No. 681,750. Patented Sept. 3, 1901.

B. C. STICKNEY & C. GABRIELSON.

TYPE WRITING MACHINE.

(Application filed Nov. 16, 1896.)

(No Model.)

FIG. 1.

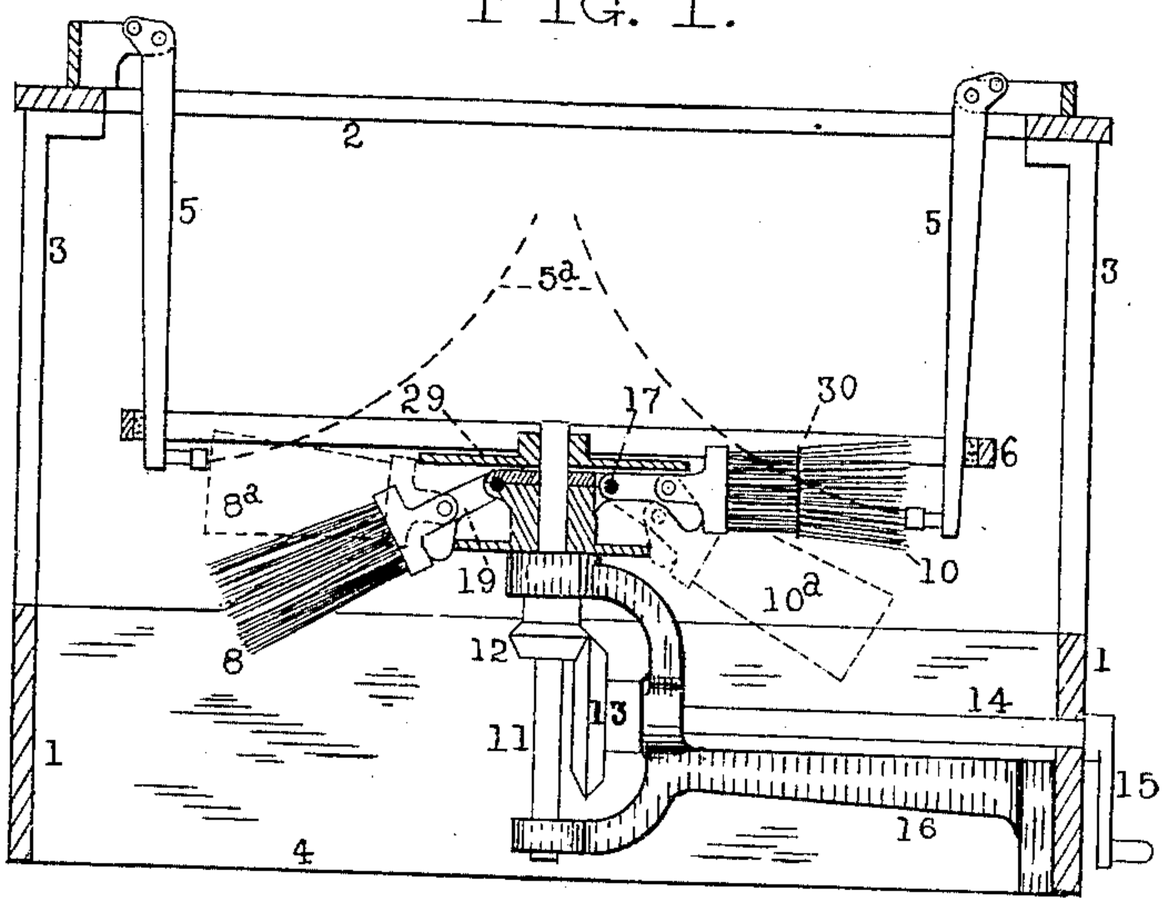
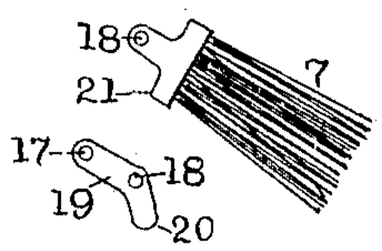
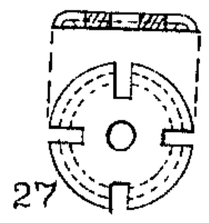


FIG 3.





