

March 7, 1939.

H. E. ENDERS

2,149,338

CALCULATING MACHINE

Filed March 26, 1938

Fig. 1

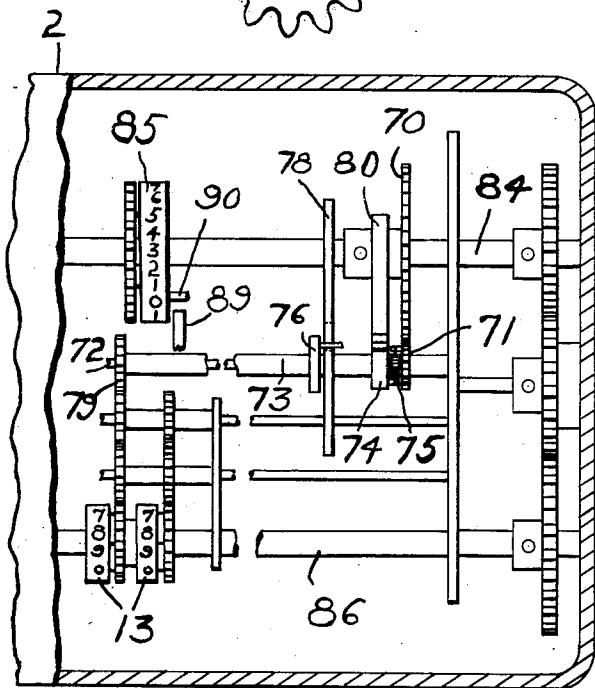
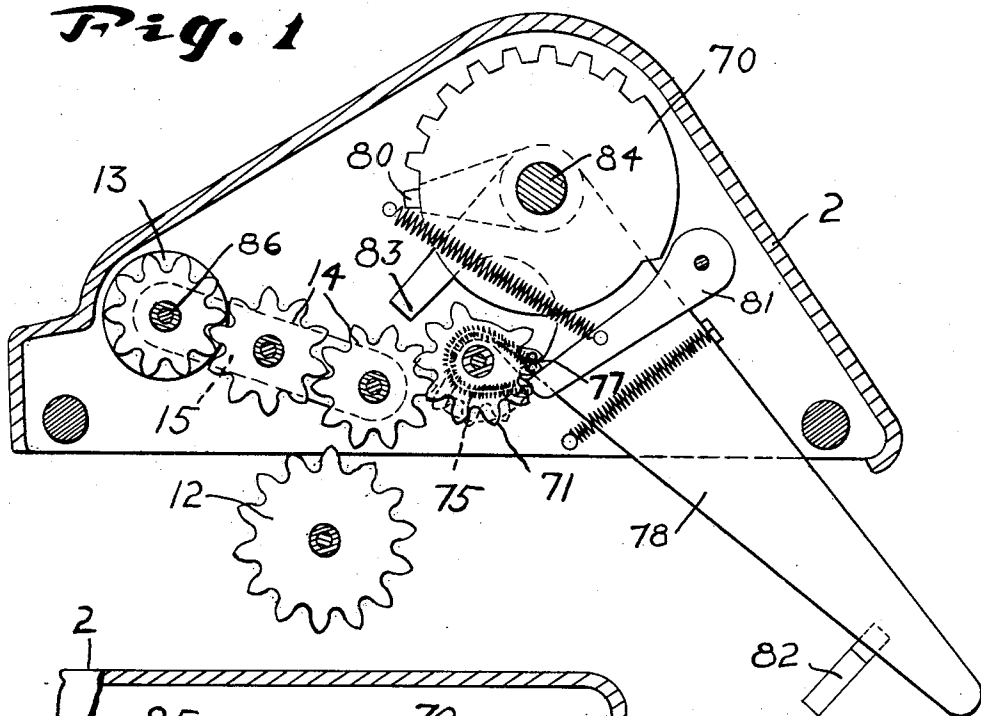


Fig. 2

Fig. 3

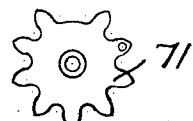


Fig. 4



Fig. 5



INVENTOR
Hugo E. Enders
BY
Stuart Wilder ATTORNEY

UNITED STATES PATENT OFFICE

2,149,338

CALCULATING MACHINE

Hugo E. Enders, Belleville, N. J., assignor to Monroe Calculating Machine Company, Orange, N. J., a corporation of Delaware

Application March 26, 1938, Serial No. 198,221

1 Claim. (Cl. 235-79)

The invention has relation to calculating machines and more particularly to means for registering decimal products in accordance with the nearest full cent value.

The invention consists in the novel construction and combination of parts, as set forth in the appended claim.

In the accompanying drawing, illustrating the invention:

Fig. 1 is a vertical section taken through the register carriage of a calculating machine equipped with the present invention.

Fig. 2 is a fragmentary plan view of the carriage, with parts broken away.

Fig. 3 is a detail face view of the mutilated gear.

Fig. 4 is a similar view of the stop arm and five toothed gear.

Fig. 5 is a similar view of the shouldered plate.

The invention is intended primarily for use in calculating machines constructed in accordance with the disclosure of U. S. Patent No. 1,964,211, issued to Austin A. Overbury on June 26, 1934, and shows means whereby a full cent mechanism such as that shown in U. S. Patent No. 1,860,490, issued to Edwin F. Britten, Jr., on May 31, 1932, may be employed in a multiplying machine of the character shown in the first named patent, without loss of registering capacity in the machine. Full cent registration is commonly provided for by setting the "mills" dial of the product register five steps ahead so that if this dial receives a registration of five or more during the calculating operation the usual tens carry mechanism will operate to register 1 on the "cents" dial.

