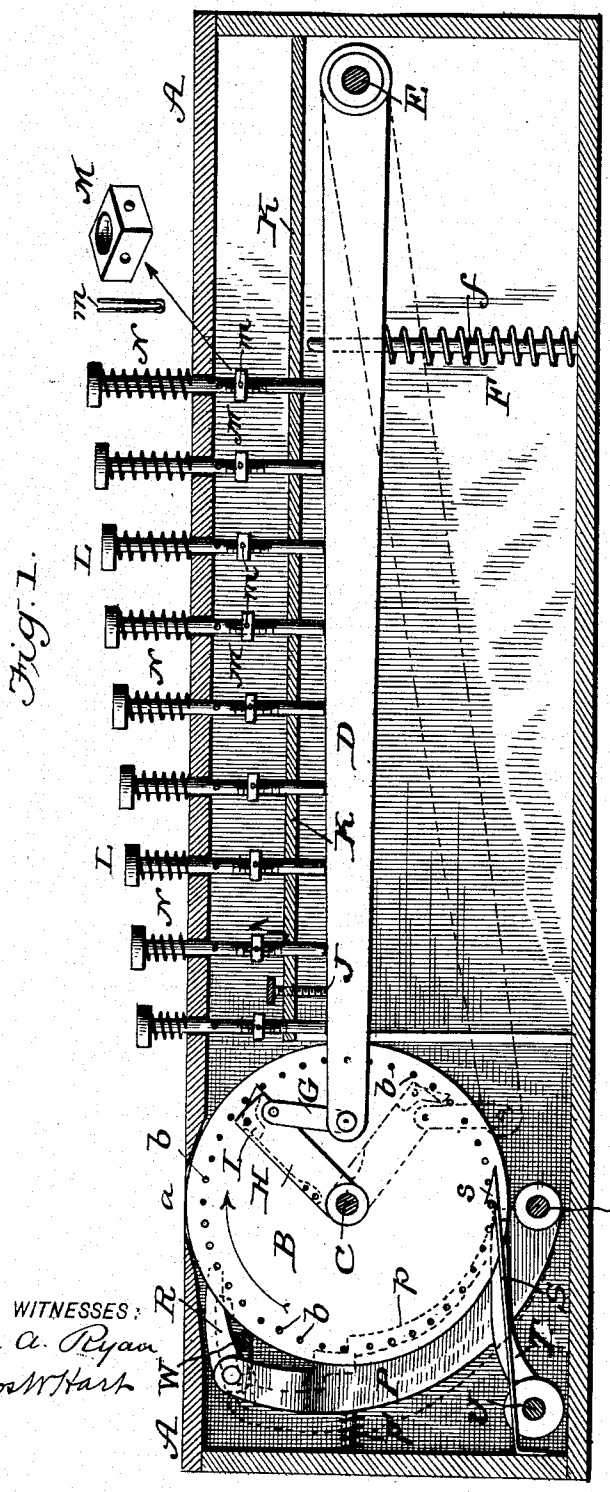
No. 674,267. Patented May 14, 1901.

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ADDING MACHINE.

(No Model.) (Application filed July 11, 1900.) 3 Sheets—Sheet 1.

Fig. 1.



