

W. W. LASKER.
 LOCK FOR ACCUMULATOR MECHANISM OF ADDING MACHINES.
 APPLICATION FILED JAN. 21, 1916.

1,309,897.

Patented July 15, 1919.

2 SHEETS—SHEET 1.

FIG. 1.

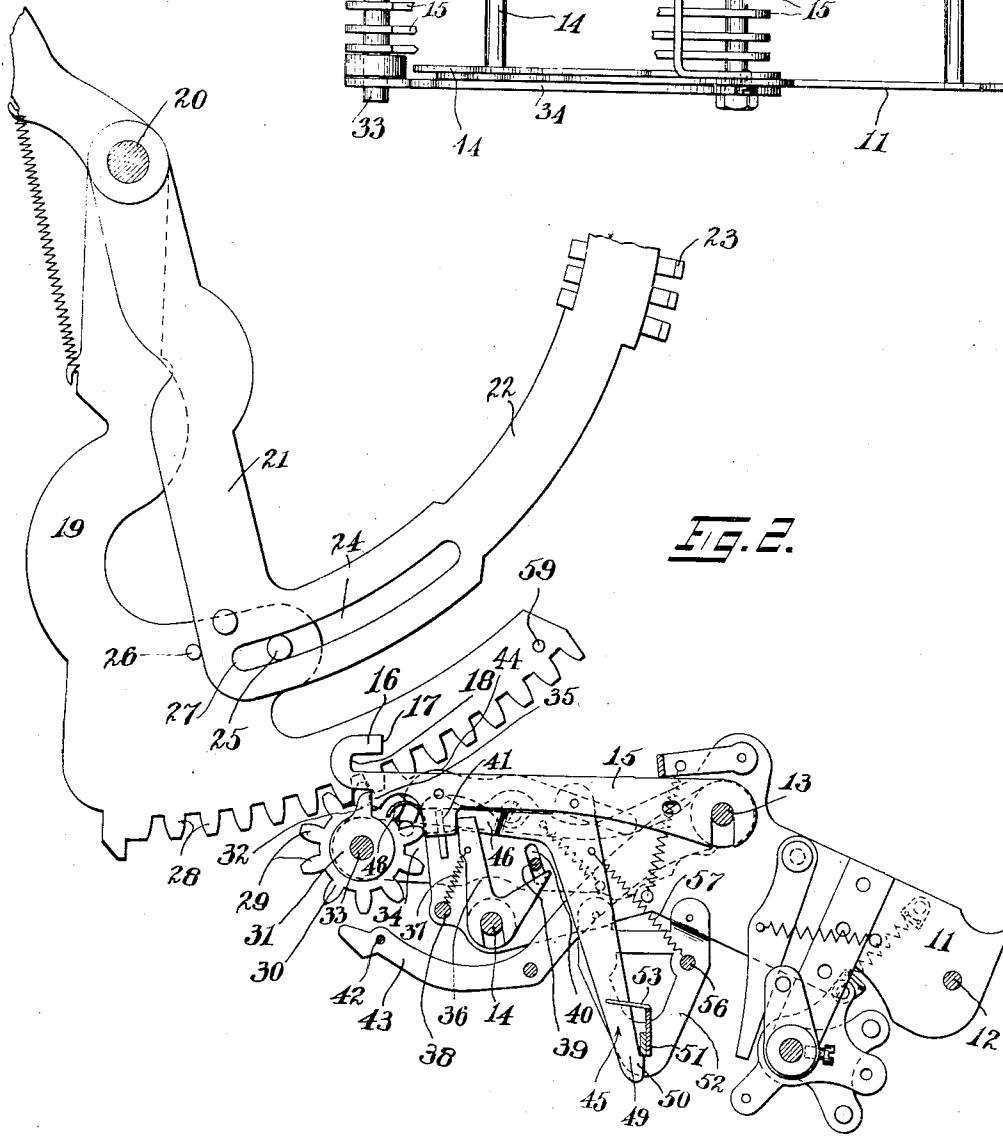
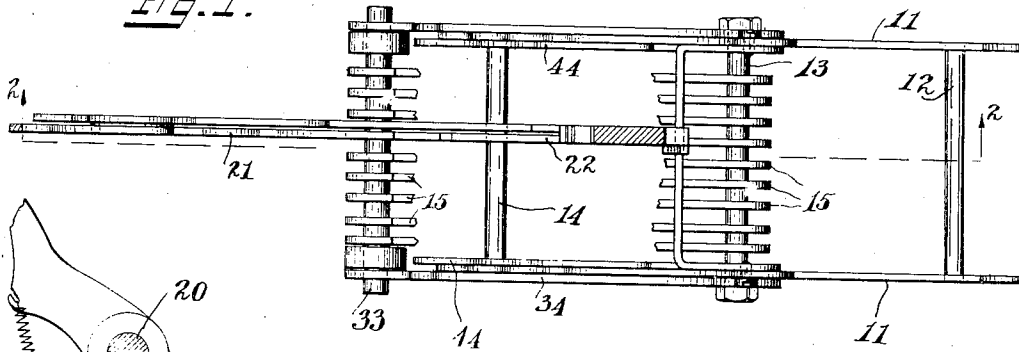


