P. E. KVISTAD.

STENCIL WRITING MACHINE.

APPLICATION FILED AUG. 13, 1917.

1,256,333.

Patented Feb. 12, 1918.

2 SHEETS—SHEET 1.

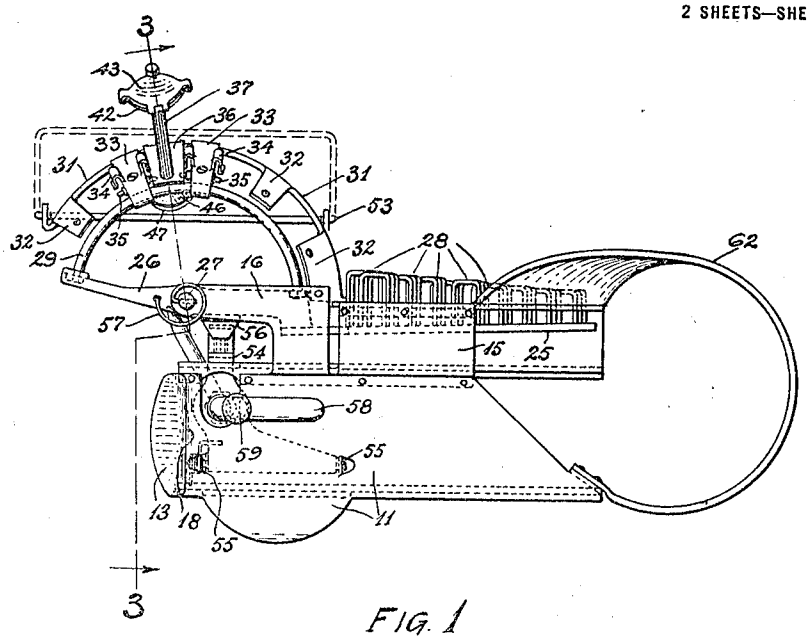


FIG. 1

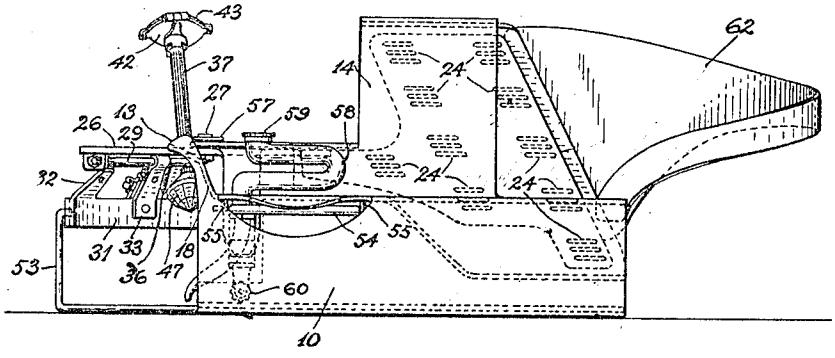


FIG. 2

Inventor
Paul E. Kvistad

By Attorney
C. D. Haskins

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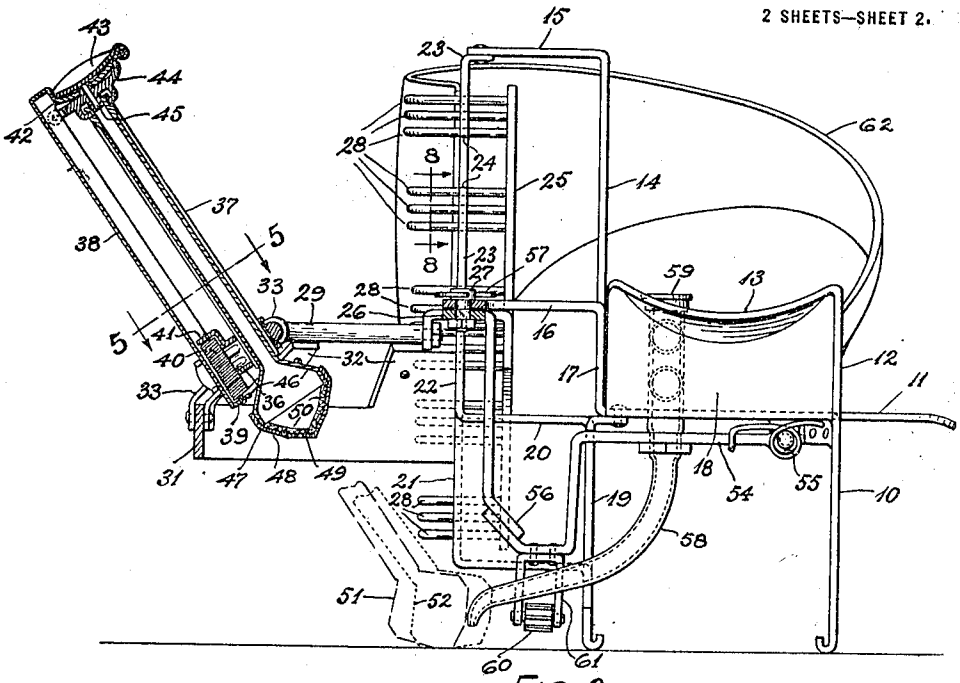


FIG. 3

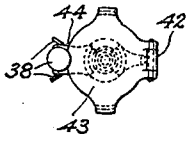


FIG. 4

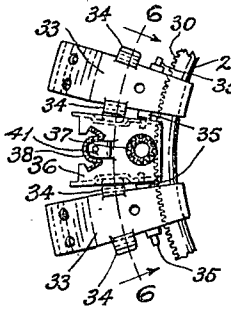


FIG. 5

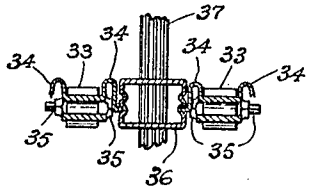


FIG. 6

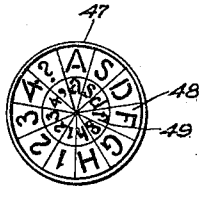


FIG. 7

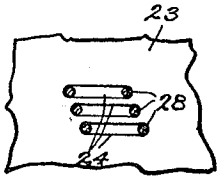


FIG. 8



FIG. 9

Inventor
Paul E. Kvistad

By Attorney
C. D. Haskins

UNITED STATES PATENT OFFICE.

PAUL E. KVISTAD, OF SEATTLE, WASHINGTON.

STENCIL-WRITING MACHINE.

1,256,333. Specification of Letters Patent. Patented Feb. 12, 1918.

Application filed August 13, 1917. Serial No. 186,079.

To all whom it may concern:

Be it known that I, PAUL E. KVISTAD, citizen of the United States, residing at Seattle, in the county of King and State of Washington, have invented a certain new and useful Improvement in Stencil-Writing Machines, of which the following is a specification.

My invention relates to improvements in stencil writing machines, and the object of my invention is to provide a writing machine which shall be adapted to be slidably movable to different positions when disposed upon a flat surface, as upon a blank leaf of an open book, or upon a sheet of paper, where it can be manually actuated to stencil upon said surface desired letters or characters in lines or in columns as may be required.

I accomplish this object by devices illustrated in the accompanying drawing wherein—

Figure 1 is a plan view of a stencil writing machine embodying my invention;

Fig. 2 is a view of the same in front side elevation;

Fig. 3 is an enlarged sectional view of the same on broken line 3, 3 of Fig. 1;

Fig. 4 is a plan view of a detail of the same;

Fig. 5 is a fragmentary sectional view of the same on broken line 5, 5 of Fig. 3;

Fig. 6 is a fragmentary view on broken line 6, 6 of Fig. 5, showing parts of the same;

Fig. 7 illustrates one of the stencil members of the same;

Fig. 8 is a fragmentary view in vertical section on broken line 8, 8 of Fig. 3; and

Fig. 9 is a perspective view of a detail of the same.

