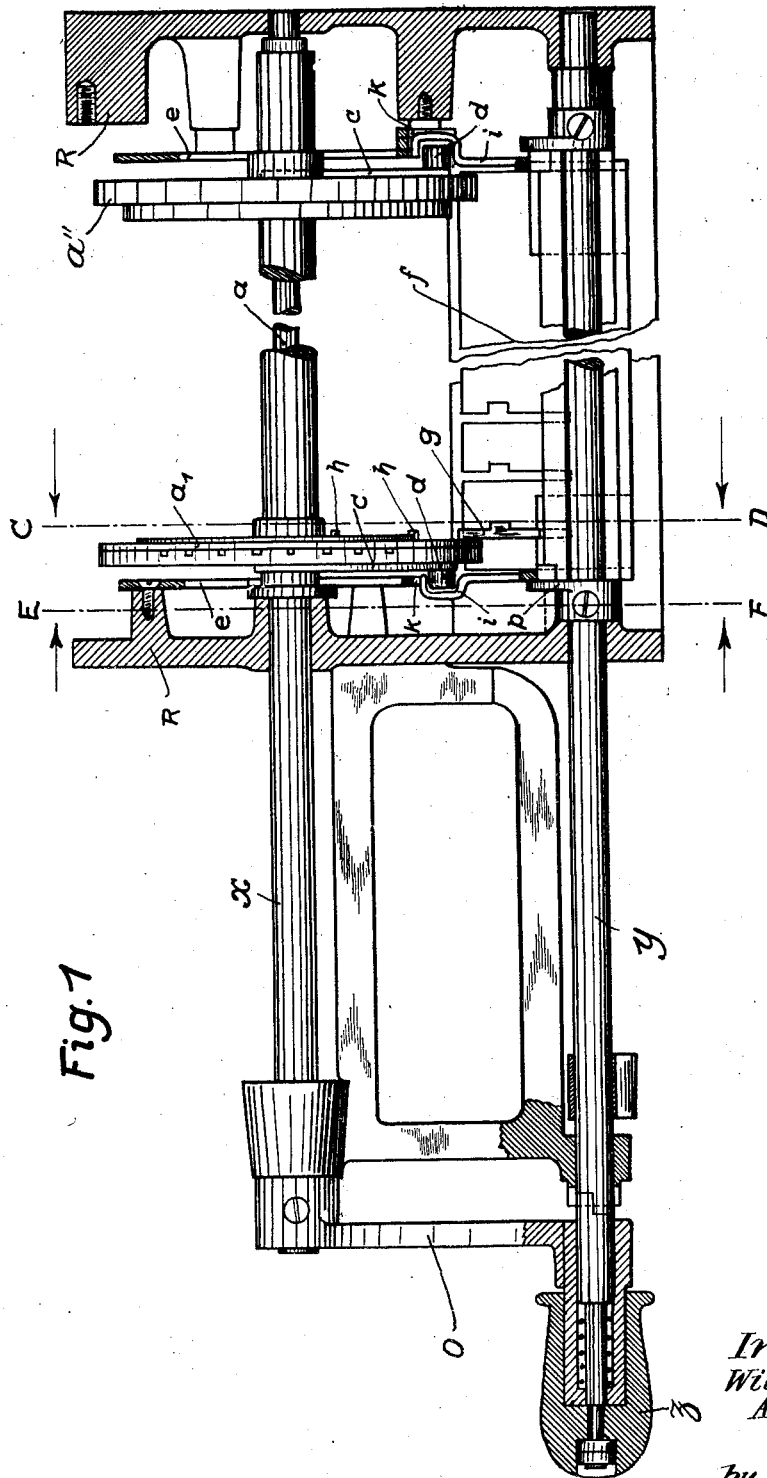


1,428,831.

Patented Sept. 12, 1922.

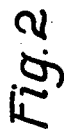
4 SHEETS—SHEET 1.



