W. H. BROWN.

RECORDING AND CALCULATING MACHINE.

APPLICATION FILED JAN. 29, 1909. RENEWED APR. 30, 1913.

1,122,191. Patented Dec. 22, 1914.

2 SHEETS—SHEET 1.

Fig. 1.

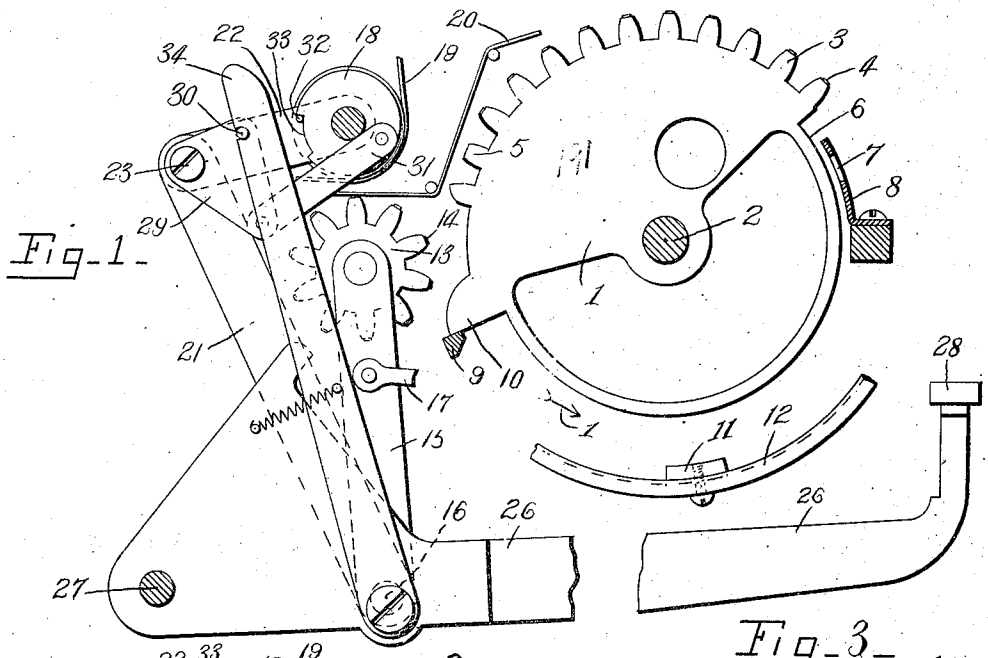


Fig. 2.

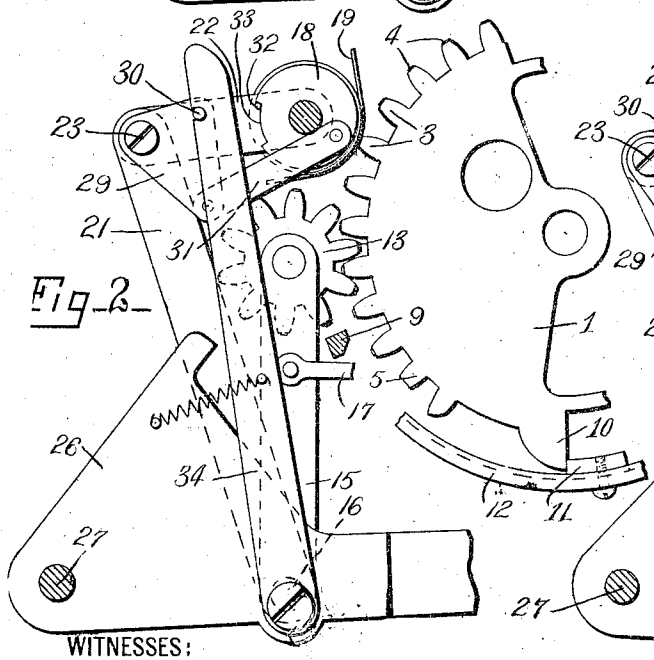
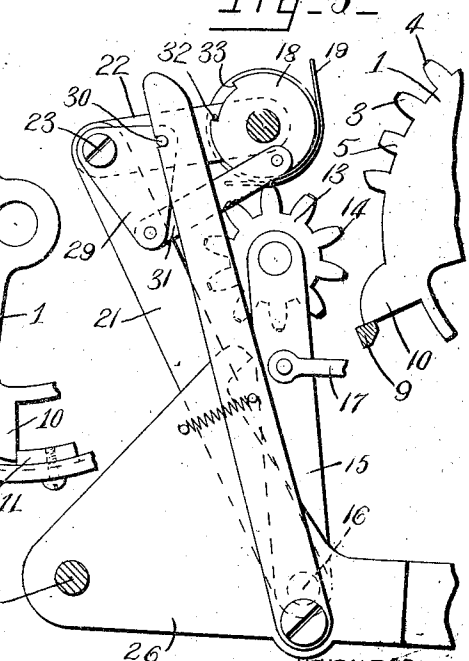


Fig. 3.



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2 SHEETS—SHEET 2.

Fig. 4.

