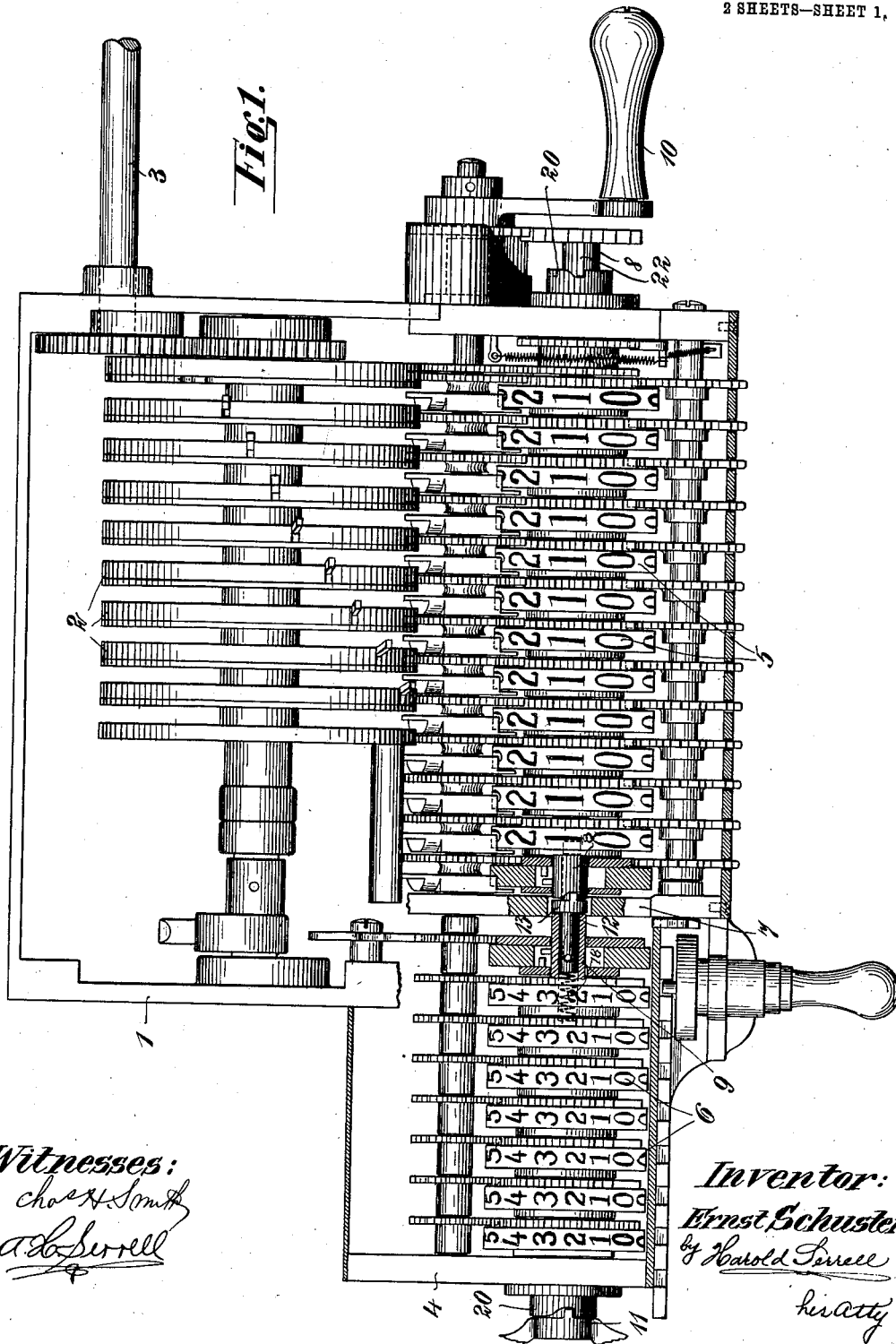


E. SCHUSTER.
 CALCULATING MACHINE.
 APPLICATION FILED JAN. 3, 1908.

901,748.