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1,428,831.

4 SHEETS—SHEET 2.



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4 SHEETS—SHEET 4.

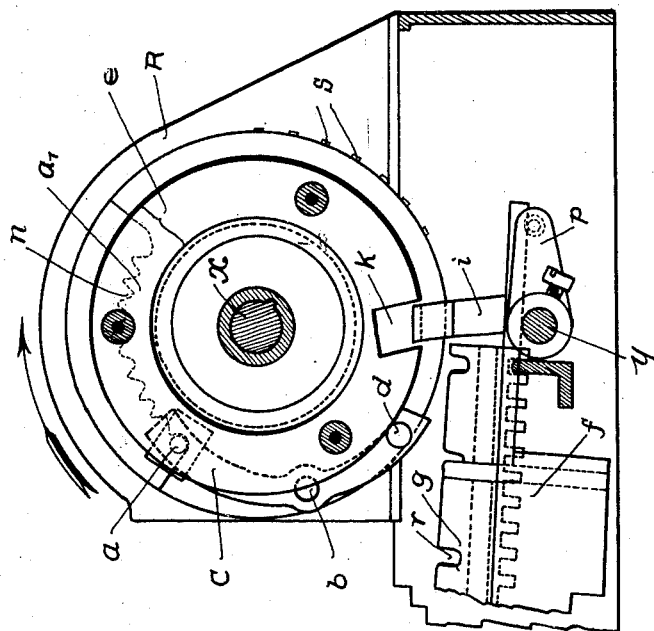


Fig. 4

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LOCKING DEVICE FOR CALCULATING MACHINES.

Application filed May 15, 1922. Serial No. 561,039.

To all whom it may concern:

Be it known that I, WILHELM AUGUSTIN, a citizen of Germany, residing at Berlin-Charlottenburg, Germany, have invented certain new and useful Improvements in Locking Devices for Calculating Machines, of which the following is a specification.

This invention relates to the adjustment and locking of the grooved cam discs during the working of a calculating machine in connection with which it is common to adjust grooved cam discs by means of toothed-rods or similar means. As exemplified in my prior Patent No. 1,104,763, dated July 28, 1914, calculating machines are known in which the adjusted grooved cam discs are held firmly in their position of rest by means of resilient detent pins, so that when a grooved cam disc is adjusted the resistance of a spring has to be permanently overcome. In order to obviate this difficulty a locking device is adopted and forms the present invention and which also ensures easy adjustment of the grooved cam discs and a positive locking without any spring pressure during the operation of the machine.

In the drawings one example is shown of carrying my invention into effect and in which:—

Figure 1 is a longitudinal section of a calculating machine on the line A—B of Fig. 3,

Figure 2 is a transverse section of the same on the line C—D of Fig. 1 in the direction of the arrow with the cam discs in the locked position.

Figure 3 is a similar view to Fig. 2 with the cam discs in the unlocked or free position, and

Figure 4 a cross section on the line E—F of Fig. 1 in the direction of the arrow during the operation of the cam discs.

In the drawings the specific embodiment of this invention includes a plurality of register actuators mounted upon the crank shaft α , each actuator including, as well known, a grooved cam disk or selector a' , loosely mounted upon the shaft and a relatively stationary pin-carrying disk in which is mounted the series of register actuating pins s which are adapted to be projected by adjustment of the cam disk a' rotatively with respect to the shaft, as well known in this art and disclosed in my prior patent

above mentioned. The cam disks or selectors a' are each provided with notches n to receive a locking detent bar a supported by the upper end of the swinging levers c pivotally mounted intermediate their length on the pivot pins or studs b , one upon the first register actuator disk a' at one side of the machine and the other upon a corresponding supporting disk a'' at the opposite side of the machine. It will thus be seen that the detent bar a is common to all of the adjusting cam disks carried by the main or crank shaft of the calculating machine. The opposite ends of the swinging levers c to that carrying the bar a are provided with laterally projecting studs or pins d , which pins are arranged to slide upon the periphery of the rings e secured to the frame R of the machine, thereby locking the swinging levers c against shifting movement during rotation of the register actuators by the crank shaft. Each of the rings e is formed at the bottom thereof with a notch h into which a hook member or arm i which engages about the adjacent stud d is received and by means of which, as will be more particularly described hereinafter, the lever c may be swung about its pivot to thereby carry the detent bar a out of operative relation or engagement with the adjusting cam disks before mentioned.

