No. 759,944. PATENTED MAY 17, 1904.

C. WALES.

HANDLE RETARDING MECHANISM FOR CALCULATING MACHINES.

APPLICATION FILED SEPT 15, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

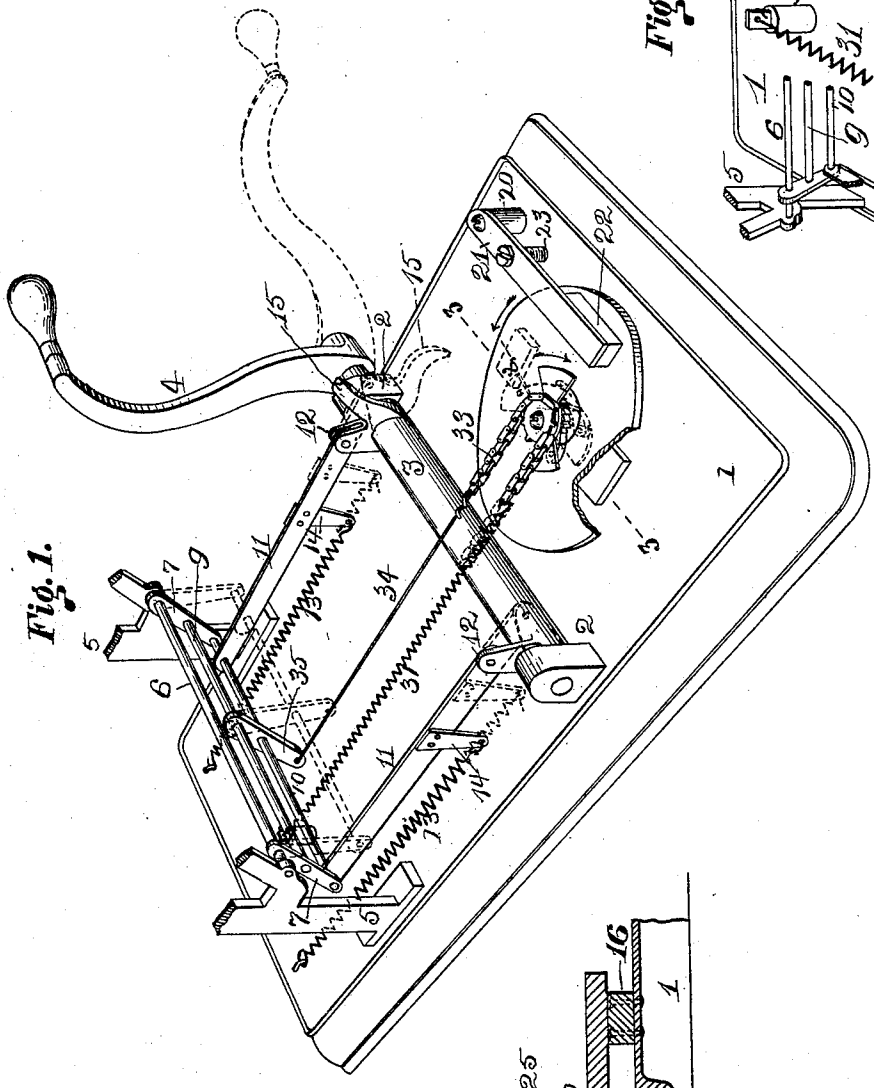


Fig. 4.

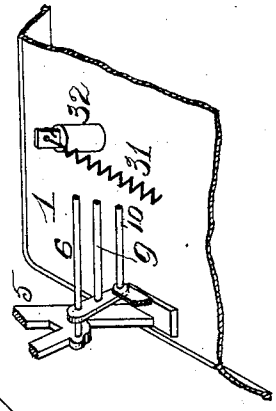
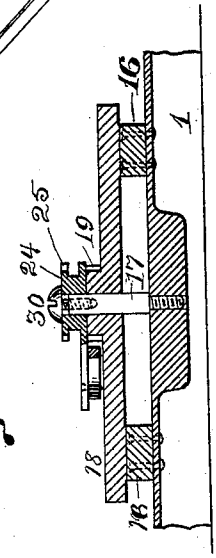


Fig. 3.