Patented Oct. 20, 1908.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

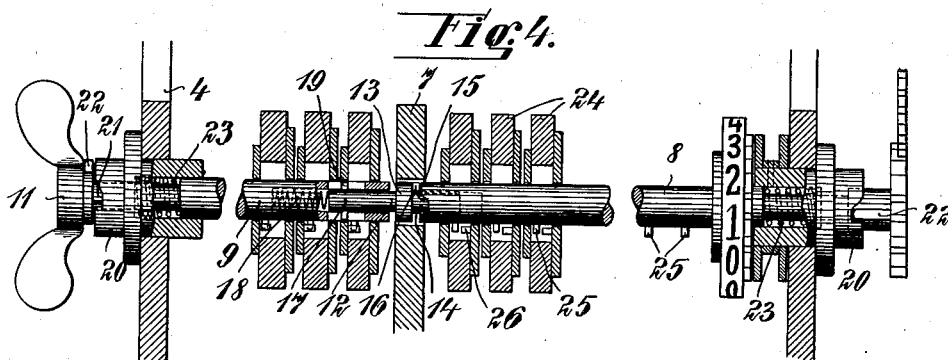
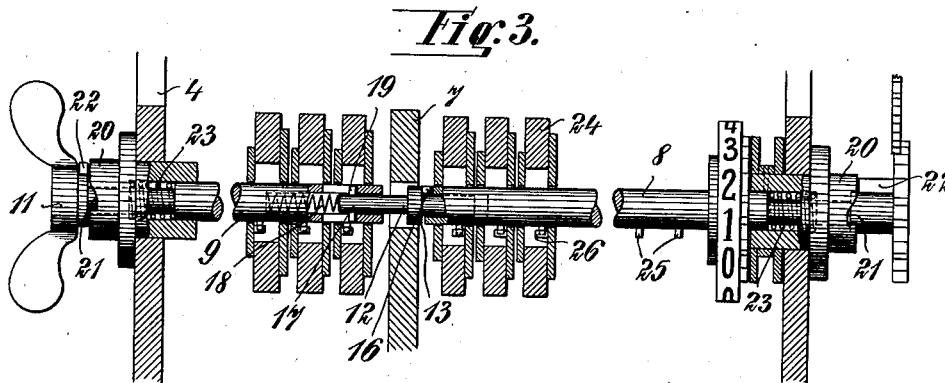
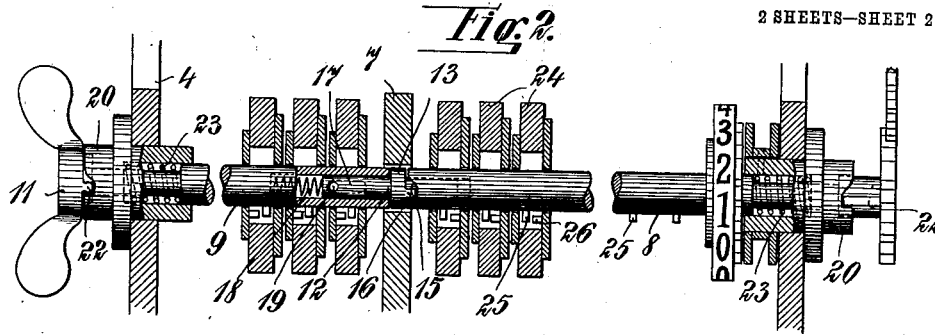
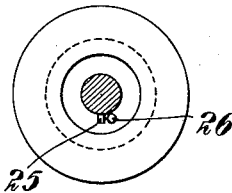


Fig. 5.



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UNITED STATES PATENT OFFICE.

ERNST SCHUSTER, OF BERLIN, GERMANY.

CALCULATING-MACHINE.

No. 901,748.

Specification of Letters Patent.

Patented Oct. 20, 1908.

Application filed January 3, 1908. Serial No. 409,188.

To all whom it may concern:

Be it known that I, ERNST SCHUSTER, a citizen of the Kingdom of Prussia, and resident of Berlin, Germany, (whose post-office address is Friedrichstrasse 39,) have invented certain new and useful Improvements in Calculating-Machines, of which the following is a specification.

