J. GRABER.

TRANSFER MECHANISM FOR CALCULATING MACHINES.

APPLICATION FILED OCT. 21, 1911.

1,023,839.

Patented Apr. 23, 1912.

Fig. 1.

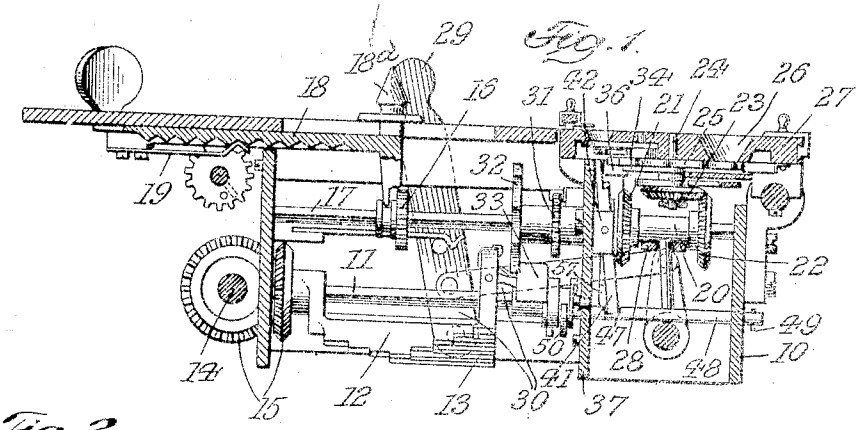


Fig. 2.

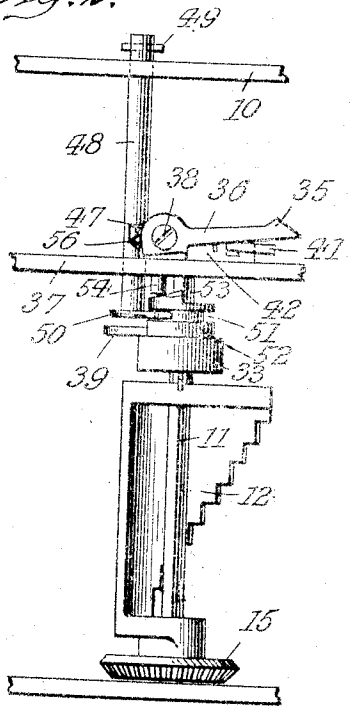


Fig. 3.

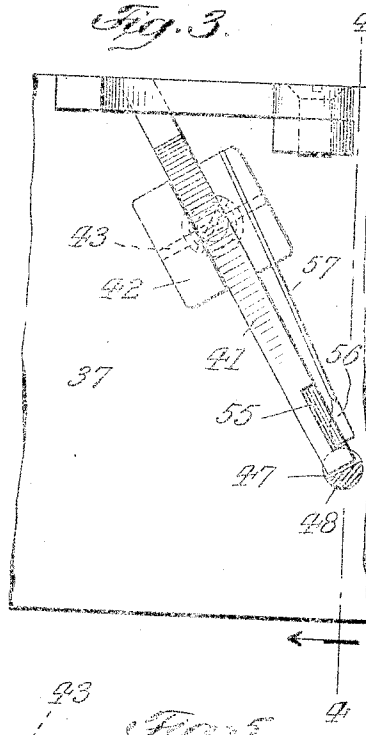


Fig. 4.

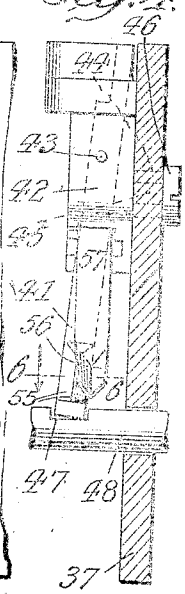


Fig. 5.

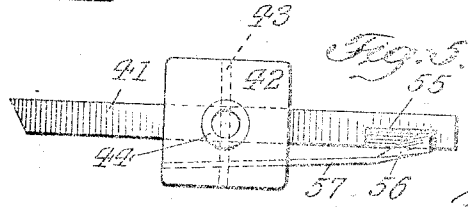
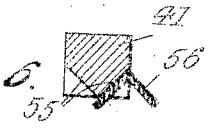


Fig. 6.



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TRANSFER MECHANISM FOR CALCULATING-MACHINES.

1,023,839. Specification of Letters Patent. Patented Apr. 23, 1912.

Application filed October 21, 1911. Serial No. 655,953.

To all whom it may concern:

Be it known that I, JULIUS GRABER, a citizen of the United States, residing at New York city, county and State of New York, have invented a new and Improved Transfer Mechanism for Calculating-Machines, of which the following is a specification.

This invention relates to a novel mechanism for shipping one of the gear members of a calculating machine such as described in Patent #972,360 granted to me June 30th, 1910, said gear member being designed to effect the carrying or borrowing of tens, hundreds, etc., as fully disclosed in said patent.

My new mechanism is of simplified construction and insures a positive maintenance of the gear member in the position to which it has been set.

In the accompanying drawing: Figure 1 is a cross section through part of a calculating machine, embodying my invention; Fig. 2 a plan of part of Fig. 1; Fig. 3 a rear view of the shipping mechanism proper; Fig. 4 a vertical section on line —4, Fig. 3; Fig. 5 a detail showing the shipping lever and bearing detached, and Fig. 6 a cross section on line 6—6, Fig. 4.