It will be understood that there is a hook arm i at each side of the machine to engage with the respective studs d and these arms are mounted upon the rear end of a rocker member f upon which is mounted a series of setting bars g , one for each register actuator, said bars being slidable relative to the rocker member as by means of a knob carried at the end of the same after the manner shown in my previous patent. The lower edges of these bars are provided with teeth to lock them at a set position in the known manner and the upper edge of each bar is formed with a series of spaced recesses or notches r arranged to engage with lateral projections or studs h upon the cam disk with which the bar is adapted to coact, whereby upon sliding movement of the toothed bar g the cam disk may be rotated to accomplish the adjustment of the pins s .

The rocker member f and the bars g are simultaneously shifted by means of the arm p upon a rock shaft y extending beneath

the actuator members in parallel relation to the crank shaft *x*, which latter shaft is operated by the crank *o* having a shiftable grip *z* movable to lock the crank shaft to the rock shaft, as shown in Figure 1.

5 With the foregoing in mind, the operation of the calculating machine is as follows:

Starting from the position shown in Figure 2, the grip piece *z* is moved inwardly 10 so as to clutch in the rock shaft *y*, whereupon the grip piece is rotated to rotate the shaft *y* and the arm *p* bearing against the rear extremity of the rocker member *f*, the arms *i* of which engaging about the studs *d* 15 are raised into the recesses *k* of the rings *e* as shown in Fig. 3. This shifts the levers *c* and carries the detent bar *a* out of engagement with the notches *n* of the adjustable cam disks, leaving the latter free to be 20 shifted about the shaft *x*. The raising movement above mentioned simultaneously causes the setting bars *g* to interlock with the driving studs *h* of their respective cam disks *d'*, whereupon the said disks may be 25 rotated by sliding the proper bars *g* inwardly a predetermined degree, these in turn projecting the proper number of pins *s*. The rock shaft is now unclutched whereupon the rocker member will drop by gravity to 30 its original position bringing the arms *i* out of engagement with the rings *e* and permitting the crank shaft to be rotated in the customary manner, the studs *d* sliding on the periphery of the rings *e* and effectively preventing the displacement of the detent bar 35 *a* from the notches of the cam disks. In the lowered position of the arms *i* the upper extremity of the hook end spans the mouth of the adjacent notch *k*, enabling the pin or stud *d* to ride around the ring *e* without 40 interruption.

The return movement of the parts is effected by a special zero adjusting device, which does not need to be described, as it 45 does not form part of this invention.

I claim:

1. In a calculating machine of the class described, the combination with a crank shaft and a series of register actuators 50 thereon including relatively stationary members and coacting selector members adjustable with relation thereto to control the register actuation operation, of a plurality of setting members adapted to coact with the 55 selector members aforesaid, means for shifting the setting members into coacting relation to the selector members and simultaneously releasing the same for adjustment by the setting members, and locking means 60 normally holding the parts of the register actuators in the adjusted position to be operated by the shaft, said means being shiftable into inoperative position as an incident to the operation of the shifting means 65 for the setting members aforesaid, whereby

to permit of selective setting of the adjustable members.