This invention relates to that type of calculating machines in which a plurality of indicating and counting mechanisms are employed; the particular class of calculating machine to which the invention relates being disclosed in Letters Patent #514,725, granted February 13, 1894, to Odhner and Letters Patent #772,935, granted October 25, 1904, to Hamann, in which and heretofore so far as I am aware, it has been customary to construct these calculating machines in such a manner that the indicating mechanisms and counting mechanisms are turned to their zero positions independently of one another; the object of my present invention being the provision of a calculating machine so constructed that the indicating mechanisms and counting mechanisms may be turned to their zero positions simultaneously and together and dependently the one on the other, or independently of one another at the pleasure of the operator.

In the example represented in the drawing:—Figure 1 is a plan showing the general arrangement of the machine, the cover being removed and some parts being shown in horizontal section: Fig. 2 is a plan partly in section showing the two shafts in their normal position, whereas Fig. 3 is a similar view of the shafts after they have been rotated, both mechanisms having been influenced; Fig. 4 is also a plan partly in section showing the shafts after they have been rotated, only the left-hand mechanism having been influenced, whereas the right-hand has remained in its normal position; Fig. 5 is a section with a side elevation of a figure-wheel.

The adjusting mechanism 2 which can be rotated by the crank 3 is mounted in known manner in the case 1. In the carriage 4, which is movable laterally in the case 1, there is situated the indicating mechanism 5 as well as the counting mechanism 6. Between these two mechanisms there is arranged a partition 7. Whereas hitherto the shaft 8 of the indicating mechanism 5 and the shaft 9 of the counting mechanism 6

were journaled independently of one another in the partition 7, and each had to be reset to zero by itself by the crank-handle 10 or the thumb-screw 11, according to the new construction in accordance with the present invention the partition 7 is perforated. The ends of the shafts 8 and 9 directed towards one another have holes made in them and plugs of a piece 12 situated between the shafts extend into these holes. The center part 13 of the piece 12 is as large as the shafts 8 and 9. The shaft 8 is provided at its end with a cam-notch, one edge 14 of which is parallel to the direction of the shaft, whereas the edge 15 is beveled. On the part 13 of the piece 12 there is a nose 16 which extends into the notch in the shaft 8. Behind the plug 17 of the piece 12 there lies in the hole in the shaft 9 a spring 18 which presses the intermediate piece 12 against the shaft 8. The plug 17 has a hole through it and is provided with a pin 19 which extends into slot-like incisions in shaft 9, so that the plug must be driven when the shaft moves.

The manner in which the mechanisms are set to zero is the usual one. It is effected by the shafts 8 or 9 being moved laterally, namely to the outside. This is effected by there being bushes 20 on the outside of the carriage which have a notch 21 beveled off in the direction of rotation. The shafts are each provided with a stop 22 which extends into the notch 21. Springs 23 provided inside the carriage press the two shafts towards the inside. The said shafts are provided with pins 25 each one of which is so placed as to come within the open interior space of one of the said figure wheels and on the inside thereof each of the said figure wheels is provided with a short stop 26. The shafts may be rotated by a crank-handle or by a thumb-screw. When the shaft is rotated the stop 22 must pass along on the beveled side of the notch 21 of the bush 20 and thereby displace the shaft to the outside against the action of the spring 23. In this manner the pins 25 come as high as the stops 26 and thereby drive the figure-wheels 24, whereby the latter are set to zero. Now on account of the shafts 8 and 9 being connected by the piece 12 it is possible to also move both shafts simultaneously. If the indicating mechanism and the counting mechanism are to be reset to zero after a cal-