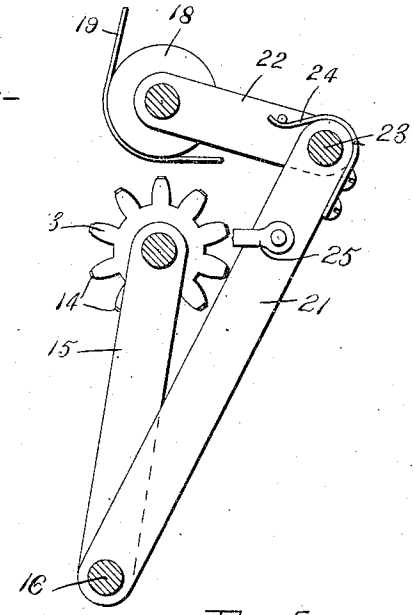


Fig. 5.

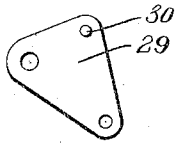


Fig. 6.

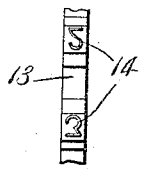
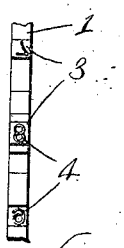


Fig. 7.



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UNITED STATES PATENT OFFICE.

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RECORDING AND CALCULATING MACHINE.

1,122,191. Specification of Letters Patent. Patented Dec. 22, 1914.

Application filed January 29, 1909, Serial No. 474,931. Renewed April 30, 1913. Serial No. 764,700.

To all whom it may concern:

Be it known that I, WILLIAM H. BROWN, of Syracuse, in the county of Onondaga and State of New York, have invented a certain new and useful Recording and Calculating Machine, of which the following is a specification.

My invention relates to recording and calculating machines, and has for its object the production of a particularly simple and efficient recording and calculating mechanism therefor; and it consists in the combinations and constructions hereinafter set forth and claimed.

In describing this invention, reference is had to the accompanying drawing, in which like characters designate corresponding parts in all the views.

Figure 1 is an elevation, partly broken away and in section, of one form of my recording and calculating mechanism, showing the parts thereof in their normal positions. Figs. 2 and 3 are similar elevations of portions of the mechanism illustrated in Fig. 1, the parts being shown in different positions. Fig. 4 is an elevation of the opposite side of parts illustrated in Fig. 1. Fig. 5 is a face view of one of the levers for effecting one of the printing operations. Figs. 6 and 7 are edged views of portions of the printing elements.

My recording and calculating mechanism comprises generally, driving and driven printing elements, and means for supporting a record-receiving element and coöperating with each of the printing elements.

Preferably, one of the printing elements, as 1, comprises a wheel loosely mounted on a suitable horizontal support or axle 2, and oscillating about its axis into and out of position to effect the printing of a record, said wheel having an arc-shaped series of peripheral gear teeth 3, a number of said teeth being provided with raised printing characters 4, as 0, 1, 2, 3, etc., at their ends, and others of said teeth being unprovided with printing characters, one of the latter teeth, 5, being shorter than the teeth 3, and normally arranged at one of the two printing points of my mechanism. Said printing element 1 is usually provided with a suitable indicating surface 6 movable across an aperture 7 in a fixed plate 8 arranged in proximity to the edge of the element 1, at one side thereof. The portion of the printing element 1 provided with the gear teeth 3 and 5 is usually weighted, and said element is normally arranged with the greater part of such weighted portion above and at the left-hand of the axis thereof, and, consequently, this weighted portion normally tends to move the element 1 in the direction indicated by the arrow 1. As will be apparent to those skilled in the art, the element or wheel 1 may be moved in the reverse direction, by hand, or by any suitable mechanism, not illustrated.

The printing element 1 is preferably held in its normal position by a stop 9 which may be moved laterally, or otherwise, from its normal position relatively to the element 1, to release the same. This stop engages with a peripheral shoulder 10 on the element 1, the outer end of such shoulder being shown as located farther from the axis of the element 1 than the outer ends of the teeth 3 and 5, in order to avoid engagement of the stop 9 by the teeth 3 and 5 and the shoulder 10, on the return movement of the element 1. It will be understood, however, that provided the stop 9 is held in its position assumed in Fig. 2 out of the path of the teeth 3 and 5 and the shoulder 10 during the return of the printing element, it is not necessary that said shoulder 10 project a greater distance beyond the periphery of the element 1 than the teeth 3 and 5.

The movement of the printing element 1 in one direction about its axis is limited at different points or positions in its path in order to position predetermined characters at the printing point, the limiting means here shown consisting of an adjustable shoulder or stop 11 carried by a suitable support 12 and adjustable relatively thereto in a curved line concentric with the printing element 1, said shoulder 11 being preferably movable in a curved guide formed in the support 12 and normally lying in the path of the shoulder 10, in order that after the shoulder 10 is released from the stop 9 it will coöperate with the shoulder 11, as shown in Fig. 2, and limit the further movement of the element 1. Adjustment of the shoulder or stop 11 to any predetermined number of positions may be effected by hand or by means operated or controlled by the keys of the recording and

calculating machine, but as I do not wish to limit my present invention to any particular mechanism for effecting or controlling the movement of the shoulder or stop 11, I have deemed it unnecessary to illustrate and describe such mechanism.

