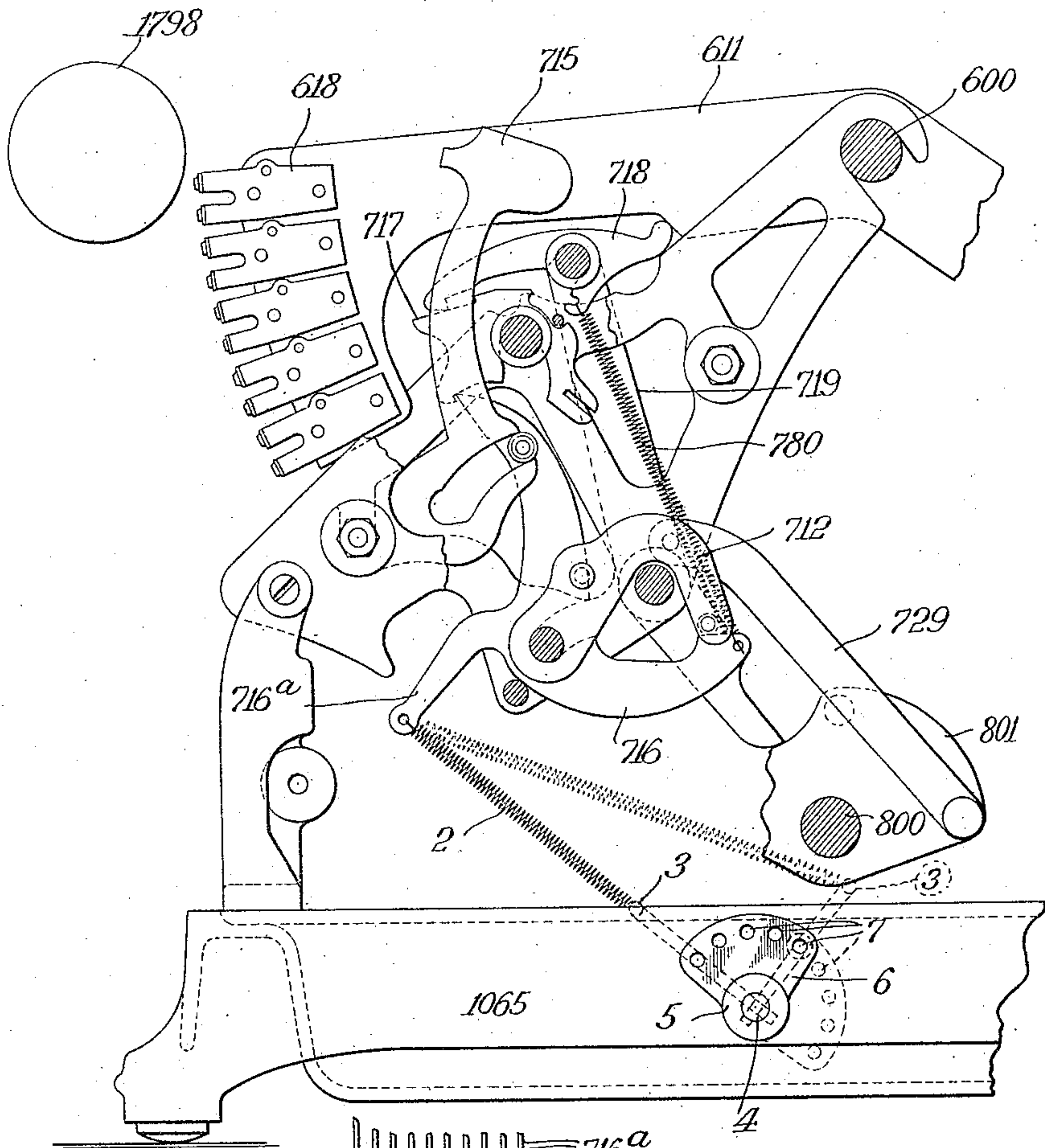


C. W. GOOCH.  
 ADDING MACHINE.  
 APPLICATION FILED OCT. 10, 1907.

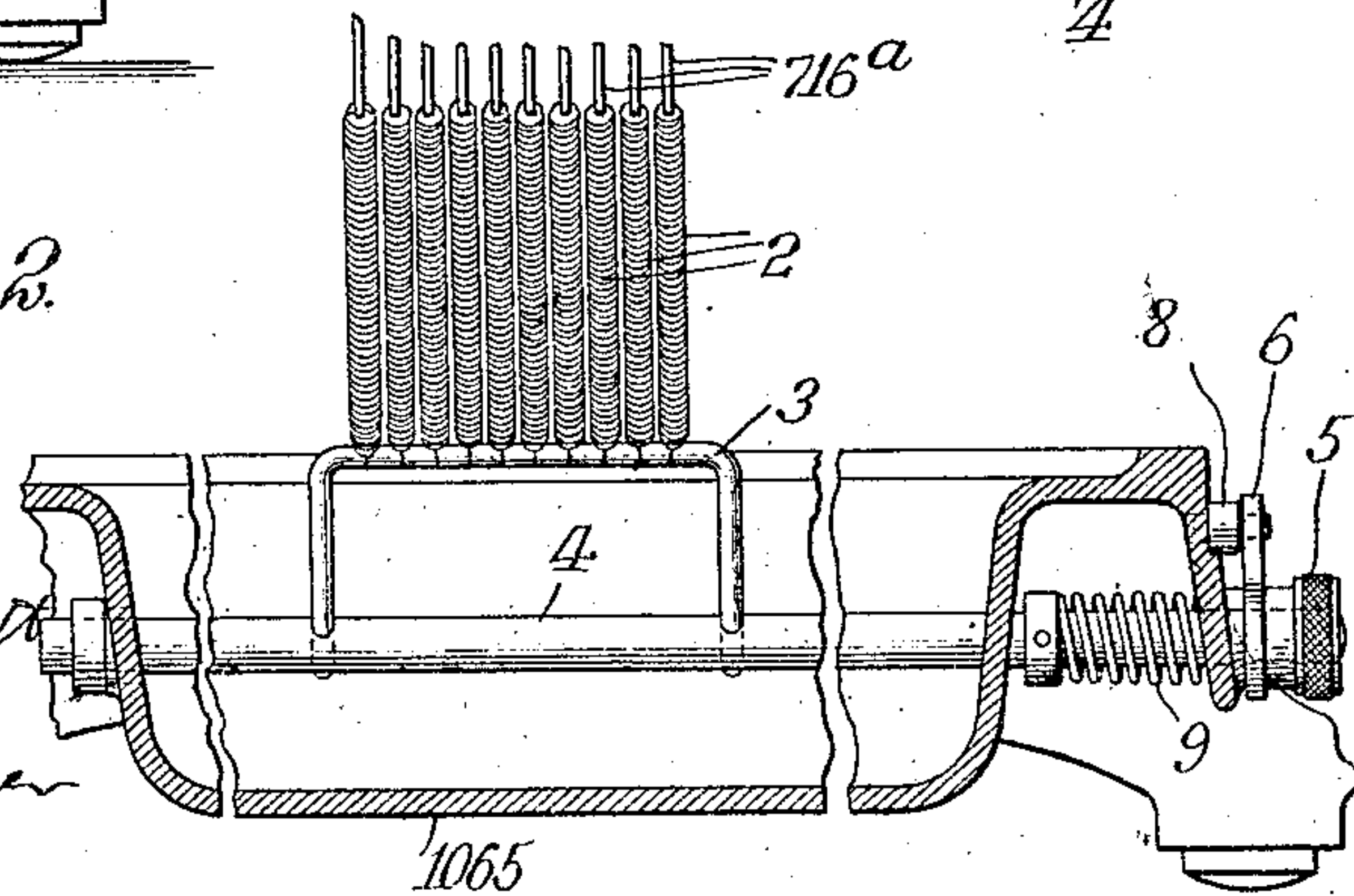
935,600.

Patented Sept. 28, 1909.

*Fig. 1.*



*Fig. 2.*



Witnesses:  
 Edw. P. Dainton  
 J. M. Stucker

Inventor  
 Claiborne W. Goch  
 By Rector, Shallen  
 & Davis  
 Attys.



# UNITED STATES PATENT OFFICE.

CLAIBORNE W. GOOCH, OF LYNCHBURG, VIRGINIA, ASSIGNOR TO BURROUGHS ADDING MACHINE COMPANY, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

## ADDING-MACHINE.

935,600.

Specification of Letters Patent.

Patented Sept. 28, 1909.

