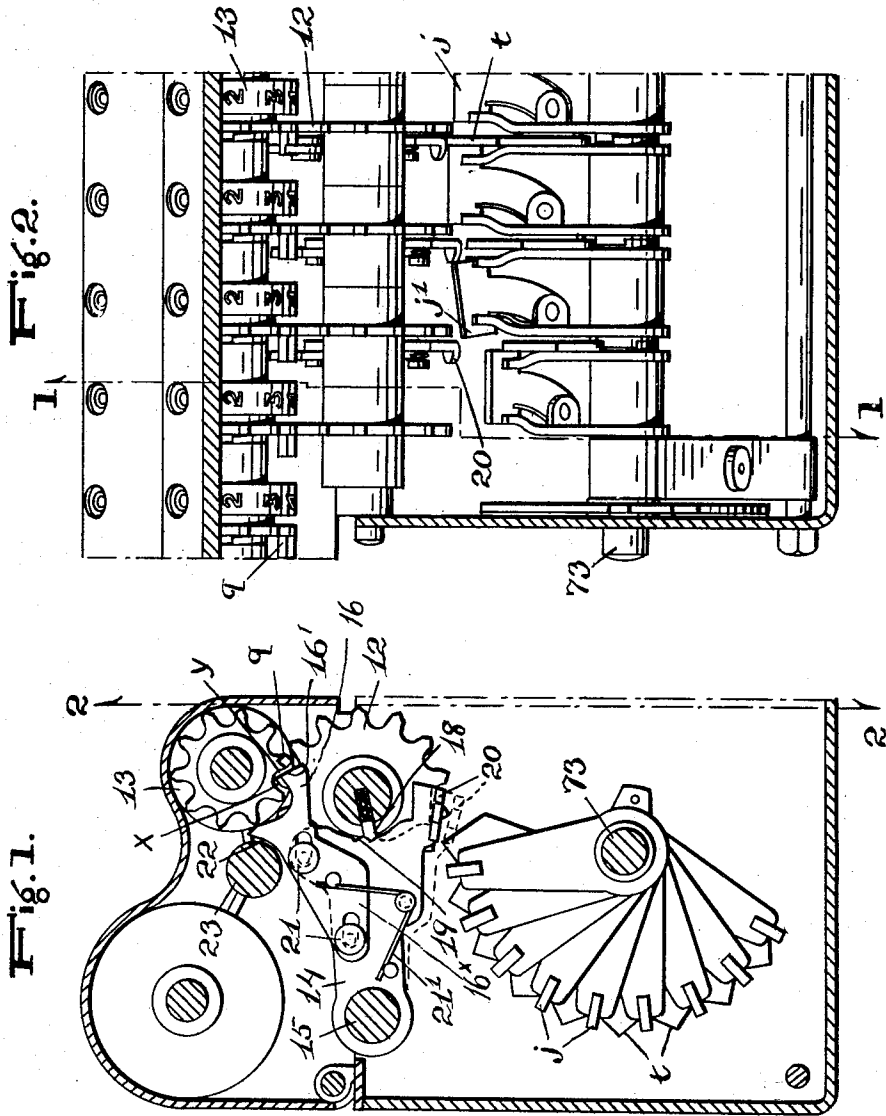


E. E. PHINNEY.  
 CARRYING MECHANISM FOR CALCULATING MACHINES.  
 APPLICATION FILED AUG. 3, 1914.

1,215,186.

Patented Feb. 6, 1917.  
 2 SHEETS—SHEET 1.



Witnesses

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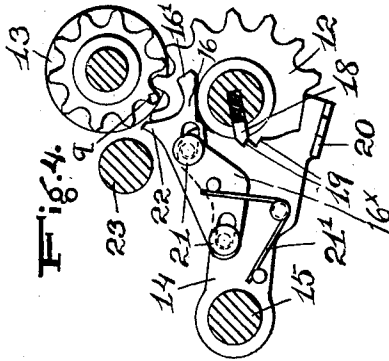


Fig. 4.