FIG. 2.

Witnesses:
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Inventor:
 William W. Lasker,
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FIG. 4.

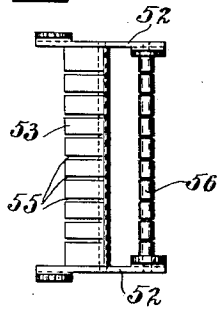


FIG. 5.

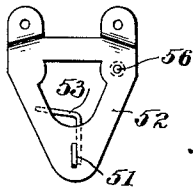


FIG. 6.

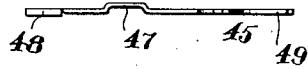


FIG. 7.

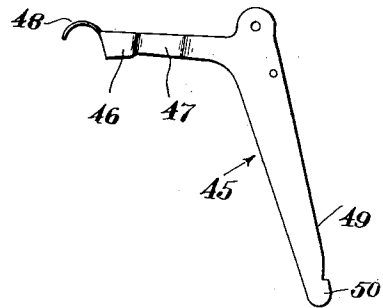
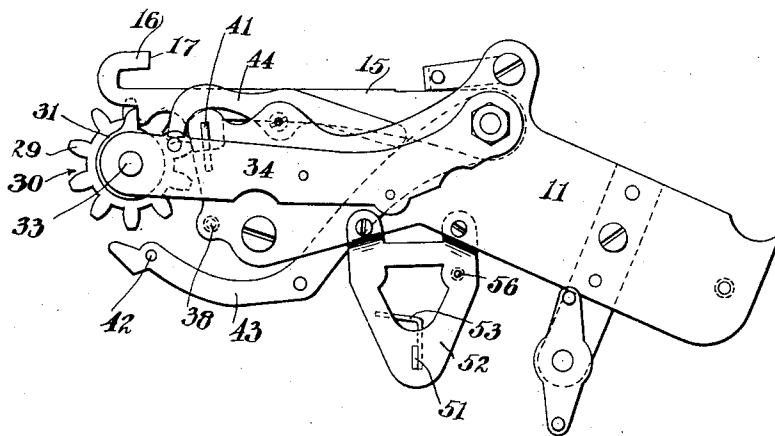


FIG. 3.



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UNITED STATES PATENT OFFICE.

WILLIAM W. LASKER, OF BROOKLYN, NEW YORK, ASSIGNOR TO POWERS ACCOUNTING MACHINE COMPANY, OF NEW YORK, N. Y., A CORPORATION OF DELAWARE.

LOCK FOR ACCUMULATOR MECHANISM OF ADDING-MACHINES.

1,309,897.

Specification of Letters Patent.

Patented July 15, 1919.

Application filed January 21, 1916. Serial No. 73,268.

To all whom it may concern:

Be it known that I, WILLIAM W. LASKER, a citizen of the United States, residing in Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Locks for Accumulator Mechanism of Adding-Machines, of which the following is a specification.

