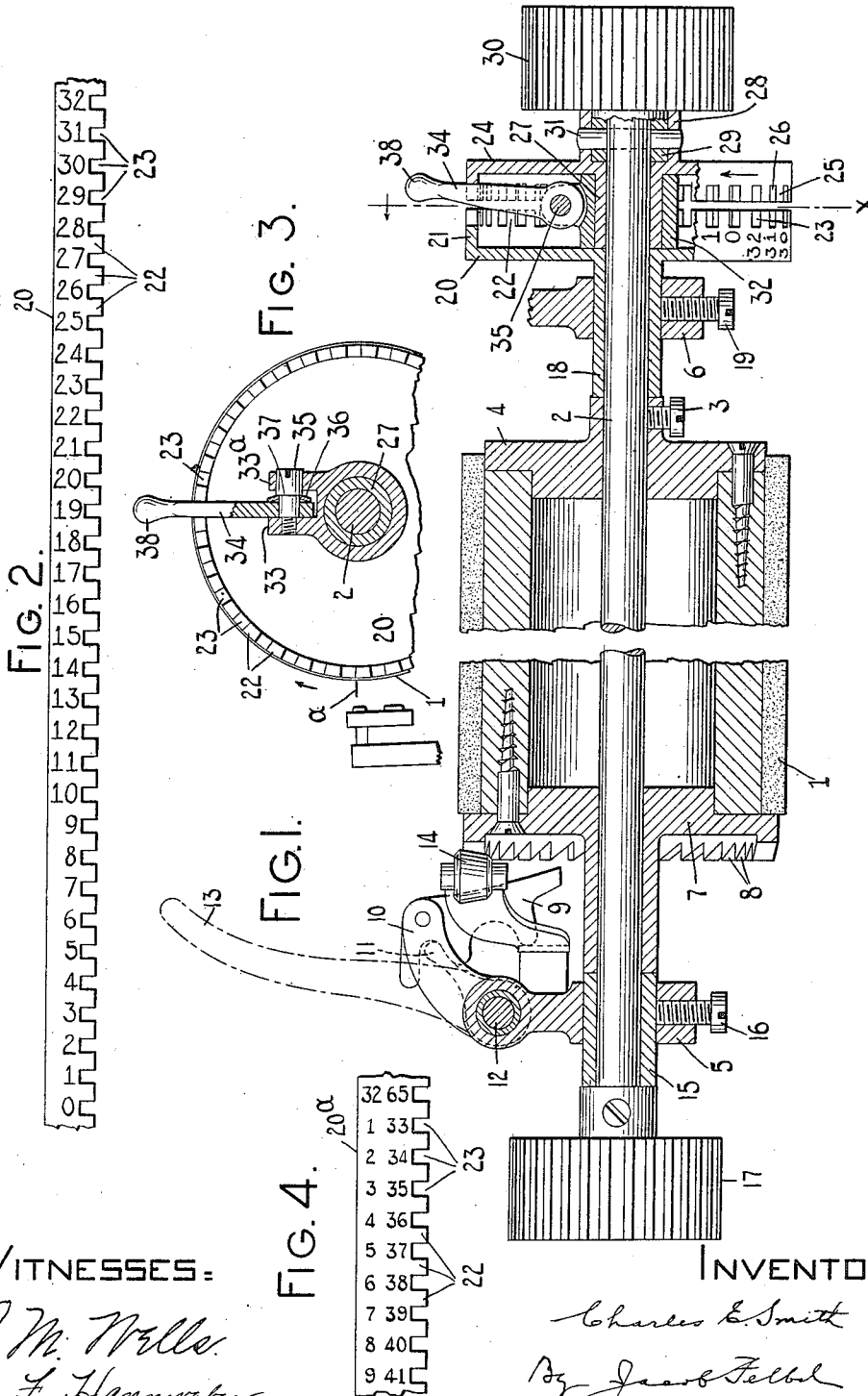


C. E. SMITH.
TYPE WRITING MACHINE.
APPLICATION FILED DEC. 19, 1910.

1,017,022.

Patented Feb. 13, 1912.



WITNESSES:

E. M. Wells
M. F. Hannover

INVENTOR:

Charles E. Smith
By Jacob Felbel

HIS ATTORNEY

UNITED STATES PATENT OFFICE.