The printing element 1 and the means for holding the same in its normal or starting position, and for limiting the movement thereof about its axis at predetermined points or positions in its path are fully set forth in my pending application, Sr. No. 467,472, filed Dec. 14, 1908, and hence further description thereof is deemed unnecessary, especially, as said element and means, although particularly applicable for use with the remaining parts of my mechanism, are only one exemplification of suitable devices capable of use with said remaining parts, and as my present invention is not limited to any particular embodiment of said devices.

The other printing element of my recording and calculating mechanism is here shown as a gear-wheel 13 arranged with its axis substantially parallel to the axis of the printing element 1, and having its teeth provided with printing characters 14 at their ends. Said printing element 13 may preferably constitute one of a train of calculating wheels, which, upon completing a revolution of a predetermined number of steps, as 10, transmits motion in any suitable manner to a similar wheel for "carrying over". When the printing element 13 is one of a train of calculating wheels, it is movable about an axis in one direction into successive positions to effect the printing of records and is usually provided with a circular series of ten teeth having the printing characters 14 thereof corresponding to the printing characters on the element 1, but it is apparent that the printing element 13 may be provided with arc-shaped series of teeth, that the characters 14 may be designed for making any desired registration, and that my invention is not limited to printing elements having corresponding characters, or to a recording and calculating mechanism in which one of the printing elements constitutes one of a train of calculating wheels.

In the preferable construction of my invention, the element 13 is of less radius than the element 1 and is arranged in advance of the central portion of said element 1. This printing element or wheel 13 is normally out of mesh with the element or wheel 1, and is shiftable toward and from the element 1 into and out of mesh with the same, being here illustrated as supported at the upper end of an arm 15 pivoted at its lower end at 16. This arm 15 is rocked on its pivot 16 by any suitable means, as a link 17, which may move said arm in reverse directions, or may move the same in one direction against a spring, not shown, for moving the arm in the opposite direction.

When the printing element 13 constitutes one of a train of calculating wheels, it is moved into mesh with the element 1 after the latter has been limited in its advance movement and has assumed a printing position as shown in Fig. 2, and during the return of the element 1 to its normal position, the teeth 3 and 5 thereof coact with the teeth of the element 13 and advance said element 13 an extent corresponding to the advance of the printing element 1 from its starting position, and after its advance, the printing element 13 is returned to normal position out of mesh with the element 1, whereupon the printing character at the end of the uppermost tooth of the element 13 is in the other of the two printing positions of my mechanism. It will be apparent, however, that this invention is not limited to moving the printing element 13 into mesh with the element 1 at any particular time, nor to an advance of the characters 14 of the printing element 13 corresponding to the advance of the characters 4 of the printing element 1.

The means for supporting the record-receiving element is movable in one direction toward the printing point for the element 1, and in another direction at an angle to the first-mentioned direction toward the printing point for the element 13, said means being here shown as a rotary platen 18 arranged parallel to the printing elements 1 and 13 and opposed to contiguous portions of the peripheries thereof. The record-receiving element 19 is passed around a portion of the periphery of the platen 18 between said platen and the opposing contiguous surfaces of the printing elements 1 and 13, and may be fed step by step by any desirable means. A suitable inking ribbon 20, illustrated in Fig. 1, may also be supported in proximity to the platen 18 and capable of movement with said platen toward and from the printing points. I do not, however, wish to have this invention limited to any particular means for feeding the record-receiving element 19, or for supporting or feeding the inking ribbon 20, and therefore have deemed it unnecessary to illustrate and describe such means.

The means for supporting the record-receiving element 19 is carried by a suitable support preferably consisting of two members or parts 21 and 22, one being disposed substantially upright and having its lower end mounted on the pivot 16 and its upper end arranged above and at one side of the printing element 13, and the other 22 extending at an angle to the part 21 above the printing element 13 and having one end pivoted at 23 to the upper end of the mem-

ber or part 21, and its other end provided with bearings for the means, as the platen 18, for supporting or holding the record-receiving element 19. Suitable means, as a spring 24 is connected at its ends, respectively, to the members 21 and 22 of the support for the platen 18, and tends to raise the free end of the member 22 and hold the platen 18 out of engagement with the printing element 13. When it is desired to receive impressions upon the record-receiving element 19 from the printing element 1, the platen 18 is forced laterally toward said printing element into the position shown at Fig. 2, both members of the support moving together as a single body during this operation, but when it is desired to receive on such element 19 impressions from the printing wheel 13, the member 21 of the support for the platen 18 remains stationary, and the member 22 of such support swings on the pivot 23 and moves the platen downwardly into the position seen in Fig. 3, or in other words in a direction at an angle to its movement toward the printing element 1.

In order that the distance between two consecutive impressions made by the printing elements 1 and 13 may be reduced to a minimum, the platen 18 has a limited movement about its axis relatively to the member 22, and then moves with said member into position to coöperate with the printing element 13.

