

(No Model.)

2 Sheets—Sheet 1.

F. WENDT.
ADDING MACHINE.

No. 563,435.

Patented July 7, 1896.

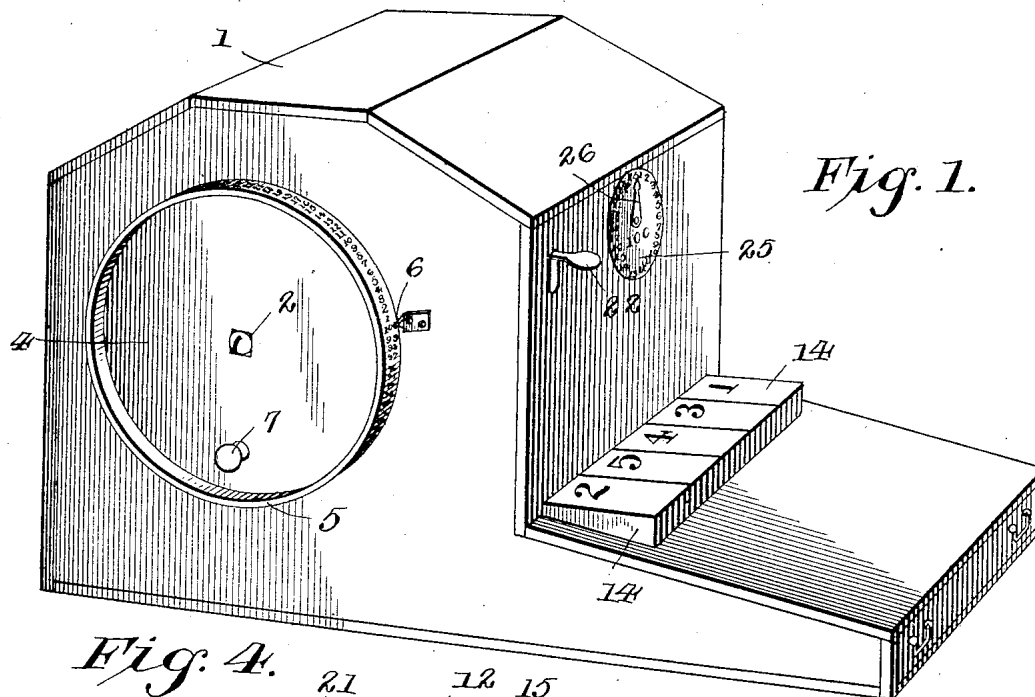


Fig. 1.

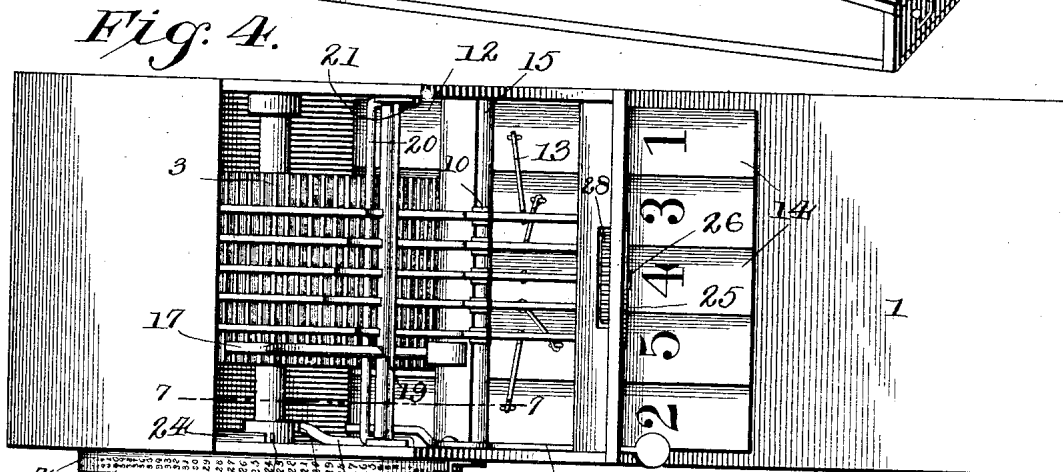


Fig. 4.