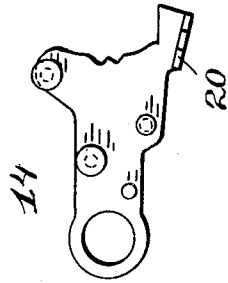


Fig. 6.

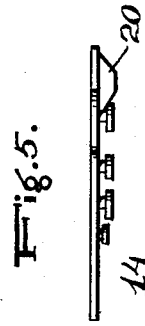


Fig. 5.

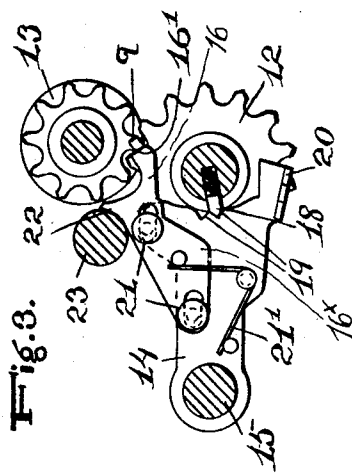


Fig. 8.

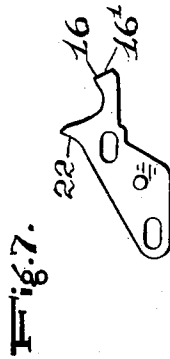


Fig. 7.

Witnesses

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# UNITED STATES PATENT OFFICE.

EDGAR E. PHINNEY, OF NEW YORK, N. Y., ASSIGNOR TO MONROE CALCULATING MACHINE COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

CARRYING MECHANISM FOR CALCULATING-MACHINES.

1,215,186.

Specification of Letters Patent.

Patented Feb. 6, 1917.

Application filed August 3, 1914. Serial No. 854,708.

*To all whom it may concern:*

Be it known that I, EDGAR E. PHINNEY, a citizen of the United States, resident of New York, in the county of New York and State of New York, have made a certain new and useful Invention in Carrying Mechanism for Calculating-Machines; and I declare the following to be a full, clear, and exact description of the same, such as will enable other skilled in the art to which it appertains to make and use the invention, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Figure 1 is a section on the line 1—1, Fig. 2, with the slide top of the pivoted arm in normal position.

Fig. 2 is a section on the line 2—2, Fig. 1. Fig. 3 is a detail side view of one of the pivoted arms and parts adjacent thereto, showing the slide top moved back slightly in the extra movement of the numeral wheel under momentum thereof.

Fig. 4 is a similar detail view showing the pivoted arm in depressed position.

Fig. 5 is a detail top plan view of one of the pivoted arms with the slide top thereof removed.

Fig. 6 is a detail side view of the same.

Fig. 7 is a detail side view of one of the slide tops.

The invention has relation to calculating machines, and particularly to the carrying mechanism thereof, having for its object certain improvements upon the machine of the patent to Baldwin of December 2, 1913, Number 1,080,245, to provide for easier working and more positive action.

The invention consists in the novel construction and combinations of parts, as hereinafter set forth.

In the accompanying drawings, illustrating the invention, the numeral 13 designates the numeral wheels of the registering mechanism, 12 the intermediate gears, 73 the shaft of the carrying mechanism and *j*, the pivoted dogs of the carrying mechanism. In place of the reciprocating or depressible plungers *p*, of the patent, pivoted members or arms 14 are provided between the gears 12, said members being mounted upon a longitudinal shaft 15 of the casing. Each pivoted arm has an upper cam extension 16, engaged by the tooth *q*, of the numeral wheel

corresponding thereto, to depress said member upon its pivot, a spring latch 18, mounted in the shaft of the intermediate gears and engaging teeth or notches 19 of said member, acting to releasably hold the member in raised or in depressed position.

