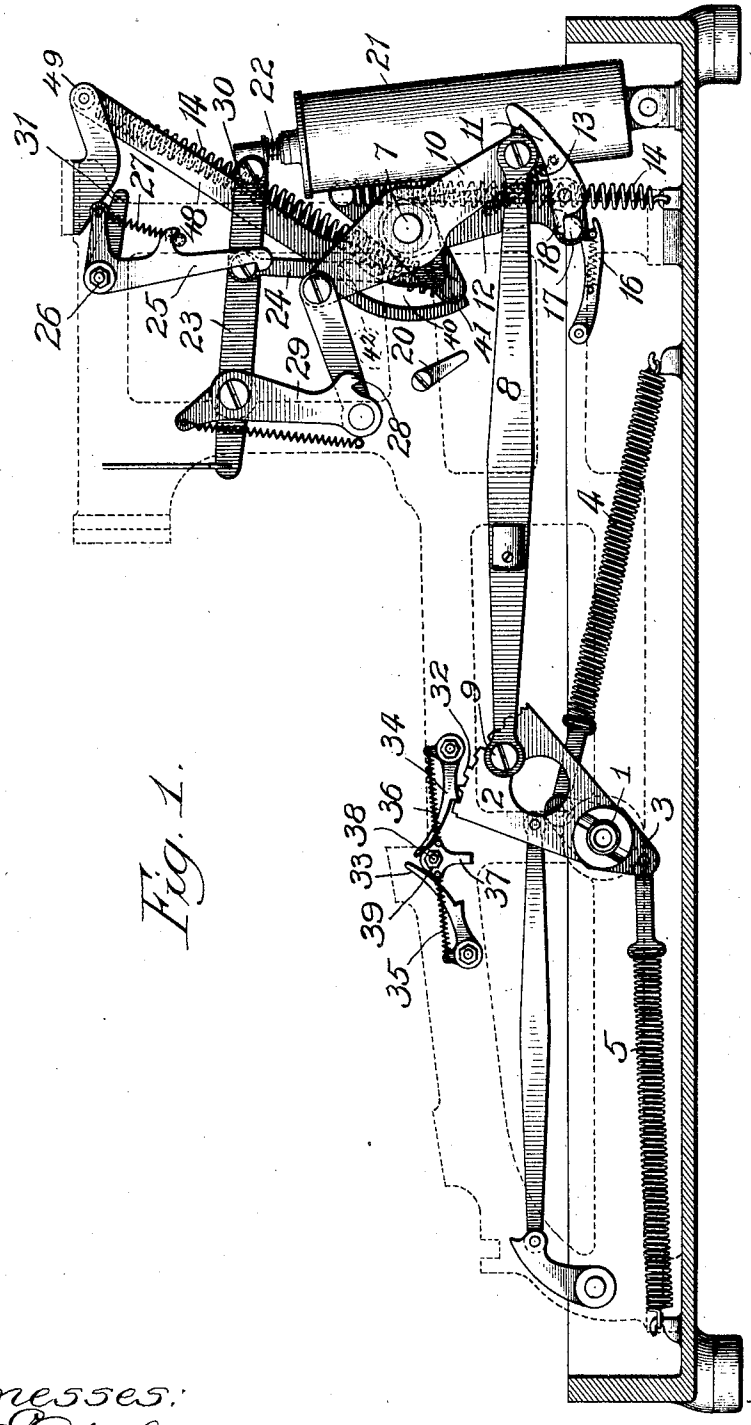

Fig. 1.