The means for moving both members of the support for the platen 18 as one body into position to coöperate with the printing element 1 may be of any desirable form, size and construction, and is here shown as a link 25 which is connected to the member 21, and may move said member 21 in reverse directions, or may move the same in one direction against a spring, not shown, for moving said member in the opposite direction. However, the movement of the parts 15 and 21 to carry the wheels 13 into and out of mesh with the wheels 1 and the platen 18 into and out of coöperation with the type on the wheels 1 may be effected as disclosed in my pending application Sr. No. 741,786, filed Jan. 13, 1913, and in my pending application Sr. No. 565,197, filed June 6, 1910. Preferably, the movement of the member 22 of the support for the platen is effected by means comprising a rocking lever 26 pivoted at one end at 27 and provided at its other end with suitable operating means, as a key 28, a lever 29 pivoted to the support for the platen and preferably on the pivot 23 and provided with a pin 30, a link 31 pivoted to the lever 29 and eccentrically pivoted to the end of the platen 18, a stop 32 carried by the member 22 of the support for the platen and arranged in an elongated recess 33 in the periphery of the platen, and a reciprocating elongated upright part 34 having its lower end pivoted to the lever 26 and its upper end provided with an open-ended slot or notch for detachably receiving the pin 30. When the free end of the lever 26 is depressed, the part 34 is moved downwardly therewith and rocks the lever 29 on the pivot 23, and through the medium of the link 31 moves the platen 18 about its axis until the stop 32 is engaged with an end of the recess 33, whereupon further movement of the platen about its axis independently of the supporting member 22 is prevented, and the additional downward movement of the part 34 rocks the supporting member 22 on the pivot 23 and moves the platen 18 downwardly into position to coöperate with the printing element 13, as shown in Fig. 3.

What I claim is:—

1. A recording and calculating machine comprising two printing elements movable about different axes, means for supporting said elements, and means for supporting a record receiving element in position to receive impressions from both printing elements, the record receiving element being movable by its supporting means from a starting point common to both printing elements toward and from either printing element, substantially as and for the purpose described.

2. A recording and calculating machine comprising two printing elements movable about different axes, means for supporting said elements, and means for supporting a record receiving element in position to receive impressions from both printing elements, the record receiving element being movable by its supporting means about two axes, it being movable about one axis toward and from one printing element and about its other axis toward and from the other printing element, substantially as and for the purpose specified.

3. A recording and calculating machine comprising two toothed printing elements, one being movable into and out of mesh with the other, and means for supporting a record receiving element in position to receive impressions from both printing elements, substantially as and for the purpose set forth.

4. A recording and calculating machine comprising two toothed printing elements, one being movable into and out of mesh with the other, and means for supporting a record receiving element in position to receive impressions from both printing elements, said means normally supporting the record receiving element in a starting position common to both elements and being operable to move the record receiving element from such starting position toward and from either printing element, substantially as and for the purpose described.

5. A recording and calculating machine

comprising two toothed printing elements movable about different axes, means for supporting said elements, the means for supporting one element being movable for shifting the corresponding printing element into and out of mesh with the other printing element, and means for supporting the record receiving element in position to receive records from both printing elements, the last-mentioned means being movable with the means supporting the shiftable printing element for carrying the record receiving element into and out of mesh with the other printing element and said means supporting the record receiving element having a portion movable toward and from the shiftable printing element, substantially as and for the purpose specified.

6. A recording and calculating machine comprising two printing elements, and means for supporting a record receiving element in position to receive impressions from both printing elements, the record receiving element and one of the printing elements having relative movement in one direction to effect the printing of one class of records, and said record receiving element and the other printing element having relative movement in another direction for printing another class of records, substantially as and for the purpose described.

7. A recording and calculating mechanism comprising driving and driven printing elements, and means for supporting the record receiving element in position to receive impressions from both printing elements, the record receiving element and one printing element having a relative movement in one direction to effect the printing of one class of records, and said record receiving element and the other printing element having relative movement in another direction for printing another class of records, substantially as and for the purpose specified.

8. A recording and calculating mechanism comprising two printing elements spaced apart, and means for supporting a record receiving element in position to receive impressions from both printing elements, the record receiving element being normally in a starting position common to both printing elements, and movable from such position into coöperation with either of the printing elements, substantially as and for the purpose described.

9. A recording and calculating mechanism comprising two printing elements spaced apart, and means for supporting a record receiving element in position to receive impressions from both printing elements, said means being normally arranged in a starting position common to both printing elements, and movable therefrom about two axes, said means being movable about one axis into coöperation with one printing element and about the other axis into cooperation with the other printing element, substantially as and for the purpose specified.

10. A recording and calculating mechanism comprising two printing elements movable about different axes, and means common to both printing elements for supporting a record receiving element in position to receive impressions from both printing elements, said means having a starting position common to both printing elements and being movable about two axes, said means being movable about one axis for carrying a record receiving element into cooperation with one of the printing elements and being movable about the other axis from its starting position for carrying a record receiving element into coöperation with the other printing element, substantially as and for the purpose set forth.

11. A recording and calculating mechanism comprising two printing elements spaced apart, means for supporting a record receiving element in position to receive impressions from both printing elements, said means being normally arranged in a starting position common to both printing elements and being movable upon each calculating operation from its starting position into coöperation with one of the printing elements and being movable independently of the calculating operations from its starting position into engagement with the other printing element, substantially as and for the purpose described.