In the registering operation of the machine, impulse will be transmitted through gears 12 to the gears of the numeral wheels 13, according to the numbers selected, by means of the devices described in Patent No. 1,080,245, hereinbefore referred to. As any one of these gears 13 passes from nine to zero or from zero to nine the lateral tooth extension *q* thereof is caused to engage with the upper cam extension 16 of the respective pivoted arm below the same, this arm being forced down upon its pivot to the lower limit of its movement, or until the spring latch engages with the upper notch 19, a lower cam lug 20 of the arm being thus depressed so that it will lie within the path of movement of the corresponding dog *j*.

The registering operation being complete, and the carrying shaft having rotated to initial active position, further rotation of said shaft will bring a dog *j* into contact with the cam lug 20 of any arm 14 depressed, said dog being thereby thrown so that the end *j'* of the dog will project in position to engage and turn the next intermediate gear 12 to the left thereof, and also the next numeral wheel 13, one tooth only, at the end of which time the pivoted arm will be raised to normal position by a cam *t*, upon the radial dog carrying arm, where it will be held by the spring latch. The lower cam lug is beveled oppositely at the ends thereof, so that it will throw the dog in either direction of rotation.

It is preferred, for reasons hereinafter set forth, that the upper part of each carrying arm, upon which is the cam extension 16, shall be separate from the arm proper, being arranged as a slide top 16' for the arm, with which it has pin and slot connection 21, the slide top being provided in rear with a cam surface 22, which, as the slide is first forced back in the engagement of the cam extension thereof with the tooth *q*, of the gear, will have contact with a bar 23 of the carriage casing, to force the carrying arm down. A return spring 21' is provided for the slide top. In this way, when the slide is moved back a fraction of an inch to en-

gage said shaft, the tooth  $q$ , will have contact with the beveled surface 16' of the cam extension 16, to force the carrying arm down, and the cam surface 22, in rear of the slide, will have contact with the bar 23 to insure the downward movement.

When the machine is operated at high speed, the numeral wheels 13 are liable, through momentum, to take a slight extra movement in excess of the gear movement imparted, and, should this take place in a wheel about to pass from nine to zero or from zero to nine, there is danger that its tooth  $q$  will strike the cam extension 16 of the carrying arm 14 with sufficient force to throw said arm into lowered position, thus carrying a number improperly to the next wheel to the left.

In order to obviate this difficulty, the carrying arm 14 is so placed that the lateral tooth  $q$ , in the position assumed by this tooth when the wheels 13 indicate the number nine, is spaced apart from the cam extension 16 by a distance  $x$ , sufficient to allow for the movement referred to, when the wheels 13 are turned at high speed in a direction from nine to 0. When turning in the reverse direction, however, the distance  $y$ , between the cam extension and the tooth  $q$ , in the position assumed by this tooth when the wheels 13 indicate 0, is less than the distance  $x$ , and insufficient to allow for the movement, which will now be taken up by the slide top.

But when it is necessary that the carrying arm shall be operated by a numeral wheel in passing from zero to nine after the slide top has been moved to the extent permitted, the relation of the tooth  $q$ , and the cam extension 16 as shown in Fig. 3 will be such that some additional means are desirable to depress or insure the depression of the carrying arm, and it is for this reason that the cam surface 22 of the slide has engagement with the bar 23.

What I claim is:—

1. In a calculating machine, a carriage having a series of numeral wheels, a series of gear wheels in operating engagement with said numeral wheels, and carrying mechanism comprising a rotary shaft having carrying members, and depressible pivoted carrying arms operated by said numeral wheels and having engagement with said members, and means for allowing extra movement of the numeral wheels when suddenly checked, without depression of said arms.

2. In a calculating machine, a carriage having a series of numeral wheels, a series of gear wheels in operating engagement with said numeral wheels, and carrying mechanism comprising a rotary shaft having carrying members, depressible pivoted carrying arms having each a slide engaging

said numeral wheels to depress said arms for engagement with said members without operation of the slide upon movement of the numeral wheels in one direction, and means cooperating with the slide to depress said arms upon movement of the numeral wheels in the opposite direction.