CHARLES E. SMITH, OF NEW YORK, N. Y., ASSIGNOR TO UNION TYPEWRITER COMPANY,
OF ILION, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

1,017,022.

Specification of Letters Patent.

Patented Feb. 13, 1912.

Application filed December 19, 1910. Serial No. 598,071.

To all whom it may concern:

Be it known that I, CHARLES E. SMITH, citizen of the United States, and resident of the borough of Brooklyn, city of New York, in the county of Kings and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to typewriting machines and more particularly to billing mechanism, and the main object of said invention is to provide an improved billing mechanism which is simple in construction, inexpensive to manufacture and efficient in use, and more particularly applicable for "condensed record" billing work.

A further object of my invention is to provide a billing mechanism of the character specified, which may be readily applied to typewriting machines now in use on the market without changing, or materially changing, the constructions of such machines as they now exist.

To the above and other ends, my invention consists in the features of construction, arrangements of parts and combinations of devices, to be hereinafter described and particularly pointed out in the appended claims.

In the accompanying drawings, wherein like reference characters indicate corresponding parts in the various views, Figure 1 is a fragmentary, vertical, transverse, sectional view taken centrally through the platen and showing so much of a typewriting machine as is necessary to illustrate my invention in its embodiment therein. Fig. 2 is a diagrammatic, developed, plan view of an index-carrier to be hereinafter more fully described. Fig. 3 is a fragmentary, vertical, sectional view, taken on the line $x-x$ of Fig. 1 and looking in the direction of the arrow at said line. Fig. 4 is a fragmentary, diagrammatic, developed, plan view of a modified form of index-carrier.

In the present instance I have shown my invention embodied in a Monarch machine although it should be understood that the invention may be employed with equal facility in other styles of typewriting machines.

The usual rotative platen 1 is mounted on a platen shaft 2; being fixed thereto by a set

screw 3 received in a tapped opening in the hub of the right-hand platen head 4 and bearing at its inner end against the platen shaft. The platen shaft 2 extends through openings in the end plates 5 and 6 of the carriage. The left-hand platen head 7 is formed with crown teeth 8 which constitute a line spacing ratchet wheel. It may be assumed that there are thirty-three teeth, 8 provided in the present instance. A line spacing pawl 9 coöperates with the teeth 8 to effect a step-by-step line spacing movement of the platen. The pawl 9 is carried by a pivoted arm 10 and is actuated by a crank arm 11 operatively connected to the rock shaft 12 controlled by a finger piece 13. The line spacing mechanism described is of the usual construction and further detailed description thereof is deemed unnecessary. The usual spring pressed roller detent 14 coöperates with the teeth 8 to properly position the platen at the different line space positions to which it may be moved. The left-hand end portion of the platen shaft extends through a bearing sleeve 15 secured in position in the end plate 5 by a set screw 16. A left-hand finger wheel 17 is secured to the left-hand end of the platen shaft. The right-hand end portion of the platen shaft extends through a bearing sleeve 18 secured in an opening in the right-hand end plate 6 of the carriage by a set screw 19. The bearing sleeve 18 is formed as a part of, or is rigidly connected to, a disk, dial or annular indicator-carrier 20 concentric with the platen and formed with an annular flange having crown teeth 22 in the outer edge thereof. The teeth 22 are so arranged in the present instance as to provide thirty-three interdenal spaces 23 between the teeth 22 and these interdenal spaces correspond with the line space positions of the platen and with the teeth 8 on the line spacing wheel, as will hereinafter more clearly appear. On the periphery of this index or indicator-carrier I preferably provide circularly arranged indices or index numerals which extend progressively, as shown in Figs. 1 and 2, from "0" to "33"; each of the index numerals being located at one of the interdenal spaces in the indicator carrier.

From the foregoing description it will be understood that the indicator-carrier 20 is

fixed to the carriage at all times and that the interdental spaces 23 are arranged concentric with the platen at line space intervals. A second disk or indicator-carrier 24, like that previously described, is fixed to the platen shaft to rotate with the platen. This indicator-carrier 24, however, has no indices or indicating numerals on the periphery thereof but is provided with a number of teeth 25 and interdental spaces 26 which correspond to the teeth and interdental spaces provided on the indicator-carrier 20. The diameter of both disks or indicator-carriers 20 and 24 is preferably the same and the teeth 22 and 25 project in opposite directions toward each other so that the interdental spaces 23 and 26 are adapted to be brought into register at each line space position of the platen, as indicated in Fig. 1.

