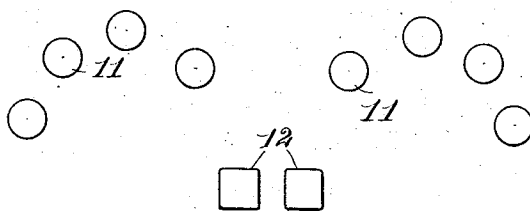
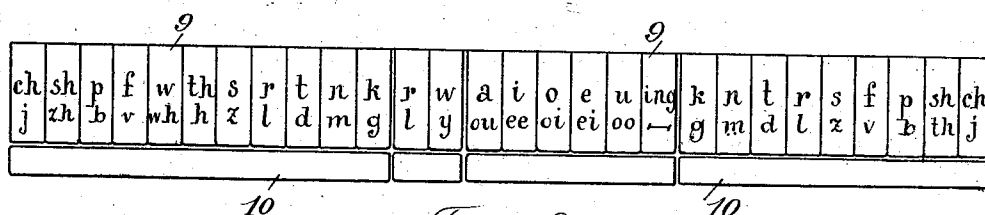
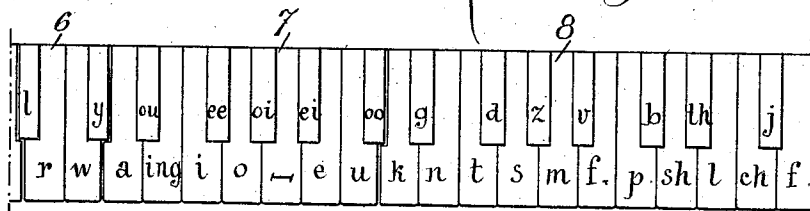
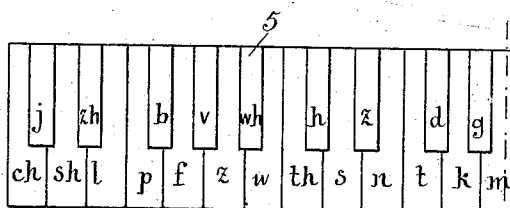
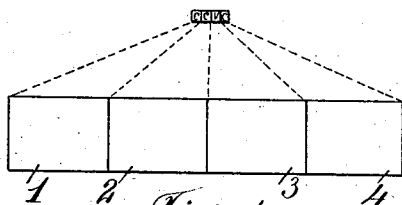


No. 828,192.

PATENTED AUG. 7, 1906.

L. CHAMBONNAUD.
STENOGRAPHIC MACHINE.
APPLICATION FILED JAN. 25, 1904.

4 SHEETS—SHEET 1.



Wismar:
Herr Heinicke
J. Franke.

Fig. 4.

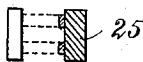
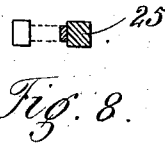
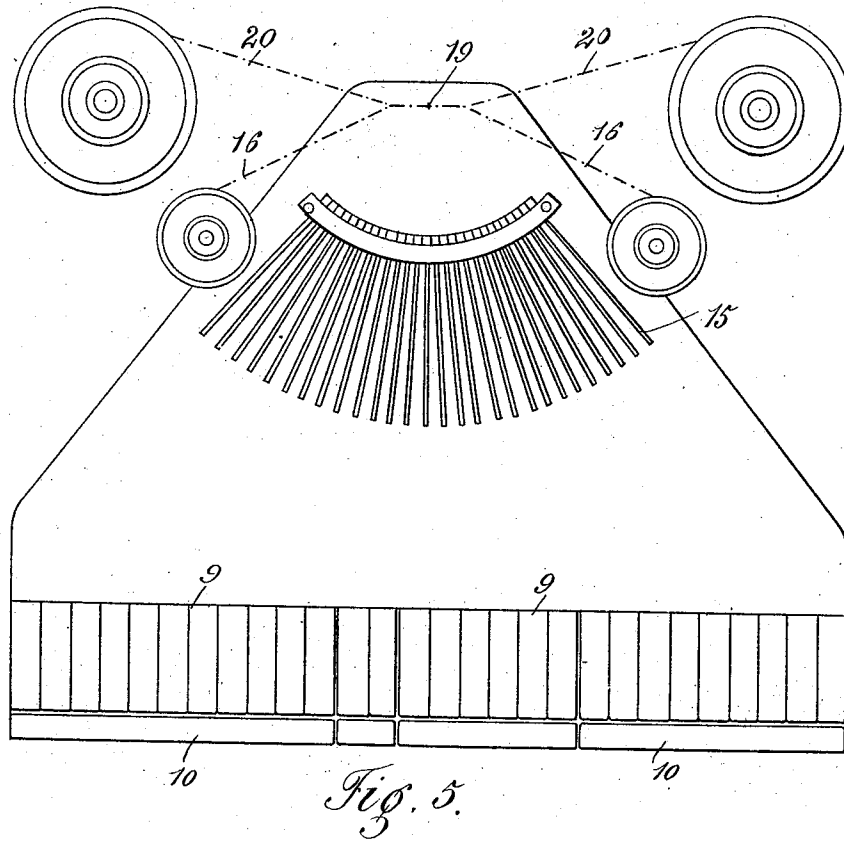
Inventor:
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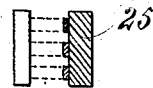
PATENTED AUG. 7, 1906.