12. A recording and calculating mechanism comprising driving and driven printing elements normally out of position to cooperate with each other, and having relative movement into such position, and means for supporting a record-receiving element in position to receive impressions from both printing elements, substantially as and for the purpose set forth.

13. A recording and calculating mechanism comprising driving and driven printing elements, means for supporting the driving element and permitting the same to oscillate about an axis into and out of position to effect the printing of a record, and means for supporting the driven element to move about a different axis in one direction into position to effect printing of records, and means for supporting a record-receiving element in position to receive impressions from both printing elements, substantially as and for the purpose described.

14. A recording and calculating mechanism comprising driving and driven toothed elements for meshing with each other, teeth of said elements being provided with printing characters, and means for supporting a record-receiving element in position to re-

ceive impressions from the printing characters of both of said toothed elements, substantially as and for the purpose specified.

15. A recording and calculating mechanism comprising driving and driven toothed elements for meshing with each other, the driving element oscillating about an axis into and out of position to effect the printing of a record, and the driven element being movable about an axis in one direction into position to effect the printing of records, teeth of said elements being provided with printing characters, means for supporting said elements, and means for supporting a record-receiving element in position to receive impressions from the printing characters of both of said toothed elements, substantially as and for the purpose set forth.

16. A recording and calculating mechanism comprising driving and driven toothed elements for meshing with each other, teeth of said elements being provided with printing characters, one of the elements being normally arranged with one of its teeth opposite the printing point, and said tooth being unprovided with a printing character, and means for supporting a record-receiving element in position to receive impressions from the printing characters of both of said toothed elements, substantially as and for the purpose described

17. A recording and calculating mechanism comprising driving and driven toothed elements for meshing with each other, teeth of said elements being provided with printing characters at their ends, and means for supporting a record-receiving element in position to receive impressions from the printing characters of both of said toothed elements, substantially as and for the purpose specified.

18. A recording and calculating mechanism comprising driving and driven toothed elements for meshing with each other, teeth of said elements being provided with printing characters, and said elements being normally out of mesh with each other and having relative movement into and out of mesh with each other, and means for supporting a record-receiving element in position to receive impressions from the printing characters of both of said toothed elements, substantially as and for the purpose set forth.

19. A recording and calculating mechanism comprising driving and driven elements, one of said elements having a circular series of teeth provided with printing characters, and the other having an arc-shaped series of teeth for meshing with the circular series of teeth and provided with printing characters, and means for supporting a record-receiving element in position to receive impressions from the printing characters of both of said toothed elements, substantially as and for the purpose described.

20. A recording and calculating mechanism comprising driving and driven elements, one of said elements having a circular series of teeth provided with printing characters at their ends, and the other having an arc-shaped series of teeth for meshing with the circular series of teeth and provided with printing characters at their ends, said elements being normally out of mesh with each other and having relative movement into and out of mesh with each other, and means for supporting a record-receiving element in position to receive impressions from the printing characters of both of said toothed elements, substantially as and for the purpose specified.

21. A recording and calculating mechanism comprising driving and driven elements, the driving element oscillating about an axis into and out of position to effect the printing of a record, and the driven element being movable about an axis in one direction into position to effect the printing of records, one of said elements having a circular series of teeth provided with printing characters at their ends, and the other having an arc-shaped series of teeth for meshing with the circular series of teeth and provided with printing characters at their ends, said elements being normally out of mesh with each other and having relative movement into and out of mesh with each other, means for supporting said elements, and means for supporting a record-receiving element in position to receive impressions from the printing characters of both of said toothed elements, substantially as and for the purpose set forth.

22. A recording and calculating mechanism comprising two printing elements, and means for supporting a record-receiving element in position to receive impressions from both printing elements, said means and one printing element having relative movement in one direction for effecting printing, and said means and the other printing element having relative movement in another direction for effecting printing, substantially as and for the purpose described.

23. A recording and calculating mechanism comprising driving and driven toothed printing elements for meshing with each other, teeth of said elements being provided with printing characters at their ends, and means for supporting a record-receiving element in position to receive impressions from the printing characters of both printing elements, said means and one printing element having relative movement in one direction for effecting printing, and said means and the other printing element having relative movement in another direction

for effecting printing, substantially as and for the purpose specified.

24. A recording and calculating mechanism comprising driving and driven printing elements, the driving element oscillating about an axis into and out of position to effect the printing of a record, and the driven element being movable about an axis in one direction into position to effect the printing of records, one of said elements having a circular series of teeth provided with printing characters at their ends, and the other having an arc-shaped series of teeth for meshing with the circular series of teeth and provided with printing characters at their ends, said elements being normally out of mesh with each other, means for supporting printing elements, and means for supporting a record-receiving element in position to receive impressions from the printing characters of both printing elements, said means and one printing element having relative movement in one direction for effecting printing, and said means and the other printing element having relative movement in another direction for effecting printing, substantially as and for the purpose set forth.

25. A recording and calculating mechanism comprising two printing elements, means for supporting the record receiving element in position to receive impressions from both printing elements, means for effecting relative movement in one direction of one printing element and the supporting means and means for effecting relative movement in another direction of the other printing element and said supporting means, substantially as and for the purpose described.