The carrier 24 is provided with an inwardly projecting hub 27 which extends toward the carrier 20; bearing at its free end against said carrier. An outwardly extending hub 28 is also formed on the carrier 24 to receive the stem 29 of a right-hand finger wheel 30. A pin 31 extends transversely through openings in the hub 28, stem 29 and platen shaft 2, to lock the parts to rotate together and to secure the carrier 24 and the finger wheel 30 to the platen shaft. A sleeve 32 surrounds the hub 27 and is loosely mounted thereon. This sleeve is provided with a bifurcated lug or projection 33—33^a in which an arm or indicator 34 is received. A shouldered pivot screw 35 extends freely through an opening in the member 33^a of the bifurcated lug and is received at its threaded end in a tapped opening in the member 33 of the lug, to form a pivot on which the arm 34 is adapted to turn. Thus the arm 34 may swing on the screw pivot longitudinally of the platen and at substantially right angles to the plane of its movement around the axis of the platen. A spring washer 36 bears at one face against a shoulder 37 on the pivot screw 35 and at its opposite face against the arm 34 in order to exert pressure against the arm to maintain it by friction in either one of the two positions to which it may be turned on the pivot 35, as will hereinafter more clearly appear. The arm 34 extends outwardly beyond the peripheries of the carriers 20 and 24 and is provided with a finger piece 38 by which it may be manipulated.

From the foregoing description it will be understood that the arm 34 may be swung on its pivot 35 into or out of positive engagement with either of the carriers 20 or 24. Thus, by swinging the indicator or arm 34 out of the interdental space in which it is seated in the carrier 24, as shown in Fig. 1, and into the registering interdental space in the carrier 20, said arm will be thrown out of connection with the rotative carrier

24, and will be connected with the member 20 which is fixed to the carriage. In that case the arm 34 is held against movement during the rotation of the platen; the platen shaft turning independently of the collar or sleeve 32 which constitutes a support for the pivoted arm or indicator 34. When, however, the arm is moved to the position shown in Fig. 1, and into one of the interdental spaces in the carrier 24, said arm is positively connected to turn with the platen.

It will be understood from the foregoing description that the indicator or arm 34 may be turned on its pivot 35 from an interdental space in one of the carriers to an interdental space in the other carrier at any line space position of the platen in the rotative movement of the latter.

In the construction shown in Figs. 1 and 2, it will be observed that the numerical indices are progressively arranged around the indicator 20 and correspond to a single complete rotation of the platen, whereas in the construction shown in Fig. 4, I have provided two series of numerical indices on the corresponding carrier 20^a, one series being arranged progressively from "1" to "32" and the other being arranged progressively from "33" to "65" beside the first series. It will be understood, therefore, that the circularly arranged numerical indices in the construction shown in Fig. 4 correspond to two revolutions of the platen for purposes which will hereinafter more clearly appear.

In the use of a machine embodying my invention for condensed record billing work, the indicator 34 may be presumed to be in position in the interdental space indicated at "0" in the carrier 20. The indicator is then shifted into the registering interdental space in the carrier 24, where it will be maintained against accidental displacement by the spring washer 36. The bill sheet, record sheet and interposed carbon sheet are then simultaneously introduced into the machine, preferably with the leading edges of said sheets in register. The finger wheel 17 or 30 may then be employed to turn the platen forwardly or in the direction of the arrow in Fig. 3 to carry the sheets which have been introduced into the machine forwardly until the bill sheet is properly positioned to receive the first line of writing. This is determined in the usual manner by the operator observing when the proper point on the bill is brought to the printing line. Thus the platen is turned forwardly until the "date line", for example, on the bill sheet is brought to the printing line indicated at *a* in Fig. 3. During this forward movement of the platen the carrier 24 has been moved in the direction of the arrow in Fig. 1 until the bill sheet has arrived at the proper position. It may be assumed that it required a rotative movement of the platen correspond-