This invention relates to accounting machines in general and more particularly to improvements in accumulators for taking totals.

One of the main objects of the invention is to provide means for locking the carrying means of accumulators, such as illustrated in the patent of Hubert Hopkins, 1,039,130 patented September 24, 1912 by which means the carrying means will be positively locked against displacement when the adding means or accumulators are out of engagement with accumulator actuating means.

Another object of the invention is to provide means for locking such carrying means against displacement until accumulators have cooperated with them to raise them into carrying position.

Still another object of the invention is to provide means whereby such a locking means will be withdrawn into locking position when the accumulators are withdrawn out of engagement with accumulator actuating means.

These and other features, capabilities and advantages of the invention will appear from the subjoined detailed description of one specific embodiment of the invention illustrated in the accompanying drawings in which—

Figure 1 is a fragmental plan view showing the frame work on which the accumulator wheels and locking means are mounted.

Fig. 2 is a transverse section on the line 2—2 of Fig. 1, and also showing a portion of the adding wheel actuating means in operative relation thereto.

Fig. 3 is an elevation of the frame on which the accumulators and locking means are mounted, together with related parts.

Fig. 4 is a perspective view of the frame by which the locking means are guided.

Fig. 5 is an elevation of one of the brackets by which the guiding frame is supported.

Figs. 6 and 7 are end and side elevational views respectively of one of the locking elements.

In the embodiment illustrated, there is provided a fixed frame having two side plate members 11, 11 which are secured to one another by the rear rod 12, the intermediate pivot bolt 13 and the front pivot bolt 14.

On the intermediate pivot bolt 13, the carrying bars 15, in the present instance nine being shown, are pivotally mounted with their active ends extending forwardly which are provided with upwardly and rearwardly extending hook portions 16 to provide two engagement faces 17 and 18, the extreme rearwardly extending ends of the hook portions 16 forming engagement faces 17, and the bottom of the hook portions 16 forming the engagement faces 18.

As illustrated in prior patents, the aforesaid Hopkins patent for instance, the faces 17 and 18 are adapted to position sectors 19 swingingly mounted on the shaft 20, one for each carrying bar 15. Adjacent to each sector 19 and also pivotally mounted on the shaft 20 is provided a type carrier segment 21 having a type carrying arm 22 at the free end of which type 23 are mounted. The segment 21 is provided with a slot 24 in which the pin 25 of its adjacent sector 19 rides. On each sector 19 there is also provided a pin 26 to limit the rearward movement of the segment 22. Thus the segment 22 will be limited in its forward movement by the face 27 of the slot 24 engaged by the pin 25, and in its rearward movement limited by the pin 26 engaging the rear end of the segment 22. This movement of the segment 22 relative to the sector 19 is equal to one tooth space hereinafter to be explained.

The lower end of the sector 19 is provided with gear teeth 28 adapted to mesh with the teeth 29 of the adding wheels 30 each adding wheel 30 being provided with ten teeth and a boss 31 on one side from which and adjacent to one of the teeth 29 a spur 32 extends. The adding wheels 30 are mounted on a shaft 33 secured in the forward ends of the

arms 34, the rearward ends of the arms 34 being pivotally connected to the bolt 13 on the outside of the plates 11. The number of gears 30 corresponds to the number of carrying bars 15 and sectors 19, a unit comprising one of each operatively related to one another.

On the lower edge of the front end of each bar 15, is provided a spur 35 to cooperate with the spur 32 of an adding wheel 30, the relation being such that upon engagement of a spur 32 with a spur 35 when the adding wheels 30 are in mesh with the sectors 19 in the movement of such sectors 19 from right to left as per Fig. 2, the inclined faces of such spurs 32 and 35 will engage and raise the carrying bar 15 on which such spur 35 is formed. Upon engagement of a spur 32 with a spur 35 when the sectors 19 are in mesh with the adding wheels 30 in the movement of such sectors 19 from left to right as per Fig. 2, the perpendicular faces of such spurs 32 and 35 will contact with one another to prevent the further movement of the adding wheel 30 as well as of the sector 19 of that particular unit.