Application filed October 10, 1907. Serial No. 396,855.

*To all whom it may concern:*

Be it known that I, CLAIBORNE W. GOOCH, a citizen of the United States, residing at Lynchburg, in the county of Campbell and State of Virginia, have invented certain new and useful Improvements in Adding-Machines, of which the following is a specification.

The present invention relates more particularly to the recording or printing mechanism of an adding machine and the object is to provide an improved form of means for regulating the force of the blow of the hammers which drive the type against the platen. This is desirable in order to provide for properly adjusting the machine to the work in hand. Thus when a considerable number of carbon copies are to be made greater force in the hammer blow is necessary than when a less number of carbon copies or no carbons at all are to be produced. Of course with the hammer-actuating devices arranged to effect a printing blow sufficient for the maximum number of carbon copies the machine would be equipped to perform all sorts of work without absolutely requiring different adjustments for different kinds of work in hand. However, the use of the machine with hammer-actuating springs under excessive tension would be productive of undue wear and so it is desirable to provide for regulating the tension of such springs according to the requirements of the work to be performed.

In the present instance the invention is shown and described as adapted to a well-known form of adding machine, to-wit the Burroughs machine exemplified in prior patents Nos. 504,963 and 505,078 issued September 12, 1893. It is to be understood, however, that the invention may be adapted to other types of adding machines.

In the accompanying drawings which form part of this specification Figure 1 represents in left side elevation, partly in section, a sufficient portion of an adding machine of the Burroughs type to show the present invention embodied therein; and Fig. 2 represents a partial cross-section of such machine, the parts introduced for carrying out the present invention appearing in rear elevation.

Many of the mechanical elements illustrated in the drawings do not differ in form

or arrangement from those familiarly employed in the well-known Burroughs machine and hence require no extended discussion although they will be briefly referred to inasmuch as the new parts for carrying out the present invention are more or less directly associated with them.

The reference numeral 600 designates a cross-shaft on which are loosely hung a series of levers 611 with segmental rear ends carrying type plates 618.

The reference numeral 1798 designates a roller platen against which the type plates are driven by hammers 715, the latter being pivotally mounted and operatively engaged with the driving levers 716, also pivotally mounted. The latter have springs 780 connected with them and tending to impel them rearwardly and thus drive the hammers against the type plates. Said driving levers are normally restrained by latches 717 pivoted upon a suitable cross-shaft and engaging the upper ends of the driving levers respectively. The displacement of these latches to release the hammers is brought about through pawls 718 engaging shoulders of the latches, these pawls being pivotally mounted upon the cross-bar or rod of a bail 719 which vibrates at each operation of the machine. The springs 780 are connected with said pawls so as to serve the double purpose of actuating the driving levers 716 and holding the pawls in engagement with the latches. The hammers and their drivers are retracted by a bail 712 which is connected by a link 729 with a crank plate 801 on a rock-shaft 800 which oscillates in every operation of the machine.

For the purpose of the present invention the driving levers 716 are formed with rearwardly extending branches 716<sup>a</sup> and additional springs 2 are attached to the extremities of these branches, one spring being attached to each driving lever. The forward ends of these springs are fastened to the cross-bar of a bail 3 whose side arms are secured to a rock-shaft 4 journaled in the base casting 1065 of the machine. When the bail is in line with the springs as shown in full lines in Fig. 1 these additional springs have no effect upon the hammers or their drivers and the springs 780 act as usual to produce the hammer blow. These springs 780 are of such tension as to effect a hammer blow of minimum force as for instance



the hammer blow sufficient when recording or printing is to be done without carbon copies. By swinging the bail 3 upward and forward the springs 2 may be put under more or less tension so as to augment the force of the hammer blow, said springs then operating conjunctively with the springs 780 to effect such blow. The swinging of the bail for such purpose is brought about through the turning of the rock-shaft 4 and to facilitate this said shaft has one end projecting beyond the base casting of the machine and equipped with a thumb-piece or knob 5. For the purpose of locking the bail in different adjustments there is secured to the rock-shaft just in rear of said knob a segmental plate 6 with a series of perforations or apertures 7 and there is mounted upon the base casting 1065 a screw stud 8 designed to engage any one of said apertures. The rock-shaft 4 is permitted a slight longitudinal movement sufficient to disengage the plate 6 from said pin or stud so that it may be turned to different positions and the plate reengaged with the stud. A spiral spring 9, surrounding the shaft between the collar thereon and a part of the base casting 1065, normally holds said plate engaged with the stud.