ing to sixteen line spaces to bring the date line on the bill sheet to the printing point. This will have moved the indicator 34 to a position where it will register with the interdental space 23 in the fixed carrier 20 opposite the index numeral "16". The operator now shifts the indicator 34 from the carrier 24 to the carrier 20 and into the interdental space opposite the index numeral "16" in the last mentioned carrier. The operator then proceeds to write the bill, and a carbon copy thereof will be reproduced on the record sheet. After the bill has been written the operator gives the platen a double line space movement in order to provide proper spacing between the last line copied on the record sheet and the first line of the next bill to be copied on the record sheet. The operator then shifts the indicator 34 from the fixed carrier 20 to the rotative carrier 24 and turns the platen rearwardly until the indicator 34 reaches the index numeral "0". The effect of this movement is to turn the platen rearwardly, carrying the bill sheet, record sheet and interposed carbon back sufficiently far to afford a removal of the written bill sheet and to properly position the platen and record sheet to receive a newly introduced bill sheet. When a new bill sheet has been introduced into the machine, the platen may be turned forwardly by either of the finger wheels 17 or 30 until the "date line" on the bill sheet arrives at the printing line *a*. The operator then shifts the indicator 34 into engagement with the fixed carrier and proceeds to write the bill as before. These operations are repeated indefinitely.

It will be understood, it is believed from the foregoing description, that the indicating numerals on the carrier 20 are not necessary and that the indicator 34 may be shifted into the proper interdental space in the carrier 20 without the use of the indices on the member 20, except that the same kind of an indication should be employed at all times to designate the position of the interdental space indicated in the drawing at "0." This space may be indicated in any suitable manner, in the event of the numerical indices being dispensed with.

In Fig. 4 I have shown a double set of numerical indices and the purpose of this arrangement is to provide for deep printed headings on the bill sheets which necessitate more than a complete revolution of the platen in order to bring the first line to be written on the bill sheet to the printing line. If, for instance, a printed heading of, say, about four inches in depth should be employed, this would necessitate, we will assume, one and a third revolutions of the platen to compensate for the depth of the printed bill head. With such a bill head it may be assumed that the indicator 34 is first

positioned in the interdental space in the carrier 20 opposite "0." The indicator 34 is shifted as before to the registering interdental space in the carrier 24. The bill sheet, record sheet and interposed carbon sheet are introduced as before into the machine, and the platen is turned forwardly until the date line has been brought to the printing line *a* as previously described. It may be assumed that this movement requires a rotative movement of the platen corresponding to forty-one line spaces of the platen. The indicator 34 will have been rotated a corresponding distance and will be brought into register with the interdental space opposite the index numeral "41" on the fixed carrier. The indicator is shifted as before into said interdental space and the bill is completed. After a double line space movement has been given to the platen to provide proper spacing between the copies of the bills on the record sheet, the indicator 34 will be again shifted into the registering interdental space in the carrier 24 and the platen will be given a complete backward rotation and a further movement sufficient to bring the indicator 34 into register with the interdental space in the carrier 20 opposite the indication "0." This indicates that the platen has received an extent of backward rotation sufficient to carry the bill sheet back to a point where it may be removed, and has carried the record and carbon sheets back to a position where a newly introduced bill sheet may be received and introduced into the machine and properly positioned with reference to the last copied item on the record sheet. The platen is then turned forwardly as before and these operations are repeated indefinitely.

If desired the completed bill sheet in each case may be removed as soon as completed without disturbing the record and carbon sheets and before a backward rotation is given to the platen.

From the foregoing description it will be understood that the platen is at all times free to be rotated either backwardly or forwardly unlimited extents; that there is at no time any obstruction to the rotation of the platen; that the construction is simple and can be manufactured at small cost and is efficient in use; and that the devices may be readily applied to the platen shaft of most typewriting machines, especially visible writing machines, outside of the end bars of the carriage, without modifying or materially modifying the structural features of such machines as they now exist. It will be understood, moreover, that in the use of the device there are no mental calculations to be made, nor is there any strain on the mind of the operator in remembering any particular numerical indices or in making any calculations for variations in the char-

acter of the work produced. While numerical indices have been provided, it should be understood that ordinarily such indices need not be used, since the positioning of the bill sheet with reference to the printing line by turning the platen forwardly is effective in itself to properly position the indicator arm 34 with reference to the fixed carrier, and that the shifting of the arm into engagement with the carrier at the point at which the platen has been arrested, is all that is necessary. When the indicator or arm 34 is again shifted into engagement with the rotative carrier 24 and the platen is turned rearwardly until the indicator reaches the "0" position, the proper extent of backward movement will be transmitted to the platen to receive a newly introduced bill sheet.