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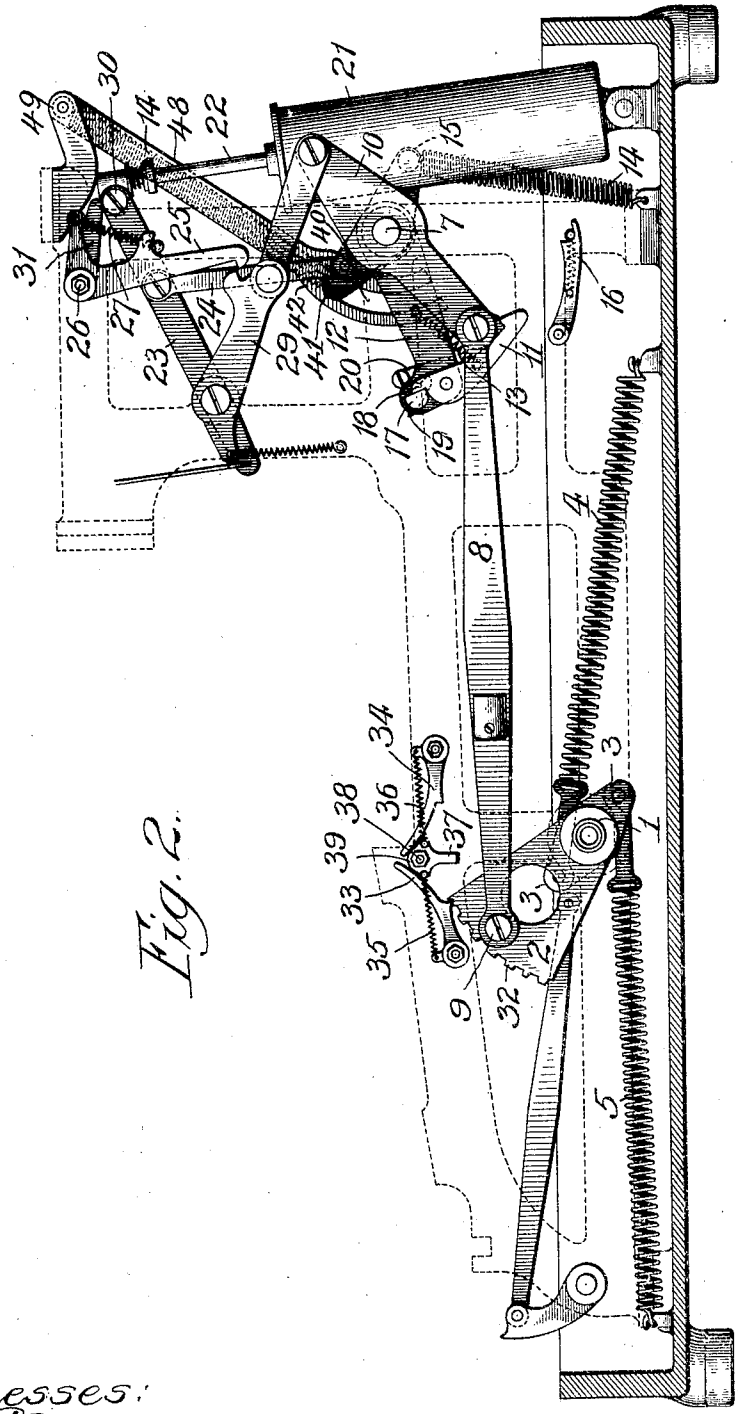

Fig. 2.

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3 SHEETS—SHEET 3.

Fig. 3.

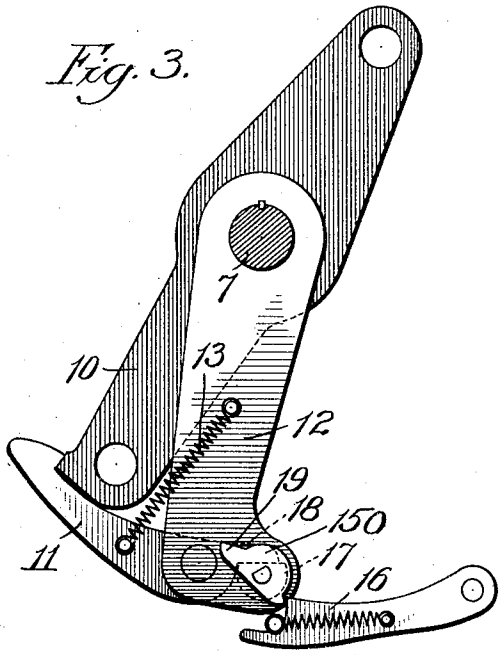


Fig. 4.