The arrangement is such that, when accumulating, the adding wheels 30 are disengaged from the sectors 19 in the movement from left to right of the sectors 19, and are engaged or in mesh with the sectors 19 when the sectors 19 move from right to left; and when taking a total, the adding wheels 30 are in mesh with the sectors 19 in the movement left to right of the sectors 19, and out of mesh in the movement from right to left of the sectors 19. For positioning the sectors 19 when they return to the left hand position, the hook portion 16 of an adjacent unit will engage with its pin 59, the face 17 engaging the pin 59 when the adding wheel of the adjacent bar 15 has accumulated any number between one and nine, but when the adding wheel has accumulated just ten, its spur 32 will engage the spur 35 of the adjacent bar 15 and raise the same, in which raised position, the face 18 will be disposed in the path of movement of the pin 59 and thereupon the sector 19 be permitted to recede a tooth-space farther than when limited by the face 17, the tooth-space between the faces 17 and 18 being equal to the space between two of the teeth 29. In this manner, the adding wheel of the column next higher will have accumulated an additional unit thereby to reproduce carrying the tens unit in addition.

For providing locking means for temporarily locking the outer bars 15 in raised position when raised as aforesaid by the spurs 32, bell cranks 36 are provided one for each bar 15, which bell cranks 36 are mounted on the pivot bolt 14, the front arm being connected by a spring 37 with

the spring abutment rod 38 secured to the frame plates 11 and its rear arm disposed below the retractor rod 39 mounted by the arms 34 and free to move with the arms 34 in the slots 40 provided for that purpose in the plates 11.

The bars 15 along their lower edges rearwardly of the spurs 35 are each provided with a shoulder 41 against the rear side of which the front arms of the bell cranks 36 rest when the bars 15 are in depressed position, the bell cranks 36 being held in such position by the springs 37. When a bar 15 is raised by a spur 32, it will raise its shoulder 41 out of engagement with its bell crank 36 and thereby permit the spring 37 to pull such bell crank 36 so that its front arm extends below the shoulder 41 and its rear arm strikes and limits the forward movement of such bell crank 36 by engagement with the retractor rod 39. The bell cranks 36 will be restored to their rearward position and thereby permit the bars 15 to descend, when the adding wheels 30 are lowered out of engagement with the teeth 28 in which action, the rod 39 which is secured to the arms 34 on which the adding wheels 30 are mounted will likewise be lowered and in its descending movement engage the rear arms of the bell cranks 36 and retract them so that their front arms are moved to the rear of the shoulders 41 and then upon the bars 15 descending the bell cranks 36 will again engage the rear face of the shoulders 41.

The rod 42 on the front ends of the arms 43 which are pivotally connected at their rear ends to the pivot bolt 13 engage between the teeth 29 of the adding wheels 30 to lock such adding wheels against displacement when they are lowered out of engagement with the teeth 28. The cam links 44, pivoted intermediately on the frame 11, are engaged and raised by the "ten" pins of the adding wheels 30, and caused, at their rear ends, to press near the rear ends of the arms 43 and force them downwardly, whereby the rod 43 disengages the teeth 29.

The feature of positively locking the carrying bars 15 against displacement when in their lower position and which forms the main feature of the present invention comprises essentially a plurality of bent levers or anchoring means 45 each pivotally connected at its angle to one of the bars 15 between the pivot bolt 13 and the shoulder 41 of such bar. The levers each embrace a forwardly extending arm 46 which in the present instance, is indented at 47 to pass the front arm of the bell crank 36 disposed below it and provided at its extreme front end with a curved cam portion 48 conforming to the concave surface formed between the spur 35 and shoulder 41 of a bar 15; and