WITNESSES:

C. A. Berthoff

F. Brashears

INVENTOR

Charles Wales

BY

William R. Baird

ATTORNEY

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 759,944. PATENTED MAY 17, 1904.

C. WALES.

HANDLE RETARDING MECHANISM FOR CALCULATING MACHINES.

APPLICATION FILED SEPT 15, 1903.

NO MODEL. 2 SHEETS—SHEET 2.

Fig. 2.

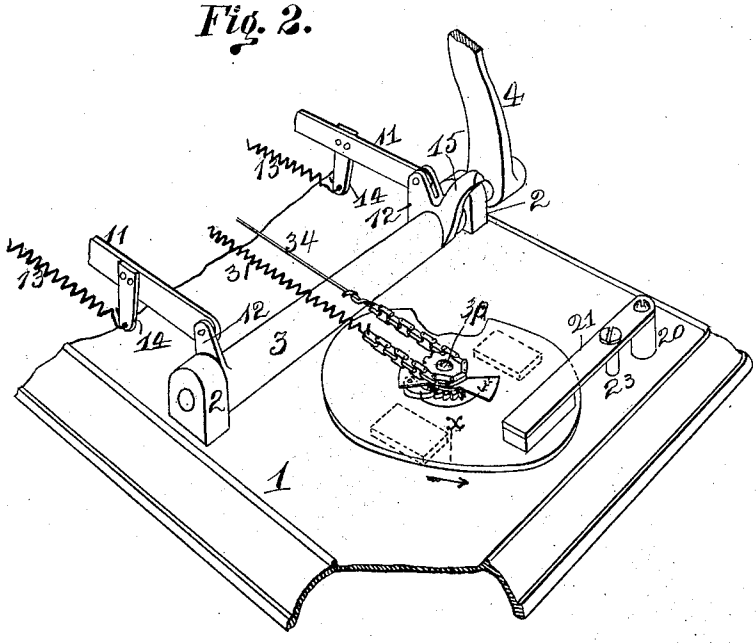


Fig. 6.

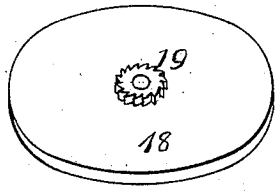


Fig. 8.

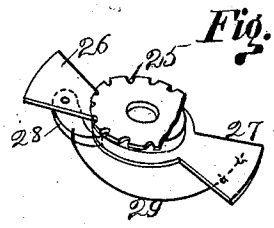


Fig. 7.

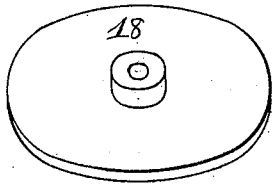
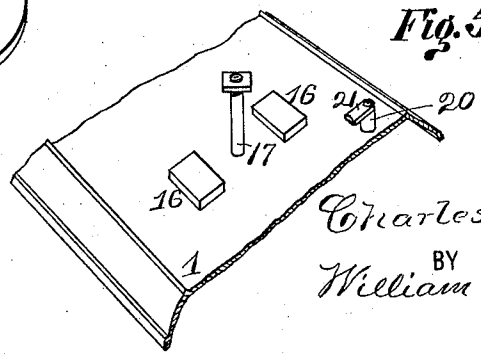


Fig. 5.



WITNESSES:

C. A. Berthoff

S. Brashears

INVENTOR

Charles Wales

BY

William R. Baird

ATTORNEY

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 759,944. Patented May 17, 1904.

UNITED STATES PATENT OFFICE.

CHARLES WALES, OF DETROIT, MICHIGAN, ASSIGNOR TO THE ADDER MACHINE COMPANY, A CORPORATION OF NEW JERSEY.

HANDLE-RETARDING MECHANISM FOR CALCULATING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 759,944, dated May 17, 1904.