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

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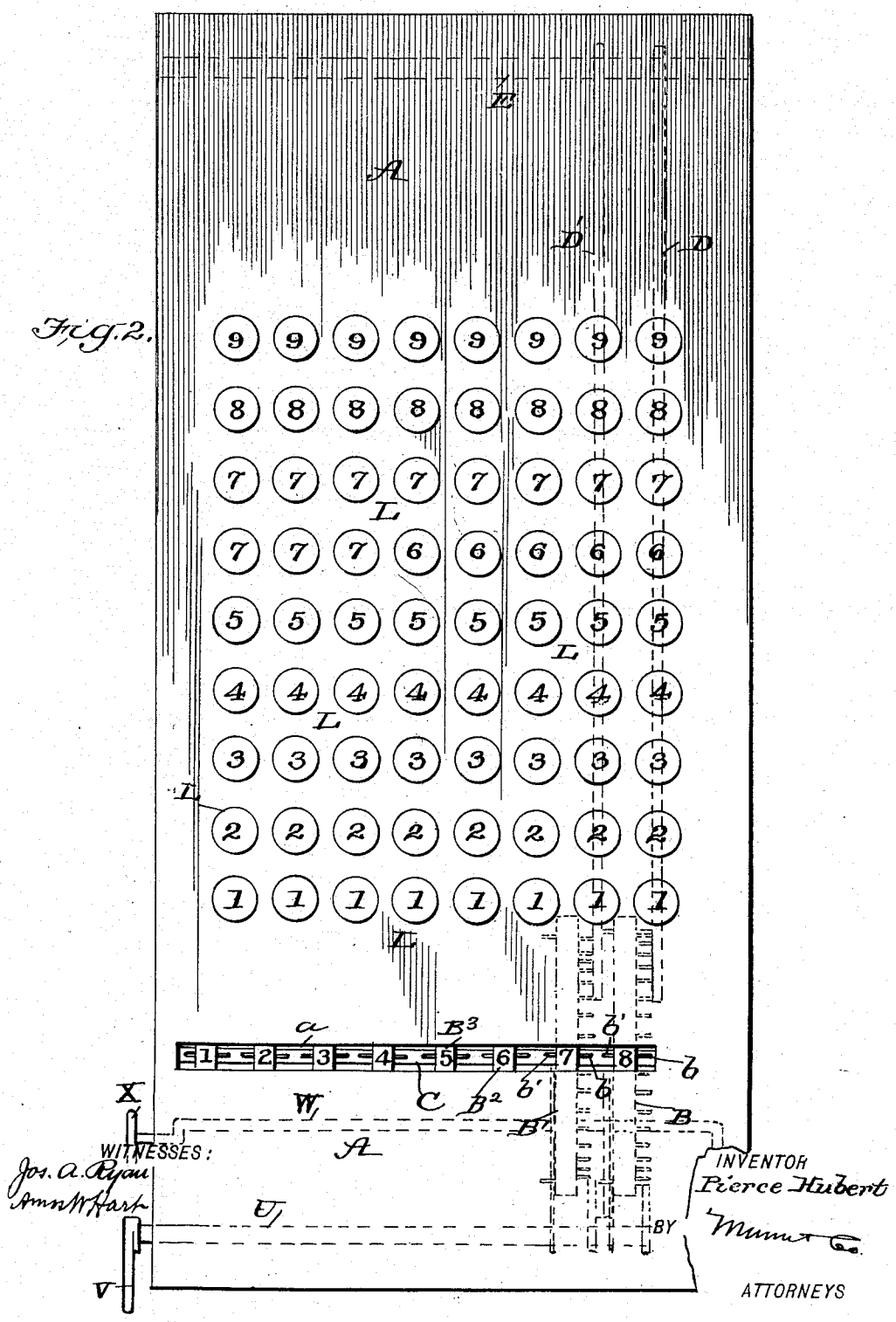
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Fig. 2.



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Fig. 3.

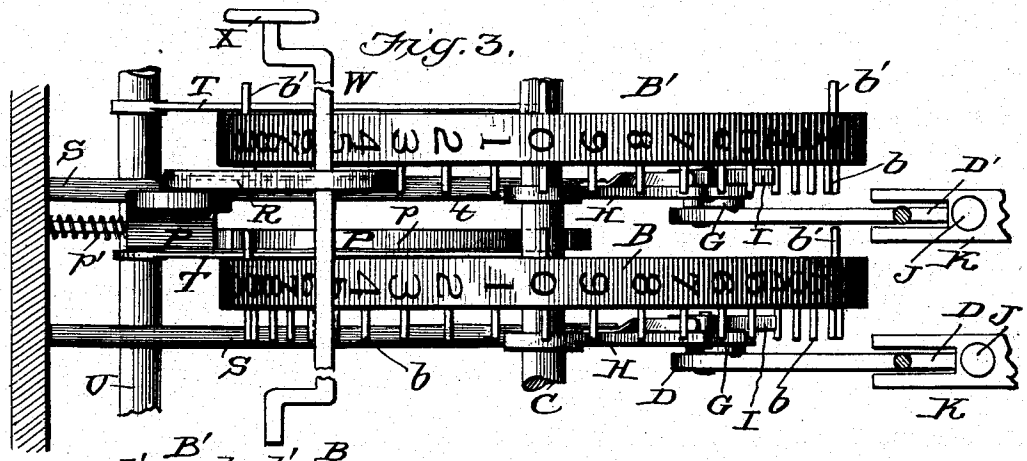


Fig. 4.