the levers also each have a rear or downwardly extending arm 49 which is notched at its lower end to form a hook portion 50 to engage the locking plate 51 which is mounted by the brackets 52 one at each end of the locking plate 51, which brackets 52 are secured to the frame sides 11 at their upper ends. Secured to the locking plate and extending upwardly therefrom there is provided a guide plate or comb 53 comprising a bent plate, the downwardly extending portion of which is secured to the locking plate 51 and the forwardly extending portion of which is provided with a series of slots 55, in number corresponding to the number of levers 45 and each adapted to accommodate and permit the downwardly extending arm of a lever 45 to enter into such slot 55 to be guided thereby. A spring abutment rod 56 is mounted between the rear upper ends of the brackets 52. To this rod 56 one of the ends of the springs 57 are connected, the other ends of such springs being connected to the downwardly extending arms 49 of the levers 45 whereby the levers 45 are normally maintained in retracted position, in which position their cam portions 48 are spaced from the bars 15 as shown in Fig. 2.

The operation is as follows: When the bars 15 are in their depressed or lower position, the hook ends 50 will engage the locking plate 51 and thereby positively prevent the raising of the arms 15. Thereupon when an adding wheel 30 has been connected so that its spur 32 is moved to cooperate with a spur 35 to raise a bar 15, it will first have to engage the cam portion 48 and thereby rock the thereto connected lever 45 out of engagement with the locking plate 51 and consequently the spur 32 can then cooperate with the spur 35 to raise the bar 15.

It is obvious that various changes and modifications may be made to the details of construction without departing from the general spirit of the invention.

I claim:

1. In a device of the character described, the combination of adding wheels; carrying bars associated therewith and adapted to assume carrying and non-carrying positions; means for positively locking the bars in each position against movement toward the other position, said adding wheels being operable to release said carrying bars.

2. In a device of the character described, the combination of adding wheels, carrying bars associated with said wheels and adapted to be moved thereby from non-carrying to carrying position; yieldable locking means for positively holding said bars in carrying position against movement toward non-carrying position; means for releasing

the locking means; and anchoring means for holding said bars in non-carrying position.

3. In a device of the character described, the combination of adding wheels; carrying bars associated with said wheels and adapted to be moved thereby from non-carrying to carrying position; locking means for holding said bars in carrying position; and anchoring means pivotally mounted on the carrying bars for positively holding said bars in non-carrying position against movement toward carrying position.

4. In a device of the character described, the combination of adding wheels; carrying bars associated with said wheels and adapted to be moved thereby from non-carrying to carrying position; locking means for holding said bars in carrying position; and anchoring means for positively holding said bars in non-carrying position against movement toward carrying position and adapted to be engaged by the adding wheels for releasing the carrying bars.

5. In a device of the character described, the combination of adding wheels; carrying bars associated with said wheels and adapted to be moved thereby from non-carrying to carrying position; locking means for positively holding said bars in carrying position against movement toward non-carrying position; and anchoring means for positively holding said bars in non-carrying position against movement toward carrying position.

6. In a device of the character described, the combination of adding wheels; carrying bars associated with said wheels and adapted to be moved thereby from non-carrying to carrying position; yieldable locking means for positively holding said bars in carrying position against movement toward non-carrying position; means for releasing the locking means; and anchoring means pivotally mounted on the carrying bars for positively holding said bars in non-carrying position, and adapted to be engaged by the adding wheels for releasing the carrying bars.

7. In a device of the character described, the combination of adding wheels; carrying bars associated with said wheels and adapted to be moved thereby from non-carrying position to carrying position; yieldable means for positively holding said bars, when in carrying position, against movement to non-carrying position; anchoring means for positively holding the bars, in non-carrying position, against movement toward carrying position; and means engaged by the adding wheels for releasing the anchoring means.

8. In a device of the character described, a frame; adding wheels each having a spur

corresponding to the tens unit; carrying bars for cooperating with said adding wheels pivotally connected to said frame; spurs on said bars for cooperating with the said spurs of said adding wheels; and means for positively locking said bars against displacement whether the spurs of said bars are in or out of engagement with the spurs of said adding wheels.