While the arrangement of the carriers 20 and 24, concentric with the platen, in the manner shown, provides a simple and inexpensive construction, it should be understood that the carriers may be otherwise arranged and that the carrier 24 may be connected with the platen or platen shaft in any suitable manner.

Various changes may be made without departing from the spirit and scope of my invention.

What I claim as new and desire to secure by Letters Patent, is:—

1. In a typewriting machine, the combination of a carriage, a rotative platen carried thereby and which is at all times free to be rotated unlimited extents both backwardly and forwardly, a rotative indicator, and means for fixedly connecting said indicator with the carriage or with said platen as may be desired at any line space position of the platen in the rotative movement thereof and irrespective of the rotative position of the indicator.

2. In a typewriting machine, the combination of a carriage, a rotative platen which is at all times free to be rotated unlimited extents both backwardly and forwardly, an indicator-carrier fixed to the carriage, an indicator-carrier connected to move in unison with the platen as the latter is rotated, a rotative indicator, and means for disconnecting said indicator from either one of said carriers and for connecting it with the other of said carriers at any line space position in the rotative movement of the platen and irrespective of the rotative position of the indicator.

3. In a typewriting machine, the combination of a carriage, a rotative platen at all times free to be rotated unlimited extents both backwardly and forwardly, an indicator-carrier fixed to the carriage and arranged concentric with the platen, a second indicator-carrier fixed to turn with the platen and arranged concentric therewith,

a rotative indicator, and means for disconnecting said indicator from either one of said carriers and for connecting it with the other of said carriers at any line space position in the rotative movement of the platen and irrespective of the rotative position of the indicator.

4. In a typewriting machine, the combination of a carriage, a rotative platen carried thereby and which is at all times free to be rotated unlimited extents both backwardly and forwardly, a rotative indicator mounted concentric with the platen and adapted to turn with the platen or to remain fixed while the platen turns independently thereof, and means for fixedly connecting said indicator with the carriage or with said platen as may be desired at any line space position of the platen in the rotative movement thereof and irrespective of the rotative position of the indicator.

5. In a typewriting machine, the combination of a carriage, a rotative platen, two annular carriers, one of said carriers being fixed to the carriage and the other turning with the platen, an indicator shiftable from one carrier to the other at any line space position of the platen, and means for positively connecting said indicator with either one or the other of said carriers as may be desired.

6. In a typewriting machine, the combination of a carriage, a rotative platen, two annular carriers arranged concentric with the platen, one of said carriers being fixed to the carriage and the other turning with the platen, an indicator shiftable from one carrier to the other at any line space position of the platen, and means for fixedly connecting said indicator with either one or the other of said carriers as may be desired, said connecting means comprising teeth in adjacent edges of said carriers, the indicator being received in the interdental spaces between said teeth.

7. In a typewriting machine, the combination of a carriage, a rotative platen, an indicator-carrier constantly maintained fixed to the carriage, a second indicator-carrier constantly maintained operatively connected to rotate with the platen, teeth on said carriers, and an indicator which is shiftable from the interdental spaces between the teeth on one carrier into the interdental spaces between the teeth on the other carrier, whereby said indicator may be positively connected to one or the other of said carriers as may be desired.

8. In a typewriting machine, the combination of a carriage, a rotative platen, a line spacing ratchet wheel, two toothed carriers, one of said carriers being fixed to the carriage and the other fixed to move in unison with the platen in the rotative movement of the latter, there being as many interdental

spaces between the teeth on each carrier as there are teeth on the line spacing wheel, and an indicator which is shiftable from one carrier to the other and into and out of the interden-
5 tal spaces between the teeth on said carriers.