3. In a calculating machine, a carriage having a series of numeral wheels, a series of gear wheels in operating engagement with said numeral wheels, and carrying mechanism comprising a rotary shaft having carrying members, depressible pivoted carrying arms having each a slide top engaging said numeral wheels to depress said arms for engagement with said members without operation of the slide upon movement of the numeral wheels in one direction, and a bar cooperating with the slide top to depress said arms upon movement of the numeral wheels in the opposite direction.

4. In a calculating machine, a carriage having a series of numeral wheels, a series of gear wheels in operating engagement with said numeral wheels, and carrying mechanism comprising a rotary shaft having carrying members, depressible pivoted carrying arms having each a slide provided with an extension engaging a lateral tooth of the respective numeral wheel to depress the arms for engagement with said members without operation of the slide upon movement of the numeral wheels in one direction, and a bar cooperating with the slide to depress said arms upon movement of the numeral wheels in the opposite direction, said carrying arms allowing extra movement of the numeral wheels when suddenly checked, without depression of said arms.

5. In a calculating machine, a carriage, a series of numeral wheels thereupon, a series of gear wheels in operating engagement with said numeral wheels, carrying mechanism comprising a rotary shaft having carrying members, and depressible carrying devices operated by said numeral wheels and having engagement with said members, and means for allowing extra movement of the numeral wheels when suddenly checked, without depression of said devices.

6. In a calculating machine, a carriage, a series of numeral wheels thereupon, a series of gear wheels in operating engagement with said numeral wheels, carrying mechanism comprising a rotary shaft having pivoted carrying dogs, and depressible pivoted carrying arms operated by said numeral wheels and having engagement with said dogs, and means for allowing extra movement of the numeral wheels when suddenly checked, without depression of said arms.

7. In a calculating machine, a carriage having a series of numeral wheels, a series of gear wheels in operating engagement

with said numeral wheels, carrying mechanism comprising a rotary shaft having carrying members, depressible carrying devices, means to depress said devices for engagement with said members upon movement of the numeral wheels in one direction, and cooperating means for depressing said devices upon movement of the numeral wheels in the opposite direction.

8. In a calculating machine, a carriage having a series of numeral wheels, a series of gear wheels in operating engagement with said numeral wheels, carrying mechanism comprising a rotary shaft having pivoted carrying dogs, depressible pivoted carrying arms, means to depress said arms for engagement with said dogs upon movement of the numeral wheels in one direction, and cooperating means for depressing said arms upon movement of the numeral wheels in the opposite direction.

9. In a calculating machine, a carriage, a series of numeral wheels thereupon, a series of gear wheels in operating engagement with said numeral wheels, carrying mechanism comprising a rotary shaft having carrying members, depressible carrying devices, means to depress said devices for engagement with said members upon movement of the numeral wheels in one direction, cooperating means for depressing said devices upon movement of the numeral wheels in the opposite direction, and means for allowing extra movement of the numeral wheels when

suddenly checked without depression of said devices.

10. In a calculating machine, a carriage, a series of numeral wheels, thereupon, a series of gear wheels in operating engagement with said numeral wheels, carrying mechanism comprising a rotary shaft having pivoted carrying dogs, depressible pivoted carrying arms, means to depress said arms for engagement with said dogs upon movement of the numeral wheels in one direction, cooperating means for depressing said arms upon movement of the numeral wheels in the opposite direction, and means for allowing extra movement of the numeral wheels when suddenly checked, without depression of said arms.

11. In a calculating machine, a series of numeral wheels, registering mechanism in connection therewith, carrying mechanism including depressible carrying devices operated by said numeral wheels in passing from nine registering position to zero registering position or from zero registering position to nine registering position, and means for effecting said operation during the last half of either such movement.

In testimony whereof I affix my signature, in presence of two witnesses.

EDGAR E. PHINNEY.

Witnesses:

CHAS. M. CLOSE,  
IRVING COYNE.