9. In a device of the character described; a frame; adding wheels each having a spur corresponding to the tens unit; carrying bars for cooperating with said adding wheels pivotally connected to said frame; spurs on said bars for cooperating with the said spurs of said adding wheels; means for positively locking said bars against displacement whether the spurs of said bars are in or out of engagement with the spurs of said adding wheels; and the spurs of said adding wheels cooperating with said locking means to release said bars when the spurs of said bars are about to cooperate with the spurs of said adding wheels.

10. In a device of the character described, a frame, accumulating wheels each having a spur corresponding to the tens unit, carrying bars for cooperating with said accumulating wheels pivotally connected to said frame, spurs on said carrying bars for cooperating with the said spurs of said accumulating wheels, brackets on said frame, a locking plate secured in said brackets, guide plates secured by said brackets, and bent levers pivotally connected to said carrying bars, guided by said guide plate and cooperating with said locking plate to positively lock said carrying bars against displacement when said carrying bars are out of carrying position.

11. In a device of the character described, a frame, accumulating wheels each having a spur corresponding to the tens unit, carrying bars for cooperating with said accumulating wheels pivotally connected to said frame, spurs on said carrying bars for cooperating with the said spurs of said accumulating wheels, brackets on said frame, a locking plate secured in said brackets, guide plates secured by said brackets, a spring abutment rod on said brackets, bent levers pivotally connected to said carrying bars, guided by said guide plate and cooperating with said locking plate to positively lock said carrying bars against displacement when said carrying bars are out of carrying position, and springs connecting said bent levers with said abutment rod to normally maintain said bent levers in locked position.

12. In a device of the character described, a frame, adding wheels each having a spur corresponding to the tens unit, carrying bars for cooperating with said adding wheels pivotally connected to said frame,

spurs on said bars for cooperating with the said spurs of said adding wheels, a locking plate secured to said frame, bent levers pivotally connected to said carrying bars and cooperating with said locking plate to positively lock said carrying bars against displacement when said carrying bars are out of carrying position, and cam portions on said bent levers positioned to cooperate with the spurs of said adding wheels to release said bent levers when the spurs of said adding wheels are about to cooperate with the spurs of said carrying bars.

13. In a device of the character described, a frame, adding wheels each having a spur corresponding to the tens unit, carrying bars for cooperating with said adding wheels pivotally connected to said frame, spurs on said bars for cooperating with the said spurs of said adding wheels, a locking plate secured to said frame, bent levers pivotally connected to said carrying bars and cooperating with said locking plate to positively lock said carrying bars against displacement when said carrying bars are out of carrying position, and cam portions on said bent levers spaced apart from the lower edges of the said carrying bars when said bent levers are in locked position and positioned to be depressed against said carrying bars by the spurs of said adding wheels to release said bent levers.

14. In a device of the character described, a frame, adding wheels each having a spur corresponding to the tens unit, carrying bars for cooperating with said adding wheels pivotally connected to said frame, spurs on said bars for cooperating with the said spurs of said adding wheels, a locking plate secured to said frame, bent levers pivotally connected to said carrying bars and cooperating with said locking plate to positively lock said carrying bars against displacement when said carrying bars are out of carrying position, and cam portions on said bent levers spaced apart from the lower edges of the said carrying bars when said bent levers are in locked position and positioned to be depressed against said carrying bars by the spurs of said adding wheels to release said bent levers when the spurs of said adding wheels are about to cooperate with the spurs of said carrying bars.

15. In a device of the character described, a frame, adding wheels each having a spur corresponding to the tens unit, carrying bars for cooperating with said adding wheels pivotally connected to said frame, spurs on said bars for cooperating with the said spurs of said adding wheels, a locking plate secured to said frame, and bent levers pivotally connected to said carrying bars and cooperating with said locking plate to positively lock said carrying bars against displacement when said carrying bars are out of carrying position.

placement when said carrying bars are out
of carrying position, the carrying bars hav-
ing concave depressions rearwardly of their
spurs, cam portions on said bent levers con-
forming to and spaced apart from said con-
cave depressions when said levers are in
locked position and positioned to be de-
pressed against said carrying bars by the

spurs of said adding wheels to release said
bent levers when the spurs of said adding
wheels are about to cooperate with the spurs
of said carrying bars. 10

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