culation is finished, the crank-handle 10
 arranged at the right-hand of the carriage
 must be turned. By turning this crank-
 handle the shaft 8 is displaced towards the
 5 outside in the above described manner and
 can drive the figure-wheels 24 by means of
 the pins 25. As the nose 16 extends into the
 notch at the end of shaft 8, when the lat-
 10 ter is rotated the edge 14 of this notch hits
 against the nose 16 and compels the piece 12
 to participate in the rotation (Fig. 3). As
 the piece 12 is connected also with the shaft
 9 by the plug 17 and pin 19 however, this
 15 shaft 9 must also participate in the rotary
 movement. As in the case of shaft 8, the
 stop 22 also laterally displaces the shaft 9 to
 the outside, so that also the pins 25 of this
 shaft engage with the stops 26 in the figure-
 wheels 24.
 20 In order that the connection of the piece 12
 with the shaft 8 be not done away with when
 shaft 9 is displaced, the spring 18 is pro-
 vided; the latter presses the piece 12 by
 means of plug 17 constantly against shaft
 25 8 independently of the displacement of shaft
 9. On account of the pin 19 being guided
 in slots of the shaft 9, the displacement
 is likewise without influence on the po-
 30 sition of the piece 12. Now if only the
 counting mechanism, for example, is to be set
 to zero, the thumb-screw 11 on the counting-
 mechanism shaft 9 must be rotated. The
 manner of obtaining the zero position by dis-
 35 placing the shaft is the same as already de-
 scribed. The piece 12 must likewise again
 participate in this rotation, as it is connected
 positively with the shaft 9 in the direction of
 rotation by means of the pin 19. During
 40 this rotation the nose 16 can slide up on the
 beveled edge 15 of the notch at the end of
 shaft 8, so that the latter is not driven.
 (Fig. 4). At the end of one revolution the
 nose 16 will jump the notch of the shaft 8
 again on account of the action of the spring
 45 18. In the example represented the shaft
 8 is driven indirectly by a crank-handle.
 Whether the shaft is driven in this manner or
 by a thumb-screw as represented in the case
 of shaft 9, or whether shaft 9 is also operated
 50 by a crank-handle is without influence on
 the essence of the improvement. Generally
 speaking these arrangements will depend on
 the kind of construction of the machine.
 Also the manner in which the shafts are dis-
 55 placed laterally may be varied in various
 ways. What is essential is the manner in
 which several shafts are connected, so that
 on the one hand all the shafts are rotated
 positively, whereas on the other hand only
 60 one shaft alone may be rotated.
 Having thus described my invention, what

I claim as new and desire to secure by Let-
 ters Patent is:—

1. In a calculating machine, the combina-
 tion with a shaft, indicating mechanism 65
 thereon, a second shaft and counting mech-
 anism on the latter, of means connecting one
 end of the former shaft with one end of the
 second shaft, the arrangement being such
 that when one shaft is rotated, the other is 70
 positively driven, whereas one shaft alone
 can be rotated, substantially as described.

2. In a calculating machine, the combina-
 tion with a shaft, indicating mechanism 75
 thereon, means for rotating and simultane-
 ously laterally shifting said shaft, a second
 shaft, counting mechanism on the latter, and
 means for rotating and simultaneously lat-
 erally shifting the latter shaft, of a spring-
 pressed member connecting and adapted to 80
 be driven by the ends of said shafts, the ar-
 rangement being such that when the former
 shaft is rotated, the second shaft is also ro-
 tated positively, whereas when the second
 shaft is rotated, the former shaft remains 85
 stationary, substantially as described.

3. In a calculating machine, the combina-
 tion with a carriage and a perforated parti-
 tion therein, of an indicating-mechanism 90
 shaft journaled in one side of the carriage, a
 counting-mechanism shaft journaled in one
 side of the carriage, and a spring-pressed in-
 termediate piece movably connecting said
 shafts rectilinearly through said partition,
 the connection of said intermediate piece 95
 with said shafts being such that when the in-
 dicating mechanism shaft is rotated, the
 counting-mechanism shaft is rotated posi-
 tively, whereas when the latter shaft is ro-
 tated, the indicating-mechanism shaft re- 100
 mains stationary, substantially as described.

4. In a calculating machine, the combina-
 tion of an indicating-mechanism shaft having
 a hole and a cam-notch in one end and jour-
 naled in the side of the carriage, a counting- 105
 mechanism shaft having a hole in and a slot-
 like hole through one end and journaled in
 the side of the carriage, a piece in said parti-
 tion having a plug at each side in and con-
 necting the ends of said shafts, said piece 110
 carrying a nose adapted to said cam-notch
 and a pin in said slot-like hole, and a spring
 on the end of said counting-mechanism shaft
 pressing the plug in the same, substantially
 as described and for the purpose set forth. 115

The foregoing specification signed at Ber-
 lin, this 17th day of December 1907.

ERNST SCHUSTER.

In presence of—

FRITZ SCHROEDER,
 HEINRICH LUCKS.