June 1, 1937. G. H. C. VONCK 2,082,370

SHORTHAND WRITING MACHINE

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Fig. 1.

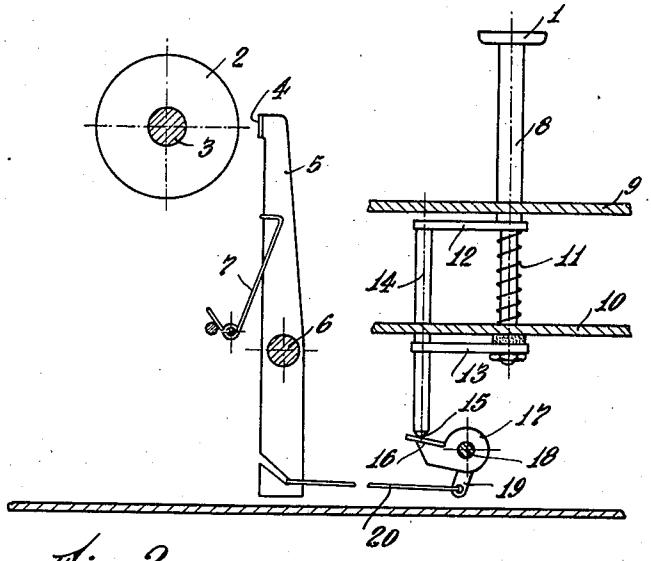


Fig. 2.

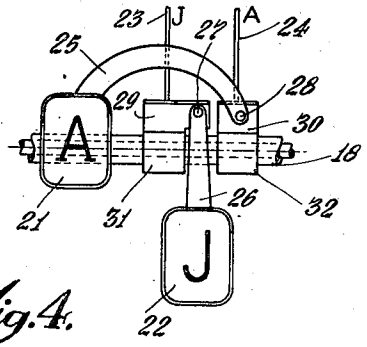


Fig. 3.

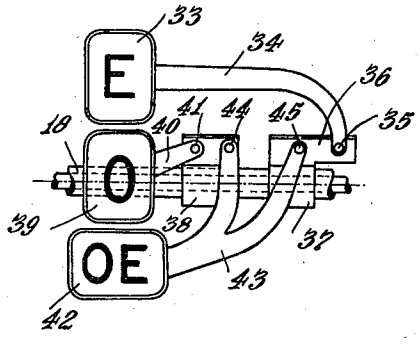
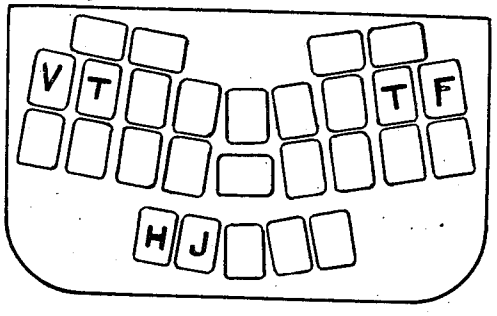


Fig. 4.



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2,082,370

SHORTHAND WRITING MACHINE

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In the Netherlands October 3, 1934

4 Claims. (Cl. 197—9)

The invention relates to a writing machine, more especially a shorthand writing machine by means of which one or a plurality of characters (letters, figures or the like) may be simultaneously printed on a paper strip running over a printing roll.

The machines of this kind hitherto known have various drawbacks which may be ascribed partly to an injudicious transmission between the keys of the keyboard and the types that are printed on the paper strip and partly by an injudicious arrangement of the keys, the types and the transmission members with regard to each other.

The keyboard of any writing machine, no matter of what kind, should be adapted as much as possible to the shape of the human hand and for this reason the keys should be arranged so that the hands manipulating the machine are in a natural position and moreover that as much as possible, the keys most frequently used are struck by the fingers that are strongest. Consequently the keys that are to be moved by the thumbs are to be placed in a row that lies in front of the other keys, as the thumbs are shorter than the other fingers calculated from the wrist, which is the pivot on which the hand turns. It is also necessary that the dip of the keys be as shallow as possible since the smaller the distance to be travelled by the keys and consequently by the hands, the quicker and the easier the writing. It is likewise a requirement that the keys are pressed down in a vertical direction as much as possible, because if the key lever is pivoting during printing, the surface of said key will take an oblique position when pressed down farthest, so that the fingers will easily slip off the keys.