26. A recording and calculating mechanism comprising two printing elements, and means for supporting a record-receiving element in position to receive impressions from both printing elements, said means being movable in two directions relatively to the printing elements, substantially as and for the purpose specified.

27. A recording and calculating mechanism comprising driving and driven toothed elements for meshing with each other, teeth of said elements being provided with printing characters, and means for supporting a record-receiving element, said means being movable in one direction for coöperating with the printing characters of one of the toothed elements, and being movable in a direction at an angle to the first-mentioned direction for coöperating with the printing characters of the other toothed element, substantially as and for the purpose set forth.

28. A recording and calculating mechanism comprising driving and driven elements, the driving element oscillating about an axis into and out of position to effect the printing of a record, and the driven element being movable about an axis in one direction into position to effect the printing of records, one of said elements having a circular series of teeth provided with printing characters at their ends, and the other having an arc-shaped series of teeth for meshing with the circular series of teeth and provided with printing characters at their ends, said elements being normally out of mesh with each other and having relative movement into and out of mesh with each other, means for supporting said elements, and means for supporting a record-receiving element, said means being movable in one direction for coöperating with the printing characters of one of the toothed elements, and being movable in a direction at an angle to the first-mentioned direction for coöperating with the printing characters of the other toothed element, substantially as and for the purpose described.

29. A recording and calculating mechanism comprising two printing elements, means for supporting the printing elements, and rotary means for supporting a record-receiving element, said means being movable in a direction at an angle to its axis for coöperating with the printing characters of one of the printing elements, and being movable in a direction at an angle to the first-mentioned direction and also about its axis for coöperating with the printing characters of the other printing element, substantially as and for the purpose specified

30. A recording and calculating mechanism comprising driving and driven toothed elements for meshing with each other, teeth of said elements being provided with printing characters, means for supporting said elements, and rotary means for supporting a record-receiving element, said means being movable in a direction at an angle to its axis for coöperating with the printing characters of one of the printing elements, and being movable in a direction at an angle to the first-mentioned direction and also about its axis for coöperating with the printing characters of the other printing element, substantially as and for the purpose set forth.

31. A recording and calculating mechanism comprising driving and driven elements, the driving element oscillating about an axis into and out of position to effect the printing of a record, and the driven element being movable about an axis in one direction into position to effect the printing of records, one of said elements having a circular series of teeth provided with printing characters at their ends, and the other having an arc-shaped series of teeth for meshing with the circular series of teeth and provided with printing characters at their ends, said elements being normally out of mesh with each other and having relative

movement into and out of mesh with each other, means for supporting said elements, and rotary means for supporting a record-receiving element, said means being movable in a direction at an angle to its axis for coöperating with the printing characters of one of the printing elements, and being movable in a direction at an angle to the first-mentioned direction and also about its axis for coöperating with the printing characters of the other printing element, substantially as and for the purpose specified.

32. A recording and calculating mechanism having two printing points and comprising two printing elements of different size, and means for supporting a record-receiving element, said means and one printing element having relative movement in one direction for effecting printing at one printing point, and said means and the other printing element having relative movement in another direction for effecting printing at the other printing point, substantially as and for the purpose set forth.

33. A recording and calculating mechanism having two printing points and comprising driving and driven elements of different radii, the driving element oscillating about an axis into and out of position to effect the printing of a record, and the driven element being movable about an axis in one direction into position to effect the printing of records, one of said elements having a circular series of teeth provided with printing characters at their ends, and the other having an arc-shaped series of teeth for meshing with the circular series of teeth and provided with printing characters at their ends, said elements being normally out of mesh with each other and having relative movement into and out of mesh with each other, means for supporting said elements, and rotary means for supporting a record-receiving element, said means being movable in a direction at an angle to its axis for coöperating with the printing characters of one of the printing elements and effecting printing at one printing point, and being movable in a direction at an angle to the first-mentioned direction and also about its axis for coöperating with the printing characters of the other printing element and effecting printing at the other printing point, substantially as and for the purpose set forth.

34. A recording and calculating mechanism comprising two printing elements, said elements being movable about parallel axes, and one element being of less diameter than the other and arranged in advance of the central portion thereof, means for supporting said elements, and a platen for supporting a record-receiving element in position to receive impressions from both printing elements, said platen being opposed to contiguous portions of the peripheries of the printing elements, substantially as and for the purpose described.

35. A recording and calculating mechanism comprising driving and driven toothed elements for meshing with each other, teeth of said elements being provided with printing characters at their ends, said elements being movable about parallel axes, and one element being of less diameter than the other and arranged in advance of the central portion thereof, means for supporting said elements, and a platen for supporting a record-receiving element in position to receive impressions from the printing characters of both printing elements, said platen being opposed to contiguous portions of the peripheries of the printing elements, substantially as and for the purpose specified.