Application filed September 15, 1903. Serial No. 173,318. (No model.)

To all whom it may concern:

Be it known that I, CHARLES WALES, a citizen of the United States, and a resident of Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Handle-Retarding Mechanism for Adding-Machines, of which the following is a specification.

This invention relates generally to adding or calculating machines, but more particularly to a machine of this class for which I have made application for United States Letters Patent of even date herewith. In such machines in general, and particularly in the machine subject-matter of the application referred to, a main operating handle or lever is provided, which after the keys are depressed to indicate the number to be added is moved first forward against the action of a spring and again backward, the return or retracting movement being assisted by the force of the spring or springs, so that such return movement is liable to be too quick and forcible, the lever and parts carried thereby being suddenly stopped with a noisy thump or jar which is liable to displace or break the delicate parts required in such machines.

The object of this invention is to provide in such machines mechanism whereby such return or retracting movement is governed, retarded, or eased up; and with this object in view the invention consists in the improved construction, arrangement, and combination of parts hereinafter fully described and afterward specifically claimed.

In the accompanying drawings, in which I have illustrated an embodiment of my invention, Figure 1 represents in perspective view so much of an adding-machine as is necessary to show the application of my invention. Fig. 2 represents in perspective view some of the parts shown in Fig. 1 in a different position. Fig. 3 represents a transverse sectional view on the plane indicated by the broken line 3 3 of Fig. 1. Fig. 4 represents in perspective view part of the mechanism in the rear of Fig. 1. Fig. 5 represents in perspective view part of the mechanism attached to the forward part of the base. Fig. 6 represents in perspective view the friction-plate detached, showing the top thereof. Fig. 7 represents in perspective view the friction-plate looking at the bottom. Fig. 8 represents in perspective view the pawl mechanism and sprocket-wheel detached.

Like reference characters mark the same parts in all of the figures of the drawings.

Referring specifically to the drawings, 1 indicates the base of the machine, upon which all the operative parts are mounted, from which base arise lugs 2 2, which serve as bearings for the main shaft 3, upon the outer end of which is mounted the main operating handle or lever 4.

5 5 indicate the standards of the frame, in which is journaled a cross-rod 6, carrying arms 7, which in turn carry cross-rods 9 and 10, the latter being connected by means of links 11 with crank-arms 12 on the main shaft 3, the links 11 being normally held in their rear positions by springs 13 connecting arms 14, depending from said links, to the base of the frame.

As before stated, when the operating-lever 4 is drawn forward—as, for instance, to the position shown in dotted lines in Fig. 1—the main shaft 3 is rotated in a forward direction, such motion being limited by a stop 15 striking the base of the machine, as also shown in dotted lines in Fig. 1. This movement of the shaft draws the links 11, springs 13, and the swinging frame to the position shown in dotted lines in said Fig. 1 against the force of said springs 13, so that when the handle or lever 4 is released the force of the springs 13 will retract all the parts and draw them into the position shown in full lines in Fig. 1. This backward motion being accomplished by the force of the springs is liable to be too rapid and to end with a shock or thump; but, as before stated, I have provided means to prevent this, which means form the subject-matter of this application.

Secured to the base 1 are blocks 16, concen-

trically placed with relation to a vertical pin 17, secured in and projecting above the base, upon which pin is loosely journaled a friction-plate 18 of circular or disk form, from the upper side of which projects a hub provided with teeth to form a ratchet-wheel 19, the disk 18 resting upon the upper faces of the blocks 16. Secured to the base of one side of the friction-disk 18 is a pin 20, upon the top of which is secured a plate 21, of elastic metal, projecting over the disk 18 and provided on its under surface, in position to contact with the upper surface of the disk, with a friction-block 22, the pressure of said block upon the surface of the disk being regulated by a screw 23, passed through the plate 21 and threaded into the base of the machine.