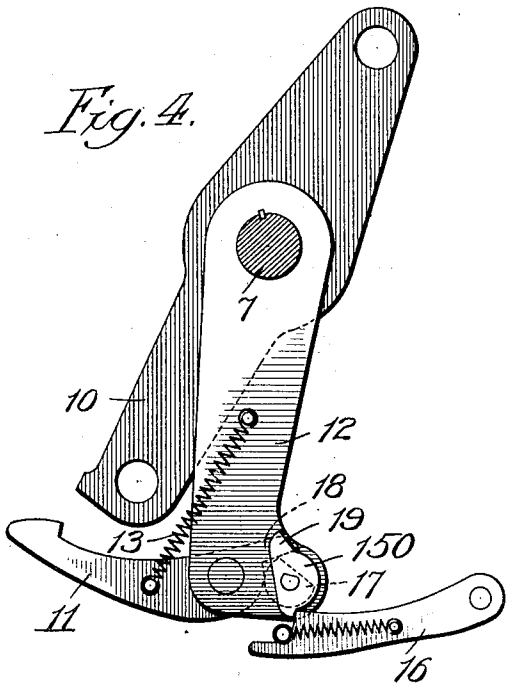
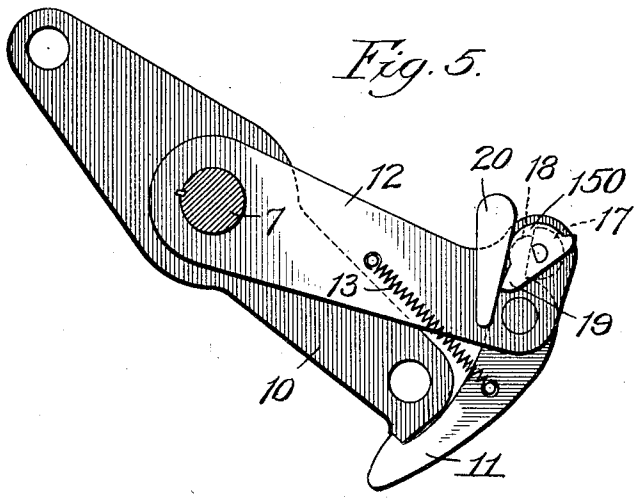


Fig. 5.



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UNITED STATES PATENT OFFICE.

FRANK C. RINSCHE, OF ST. LOUIS, MISSOURI, ASSIGNOR TO UNIVERSAL ADDING MACHINE COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI.

ADDING-MACHINE.

1,001,688. Specification of Letters Patent. Patented Aug. 29, 1911.

Application filed August 17, 1906. Serial No. 330,990.

To all whom it may concern:

Be it known that I, FRANK C. RINSCHE, a citizen of the United States, residing in the city of St. Louis and State of Missouri, have invented certain new and useful Improvements in Adding-Machines, of which the following is a specification.

My invention relates to adding machines; and has for its object the improvement of the mechanism of such machines, whereby a more efficient and uniform operation of the parts is secured.

The present invention is a general improvement upon the adding machines disclosed in my former Patents No. 654,181 of July 24, 1900, and No. 751,207 of February 2, 1904, and is also a specific improvement upon the adding machine disclosed in my application filed Aug. 11, 1906, Serial No. 330,175.

My improvements are illustrated in the accompanying drawings forming a part of this specification, in which—

Figure 1 is a section through the right-hand side of my improved adding machine, showing my improvements completely assembled and in their normal position. Fig. 2 is a similar view showing the mechanism in the position which it assumes when the operating handle is drawn completely forward. Fig. 3 is a detail drawing of my release mechanism, as shown from the left side of the machine and in its normal position. Fig. 4 is a detail drawing of the same mechanism just after being released; and Fig. 5 is a detail drawing of the same mechanism in the position which it assumes when the operating handle is drawn completely forward.