Referring to the drawing, numeral 2 represents the transversely shiftable register carriage of a calculating machine, in which are mounted shafts 84, 86 supporting a series of multiplier dials 85 and a series of product dials 13, respectively. Products to be registered in the dials 13 are entered therein through intermediate gears 12, mounted in the base of the machine and driven by the differential actuators of the calculating machine, these gears meshing with a train of intermediate gears 14 mounted in a rocking frame 15 supported upon a product dial shaft 86.

When the carriage 2 is to be shifted, or when either set of dials is to be cleared to zero registering position, train 15 is rocked into the position illustrated in Fig. 1, in which the gears 14 will be out of mesh with the gears 12, and will

be in position to be set for full cent registration as hereinafter described.

According to the present invention a spring operated five toothed segment is employed to register 5 on the mills wheel of the product register, the parts being put under spring tension when the multiplier dials 85 are cleared to zero registering position, and the segment released and allowed to register when the carriage 2 comes into a given transversely shifted position.

The multiplier dials 85 are cleared by means of a hand crank on the end of the carriage, having gearing connection with a shaft 84, so that rotation of the crank will rotate shaft 84 and the dials 85 frictionally carried thereon, until pins 90 15 of the dials engage stops 89 which have been swung into their paths of movement. This rotation of shaft 84 serves to tension the full cent means as follows:

A mutilated gear 70, fast upon shaft 84, is capable of meshing with a mutilated gear 71, loosely mounted on a supporting shaft 72. Shaft 72 also supports a sleeve 73, provided at one end with a shouldered plate 74. Stud on gear 71 and plate 74 are engaged by the two ends of a spring 75, which thus serves to couple these two parts yieldably together. Sleeve 73 is also provided with an arm 76, having a stud mounted therein, and adapted to cooperate with the shoulder 77 of a latch 78, loosely mounted on shaft 84. Sleeve 73 is also provided with a five toothed segment 79, adapted to mesh with the gear 14 of the mills dial when the parts are in the position illustrated in Fig. 1. Fast on shaft 84 is a toothed arm 80, adapted during the rotation of said shaft to engage the shoulder of plate 74 and to rotate sleeve 73 and gear 71, to bring one of the teeth of said gear into meshing position with the teeth of gear 70.

Continued rotation of shaft 84 will now further rotate gear 71 and sleeve 73, until the stud of arm 76 engages shoulder 77 of latch 78, whereupon rotation of sleeve 73 will be stopped and, gear 71 continuing to rotate, spring 75 will be tensioned. A back stop pawl 81 acts on the teeth of gear 71 to hold the spring under tension. The non-toothed portion of gear 71 now being opposite gear 70, the former gear will remain as set until the even cent operation has been completed, since plate 74 has now been rotated out of the path of movement of the tooth of arm 80.

As the register carriage is moved into a given position (for instance into the second or third place to the right of its extreme left hand shifted position), the depending end of latch 78 will

strike a cam projection 82 mounted in the stationary frame of the machine, and shoulder 77 will be rocked away from the stud of arm 76. Thereupon spring 75 will rotate sleeve 73 and the five toothed segment 79 will act, through gears 14, to register 5 on the mills dial. Preferably, this rotation of sleeve 73 will be stopped by engagement of the stud of arm 76 with a stop extension 83 of latch 78. As soon as the carriage 10 2 is moved to the right, latch 78 will be rocked by a suitable spring into its original position, and a stud of arm 76 will escape from extension 83, bringing the parts back to their original position.

In applying this invention to the machine disclosed in Patent 1, 964,211, hereinbefore referred to, the sequence of operations will be as follows:

The multiplier is registered on a certain number of the dials 13 at the extreme right hand of the series, and the carriage is shifted to the right, carrying these dials out of register with the keyboard mechanism. The multiplier dials 85 are now cleared to zero registering position, tensioning the full cent spring 75 as above noted. The multiplicand, set on the keyboard, is now added 25 into the dials 13 repeatedly, and the left hand dial 13 showing the multiplier is moved step by step back to zero registering position by a counting finger, whereupon the carriage is shifted one step to the left and the process repeated with the next 30 figure of the multiplier. When the carriage is shifted out of its units of cents registering position, in order to register the final decimals of the product, latch 78 will strike cam projection 82, and 5 will be set in the mills dial as above set forth. 35 It is to be noted that the five toothed gear 79

may be located opposite any dial 13 in which it is desired to register the mills. According to the method of multiplication above described, it will be evident that certain of the dials 13 may first be used to register a multiplier, and that these 5 same dials may later during the multiplying operation, be used to register a product. The present full cent means allows for this by delaying the registering of 5 in the mills dial until the carriage is so far shifted toward the left that the multiplier has been cleared therefrom. It may 10 also be noted that in case a constant multiplier is desired, such a constant may be set in the dials, according to the disclosure of U. S. Patent No. 1,995,434, issued to Austin A. Overbury on March 15 26, 1935, there being nothing in the present mechanism to interfere with the locating of the dials 13 either at zero or according to a constant by means of their clearing mechanism.

I claim:

20 In a calculating machine; the combination with a transversely shiftable carriage, a set of product dials mounted thereon, a set of multiplier dials, and means for clearing said multiplier dials to zero registering position; of means for automati- 25 cally setting a value in one of said product dials, including a gear segment, an operating spring therefor, a latch adapted to hold said segment against the tension of its spring, means operable by the multiplier dial clearing means to tension 30 said segment spring, and a fixedly mounted projection engageable by said latch during the shifting of said carriage, to release the segment.

HUGO E. ENDERS. 35