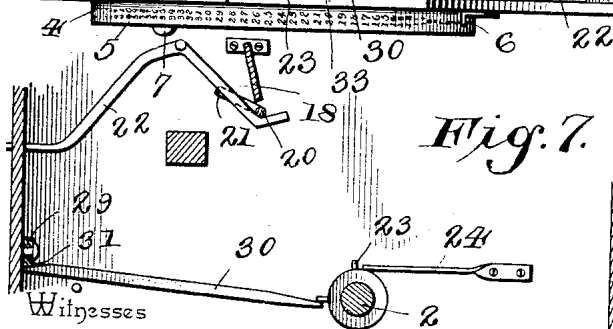


Fig. 7.

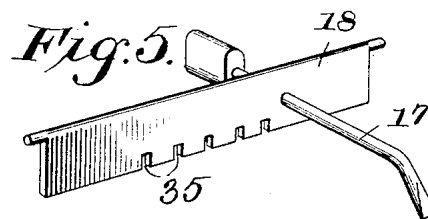


Fig. 5.

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2 Sheets—Sheet 2.

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Fig. 6.

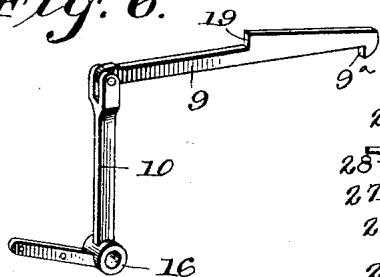


Fig. 2.

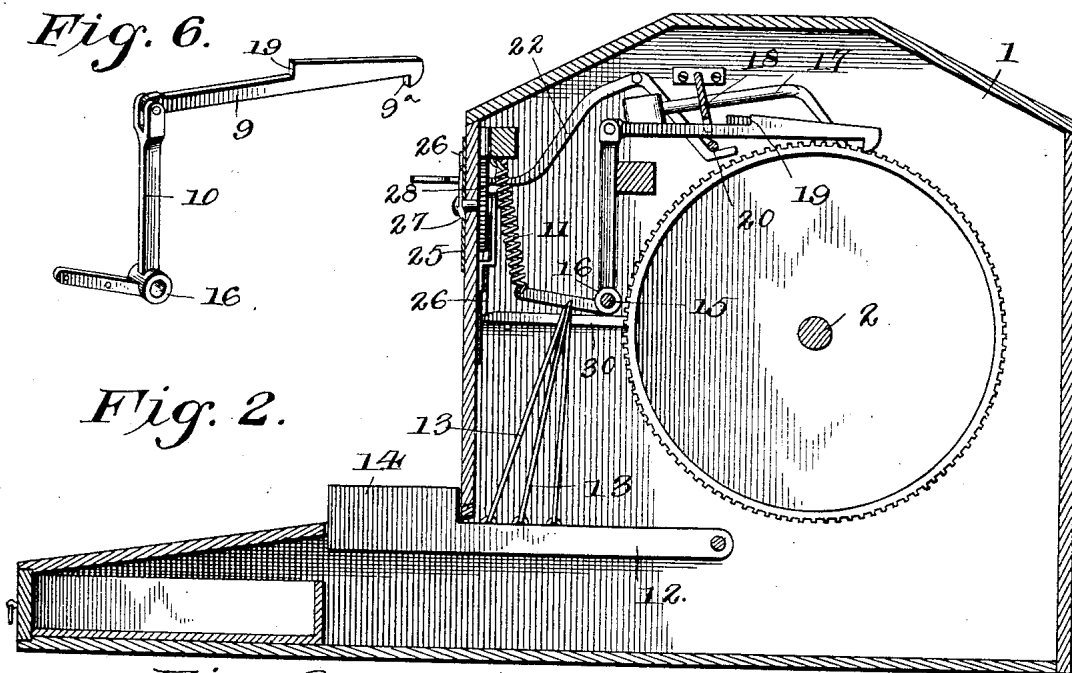


Fig. 3.