2. In a calculating machine of the class described, the combination with a crank shaft and a series of register actuators 70 thereon including relatively stationary members and coacting selector members adjustable with relation thereto to control the register actuation operation, of a plurality of setting members adapted to coact with the 75 selector members aforesaid, means for shifting the setting members in coacting relation to the selector members from the crank shaft and simultaneously releasing the same for adjustment by the setting members, and 80 locking means normally holding the parts of the register actuators in the adjusted position to be operated by the shaft, said means being shiftable into inoperative position as an incident to the operation of the 85 shifting means for the setting members aforesaid, whereby to permit of selective setting of the adjustable members.

3. In a calculating machine of the class described, the combination with a crank 90 shaft and a series of register actuators thereon including a plurality of cam members, of means for selectively setting said cam members, locking means common to said cam 95 members and engaging therewith to hold them in their selected positions during operation of the actuators by the crank shaft, means for shifting said locking means out of engagement with the cam members to permit of adjustment of the latter by the setting 100 means aforesaid, and means for preventing operation of the last named means during operation of the crank shaft.

4. The combination with a crank shaft and a plurality of register actuators thereon including a series of adjustable cam members, 105 of setting members arranged contiguous to the cam members and mounted so as to be rocked into engagement therewith and shiftable to adjust said cam members relative 110 to the shaft, a locking detent extending transversely of the cam members for holding them in their adjusted positions, and means for swinging said detent into inoperative position incident to rocking the setting mem- 115 bers into engaging relations with the cam members, whereby to permit of independent adjustment of said cam members.

5. The combination with a crank shaft and a plurality of register actuators there- 120 on including a series of adjustable cam members, of setting members arranged contiguous to the cam members and mounted so as to be rocked into engagement therewith and shiftable to adjust said cam members rela- 125 tive to the shaft, a locking detent extending transversely of the cam members for holding them in their adjusted positions, means for swinging said detent into inoperative position incident to rocking the setting members 130

into engaging relation with the cam members, whereby to permit of independent adjustment of said cam members, and means for rendering the swinging means last mentioned inoperative during operation of the actuators in the register actuating operation.

6. In a calculating machine of the class described, the combination with a crank shaft, pin carrying disks thereon and coacting cam disks therefor movable relative to the pin carrying disks, of a detent bar extending transversely of the disks and normally engaging the same to hold the cam disks at adjusted positions, means carried by the cam disks for swingingly supporting the detent bar in coacting relation to the cam disks, lifting means engageable with the supporting means for said detent bar including a rocker member, a rock shaft for said rocker member, means adapted to interlock the crank shaft with the rock shaft and operable to rock the latter to thereby swing the detent bar out of engagement with the cam disks, and setting bars shiftably mounted upon the rocker member and engageable with the cam disks for adjusting the same when the detent bar is out of engagement with said cam disks.

7. In a calculating device of the class described, the combination with a crank shaft, a series of pin carrying disks thereupon and coacting cam disks therefor and adjustable with relation thereto, of a detent bar common to and normally engaging the cam

disks, levers swingingly supporting the detent bar having projections thereon, means with which said projections are engageable to prevent swinging of the detent bar with relation to the cam disks during registering operation of the machine, setting bars adapted to engage the cam disks to adjust the same, and means simultaneously operable to disengage the detent bar from the cam disks.

8. In a calculating machine of the class described, the combination of a crank shaft, a series of pin carrying disks thereon and cam disks therefor, of a detent bar common to said cam disks and normally engaging the same to hold them fixed with relation to the pin carrying disks, levers swingingly supporting the detent bar in coacting relation to the disks aforesaid, projections on said levers, means on the machine with which said projections engage to hold the detent bar in engagement with the cam disks during rotation of the crank shaft, a rocker member arranged beneath the cam disks and having lifting arms engaging the projections on the supporting levers for the detent bar, a rock shaft for raising said arms, and setting bars mounted on said rocker member and adapted to be shifted into engaging relation with respect to the cam disks, said disks being adjustable with respect to the pin carrying disks by said setting bars.

In testimony whereof I affix my signature.

WILHELM AUGUSTIN.