Referring to the drawings, throughout which like reference numerals indicate like parts, a frame is formed of two pieces of sheet metal, one of which pieces is cut and bent to form integral portions 10, 11, 12, 13, 14, 15, 16, 17 and 18, and the other of which pieces is cut and bent to form portions 19, 20, 21, 22 and 23, said two pieces being joined and riveted together to form a unitary frame, as indicated in Figs. 1, 2 and 3.

The portions 10 and 19 serve to form spaced supports that are parallel with each other, their lower edged portions being curved to form a smooth bottom bearing that will adapt the structure to be easily slidable when operatively disposed upon a surface on which characters are to be stenciled.

The portions 21, 22 and 23 form a rigid keyboard which is provided with ten groups 24 of slotted openings extending therethrough which groups are spaced one from another to dispose them in relative positions, as indicated more clearly by dotted lines in Fig. 2, there being three slotted openings in each group 24.

Extending through each of the slotted openings of each group 24 is a wire 28 bent in the form of a staple, the ends of all of said wires being rigidly fixed in one key-bar 25, as more clearly shown in Figs. 1 and 3.

The key-bar 25 is disposed in a vertical plane and is provided with an integral bracket arm 26, of angular form, which is pivotally attached to the underside of the portion 16 by a pivot bolt 27.

Each group 24 comprising three wires 28, of the form of staples, serve as a key which may be depressed by one's finger until the movement of the finger is intercepted by the surface of the key board formed by the portions 21, 22 and 23, and since all three wires 28 of each group 24 that constitute a key, are of equal length, but are different in length from the wires of any other group 24, it is manifest that a depression of any one key will swing the key-bar 25 on its pivot through an angular distance that is different from the distance that it would be caused to swing by a depression of any other one of the keys.

Extending in a horizontal plane from the bracket arm 26, and rigidly attached thereto, is a rack bar 29 which is curved in the form of a semi-circle that is concentric with the pivot bolt 27, as shown more clearly in Figs. 1 and 3, said rack bar 29 being provided with a series of teeth 30, as indicated in Fig. 5.

Rigidly attached to the frame of the structure is a semi-circular bracket 31 whose radius is larger than the radius of the circle of the rack bar 29 and whose axis is in the same vertical line with the axis of the circle of said rack bar 29, as indicated in Fig. 1.

Integral with the upper edge of the bracket 31 are spaced lugs 32, which project upwardly and converge inwardly, as indicated in Figs. 1 and 2.

Each of the lugs 32 serves as a support for a bearing bracket 33, but, for convenience in

drawing, I have shown only two adjacent ones of said lugs 32 as being supplied each with a bearing bracket 33.

The bearing brackets 33 are of thin sheet metal and are formed to extend from the inner side of the lugs 32 in a circle around the rack bar 29, thence to the outer side of said lugs 32 and in engagement therewith to terminate against the outer side of the bracket 31.

As indicated in Figs. 5 and 6, each of the bearing brackets 33 is provided with integral wing springs 34 that project from its upper side edges at opposite points thereof, and is further provided with integral pivots 35 that project from its side edges at opposite sides thereof between the wing springs 34 and the circular rack bar 29.

Pivotally mounted on the adjacent pivots 35 between adjacent ones of the brackets 33, is a guiding holder 36, formed of sheet metal, in the shape indicated in Figs. 3, 5 and 6, and extending through both the upper wall and the lower wall of said guiding holder 36 adjacent to the circular rack bar 29 is a circular hole, which serves as a bearing for a pinion rod 37, which is rotatably and slidably disposed to extend therethrough to adapt the teeth of said pinion rod 37 operatively to engage with the teeth of the circular rack bar 29, as indicated more clearly in Fig. 5.