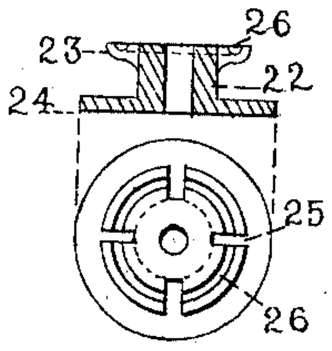
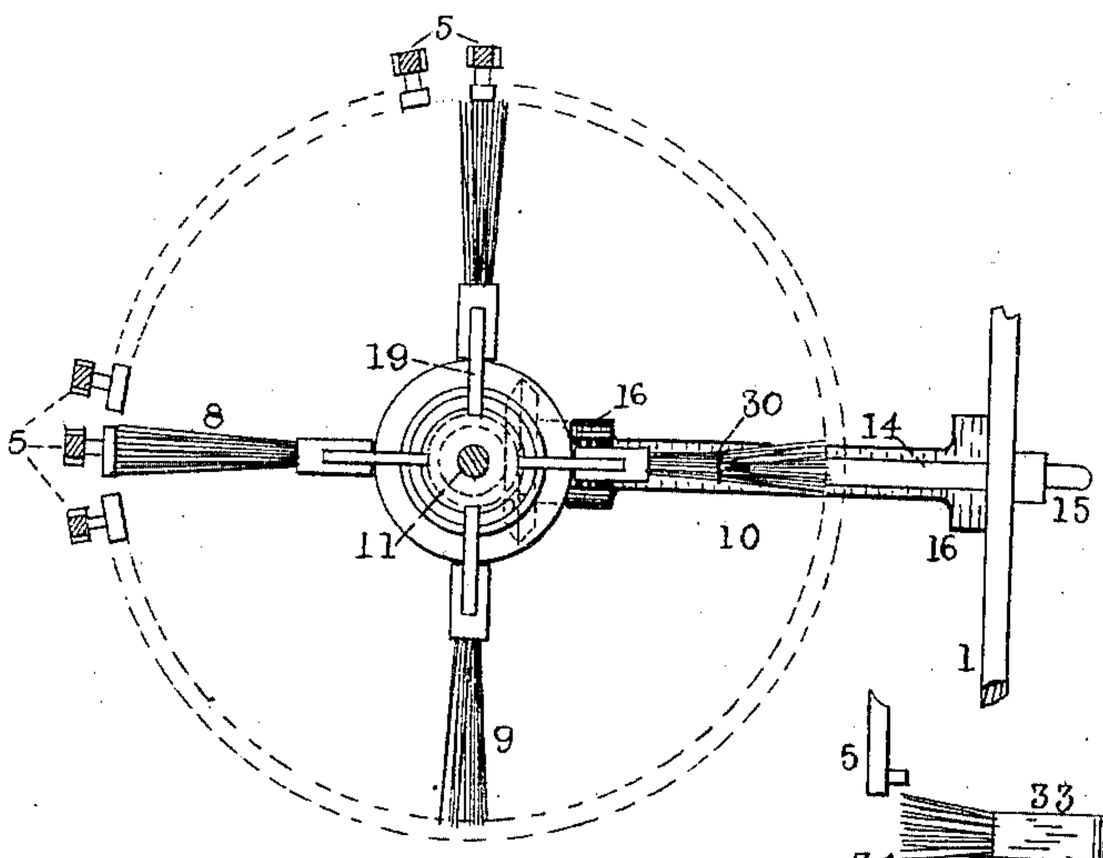


FIG. 2.



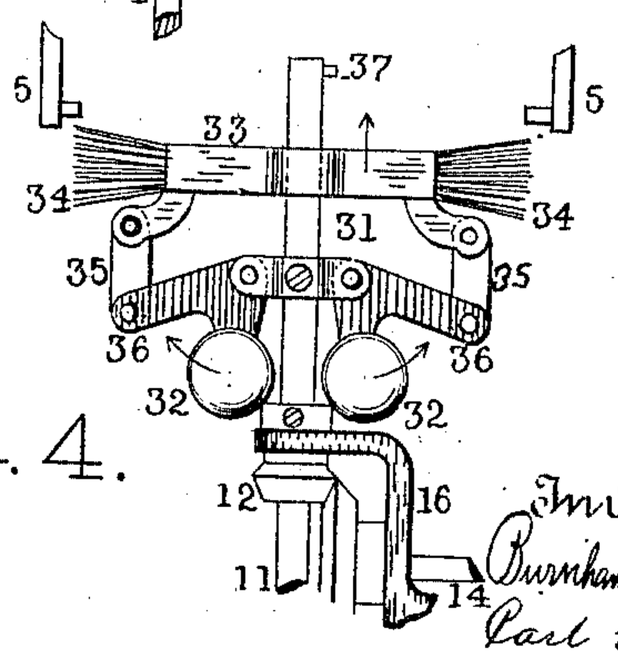


FIG. 4.