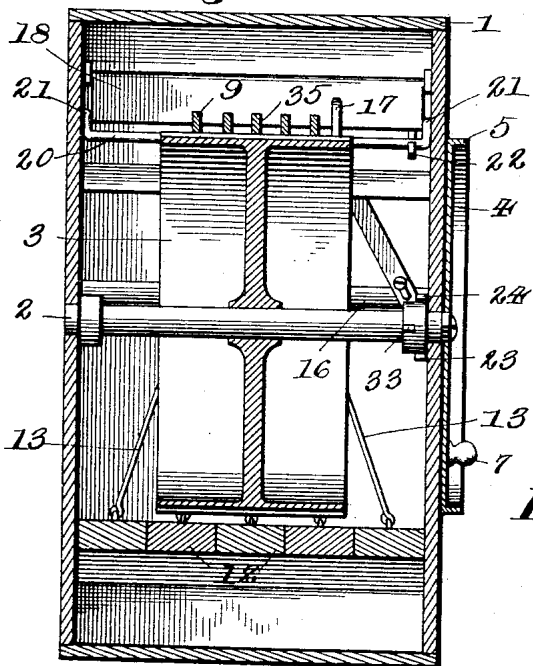


Fig. 8.

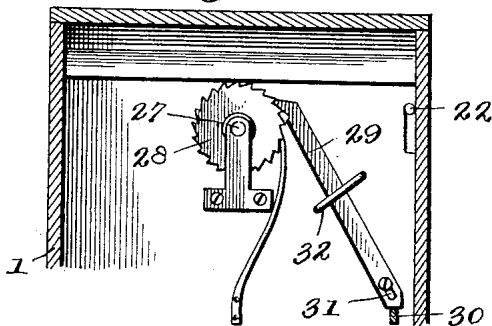
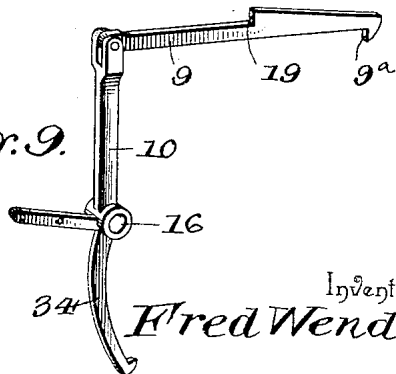


Fig. 9.



Witnesses

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UNITED STATES PATENT OFFICE.

FRED WENDT, OF MARSHFIELD, WISCONSIN, ASSIGNOR TO MATHIAS NICK
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ADDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 563,435, dated July 7, 1896.

Application filed December 31, 1895. Serial No. 573,917. (No model.)

To all whom it may concern:

Be it known that I, FRED WENDT, a citizen of the United States, residing at Marshfield, in the county of Woods and State of Wisconsin, have invented a new and useful Calculating or Adding Machine, of which the following is a specification.

My invention relates to calculating or adding machines, and has for its object to provide a simple, inexpensive, and efficient construction and arrangement of parts whereby numerals may be added in rapid succession through the proper manipulation of keys provided for the purpose, the sums not exceeding one hundred being indicated upon a units-dial, while the sums exceeding one hundred are indicated upon a hundreds-dial, which is actuated by means connected with the units-dial to register the hundreds successively as they are indicated upon the units-dial.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a perspective view of an adding-machine constructed in accordance with my invention. Fig. 2 is a longitudinal central section of the same. Fig. 3 is a transverse section in the plane of the axis of the units-dial. Fig. 4 is a plan view of the operating mechanism, the casing being shown with the top removed. Fig. 5 is a detail view in perspective of the stop-pawl and the rock-shaft, by which it is carried. Fig. 6 is a detail view in perspective of one of the operating-pawls. Fig. 7 is a partial vertical section on the plane indicated by the line 7 7 of Fig. 4. Fig. 8 is a detail view of the means for communicating motion from the rocking lever to the spindle of the pointer which traverses the hundreds-dial. Fig. 9 is a detail view of a slightly-modified form of bell-crank lever.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