36. A recording and calculating mechanism having two printing points and comprising driving and driven elements, said elements being movable about parallel horizontal axes, and the driven element being of less diameter than the driving element and arranged in advance of the central portion thereof, the driving element oscillating about an axis into and out of position to effect the printing of a record, and the driven element being movable about an axis in one direction into position to effect the printing of records, the driven element having a circular series of teeth provided with printing characters at their ends, and the driving element having an arc-shaped series of teeth for meshing with the circular series of teeth and provided with printing characters at their ends, the driven element being normally out of mesh with the driving element and being movable into and out of mesh with said driving element, and a rotary platen for supporting a record-receiving element, said platen being parallel to the printing elements and opposed to contiguous portions of the peripheries thereof and being movable in a direction at an angle to its axis for coöperating with the printing characters of the driving element and effecting printing at one printing point, and being movable in a direction at an angle to the first-mentioned direction and also about its axis for coöperating with the printing characters of the driven element and effecting printing at the other printing point, substantially as and for the purpose set forth.

37. A recording and calculating mechanism comprising two printing elements, means for supporting a record-receiving element in position to receive impressions from both printing elements, and a support for said means including two members movable together for moving said means into

position to coöperate with one of the printing elements, one of such members being movable relatively to the other for moving said means into position to coöperate with the other printing element, substantially as and for the purpose described.

38. A recording and calculating mechanism comprising two printing elements, means for supporting a record-receiving element in position to receive impressions from both printing elements, and a support for said means including two members, one being supported by the other and extending at an angle thereto, such members being movable together for moving said means into position to coöperate with one of the printing elements, and one of said members being movable relatively to the other for moving said means into position to coöperate with the other printing element, substantially as and for the purpose specified.

39. A recording and calculating mechanism comprising two printing elements, means for supporting a record-receiving element in position to receive impressions from both printing elements, and a support for said means including a pivoted member, and a second member pivoted to the first-mentioned member and connected to said means, such members being movable together for moving said means into position to coöperate with one of the printing elements, and the second-mentioned member being movable relatively to the first-mentioned member for moving said means into position to coöperate with the other printing element, substantially as and for the purpose set forth.

40. A recording and calculating mechanism comprising two printing elements, means for supporting a record-receiving element in position to receive impressions from both printing elements, and a support for said means including a member pivoted at one end, and a second member extending at an angle to the first-mentioned member and pivoted at one end to the opposite end of the first-mentioned member, the opposite end of the second-mentioned member being connected to said means, such members being movable together for moving said means into position to coöperate with one of the printing elements, and the second-mentioned member being movable relatively to the first-mentioned member for moving said means into position to coöperate with the other printing element, substantially as and for the purpose described.

41. A recording mechanism comprising a printing element, a movable support, and means for holding a record-receiving element in position to receive an impression from the printing element, said means being carried by the support, and being movable relatively thereto a limited distance and then movable with said support for effecting the printing, substantially as and for the purpose specified.

42. A recording mechanism comprising a printing element, a movable support, means for holding a record-receiving element in position to receive an impression from the printing element, said means being carried by the support, and being movable relatively thereto a limited distance, means carried by the support for limiting the movement of the first-mentioned means relatively thereto, and means connected to the first-mentioned means for moving the same relatively to the support and for moving the same with said support, substantially as and for the purpose set forth.

43. A recording and calculating mechanism comprising two printing elements, a movable support, and means for holding a record-receiving element in position to receive impressions from both printing elements, said means being carried by the support, and being movable with the support into position to coöperate with one of the printing elements, and being movable relatively to the support a limited distance and then movable with said support into position to coöperate with the other printing element, substantially as and for the purpose described.

44. A recording and calculating mechanism comprising two printing elements, a movable support including a pivoted member, and a second member extending at an angle to the first-mentioned member and pivoted thereto, and means for holding a record-receiving element in position to receive impressions from both printing elements, said means being carried by the second-mentioned member, such members being movable together for moving said means into position to coöperate with one of the printing elements, and said means being movable relatively to the second-mentioned member a limited distance and then movable with said second-mentioned member relatively to the first-mentioned member into position to coöperate with the other printing element, substantially as and for the purpose specified.

45. A recording mechanism comprising a printing element, a movable support, means for holding a record-receiving element in position to receive an impression from the printing element, said means being carried by the support, and being movable relatively to the support a limited distance and then movable with said support for effecting the printing, and means carried by the support and movable relatively thereto, said means being connected to the first-mentioned means for moving the same relatively

to the support and for moving the same with said support, substantially as and for the purpose set forth.

46. A recording mechanism comprising a printing element, a movable support, means for holding a record-receiving element in position to receive an impression from the printing element, said means being carried by the support, and being movable relatively to the support a limited distance and then movable with said support for effecting the printing, means carried by the support for limiting the movement of the first-mentioned means relatively thereto, and a lever pivoted to the support and movable relatively thereto, said lever being connected to the first-mentioned means for moving the same relatively to the support and also with said support, substantially as and for the purpose described.

47. A recording mechanism comprising a printing element, a movable support, means for holding a record-receiving element in position to receive an impression from the printing element, said means being carried by the support, and being movable relatively to the support a limited distance and then movable with said support for effecting the printing, means carried by the support for limiting the movement of the first-mentioned means relatively thereto, a lever pivoted to the support and movable relatively thereto, and a link pivoted to the first-mentioned means and to said lever, substantially as and for the purpose specified.