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BURNHAM C. STICKNEY AND CARL GABRIELSON, OF ELIZABETH, NEW JERSEY, ASSIGNORS, BY DIRECT AND MESNE ASSIGNMENTS, TO JACOB FELBEL, OF BOROUGH OF MANHATTAN, NEW YORK, N. Y.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 681,750, dated September 3, 1901.

Application filed November 16, 1896. Serial No. 612,240. (No model.)

To all whom it may concern:

Be it known that we, BURNHAM C. STICKNEY and CARL GABRIELSON, citizens of the United States, and residents of Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

Our invention relates to brushes for cleaning the types in type-writing machines; and its object is to improve the construction and simplify the operation thereof.

The invention consists in the combination, with a series of types, of one or more rotary brushes arranged without the type-field and adapted when rotated to be moved by the action of centrifugal force into contact with the types; and it further consists in the various features of construction and combinations of devices hereinafter more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a front elevation, partly in section, of our improvement as applied to a type-writing machine. Fig. 2 is a plan showing the brushes in operative position. Fig. 3 gives views of various details, and Fig. 4 illustrates another method of lifting the brushes by means of centrifugal force.

In the several views similar numerals of reference designate similar parts.

1 represents the side wall of the base of a type-writing or similar type-striking machine; 2, the top plate or type-bar ring; 3, the usual posts extending from the base to support the top plate, and 4 the rear wall of the base. Swinging type-bars 5 depend from the top plate and are provided with an annular type-basket 6.

Any number of type-brushes (designated by the numerals 7 8 9 10) may be employed. The brushes are connected to a centrally-arranged vertical rotary shaft 11. The shaft is provided with a small bevel gear-wheel 12, meshing with which is a larger bevel gear-wheel 13, arranged upon the inner end of a horizontal shaft 14, which protrudes through the side wall of the base and is provided with a crank 15, whereby it may conveniently be rotated. The shafts and appurtenances are supported in a bracket 16, secured to the framework of the machine. The outer end of shaft 14, however, is journaled in the wall of the base. At its inner end the bracket is forked to provide a long bearing for the vertical shaft 11. The brushes, guards, supports, &c., are secured to the portion of the shaft projecting above the bracket. The small gear-wheel is secured to the shaft at a point below the upper bearing. Normally the brushes lie in the position shown in full lines at 8 and in dotted lines at 10^a. In this position they lie outside of the type-field—*i. e.*, outside of the space occupied by the types in swinging to make their impressions, as indicated by the dotted curves 5^a.

To clean the types, the crank 15 is turned in either direction, and rotary motion is thereby communicated through shaft 14 and gear 13 to gear 12 and shaft 11. The latter rotates at an accelerated speed, owing to the difference in size of the gear-wheels. The brushes rotate with shaft 11, and by the action of centrifugal force they swing or fly outward and upward about the pivots 17 until they reach the position shown in full lines at 10, where they fly around at a right angle to the shaft 11 and in contact with the types. This flying position is maintained by the brushes so long as crank 15 is turned. Upon diminishing the speed or ceasing to turn the crank the brushes will fall by gravity to normal position. To facilitate the prompt return of the brushes, the brush-handles are broken and the two parts pivoted to each other at 18, Fig. 3, so that at the cessation of the rotary motion the brush collapses, the link 19 swings by gravity down about the pivot 17, the inner end of the brush falling with it, until the position of the parts shown by dotted lines at 8^a is reached or until the bristles are freed from the types, whereupon the outer end of the brush also falls. Without the joint 18 the bristles by catching upon the types would be likely to hinder the prompt collapse or return of the brushes to normal position. The link 19 is provided with a short arm 20, which

contacts with the shoulder of the brush at 21 and limits the motion thereof about the pivot 18.

In the above-described mechanism for carrying out our invention the link 19, the handle, and the body of the brush taken together constitute a swinging weight, which upon rotation is acted upon by centrifugal force, so that it swings upwardly and outwardly, whereby the type-cleaning end of the brush is carried into contact with the types.