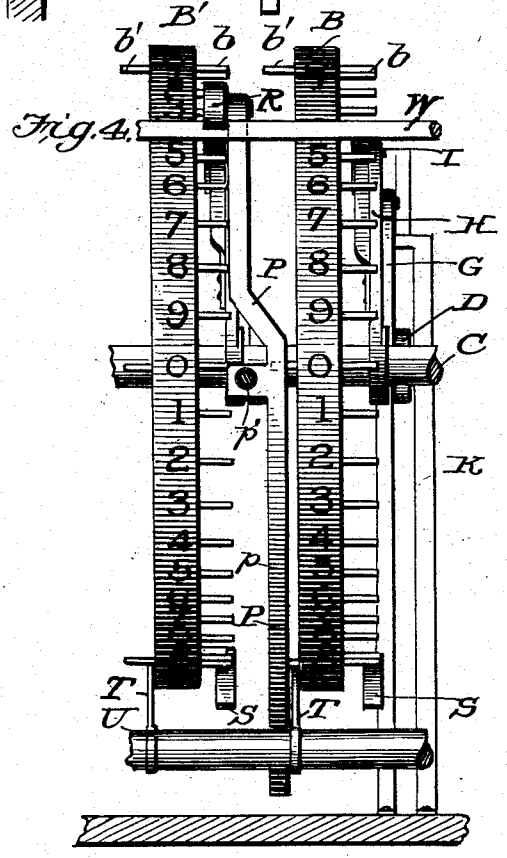
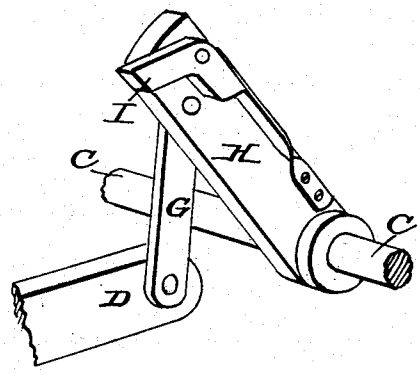


Fig. 5.



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UNITED STATES PATENT OFFICE.

PIERCE HUBERT, OF LOUISVILLE, GEORGIA.

ADDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 674,267, dated May 14, 1901.

Application filed July 11, 1900. Serial No. 23,231. (No model.)

To all whom it may concern:

Be it known that I, PIERCE HUBERT, residing at Louisville, in the county of Jefferson and State of Georgia, have made certain new and useful Improvements in Adding-Machines, of which the following is a specification.

My invention is an improvement in that class of adding-machines whose principal parts are a series of rotatable disks or wheels having numerals inscribed on their peripheries and which are operated by pivoted levers actuated by depressible spring-keys. I have devised certain improvements whereby I attain greater simplicity and economy of construction, compactness of organization, and reliability of operation.

The details of construction, combination, and arrangement of parts are as hereinafter described, reference being had to the accompanying drawings, (three sheets,) in which—

Figure 1 is a longitudinal vertical section of the machine. Fig. 2 is a plan view. Fig. 3 is an enlarged plan view of a portion of the machine. Fig. 4 is an end view of the parts shown in plan in Fig. 3. Fig. 5 is an enlarged perspective view of the ratchet mechanism for operating a number disk or wheel.