Mounted on the pin 17 above the ratchet-wheel is a hub or block 24, provided with teeth 25, whereby it forms a sprocket-wheel, and with wings 26 and 27, (see Fig. 8,) which project radially in opposite directions, a pawl 28 being pivoted under the wing 26 in the plane of the ratchet-wheel, and a spring 29, projecting from wing 27, bears upon and normally holds the pawl in contact with the ratchet-teeth.

The block 24 is retained in position by a screw 30 and turns freely upon the pin 17 independent of the disk 18. A spring 31, secured at its rear end to a pin 32, mounted in the base, (see Fig. 4,) is attached at its forward end to a sprocket-chain 33, which passes around and engages the sprocket-teeth 25 and is by means of a cord or wire 34 attached at its rear end to an arm 35, secured to the swinging frame before mentioned.

When the operating handle or lever 4 is in its normal position, the parts last described are in the position shown in full lines in Fig. 1, and when the operating-lever is drawn forward to the position shown in dotted lines the arm 35 is drawn forward, slacking up on that end of the chain 33 connected to said arm, thus permitting the spring 31 to draw the other end of the chain 33 backward. This movement of the chain rotates the sprocket-wheel, and with it the arms 27 and pawl 28, the pawl sliding over the ratchet-teeth and having no effect upon the disk 18, so that practically the forward motion of the operating-lever is not interfered with, the friction of the parts during that motion being so slight as not to be noticed. When, however, the operating-handle is returned from the position shown in dotted lines to that shown in full lines in Fig. 1, the arm 35, moving backward with the other parts of the machine, draws the cord or wire backward and with it the chain 33, causing the sprocket-wheel to move in the opposite direction. During this rearward movement the pawl 28 engages the teeth of the ratchet-wheel and causes the friction-disk 18 to rotate, and the speed of its rotation is accurately governed by the pressure of the friction-block 22, as before described. The backward movement of the operating-lever and all the parts of the machine is thereby retarded to any desired degree, the adjustment being made so that the force of the springs 13 will be just sufficient to retract the parts to their normal position, thereby avoiding a too rapid movement and a thump or clash and jar at the end of said movements.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a calculating-machine, the combination with an operating handle or lever, and elastic means adapted to retract to position the parts moved by the handle, of means for retarding the backward motion of the handle, comprising a friction-brake, and connections between one of the parts moved by the forward motion of the handle and said brake, substantially as described.

2. In a calculating-machine, the combination with an operating handle or lever, and elastic means adapted to retract to position the parts moved by the handle, of means for retarding the backward motion of the handle, comprising a brake, connections between one of the parts moved by the forward motion of the handle and said brake, and means for varying the efficiency of the brake, substantially as described.

3. In a calculating-machine, the combination with an operating handle or lever, and elastic means adapted to retract to position the parts moved by the handle, of means for retarding the backward motion of the handle, comprising a plate, a friction-surface against which it moves, and means for varying the friction between the plate and surface, substantially as described.

4. In a calculating-machine, the combination with an operating handle or lever, and elastic means adapted to retract to position the parts moved by the handle, of means for retarding the backward motion of the handle, comprising a plate, a friction-surface against which it moves, friction-blocks on each side of the plate, and means for moving the plates and blocks toward and from each other, substantially as described.

5. In a calculating-machine, the combination with an operating handle or lever, and elastic means adapted to retract to position the parts moved by the handle, of means for retarding the backward motion of the handle, comprising a rotating plate, a friction-block arranged to press against said plate, and means for varying the contact pressure between the plate and the block, substantially as described.

6. In a calculating-machine, the combination with an operating handle or lever, and elastic means adapted to retract to position

the parts moved by the handle, of means for retarding the backward motion of the handle, comprising a rotating weight, a friction-block arranged to press against said plate, and a screw threaded into a fixed part of the machine and arranged to vary the pressure of the friction-block, substantially as described.

Witness my hand, this 10th day of September, 1903, at the city of New York, in the county and State of New York.

CHARLES WALES.

Witnesses:

HERMAN MEYER,

S. BRASHEARS.