In the operation of my previous disclosures certain mechanism of the machines, including the movable type-carrying devices, has been arranged under such control of the operating handle, that it has been possible by the very slow or very rapid movement of the handle to give widely different rates of movement to the operating parts of the machine, so that it has been impossible to eliminate the danger of damaging some of the parts by rough handling. In this way some of the parts of the machine which might be made very light when used by one operator would necessarily be made much heavier when used by another operator and a more or less clumsy arrangement of certain parts of the machine would necessarily follow.

In carrying out my present improvements, I provide means whereby the movable parts of the machine are actuated by springs which are released by a very slight forward movement of the operating handle and are again placed under tension by the complete stroke of the handle. It will thus be seen that no matter what the speed of operation of the main handle may be, the movable parts are always actuated with the same governing force, viz., the tension in the above mentioned springs. I provide, as in my former disclosures, the main operating shaft 1 to be rotated by the handle or other convenient means—not shown in the drawings—and the segment 2 rigidly secured to such shaft. Also secured upon this shaft is the double arm 3, to either end of which the springs 4 and 5 are secured to normally hold the shaft in the position shown in Fig. 1. As in my former patents, I also provide the driving shaft 7, but in my present invention I connect therewith the rigid link 8, which extends from the pivot 9 upon the segment 2 to the lower end of the arm 10, which is loosely mounted upon the driving shaft 7. This arm 10, which is positively operated by the main handle, engages the catch 11 when the handle is brought to its forward position, as shown in Fig. 2, such catch being pivotally mounted upon the arm 12, and being held in its engaging position by the spring 13 between such catch and the arm 12, which is rigidly secured to the driving shaft 7. Upon the return of the handle, the arm 12 is drawn back to its normal position by the springs 4 and 5, which act to rotate the main shaft 1.

Springs 14 are connected between the frame of the machine and the opposite ends of the arm 15 upon the shaft 7, tending to rotate said shaft to the position shown in Fig. 2, and are overpowered by springs 4 and 5 and moved to their "set" position by the return motion of the main operating shaft. In order to allow this driving shaft to rotate from the position shown in Fig. 1 to that shown in Fig. 2, I provide, as shown in detail in Figs. 3, 4 and 5, the dog 150 adapted to be engaged by the catch 16 and having a rotatable portion pivotally mounted in the arm 12, such portion

carrying at its other end the flattened disk 17, against the flattened portion of which the projection 18 upon the catch 11 rests. Now, when the main operating handle is moved forward, the lower projection of the dog 150 is engaged by the catch 16, thus rotating the disk 17 to its position shown in Fig. 4 and releasing the catch 11 from its engagement with the lower end of the arm 10. When thus released, the driving shaft 7 moves to its forward position under the influence of springs 14, carrying with it the arm 12 and parts secured thereon. Whether the stroke of the main handle is completed or not at that time does not affect the movement of the driving shaft and parts controlled thereby, but upon the complete forward movement of the main operating handle the arm 10 moves into the position shown in Figs. 2 and 5 and again engages the catch 11, which has been allowed to return to its original position by the movement of the dog 150, caused by the upper prong 19 thereof coming into engagement with the trip 20, shown in Fig. 5, such trip being stationary and so secured to the frame of the machine that it will engage the dog just before the arm 12 has reached its forward limit of movement. It will now be seen that when the main operating handle is released, the driving shaft will be rotated back to its normal position by the engagement of the catch 11 with the end of the arm 10, and the machine will be in condition for the next operation.