The working parts of the machine are inclosed, save the projecting top portions of the keys, in a box or case A—a parallelepiped—which form is the simplest and cheapest in construction and easily portable. A series of number disks or wheels B B′ B^2, &c., are mounted loose on a horizontal shaft C, and a like series of levers D D′ D^2, &c., are fulcrumed on a parallel shaft E, arranged at the other end of the box. The periphery of each of said disks or wheels is divided into four equal parts, (see Figs. 3 and 4,) and each such part is subdivided into ten spaces containing ten numerals from "0" to "9," inclusive. Each of said levers D D′ D^2, &c., is supported, normally, in horizontal position by a spiral spring F, Fig. 1, which encircles a fixed pin or post *f*, located near the shaft E. The free end of each lever D D′, &c., is operatively connected by a pivoted link G with an arm H, which is mounted loose on shaft C. Each number-wheel B has forty steel pins *b* set in its right-hand side near its periphery, the same being located equidistantly.

The means of operative connection between the oscillating arm H and adjacent number-wheel is a spring-pressed ratchet or pawl I, Fig. 5, which is obtuse-angled and pivoted to the side of said arm near its free end, beyond which it projects, as shown, so as to engage one of the forty pins *b* whenever the corresponding lever D D′, &c., is depressed, as shown by dotted lines, Fig. 1. When a lever is raised following a depression by the spring F, the ratchet I skips over the pins *b* until the lever is arrested by an adjustable stop J, Fig. 1, which is in the form of a set-screw inserted and working vertically through a right-angle bar K, that is fixed in place directly over a lever D D′, &c., and between it and a row of keys L, which pass through it and the top board of the box or case A.

It will be noted the front ends of the bars are slotted to form vertical guides and lateral spacers for the levers D D′, &c. The lower ends of the keys L rest upon the levers, and when one is pushed down the lever on which it rests is depressed to a degree corresponding to the descent of the key. This movement is regulated in a graduated scale, the lowest key being depressed least and the highest the most. The lowest key is marked 1, the next 2, and so on to the highest, which is marked 9. (See Fig. 2.) It may be noted here that the rows of keys are eight in number, corresponding to the number of wheels and their actuating-levers. Thus there are seventy-two keys in all. Such regulation is obtained by nuts M, which are applied to the threaded shanks of the keys L and arranged at graduated distances from the angle-bar K. They may be clamped or locked in any adjustment by means of spring keys or cotter-pins passing through them transversely and through slots in the key-shanks. Spiral springs N support the keys L in normal position, the same being interposed between their enlarged heads and the top of the box A.

It will be understood that the several actuating key-levers D D′, &c., when depressed rotate their respective number-wheels B B′, &c., a part of a revolution, and thus effect the desired additions. Thus if the unit or first wheel B at the right stands at "0," which symbol will be visible through the slot

a in the top of the box A, then by pushing down the key numbered 4 in the right-hand row the said wheel B will be rotated to bring "4" into view in said slot *a*. Then if it is desired to add "6" to the "4" the key 6 is depressed, which rotates the wheel B till "0" appears in the slot *a*. If, however, it be desired to add to "4" the number "7" instead of "6," the first wheel B is rotated to "1," and then the adjacent left-hand or tenths wheel B must be rotated a distance required to register "1"—*i. e.*, the tenth. The automatic mechanism for thus carrying tenths is as follows: The left side of each number disk or wheel B B′, &c., is provided with a series of four pins *b′*, which are located equidistantly, one being directly opposite or adjacent to "0" on the periphery. A lever P, Figs. 1, 3, and 4, is arranged between every two wheels B B′, &c., and they are mounted loose on a horizontal shaft Q, arranged parallel to shaft C directly below the number-wheels B B′, &c. Each lever P is curved lengthwise and also laterally, Fig. 4, and carries at its upper end a pivoted push-pawl R, that is arranged to act on the forty pins of the next or left-hand number-wheel. It will be understood this pawl R drags or skips over the pins *b* when the lever P is retracted. At a central point each lever is provided on the inner side with a cam or eccentric portion *p*, which coacts with the four pins *b′* on the right-hand wheel—that is to say, the said cam or eccentric *p* is a projection of the lever, which curves inward from its lower end to its upper end, the latter forming an abrupt shoulder. As one of the four pins *b′* comes in contact with the cam *p* and the wheel carrying such pin continues to rotate the latter rides over the cam, and thereby gradually forces the lever back to the position shown by dotted lines, Fig. 1, and as the pin passes off at the upper end of the cam a spring *p′*, arranged behind the lever and pressing against it, forces it suddenly forward or inward, and thereby rotates the adjacent left-hand wheel B′ a corresponding distance. Thus each of the four pins *b′* corresponding in place to a "0" on the periphery of a number-wheel operates a carrying-lever P and rotates the next or left-hand wheel. By this means tens, hundreds, and thousands are carried in the required manner and recorded by the number-wheels to form the true numerical aggregate sought.