It will be seen that the above-described construction provides means under control of the operator whereby the force of the hammer blow can be readily regulated according to the requirements of the work in hand and thus the object of the invention is fulfilled. While the particular form of means above described is well adapted to the fulfilment of that object it is nevertheless to be understood that modifications may be made without necessarily departing from the scope of the invention.

What is claimed is:

1. In a machine of the character described, the combination of a hammer adapted to strike a printing blow, a spring for actuating said hammer, and a second spring acting upon said hammer and adjustable as to tension for varying the force of the printing blow of the hammer.

2. In a machine of the character described, the combination of a printing hammer, a spring for actuating the same, and a second spring acting upon said hammer and adjustable to augment the force of the first-named spring in varying degree.

3. In a machine of the character described, the combination with a platen, type, a pivoted hammer for driving the type against the platen, a pivoted driver for said hammer, a spring for actuating said driver, and a second spring attached to said driver and adjustable to augment the force of the first-mentioned spring in varying degree.

4. In a machine of the character described, the combination with a platen, type, a piv-

oted hammer for driving the type against the platen, a pivoted driver for said hammer, a spring attached to said driver on one side of its pivot, and a second spring attached to said driver on the other side of its pivot and adjustable to augment the force of the first-mentioned spring in varying degree.

5. In a machine of the character described, the combination of a printing hammer, a spring acting thereon, an adjustable arm supporting one end of said spring, and means for locking said arm at different adjustments.

6. In a machine of the character described, the combination of a printing hammer, a spring acting thereon, a pivoted arm supporting one end of said spring, a perforated plate moving with said arm, and a pin or stud for engaging any one of the perforations of said plate to lock the arm at different adjustments.

7. In a machine of the character described, the combination of a printing hammer, a spring acting thereon, a pivoted arm supporting one end of said spring, a perforated plate moving with said arm and also axially movable, a spring resisting axial movement of said plate, and a fixed stud for engaging any one of the perforations of the plate to lock the arm at different adjustments.

8. In a machine of the character described, the combination of a series of printing hammers; a series of springs acting thereon,—one for each hammer; a swinging bail supporting the outer ends of said springs, and means for locking said bail at different adjustments.

9. In a machine of the character described, the combination of a series of printing hammers; a series of springs acting thereon,—one for each hammer; a swinging bail supporting the outer ends of said springs, a perforated plate moving with the bail and a stud for engaging any one of the perforations of said plate to lock the bail at different adjustments.

10. In a machine of the character described, the combination of a series of printing hammers; a series of springs acting thereon,—one for each hammer; a swinging bail supporting the outer ends of said springs, a perforated plate moving with the bail and axially movable, a spring resisting axial movement of the plate, and a fixed stud for engaging any one of the perforations of said plate to lock the bail at different adjustments.

11. In a machine of the character described, the combination of a series of printing hammers; a series of springs, acting thereon,—one for each hammer; a swinging bail supporting the outer ends of said springs, a rock-shaft carrying the bail, a



perforated plate on said shaft and axially movable, a spring resisting axial movement thereof, and a fixed stud for engaging any one of the perforations of said plate to lock the bail at different adjustments.

12. In a machine of the character described, the combination of a printing hammer, a spring for actuating the same, a second spring acting on said hammer, and means for varying the tension of said second spring comprising an adjustable arm supporting one end of it.

13. In a machine of the character described, the combination of a printing hammer, a spring for actuating the same, a second spring acting on said hammer, means for varying the tension of said second spring comprising an adjustable arm supporting one end of it, and means for locking said arm at different adjustments.

14. In a machine of the character described, the combination of a printing hammer, a spring for actuating the same, a second spring acting on said hammer, and means for varying the tension of said second spring comprising a pivotal arm supporting one end of it.

15. In a machine of the character described, the combination of a printing hammer, a spring for actuating the same, a second spring acting on said hammer, and means for varying the tension of said second spring comprising a pivotal arm supporting one end of it, and means for locking said arm at different adjustments.

CLAIBORNE W. GOOCH.

Witnesses:

E. P. MILLER,  
J. D. OWEN.