Slidably disposed in a guiding recess formed in the outer edge portions of the guiding holder 36 is a slide bar 38, of corrugated cross-section, whose lower end portion is turned inwardly to a right angle, to form a lug 39, to which is connected a helical tension spring 40 that extends through the guiding holder 36 to connect its upper end to the underside of a lug 41 that is integral with the upper wall of said guiding holder 36, said spring tending to maintain the slide bar 38 in its uppermost position.

Integral with the upper end of the slide bar 38 is a concavo-convex lug 42, that extends inwardly therefrom substantially at right angles thereto and on its innermost end portion is articulated a cap 43 that is adapted to swing to cover and uncover the concave side of said concavo-convex lug 42.

Attached to the underside of the lug 42 and to the adjacent portion of the slide bar 38 is a bearing bracket 44 which serves as a bearing for the upper end portion of the pinion rod 37, as shown in Fig. 3.

The pinion rod 37 is hollow throughout its length and extending through the bearing bracket 44 and through the lug 42 is a passageway 45 through which ink may pass from the concave side of the lug 42 into the interior of the hollow pinion rod 37.

The hollow pinion rod 37 terminates at its lower end in an outwardly flaring bell-like portion 46 around whose outer edge portion is formed an external screw-thread on to which is screwed a cup-like stencil member 47 which is formed to have a plurality of facets, like the facets 48 and 49, through each of which facets 48 and 49 is formed a stenciled letter or other character as indicated in Fig. 7, and within the space inclosed by the flared portion 46 and the cup-like stencil member 47 is disposed a padding 50 of absorbent material.

The hollow pinion 37 and the space within the flaring bell-like portion 46 and the cup-like stencil member 47 is filled with a suitable ink which may percolate through the padding 50 and through the stenciled facets 48 and 49 so that when any one of the facets 48 and 49 engage with the surface of a paper the character represented in such facet will be stenciled on said surface in an obvious manner.

The guiding holder 36, on its opposite sides is corrugated to form two notches within either one of which may project the end of the wing springs 34 to maintain said guiding holder 36 in the respective one of two different angular positions as may be required to cause one of the facets 48 or one of the facets 49, as may be desired, to engage with the surface of the paper when the pinion rod 37 is depressed by a finger of one's left hand applied to the cap 43 to move said pinion rod to one of the different positions indicated by broken lines 51 and by dotted lines 52 in Fig. 3, either of which positions may be attained by swinging the slide bar 38 and guiding holder 36 to cause the wing spring 34 to project into the proper ones of the notches formed in the corrugated sides of the guiding holder 36.

While I have shown only one pinion rod 37 and its associated parts as being disposed between adjacent ones of the lugs 32, it is to be understood that there are three other pinion rods, each like the pinion rod 37, each disposed in a similar manner between adjacent ones of the other lugs 32.

By depressing any particular one of the different keys 28 the key board 25 will be actuated rotatively to move the circular rack-bar 29 in its circle concentric with the pivot 27 with the result that the pinion rod 37 will be rotated to dispose a corresponding particular one of the facets of the cup-like member 47 so that when the cap 43 is depressed such particular facet will engage with the surface of the paper upon which the structure is disposed, and thereupon another particular key may be depressed to rotate another particular one or the same one of the pinion rods 37 to dispose another corresponding particular facet in a position to engage with the surface of the paper upon the depression of its pinion rod 37, the structure being moved to a new position immediately after one of the pinion rods 37

has been depressed in order that each successive character stenciled on the paper may be on a proper line or in a proper column.

In order to prevent the structure from tipping from its horizontal position on the paper, if it be so required, I have provided a U shaped support 53, made of wire, whose opposite ends are articulated to the bracket 31, as indicated in Figs. 1 and 2, which support 53 may be swung downwardly to a vertical position to engage with the paper in the manner shown.