9. In a typewriting machine, the combination of a carriage, a rotative platen, a line spacing ratchet wheel, two annular toothed carriers arranged concentric with the platen, one of said carriers being fixed to the carriage and the other fixed to the platen, there being as many interdental spaces between the teeth on each carrier as there are teeth
10 on the line spacing wheel and said teeth on the carriers projecting in opposite directions from adjacent edges of said carriers, and an indicator which is shiftable from one carrier to the other and into and out of the
15 interdental spaces between the teeth on said carriers.

10. In a typewriting machine, the combination of a carriage, a rotative platen carried thereby and which is at all times free
25 to be rotated unlimited extents both backwardly and forwardly, an indicator in the nature of an arm that it pivoted to turn in two directions at substantially right angles to each other, and means for fixedly connecting said indicator with the carriage or
30 with said platen as may be desired at any line space position of the platen in the rotative movement thereof, the movement of the arm in one direction affording a connection
35 or disconnection thereof with one of said members or the other and the movement of the arm in the other direction affording a movement of the arm with the platen.

11. In a typewriting machine, the combination of a carriage, a rotative platen which is at all times free to be rotated unlimited
40 extents both backwardly and forwardly, an indicator-carrier fixed to the carriage, an indicator-carrier connected to move in unison with the platen as the latter is rotated, a rotative indicator, means for disconnecting said indicator from either one of said
45 carriers and for connecting it with the other of said carriers at any line space position in the rotative movement of the platen and irrespective of the rotative position of said
50 indicator, and means for mounting said indicator for movement in two directions at substantially right angles to each other, the
55 movement of the indicator in one direction affording the connection and disconnection between said indicator and said carriers and the movement of the indicator in the other
60 direction affording a movement thereof with the carrier which is connected to move in unison with the platen.

12. In a typewriting machine, the combination of a carriage, a rotative platen which is at all times free to be rotated unlimited
65 extents both backwardly and forwardly,

two disks arranged concentric with the platen and each provided with a circularly arranged series of crown teeth that project therefrom toward the teeth of the other disk so that the interdental spaces between the
70 teeth on the two disks may be brought into register, one of said disks being connected to turn with the platen and the other being fixed against such turning movement, and
75 an arm that has an indefinite extent of rotative movement and that may be moved from an interdental space in one disk into a registering interdental space in the other disk irrespective of the position of said arm.

13. In a typewriting machine, the combination of a carriage, a rotative platen which is at all times free to be rotated unlimited
80 extents both backwardly and forwardly, two indicator carriers, one of said carriers being fixed to the carriage and the other turning
85 with the platen, an arm which has an indefinite extent of rotative movement and which is free to turn around the axis of the platen with the turning indicator or which
90 affords a movement of the turning indicator independently thereof, and means for affording a movement of said arm longitudinally of the platen and into engagement
95 with either one of said carriers and out of engagement with the other at any line space position of the platen in the rotative movement thereof and irrespective of the position of said arm.

14. In a typewriting machine, the combination of a carriage, a rotative platen which
100 at all times is free to be rotated to any desired extent either forwardly or backwardly, and a rotative arm which may be connected at will with either the carriage or the platen
105 to rotate with the latter at any letter space position of the platen and irrespective of the rotative position of the arm.

15. In a typewriting machine, the combination of a carriage, a rotative platen at all
110 times free to turn unlimited extents backwardly and forwardly, a disk fixed to the carriage and carrying circularly arranged numerical indices, a second disk fixed to turn with the platen, and an arm that may
115 be shifted out of connection with one disk and into connection with the other, said arm being free to rotate unlimited extents either backwardly or forwardly when it is shifted into connection with said turning disk and
120 adapted to remain fixed against movement when the arm is shifted into connection with the fixed disk.

16. In a typewriting machine, the combination of a carriage, a rotative platen, a fixed disk having circularly arranged
125 numerical indices thereon, a rotative arm, and means for connecting said arm to turn with the platen at any point in the rotation of the latter and at any point in the rotative movement of said arm or for connecting the arm
130

to the fixed disk to hold the arm against movement, the movement of the arm with the line space movements of the platen carrying said arm into register with the different numerical indices.

5 Signed at the borough of Manhattan, city of New York in the county of New York

and State of New York, this 16th day of December, A. D. 1910.

CHARLES E. SMITH.

Witnesses:

E. M. WELLS,

M. F. HANNWEBER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