In order to give uniformity to the motion of the parts controlled by the driving shaft, the dash-pot 21 is provided, and through its piston rod 22 and the lever 23 and link 24 retards the motion of the driving shaft. If the main shaft is brought forward more rapidly than the driving shaft can follow, due to its retardation by the dash-pot, the catch 25—which is pivoted upon the frame of the machine at the point 26 and is held in the position shown in Fig. 1 by the spring 27—is adapted to engage the shoulder 28 upon the link 29, and thus prevent the main operating shaft from returning to its normal position until the catch 25 has been moved by the engagement of the rearward end 30 of lever 23 with the arm 31, which is rigidly secured to the catch 25. Such engagement, it will be seen, will move the catch 25 rearwardly and allow the main handle to return to its normal position.

The link 29 is connected by a link 29ª to the upwardly extending arm of the lever 10, the two links forming a toggle joint. This toggle joint is normally broken as shown in Fig. 1 but when the handle of the machine has been pulled all the way forward the toggle joint is all but straightened as shown in Fig. 2. The effect is to relieve the hook or catch 25 by throwing the burden of resisting the main springs 4 and 5 upon the toggle.

In order to prevent the main handle from being moved in the opposite direction after its motion has been started in either direction and before the stroke has been completed, I provide an improved form of ratchet, which consists of the notched periphery 32 of the segment 2 and the two similar catches 33 and 34 connected by springs 35 and 36 to the reversible pawl 37, such that—referring to Fig. 1—the catch 34 alone engages the teeth 32 until the disk has been moved far enough so that it moves the reversible pawl 37 upon its pivot 38, after which both catches 34 and 37 will engage the ratchet teeth 32 until the segment is moved far enough for the catch 34 to no longer register with the ratchet teeth. As soon as the disk 2 strikes the reversible pawl 37 and rotates it, the catch 33 is raised by its contact with the extension 39 upon the pawl 37 and allows the disk to move forward without coming in contact with the catch 33. Upon the return movement of the handle the action of the parts is similar, except that the catches 33 and 37 now engage the ratchet teeth, while catch 34 is moved away by the movement of the reversible pawl 37. The arm 48, which is pivoted upon the frame of the machine at point 49, has the slot 40 therein, in which the lug 41 carried on arm 15 moves and by its contact with the shoulder 42 at the end of the slot limits the rotation of the auxiliary shaft as caused by the tension of the springs 14.

In this specification I have only described such parts of my adding machine as are new, taken in connection with such parts as are old as are necessary for a complete understanding of my improvements; and while I have shown and described my improvements of a specific form, it will be understood that I do not desire to be unduly limited thereto, as it is evident that other forms may be used without departing from the spirit or scope of the invention.

I claim:

1. In a machine of the character described, the combination of primary driving means; spring actuated secondary driving means normally restrained by the primary driving means; and means for releasing said secondary driving means from such restraint by initial movement of the primary driving means accompanied by movement of the secondary driving means.

2. In a machine of the character described, the combination of primary driving means; spring actuated secondary driving means normally restrained by the primary driving means, the latter superiorly spring-held; and means for releasing said secondary driving means from such restraint by initial

movement of the primary driving means accompanied by movement of the secondary driving means.

3. In a machine of the character described, the combination of reciprocatory primary driving means; spring actuated secondary driving means normally restrained by the primary driving means; and means for releasing said secondary driving means from said restraint by initial movement of the primary driving means accompanied by movement of the secondary driving means.

4. In a machine of the character described, the combination of reciprocatory primary driving means; spring actuated secondary driving means normally restrained by the primary driving means, the latter superiorly spring-held; and means for releasing said secondary driving means from such restraint by initial movement of the primary driving means accompanied by movement of the secondary driving means.

5. In a machine of the character described, the combination of reciprocatory primary driving means; spring actuated secondary driving means normally restrained by the primary driving means; means for releasing said secondary driving means from said restraint by initial movement of the primary driving means accompanied by movement of the secondary driving means; means for detaining the primary driving means at the end of movement thereof in one direction, and means for disabling the detaining means by the secondary driving means.