Within the casing 10 of the calculating machine described in my above cited patent, is mounted a plurality of squared shafts 11 carrying toothed sectors 12, each of which is provided with nine teeth 13 that gradually decrease in length, one of said shafts and sectors being shown in Fig. 1. Shafts 11 are rotated through spindle 14 and miter wheels 15, while they in turn transmit their movement to a pinion 16 which is slidably mounted on a squared shaft 17 and is adapted to be adjusted on the latter by a slide 18 operable through handle 18^a, a retaining spring 19 locking the slide in the position to which it has been set. Upon shaft 17 is slidably mounted a sleeve 20 carrying a pair of beveled gear wheels 21, 22, either one of which is adapted to engage a similar wheel 23. The latter is keyed to the spindle 24 of a registering dial 25 that displays its uppermost number through a window 26 of a carriage 27. Intermediate the collars of wheels 21, 22 is located a shipping bar 28 operated from a handle 29 through a lever and link connection 30, said handle being adapted to set the machine for addition and multiplication and for subtraction and division. Shaft 17 carries a relatively fixed toothed wheel 31 and a scalloped disk 32 which is adapted to be engaged by the solid section of a mutilated barrel 33 slidably and non-rotatably mounted upon shaft 11, said disk and barrel serving the purpose of locking dial 25 in position while it is inoperative, all of which has been fully brought out in my above cited patent. In the latter, it has also been described that when during the course of operation of a dial, its zero mark passes underneath window 26 thus indicating the completion of one rotation, the neighboring dial should be advanced or returned for one digit according to whether an addition or a subtraction is performed, so as to properly register such rotation. For this purpose, each spindle 24 is provided with a tappet 34 adapted to engage the nose 35 of a trigger 36 which is pivoted to a partition 37 of casing 10 as at 38. The movement of this trigger is transmitted to a finger 39 slidably mounted on squared shaft 11, which finger when shifted will engage toothed wheel 31 carried by the shaft 17 pertaining to the neighboring dial which is to mark the completion of one rotation of the dial coöperating with the trigger above referred to.

The novel means for transmitting the motion of trigger 36 to finger 39 constitute the substance of my present application and comprise a shipping lever 41 accommodated with a corresponding recess of a block 42 and turning on a pin 43 traversing the block-recess. Block 42 has a central tubular projection 44 which is fitted into a corresponding bore of partition 34, while a screw 45 tapped into said projection removably secures the block to the partition for which purpose the diameter of the screw head 46 should exceed that of projection 44. The upper arm of lever 41 is engaged by trigger 36 while its lower end is received within a corresponding transverse recess 47 of a rod or member 48 slidably received within corresponding perforations of casing 10 and partition 37 respectively. At its outer end, rod 48 is provided with a transverse pin 49 that limits the inward play of said rod while at its inner end, the rod carries a fork 50. The latter engages a corresponding groove 51 formed in the hub 52 of barrel 33, said hub also carrying the finger 39 hereinabove referred to. As thus far described, it will

be seen that when tappet 34 tilts trigger 36 toward partition 37, the lower arm of lever 41 will draw rod 48 outward, in which movement hub 52 and finger 39 will participate. In this way, the latter is brought into alinement with pinion 16, so that the finger during its rotation, will turn pinion 16 for one tooth, thereby causing the corresponding dial to be advanced or turned backward for one digit, as the case may be.

In order to return lever 41 and hub 52 to its original position after finger 39 has rotated and subsequently cleared pinion 16, said hub is provided with a helical cam 53 which, by engaging an abutment 54 of partition 37 will shift hub 52 away from said partition, thereby taking rod 48 along to correspondingly tilt lever 41 and trigger 36.

For preventing any accidental displacement of lever 41, it is provided near its lower end with a pair of bevels 55 forming a saddle that is engaged by the V-shaped end portion 56 of a spring 57 fitted into a corresponding slot of block 42. When lever 41 is oscillated, its saddle will pass underneath the V-shaped end of spring 57 to be retained in either position to which it has been set.

I claim:

1. In a device of the character described, a pinion, a finger adapted to engage the same, a slidable member operatively connected to said finger, a shipping lever engaging said member, a trigger actuating said lever, and a tappet adapted to engage said trigger.

2. In a device of the character described, a grooved hub, a finger carried thereby, a fork engaging the hub groove, a slidable member carrying said fork, a shipping lever engaging the slidable member, a trigger actuating said lever, and a tappet adapted to engage the trigger.

3. In a device of the character described, a recessed block, a pin traversing the block recess, a shipping lever accommodated within said recess and turning on the pin, said lever being provided with a saddle-shaped section, and a spring secured to the block and adapted to engage said saddle shaped section.

4. In a device of the character described, a recessed block, a pin traversing the block recess, a shipping lever accommodated within said recess and turning on the pin, said lever being provided with a saddle-shaped section, a spring secured to the block and adapted to engage said saddle shaped section, a notched slidable member engaged by the lever, a fork on said member, a grooved hub engaged by the fork, a finger on the hub, and a pinion adapted to be engaged by said finger.

5. In a device of the character described, a block having a recess and a slot, a lever fulcrumed to the block and accommodated within the recess, said lever having a saddle-shaped section, a spring fitted into the block-slot and having a V-shaped portion that engages the saddle-shaped lever-section, a trigger actuating said lever, a notched slidable rod engaged by the lever, a slidable hub operatively connected to said rod, a finger on said hub, a pinion adapted to be engaged by said finger, and a registering dial actuated by said pinion.

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