1 designates a case within which is mounted the horizontal transverse main shaft 2, carrying a spur-gear 3, having a broad trans-

versely ribbed or toothed operating-face. Upon one extremity of this main shaft and contiguous to the outer surface of one side of the case is a units-dial 4, preferably provided with an upstanding flange 5, which is graduated from "1" to "100," and which operates contiguous to a stationary pointer 6, secured to the side of the case. This dial is preferably provided with a knob or handle 7, whereby the main shaft and gear may be turned with the units-dial to its initial position.

A step-by-step motion is communicated to the gear by means of operating-pawls 9, pivotally connected to the upright arms of the bell-crank levers 10, the forwardly-extending arms of said levers being attached to the extremities of return-springs 11, whereby when released the operating-pawls are returned to their normal or initial positions. The teeth on the gear are preferably abrupt or parallel sided, and in order to provide for the operating-pawls slipping loosely over the teeth during their backward or return movement the detents 9^a of said pawls are beveled at their rear sides. Motion may be communicated to either of the bell-crank levers by means of key-levers 12, which are pivoted within the case preferably below the plane of the main shaft, and are connected to the forwardly-extending arms of the bell-crank levers by means of draw wires or rods 13, the keys 14 at the front ends of said key-levers being exposed at the front of the case within reach of the operator. The keys are inscribed with numerals to indicate the number of steps which the units-dial will be advanced in consequence of the operation of said keys, respectively, and in the drawings I have illustrated a series of five keys inscribed consecutively from "1" to "5." The gear which the operating-pawls engage may be and preferably is provided with a number of teeth or ribs corresponding with the number of units inscribed upon the units-dial, and hence in the construction illustrated said gear is provided with one hundred ribs or teeth. The bell-crank levers are preferably mounted upon a common fixed spindle 15, and are provided with hubs 16 to fit upon said spindle.

In order to limit the movement of the operating-gear to the number of spaces corresponding with the denomination of the key operated, I employ stop mechanism, including
 5 a stop-pawl 17, arranged at its nose in operative relation with the ribs or teeth of the operating-gear, and preferably weighted at the other end to normally hold the nose of the pawl out of engagement with said ribs
 10 or teeth, and a rock-shaft by which said pawl is carried, the rock-shaft being mounted at its extremities in suitable bearings on the side walls of the case. This rock-shaft is provided with a depending web or wing 18,
 15 arranged in the path of shoulders or projections 19, carried, respectively, by the operating-pawls. As the keys are successively operated and the operating-pawls are advanced to communicate motion to the operating-gear,
 20 said shoulders or projections on the operating-pawls strike the web or wing of the rock-shaft and thus throw the stop-pawl down into operative relation with the ribs or teeth of the gear. As the stop-pawl reaches the operative position it checks the movement of the gear, and by arranging the shoulders or projections at different distances from the plane of the web or wing of the rock-shaft the stop-pawl will be operated at different
 25 points in the throw of the operating-pawls to suit the denomination of the key depressed.

In order to disengage the operating-pawls simultaneously from the gear to provide for returning the mechanism to its initial position,
 35 I employ a trip-rod 20, having eccentric trunnions 21, mounted in bearings in the side walls of the case, said trip-rod extending transversely under the operating-pawls, and a trip-lever 22, projecting at its front end beyond
 40 the front of the case and arranged at its rear end in operative relation with the trip-rod, as shown in Figs. 4 and 7.