6. In a machine of the character described, the combination of reciprocatory primary driving means; spring actuated secondary driving means normally restrained by the primary driving means, the latter superiorly spring-held; means for releasing said secondary driving means from said restraint by initial movement of the primary driving means accompanied by movement of the secondary driving means; means for retaining the primary driving means at the end of movement thereof in one direction, and means for disabling the detaining means by the secondary driving means.

7. In a machine of the character described, the combination of primary driving means; reciprocatory secondary driving means spring-actuated in one direction and normally restrained by the primary driving means; and means for releasing said secondary driving means from such restraint by initial movement of the primary driving means accompanied by movement of the secondary driving means.

8. In a machine of the character described, the combination of reciprocatory primary driving means; reciprocatory secondary driving means spring-actuated in one direction and normally restrained by the primary driving means, the latter superiorly spring held; and means for releasing said secondary driving means from such restraint by initial movement of the primary driving means accompanied by movement of the secondary driving means.

9. In a machine of the character described, the combination of reciprocatory primary driving means; reciprocatory secondary driving means spring-actuated in one direction and normally restrained by the primary driving means, the latter superiorly spring held; means for detaining the primary driving means at the end of movement thereof in one direction, and means for disabling the detaining means of the secondary driving means at the end of the latter's movement in the same direction.

10. In a calculating machine, a main oscillatory shaft, a driving shaft, means associated with the driving shaft wherein power is stored to operate the machine, means acting upon the initial movement of the main shaft for tripping the driving mechanism, and means acting during the return movement of the main shaft for restoring the power in the operating means.

11. In a calculating machine, a spring-driven operating shaft, a main oscillatory shaft, and means acting during the operation of the main shaft for releasing spring-driven shaft, and thereafter re-setting it on the return movement of the main shaft.

12. In a calculating machine, the combination with a spring-driven oscillatory shaft of a member rigidly secured to said shaft, a second member loosely mounted upon said shaft, and means upon said first member for engaging the second member, whereby the movement of the latter will carry said spring-driven shaft to its set position.

13. In a calculating machine, a spring-driven oscillatory shaft having an arm rigidly secured thereon, a catch carried by said arm, and means for engaging said catch to move said spring-driven shaft to its set position.

14. In a calculating machine, a spring-driven oscillatory shaft having an arm rigidly secured thereon, a catch carried upon said arm and adapted to be engaged to hold the spring-driven shaft in its set position, and means for moving said catch to release the spring-driven shaft.

15. In a calculating machine, a spring-driven oscillatory shaft, a catch to hold said shaft in its set position, and means under the control of the operator for moving said catch to release said spring-driven shaft and thereafter to reset the spring.

16. In a calculating machine, two oscillatory members mounted on the same shaft, a catch adapted to hold them together, a spring acting upon one member but nor-

mally restrained by the other member through the medium of said catch, means to oscillate said other member, and means to disengage the catch upon an initial movement of said other member.

17. In a calculating machine, two oscillatory members mounted on the same axis, springs acting upon one member tending to throw it in one direction, and a catch adapted to lock the two members together so that the other member can engage the spring actuated member and thereby re-set the spring.

18. In a machine of the character described, the combination of a reciprocating prime mover, a reciprocating secondary driving member spring actuated under control of said prime mover, a toggle joint applied to the prime mover, a detent adapted, to engage the toggle joint when the same has been partially straightened by movement of the prime mover in the initial direction, and means for disabling the detent by the secondary driving member at the end of the latter's movement in a like direction.

19. In a machine of the character described, the combination of an oscillatory drive shaft, an arm loose thereon, a prime mover applied to said arm, a hook linked to said arm, a catch adapted to engage said hook and detain the arm at one end of its swing, an arm fixed to the shaft and spring-actuated, a separable connection between the two arms, means for effecting the separation in initial movement of the loose arm accompanied by movement of the fixed arm, and means for displacing the aforesaid catch by the fixed arm on arrival of the latter at the limit of its spring movement.

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