There are eleven facets in each of the two circles of the cup-like member 47, but only ten keys 28 for moving a desired one of ten of said facets to a required position and in order to move the eleventh one of said facets to a required position and to provide means for making a straight dotted line on the paper, I have provided a lever 54, one end of which is articulated to a lug 55 on the inner side of the portion 10 of the frame, as shown in Fig. 3, the free end of which lever 54 normally engages with an arm 56 that is integral with the key-bar 25, and upon a depression of the lever 54 the key-bar 25 will be actuated by a spring 57 to dispose the eleventh facet of a desired one of the two circular rows of facets of the cup-like member 47 of the required one of the pinion rods 37 in its desired position, the free end of the lever 54 by its downward movement disengaging from the arm 56 to permit such movement of the key-bar 25.

Attached to the lever 54 is a curved tube 58, one portion of which extends vertically through the horizontal portion 11, thence in a horizontal direction for a distance, thence in a curve and back again in a horizontal direction, thence vertical for a slight distance to terminate in an externally screw-threaded end portion, upon which is disposed a screw-threaded removable cap 59, the purpose of such irregular course being to provide sufficient interior space within the tube to serve as a reservoir of large capacity for containing ink.

The other lower portion extends downwardly in a curve toward the point on the paper toward which all the pinion rods 37 converge and its lowermost end portion is tapered almost to a point and is provided with an aperture through which ink may flow when the lever 54 is depressed by pressure of one's finger on the cap 59 to cause such tapered end of the tube 58 to engage with the surface of the paper, thus to deposit ink on said paper, and to cause the tapered end portion of the tube 58 intermittently to engage with the surface of the paper when the structure is moved to make a line, there is provided a notched roller 60 that is rotatably mounted in a bracket 61 that is fastened to said lever 54 in a position to engage with the surface of the paper when said lever is depressed to a point where the tapered end of the tube 58 engages with the paper so that when the structure is moved the notch roller 60 by its projection ridges will intermittently raise and lower the tube 58 from its contact with the paper to make a dotted line.

In order to permit one's hand to be steadied in its position while manipulating the different keys 28, I have provided a circular hand-hold 62 with which the inner surface of the palm of one's hand may engage.

A contemplation of the accompanying drawings and a consideration of the description of the structure as herein given will make clear the operation of the structure to one skilled in the art.

Obviously, changes may be made in the forms, dimensions and arrangement of parts of my invention without departing from the spirit thereof.

What I claim is:

A stencil writing machine of the class described which embodies a frame having supporting members to adapt it to be slidably supported on a surface to be stenciled; a vertically disposed key-board rigidly associated with said frame and provided with key-holes extending therethrough; a lever pivotally mounted on said frame and provided at one end with an attached key-bar disposed adjacent to said key-board and parallel therewith whereby said key-bar may be actuated to swing toward and away from said key-board; a plurality of keys of different lengths rigidly fixed in said key-bar and disposed freely to project through said key-holes of said key-board; a toothed rack-bar attached to said lever and disposed in a horizontal plane to extend in a circle concentric with the pivot of said lever; a bracket attached to said frame and disposed to extend in a larger circle concentric with the circle of said rack-bar; a plurality of spaced lugs integral with said bracket and disposed to extend obliquely upward in converging lines therefrom; a plurality of guiding holders disposed each between adjacent ones of said spaced lugs and pivotally associated therewith; a slide-bar mounted on each of said guiding holders and adapted to be slidably movable thereon; a pinion-rod rotatably mounted on each of said slide-bars and adapted operatively to engage its teeth with the teeth of said rack-bar whereby it may be rotatively moved in response to movements of said key-bar, said pinion-rod being hollow throughout its length; a stencil member comprising a cup formed to have two circular rows of facets each of which facets is perforated to form a stencil, said stencil member being attached to the lower end of said pinion

member, a pad of absorbent material disposed within said stencil member adjacent to said stenciled facets whereby ink from within said hollow pinion rod may be caused slowly to percolate therethrough into the perforations of said facets, a funnel and cover provided on the upper end of said pinion-rod; and detent means for holding said slide-bar at a desired one of two different angular positions with respect to a vertical line.

In witness whereof I hereunto subscribe my name this 6th day of August, A. D. 1917.

PAUL E. KVISTAD.