In order to stop the backward rotation of the gear when it reaches the initial point of the mechanism, or when the fixed pointer indicates the terminal numeral on the hundreds-dial, I employ a stud 23 on the main shaft, which coöperates with a dog 24, said stud passing freely under the dog during the forward rotation of the shaft, but coming in contact with the extremity of the dog when the shaft is rotated backwardly, to limit said rotation.

Arranged, preferably, upon the front of the case in an exposed position is a hundreds-dial 25, traversed by a pointer 26, which is carried by a spindle 27. Affixed to this spindle within the case is a gear 28, with which coöperates a sliding feed-pawl 29, arranged
 55 at one end in the path of one end of the rocking lever 30. In the construction illustrated, this feed-pawl is slotted at one end, as shown at 31, to form a loose or sliding pivot, and a limiting-keeper 32 is arranged at an intermediate point to limit the oscillatory movement of the pawl. The rocking lever receives motion by means of a pin 33 on the main

shaft, and said lever is actuated once for each complete revolution of the operating-gear. The movement imparted to the rocking lever at the end of each complete revolution of the operating-gear causes through the feed-pawl a motion of the pointer from one numeral to the next in the hundreds-dial.

In Fig. 9 I have shown a slightly-modified form of stop device for limiting the forward movement of the rotary member or operating-gear, the same consisting of a tooth or detent 34, carried by the bell-crank lever. This form of stop device is of special importance in connection with those operating-pawls which are of high denomination, inasmuch as it is positive in its action and is not affected by the extent or amplitude of vibration of the operating-pawl. Furthermore,
 85 in order to prevent lateral vibration of the operating-pawls I preferably provide the lower or free edge of the web or wing of the rock-shaft with a series of notches 35, in which fit the shanks of said operating-pawls.

It will be understood that in practice various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having described my invention, what I claim is—

1. In a calculating-machine, the combination of a gear, indicating devices coöperatively connected with said gear, reciprocatory operating-pawls normally arranged in operative relation with the gear, a stop-pawl normally held out of engagement with the gear, a rock-shaft connected to the stop-pawl and having a web or wing arranged transversely in the path of projections on the operating-pawls and adapted to be engaged thereby to move the stop-pawl into engagement with the gear, and means for communicating motion to the operating-pawls, substantially as specified.

2. In a calculating-machine, the combination of a gear, indicating devices operatively connected with said gear, reciprocatory operating-pawls normally held by gravity in operative relation with the teeth at the upper side of the gear, a stop-pawl normally held by gravity out of engagement with the gear, a rock-shaft carrying the stop-pawl and having a web or wing arranged in the path of projections on the operating-pawls, and means for communicating motion to the operating-pawls, substantially as specified.

3. In a calculating-machine, the combination with a gear and indicating devices operatively connected with said gear, of operating-pawls provided with shoulders or projections, a rock-shaft having a web or wing arranged in the path of said shoulders or projections, a stop-pawl carried by the rock-shaft and normally held out of engagement with the teeth of the gear, the web or wing being provided with notches in which operate the shanks of

the operating-pawls, and means for communicating motion to the operating-pawls, substantially as specified.

5 4. In a calculating-machine, the combination with a gear and indicating devices operatively connected with said gear, of operating-pawls, means actuated by the operating-pawls for limiting the rotary movement of the gear and means for communicating motion to
10 the operating-pawls, a trip-rod extending transversely under the operating-pawls and having eccentric trunnions, and a trip-lever arranged in operative relation with the trip-rod, substantially as specified.

15 5. In a calculating-machine, the combination with a rotary member and means for com-

municating a step-by-step movement thereto, of a pointer arranged to traverse an indicating-dial, a feed-pawl arranged in operative relation with a gear fixed to the spindle of
20 said pointer, and a rocking lever arranged at one end in position to impart motion to the feed-pawl and at the other end in the path of a stud on said rotary member, substantially as specified.

25 In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

FRED WENDT.

Witnesses:

MILO WOODBURY,
ANTON WOONGARD.