Finally it is a fact that the sequence of the characters especially the letters which are to be printed on the paper, is dependent on the sequence of the letters in the words belonging to the most currently used languages. In order to meet all the requirements mentioned above, it will therefore often be necessary that the order in which the keys are arranged on the keyboard is different from the order of the types that are to be pressed against the printing roll. For this purpose a very special construction of the keyboard and the connecting members between the keys and the type bars is required.

It is also often desirable that more than one character be printed by means of a single key; this will cause a considerable reduction of the number of times that a key is to be pressed down.

The present invention has for its purpose to provide a machine meeting all the requirements mentioned above and also a few additional ones; it has a very compact and simple construction and will enable the operator to work at a high rate of speed.

As will be shown below, the machine moreover has the advantage that the keyboard with the keys and the key levers may be readily constructed as a single unit of a very compact form and may be taken out of the machine as such and used in other machines of the same or a different kind.

The machine according to the invention is characterized in that the printing types are mounted facing the printing roll in a sequence, different from the one corresponding to the arrangement of the keys in the different horizontal rows on the keyboard and that the sequence of the types is altered with respect to the arrangement of the keys on the keyboard by the insertion of transmission members of such shape and construction, that each one of the printing types will take the most desirable position with regard to the printing roll.

The invention will be further explained with the aid of the drawing in which—

Fig. 1 is a schematic illustration of the device for moving the types.

Fig. 2 represents an embodiment of a special arrangement of the types and keys.

Fig. 3 represents a method for pressing down several types by means of a single key.

Fig. 4 represents a keyboard.

In Fig. 1 which very schematically represents only one key indicated by 1, 2 is the paper roll which is rotatably mounted on a shaft 3. The type 4 attached to a type bar 5 is adapted to strike against the roller 2, since the said type bar 5 is pivotally mounted on the shaft 6; the type bar 5 is held away from the roll 2 by means of a spring 7 or the like. The type bar 5 is moved by pressing down the key 1 placed on the key lever 8, by means of a lever system constructed in a special manner according to the invention. The key levers 8 are mounted together in openings of two interconnected parallel plates 9 and 10, in which openings said key levers are able to move up and down. The lever 8 is held in the raised position by means of a spiral spring 11. The lower part of the lever 8 is provided with parallel guide members, consisting of two transversal arms 12 and 13 mounted about the lever 8 and carrying at their ends the pressure bar 14, which is adapted to move up and down through an opening in the lower plate 10. The pressure bar 14 is provided at its lower end with a steel ball 15 co-operating with a small pressure sur-

face 16 provided on a rotatable cam 17, which is mounted about a shaft 18. The cam 17 is provided with a projection 19, which projection is connected by means of a draw bar 20 with the lower end of the type bar 5.

From the construction described above it is evident that the key is always moved in a strictly vertical direction and on account of the parallel guiding means only a very slight amount of friction will occur in the openings of the plates 9 and 10, so that only a very slight effort is required for pressing down the keys. It is evident moreover that it is only necessary to press down the key over a very small distance, in order to effect the striking of the types 4 against the roll 2.

As stated above a given arrangement of the keys on the keyboard will not always correspond to the sequence of the types facing the printing roll. This problem might be solved by giving a special shape to the type bars 5 and the draw bars 20, but this will always affect the lightness of the touch and render dismounting and repairs more difficult. The present invention avoids this drawback by giving to the transversal arms 12 and 13 a shape corresponding to the location of the keys and the types. An embodiment of this construction is illustrated in Fig. 2. In this figure 21 and 22 are two keys one for the letter A and one for the letter J. For the purpose of obtaining a reverse order of the types J and A (vide the draw bars 23, and 24 respectively) it is necessary that the transverse arms 25 of the key 21 reach past and about the transverse arms 26 of the key 22. The said arms 25 and 26 will then exert pressure by means of the pressure bars 27 and 28 respectively, on the cam surfaces 29 and 30 respectively of the cams 31 and 32 respectively, which cams are mounted on the shaft 18 and which are connected by means of projections with the draw bars 23 and 24 respectively. The transversal arms will be given a special form for each individual case, in such a way that in all cases the keys will obtain the most desirable and efficacious place on the keyboard, whereas on the other hand each type will always retain its proper position with regard to the printing roll and to the other types.

Fig. 4 represents a keyboard which is eminently suitable for machines of the kind described above. In the said figure some of the keys are provided with letters on behalf of which the sequence of the types is altered with regard to their arrangement on the keyboard. For example, the sequence of the keys V and T is the reverse of that of the types corresponding to said keys and facing the printing roll. The same is the case with the keys H and J and T and F.