The brushes are pivotally connected to the shaft 11 in the following manner: A collar 22, Fig. 3, fixed upon the shaft, is provided with an upper flange 23 and a lower flange 24. Flange 23 is slotted, as at 25, to receive the links 19, and it is also provided on its upper surface with a circular groove 26. A cap 27 is provided with a similar groove in its lower surface, also with slots to match the slots 25. In assembling a wire ring 28 is passed through the pivot-holes 17 of the links 19, which are then arranged in the slots, the ring fitting in the circular grooves. The cap 27 is then soldered, screwed, or riveted to the flange 23, securing the links in place and permitting them to swing about the pivots 17, the ring 28 serving for all the pivots. The lower flange 24 supports the brushes when in normal position, the arms 20 resting thereon. The shaft 11 is also provided with a top guard-plate 29, which prevents accidental upward displacement of the brushes. This guard-plate and the cap 27 are omitted from Fig. 2, so as to make clear the manner of stringing the links 19 upon the wire ring 28 and their arrangement in the slots 25.

As illustrated at Fig. 1, the faces of the types may be arranged at different heights and the brushes are sufficiently large to clean them all. The type-bars are arranged in a concentric curve, as shown by dotted lines at Fig. 2. If desired, the bristles may be bound together, as at 30, to make the brush stiffer and more effective.

At Fig. 4 the vertical motion of the brushes into the type-field is obtained by connecting them to a pair of pendulums similar to those used in governors for steam-engines. Upon turning the crank the pendulums are swung outwardly by the action of centrifugal force, and by means of suitable connections the brushes are thereby elevated into the type-field. The shaft 11 is rotated by means of gears 12 13 and crank-shaft 14, as in the other views. A collar 31 is secured to the shaft 11, to which are pivotally secured two hanging weights 32. Arranged near the top of the shaft and adapted to slide thereon is a cross-bar 33, provided at its ends with type-cleaning brushes 34. A circular brush may be employed, if preferred, in place of a cross-bar with two brushes. Links 35 are pivoted at their upper ends to two arms that depend from the cross-bar 33 and at their lower ends to the free ends of arms 36, with which the pendulums are provided. Upon the crank being turned rotary motion will be imparted to shaft 11, collar 31, and weights 32, which will swing outwardly upon their pivots, as indicated by the curved arrows, and by means of arms 36 will lift the links 35 and the cross-bar 33 with its brushes 34. A stop-pin 37 at the top of the shaft limits the upward motion of the parts. The brushes will sweep across the faces of the types as long as the crank is turned, and upon cessation of the crank motion the parts will return by gravity to normal position. To assist such return, the arms of the cross-bar may, if desired, be made collapsible in the same manner as shown in the other figures with reference to the brush-handles.

If desired, other than the described means may be employed to rotate the brushes, or other type-cleaning devices than brushes may be employed, or different means for moving the brushes from normal to active position, and vice versa, or for performing various other offices of the invention. The means we have described for performing the various functions are those preferred by us; but, so far as the broad features of our invention are concerned, it is not our intention to limit ourselves to such means.

So far as both the broad and minor features of our invention are concerned many changes in form and detail construction and arrangement may be made without departing from the spirit of our invention, and it is not our intention to limit ourselves in any instance to the precise details above described.

The gist of one part of our invention resides in causing the type-cleaning end of the brush to be moved into contact with the types through the instrumentality of centrifugal force.

In the practical embodiment of our conceptions we have employed combinations of devices which are valuable in other associations and which it is our desire to secure hereby. To illustrate: In carrying out the idea of a centrifugally-operating cleaner we have made use of a series of brushes adapted to collapse in the same manner as an umbrella, and we regard this collapsible-brush feature as valuable *per se*, whether or not centrifugal force is employed, and in carrying out the idea of a continuously-rotary brush provided with an operating-crank and adapted to move automatically into the type-field we have preferably used centrifugal force to impart to the brushes the desired automatic movement; but we desire to secure this feature broadly, whether the effect is produced by means of centrifugal force or otherwise.

What we claim herein as new, and desire to secure by Letters Patent, is as follows:

1. The combination with a series of types of a brush arranged below the types, means for rotating the brush, and means called into action only at such rotation for elevating the brush into the type-field, the brush being

mounted to rotate in working position against the types as long as the brush-rotating means are kept in action, and thereafter to return automatically to normal position.