To lock each number-wheel B B′, &c., against backward rotation and also hold it temporarily in any position to which it may be adjusted by its actuating-lever, I provide the device S, Fig. 1, which consists of a spring fixed to the box and having a triangular head *s*, whereby it is adapted to pass over the pins *b* in one direction, but positively engages any one of them should the wheel rotate in the other direction. Further, the inner angle of such head *s* enters the space between any two pins *b*, and thus offers frictional resistance to rotation of the wheel, so that it is not liable to rotate accidentally in the direction in which it is otherwise free to move.

For the purpose of setting the number-wheels at "0" to begin a new addition I employ a series of levers T, which are fixed on a rock-shaft L, arranged parallel to shaft C and provided with a lever-arm V, as shown in Fig. 2. These levers T are constructed of thin metal and project inward between the wheels B B′, &c., and the levers P, as shown in Figs. 3 and 4. Their free ends are rounded, and their length is such that they do not reach the pins *b′* when the latter are at the lowest point on a number-wheel. Thus they cannot disturb the position of the wheels when "0" is visible through the slot *a*; but when any other numeral is thus visible the levers T may come in contact with pins *b′* to move the wheels. Thus by working the lever-arm V, and thereby rocking the shaft U, the levers T are thrown upward and striking on the pins *b′* the wheels B B′, &c., are rotated to bring "0" into the slot *a*.

It will be seen that the numerical result of an addition appears in the slot *a* almost directly under the eye of the operator, which is a considerable advantage, and that this arrangement is effected without changing the regular contour of the box A; also, that the provision of lateral pins on the number-wheels avoids the necessity for using supplemental ratchet wheels or gears and reduces the weight and cost of this portion of the machine to a minimum; also, that the arrangement of the angular bar for contact of the stop-nuts on the keys and for supporting adjustable lever-stops, as well as guiding the actuating-levers, further contributes to reduction of weight and cost.

It is required to raise the push-pawls R before setting the wheels at "0," and thus prevent the pawls forcing the wheels B B′, &c., one space farther. For this purpose I provide a cranked rock-shaft or rod W, which extends across under said pawls R and is journaled in the sides of the case A. It is provided at one or both ends with a small milled disk X for use in rotating it manually. It will be seen that if the cranked or eccentric portion of said shaft W be thrown up the pawls R will be raised and may be so held as long as required. It is to be understood that any desired number of rows of keys may be employed.

What I claim is—

1. In an adding-machine, the combination, with a series of rotatable number-wheels, and a like series of pivoted levers for operating them, of bars K, fixed over said levers, a series of set-screws J, inserted through the bars and serving as stops, a series of vertical spring-keys acting on the levers and working through the fixed bars, and a series of stops applied to the keys and adapted for contact with the bars, as shown and described.

2. In an adding-machine, the combination,

with the casing, having slot *a*, a series of keys and levers, and a series of wheels operated by said levers and inscribed with groups of numerals from "0" to "9," and having lateral pins as specified, of the series of levers T having their free ends rounded for coacting with said pins, and a rock-shaft carrying said levers, and having an arm V, whereby said levers are adapted to rotate the number-wheels when the shaft is rocked, as shown and described.

3. In an adding-machine, the combination with a series of number-wheels and a like series of pivoted levers for actuating them, of a series of fixed bars of angular form which are provided with slots in the vertical portion, to serve as guides for the vibrating levers, and a series of adjustable stops for the levers which are applied to the bars as shown and described.

4. In an adding-machine, the combination with a series of rotatable number-wheels and means for operating them, of a series of levers adapted for contact with the lateral pins *b'* and a rock-shaft on which said levers are fixed, all operating substantially as shown and described.

PIERCE HUBERT.

Witnesses:
E. M. CLARK,
L. R. FARMER.