In the specification and claims mention is made of horizontal rows of keys; such a row is e. g. the group to which belong to the keys V, T, T and F; the letters H and J belong to another horizontal row.

Fig. 3 represents an embodiment of the construction for pressing down several characters, e. g. O and E by means of a single key. It is a property of every language that the same characters habitually succeed each other in one and the same syllable; actuating these characters by means of a single key will save considerable time, which means an increased speed in writing. As indicated in Fig. 3, the cam 37 for the letter E may be operated by means of the key 33 and the transversal arms 34 with the pressure bar 35. In the same manner the cam 38 for the O is operated by the key 39 and the transversal arm 40 with the pressure bar 41. For the purpose of printing the O and the E at the same time there has been provided an extra key 42 which by means of a forked transversal arm 43 and pressure bars 44 and 45 co-operates with the cams 38 and 37 respectively.

It is self-evident that the pressure cams, e. g. 31 and 32 or 37 and 38 need not be mounted on the same shaft, but that all or some of the pressure cams may be mounted on different shafts either separately or in groups.

It is also shown by the drawing that the entire keyboard with all the keys, transversal arms and pressure bars may be taken out of the machine as a single unit, owing to the detachable connection between the pressure bars and the cams with the pressure surfaces. The keyboard with the parts pertaining thereto may then be placed at once into any other suitable machine.

I claim:

1. A shorthand typewriting machine for selectively printing either a single character or, simultaneouly, a plurality of characters, comprising a printing roll, a paper strip guided over said roll, a keyboard having horizontal rows of keys thereon, and a plurality of printing type bars disposed facing said printing roll and interconnected with corresponding ones of said keys, the sequence of the type bars facing the printing roll being different from the sequence of the keys in the horizontal rows, whereby a plurality of characters may be simultaneouly printed in a sequence different from that in which they appear on the keyboard.

2. A shorthand typewriting machine for selectively printing either a single character or, simultaneously, a plurality of characters, comprising a printing roll, a paper strip guided over said roll, a keyboard having horizontal rows of keys thereon, a plurality of printing type bars disposed facing said printing roll and interconnected with corresponding ones of said keys, the sequence of the type bars facing the printing roll being different from the sequence of the keys in the horizontal rows, and transmission members between the keys and the type bars, the said members comprising key levers carrying said keys, pressure bars, at least one transverse arm for each key lever, transmitting the motion of said key levers to said pressure bars, and pressure cams actuated by said pressure bars and connected to the type bars, the length and shape of the transverse arms being dependent of the position along the printing roll of the type bars relating to the transmission members.

3. A shorthand typewriting machine for selectively printing either a single character or, simultaneously, a plurality of characters, comprising a printing roll, a paper strip guided over said roll, a keyboard having horizontal rows of keys thereon, a plurality of printing type bars disposed facing said printing roll and interconnected with corresponding ones of said keys, the sequence of the type bars facing the printing roll being different from the sequence of the keys in the horizontal rows, and transmission members between the keys and the type bars, the said members comprising key levers carrying said keys, pressure bars, at least one transverse arm for each key lever transmitting the motion of said key levers to said pressure bars, and pressure cams actuated by said pressure bars and connected to the type bars, the length and shape of the transverse arms being dependent of the positions along the printing roll of the type bars relating to the

transmission members, the transverse arms of at least one key lever carrying a plurality of pressure bars, said pressure bars cooperating each with a separate pressure cam, at least one of said pressure cams simultaneously cooperating with another key lever.

4. A shorthand typewriting machine for selectively printing either a single character or, simultaneously, a plurality of characters, comprising a printing roll, a paper strip guided over said roll, a keyboard having horizontal rows of keys thereon, a plurality of printing type bars disposed facing said printing roll and interconnected with corresponding ones of said keys, the sequence of the type bars facing the printing roll being different from the sequence of the keys in the horizontal rows, and transmission members between the keys and the type bars, the said members comprising key levers carrying said keys, pressure bars, at least one transverse arm for each key lever transmitting the motion of said key levers to said pressure bars, pressure cams actuated by said pressure bars and connected to the type bars, the length and shape of the transverse arms being dependent of the positions along the printing roll of the type bars relating to the transmission members, and two parallel, substantially horizontal plates constituting part of the keyboard, said key levers extending through both plates, and the transverse arms passing below the plates, the pressure bars extending through the lower plate.

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