2. In a writing-machine, the combination with a series of types of a rotating brush arranged below the types, means called into action only at the rotation of the brush to elevate it into the type-field; a crank having a permanent bearing upon the frame of the machine, and operative connections from the crank to the brush-elevating means, said connections being permanently arranged outside of the type-field, whereby the types may be freely operated without removing said connections from the machine.

3. In a writing-machine, the combination with a series of types of a rotating brush arranged below the types, means called into action only at the rotation of the brush to elevate it into the type-field, the brush being mounted to rotate in working position against the types in the same direction as long as the brush-rotating means are kept in action, a crank having a permanent bearing upon the frame of the machine, and operative connections from the crank to the brush-elevating means, said connections being permanently arranged outside of the type-field, whereby the types may be freely operated without removing said connections from the machine.

4. The combination with a series of types of a brush arranged below the types, means for rotating the brush, and means called into action only at such rotation for elevating the brush into the type-field, the brush being mounted to rotate in working position against the types as long as the brush-rotating means are kept in action and thereafter to return automatically to normal position, a crank having a permanent bearing upon the frame of the machine, and operative connections from the crank to the brush-elevating means, said connections being permanently arranged outside of the type-field, whereby the types may be freely operated without removing said connections from the machine.

5. The combination with a series of types of a rotary brush arranged without the type-field and constructed to be moved into the type-field and toward the types by means of centrifugal force developed at its rotation.

6. The combination with a series of types of a rotary brush arranged without the type-field and constructed to be moved into the type-field and toward the types by means of centrifugal force developed at its rotation, and constructed also to return automatically to normal or inactive position upon the cessation of its rotation.

7. The combination with a series of types of a brush and a crank for rotating it, the brush being constructed to be moved toward the types by the action of centrifugal force developed by turning the crank.

8. The combination with a series of types of a rotary shaft and a type-cleaning mechanism, inclusive of a centrifugally-swinging weight, supported thereon.

9. The combination with a series of types of a rotary shaft, a type-cleaning mechanism inclusive of a centrifugally-swinging weight supported thereon, and an actuating-crank for the shaft.

10. The combination with a series of types of a vertically-arranged shaft, a brush constructed to be rotated thereby, a horizontal shaft arranged in operative connection with the vertical shaft, means for turning the horizontal shaft, and means called into action only by the rotation of the horizontal shaft for causing the brush to rise.

11. The combination with a series of types of a vertical shaft bearing a type-cleaning brush, means for causing the brush to move automatically into contact with the types only at the rotation of said shaft, and a horizontally-arranged shaft operatively connected to said vertical shaft and provided at one end with a crank, substantially as set forth.

12. The combination with a series of types of a brush arranged below the type-field and mounted upon a vertical shaft fixed against endwise motion, and means actuated by the rotation of the shaft for causing the brush to move up into the type-field.

13. The combination with a series of types of a brush constructed to swing centrifugally into contact with the types when it is rotated.

14. The combination with a series of types of a radially-arranged brush constructed to swing centrifugally into contact with the types when it is rotated.

15. The combination with a series of types of a centrifugally-flying brush and means for rotating it, said brush normally standing out of the paths of the types but upon rotation flying into the paths of the types by centrifugal force and cleaning said types as the rotation is continued.

16. The combination with a vertically-arranged shaft bearing a centrifugally-flying type-cleaning brush of a horizontal shaft operatively connected thereto and provided with turning means, said brush standing normally out of the paths of the types but flying into the said paths upon rotation of the brush and cleaning said types as the turning movement is continued.

17. The combination with a series of types of a collapsible rotary centrifugal type-cleaning brush normally out of the paths of the types, the axis of whose rotation stands always vertically, the construction and arrangement being such that when in action the brush sweeps across the faces of the types, and such that it may collapse and return to normal position out of the paths of the types, whereupon the types may be freely operated without altering the position of said rotary axis.

18. The combination with a series of types of a collapsible rotary type-cleaning brush constructed to move from an inactive posi-

tion toward the types by means of centrifugal force developed at its rotation, and means for rotating the brush.

19. The combination with a series of types of a brush pivoted to the free end of a link, as 19, the link being pivotally connected, as at 17, to a rotary member.