48. A recording and calculating mechanism comprising two printing elements, a movable support, means for holding a record-receiving element in position to receive impressions from both printing elements, said means being carried by the support, and being movable with the support into position to coöperate with one of the printing elements, and being movable relatively to the support a limited distance and then movable with said support into position to cooperate with the other printing element, means carried by the support for limiting the movement of the first-mentioned means relatively thereto, and a lever pivoted to the support and movable relatively thereto, said lever being connected to the first-mentioned means for moving the same relatively to the support and for moving the same with said support, substantially as and for the purpose set forth.

49. A recording and calculating mechanism comprising two printing elements, a movable support including a pivoted member, and a second member extending at an angle to the first-mentioned member and pivoted thereto, a rotary platen for holding a record-receiving element in position to receive impressions from both printing elements, said platen being carried by the second-mentioned member, such members being movable together for moving the platen into position to coöperate with one of the printing elements, and said platen being movable about its axis relatively to the second-mentioned member a limited distance and then movable with said second-mentioned member relatively to the first-mentioned member into position to coöperate with the other printing element, means carried by the second-mentioned member for limiting the movement of the platen relatively thereto, a lever pivoted to the support and having its pivotal axis substantially coincident with the pivotal axis common to the members of the support, and a link pivoted to said lever and eccentrically pivoted to the platen, substantially as and for the purpose described.

50. A recording mechanism comprising a printing element, a movable support, means for holding a record-receiving element in position to receive an impression from the printing element, said means being carried by the support, and being movable relatively to the support a limited distance and then movable with said support for effecting the printing, means carried by the support and movable relatively thereto, said means being connected to the first-mentioned means for moving the same relatively to the support and for moving the same with said support, and a reciprocating part connected to the last-mentioned means, substantially as and for the purpose specified.

51. A recording mechanism comprising a printing element, a movable support, means for holding a record-receiving element in position to receive an impression from the printing element, said means being carried by the support, and being movable relatively to the support a limited distance and then movable with said support for effecting the printing, means carried by the support for limiting the movement of the first-mentioned means relatively thereto, a lever pivoted to the support and movable relatively thereto, said lever being connected to the first-mentioned means for moving the same relatively to the support and also with said support, and a reciprocating part detachably connected to said lever, substantially as and for the purpose set forth.

52. A recording mechanism comprising a printing element, a movable support, means for holding a record-receiving element in position to receive an impression from the printing element, said means being carried by the support, and being movable relatively to the support a limited distance and then movable with said support for effect-

ing the printing, means carried by the support and movable relatively thereto, said means being connected to the first-mentioned means for moving the same relatively to the support and for moving the same with said support, a rocking lever, and an elongated part having one end pivoted to the rocking lever and its other end detachably engaged with the last-mentioned means, substantially as and for the purpose described.

53. A recording and calculating mechanism comprising two printing elements, a movable support including a pivoted member, and a second member extending at an angle to the first-mentioned member and pivoted thereto, a rotary platen for holding a record-receiving element in position to receive impressions from both printing elements, said platen being carried by the second-mentioned member, such members being movable together for moving the platen into position to coöperate with one of the printing elements, and said platen being movable about its axis relatively to the second-mentioned member a limited distance and then movable with said second-mentioned member relatively to the first-mentioned member into position to coöperate with the other printing element, means carried by the second-mentioned member for limiting the movement of the platen relatively thereto, a lever pivoted to the support and having its pivotal axis substantially coincident with the pivotal axis common to the members of the support, said lever being connected to the rotary platen for moving the same, a rocking lever, and a reciprocating part pivoted to the rocking lever and detachably connected to the first-mentioned lever, substantially as and for the purpose specified.

54. A recording and calculating mechanism comprising driving and driven printing elements, one of said elements being normally out of position to coöperate with the other and being movable relatively thereto into such position, a pivoted support for the relatively movable element, a second pivoted support having its pivotal axis substantially coincident with the pivotal axis of the first-mentioned support, and means for holding a record-receiving element in position to receive impressions from both printing elements, said means being carried by the second-mentioned support, substantially as and for the purpose specified.

55. A recording and calculating mechanism comprising driving and driven printing elements, one of said elements being normally out of position to coöperate with the other and being movable relatively thereto into such position, a pivoted support for the relatively movable element, a second support including a pivoted member having its pivotal axis substantially coincident with the pivotal axis of the first-mentioned support, and a second member pivoted to the first-mentioned member, a rotary platen for holding a record-receiving element in position to receive impressions from both printing elements, said platen being carried by the second-mentioned member, such members being movable together for moving the platen into position to coöperate with one of the printing elements, and said platen being movable about its axis relatively to the second-mentioned member a limited distance and then movable with said second-mentioned member relatively to the first-mentioned member into position to coöperate with the other printing element, means carried by the second-mentioned member for limiting the movement of the platen relatively thereto, a lever pivoted to the second-mentioned support and having its pivotal axis substantially coincident with the pivotal axis common to the members of the second-mentioned support, said lever being connected to the rotary platen for moving the same, a rocking lever, and a reciprocating part pivoted to the rocking lever and detachably connected to the first-mentioned lever, substantially as and for the purpose set forth.

In testimony whereof I have hereunto signed my name in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 26th day of Jan., 1909.

WILLIAM H. BROWN.

Witnesses:
S. DAVIS,
E. K. SEEMILLER.