20. The combination with a series of types of a pivotally-mounted brush arranged below the types, and constructed when rotated to swing up about its pivot into contact with the types by means of centrifugal force and also constructed to return by gravity to normal position upon the cessation of its rotation.

21. The combination of shaft 11, link 19 pivotally secured thereto and provided with an arm 20, and the type-cleaning brush pivoted to the link and adapted to bear upon the arm.

22. The combination with a series of types of shaft 11, the centrifugally-moving type-cleaning brushes secured thereto, brush-support 24, and guard-plate 29.

23. The combination of shaft 11, collar 22 secured thereto and provided with slots 25 and groove 26, and provided also with a cap 27 having slots and groove to match, and ring 28 secured in the grooves and serving to pivotally support a series of type-cleaning brushes arranged within said slots.

24. The combination of a vertically-arranged shaft, constructed to have a rotary movement only, a fixed bracket having two bearings for the shaft, a type-cleaning brush arranged on the shaft above the upper bearing and constructed to move against the types and to move back out of the type-field without disturbing the vertical position of the shaft, a driving-wheel secured to the shaft below said upper bearing, and a horizontally-arranged shaft provided at one end with a crank and at the other end with a wheel to engage the first-mentioned wheel.

25. The combination with a series of types of a brush arranged below the types, means for rotating the brush, and means called into action only at such rotation for elevating the brush into the type-field, the brush being mounted to rotate in working position against the type, in the same direction, as long as the brush-rotating means are kept in action.

26. In a writing-machine, the combination with a series of types of a brush constructed to sweep across the faces of the types, a rotary member connected to said brush to rotate it, means for moving the brush automatically into the type-field and automatically back to normal position and controlled by said rotating means, a crank having a permanent bearing upon the frame of the machine, and operative connections from the crank to the said rotary member, said connections being permanently arranged outside of the type-field, whereby the types may be freely operated without removing said connections from the machine.

27. The combination with a series of types of a series of rotary brushes adapted to be moved toward the types by the action of centrifugal force.

28. The combination with a series of types of a series of independently-pivoted brushes radially arranged about a common center and standing normally below the type-field, and constructed to swing up into contact with the types by centrifugal force when rotated.

29. In a writing-machine, the combination with a series of types of a brush arranged below the types, means called into action only at the rotation of the brush to elevate it into the type-field, the brush being mounted to rotate in working position against the type in the same direction as long as the brush-rotating means are kept in action, and constructed to return to normal position automatically and independently of such rotation, a crank having a permanent bearing upon the frame of the machine, and operative connections from the crank to the brush-elevating means, said connections being permanently arranged outside of the type-field, whereby the types may be freely operated without removing said connections from the machine.

30. The combination with a series of types of a rotary type-cleaning mechanism including a centrifugally-swinging weight constructed to effect a movement of the type-cleaner from normal to operative position.

31. The combination with a series of types of a collapsible type-cleaning brush having a permanent vertical rotatory axis, and an operating-crank for rotating the brush, the brush being mounted to engage the type-faces only upon the rotation of the crank.

32. The combination with a series of types of a brush having a permanent rotary axis, and rotary means for moving it radially outward into contact with the types and thereupon to sweep it across said faces, the brush being constructed to thereafter return radially inward to normal position.

33. The combination with a series of types of a brush having a permanent rotary axis, rotary means for moving it radially outward into contact with the types and thereupon to sweep it across said faces, the brush being constructed thereafter to return radially inward to normal position, and a crank operatively connected to said rotary means.

34. The combination with a series of types of a series of independently-pivoted brushes having a common permanent rotary axis, and rotary means for moving the brushes radially outward into contact with the types and thereupon to sweep them across said faces, the brushes being constructed thereafter to return radially inward to normal position.

35. The combination with a series of types of a brush arranged below the types, and a support for the brush fixed upon the upper end of a spindle and having only a rotatory motion, the brush being mounted to automatically rise into the plane of the types when the brush-support is rotated.

36. The combination with a series of types of a brush arranged below the types, a horizontal shaft having only a rotary movement and provided with a crank, and means operated by the crank-shaft for elevating the brush and rotating it in contact with the types.

37. The combination with a series of types of a type-cleaning brush, and rotary means for elevating the brush and rotating it in contact with the types, the brush being constructed to collapse automatically upon the cessation of its rotary movement.

Signed at Elizabeth, in the county of Union and State of New Jersey, this 13th day of November, A. D. 1896.

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