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4 SHEETS—SHEET 2.



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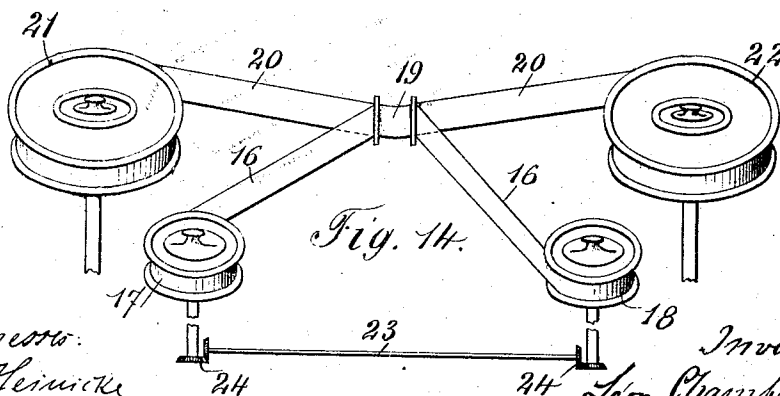
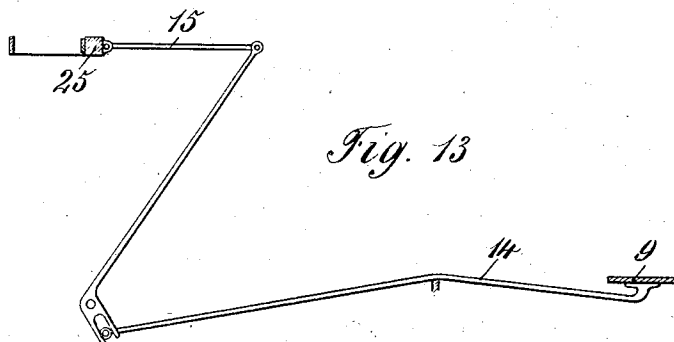
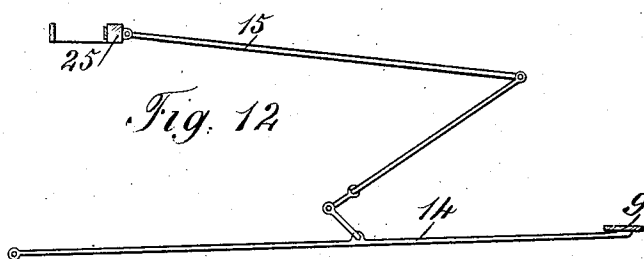
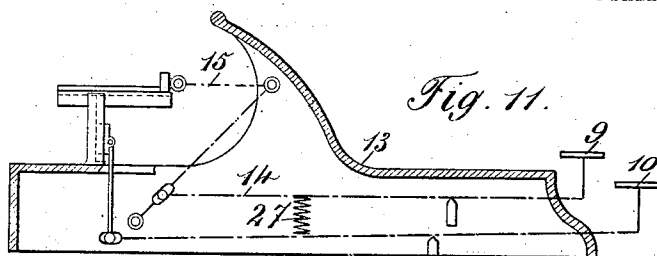
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APPLICATION FILED JAN. 26, 1904.

4 SHEETS—SHEET 4.

Fig. 15.

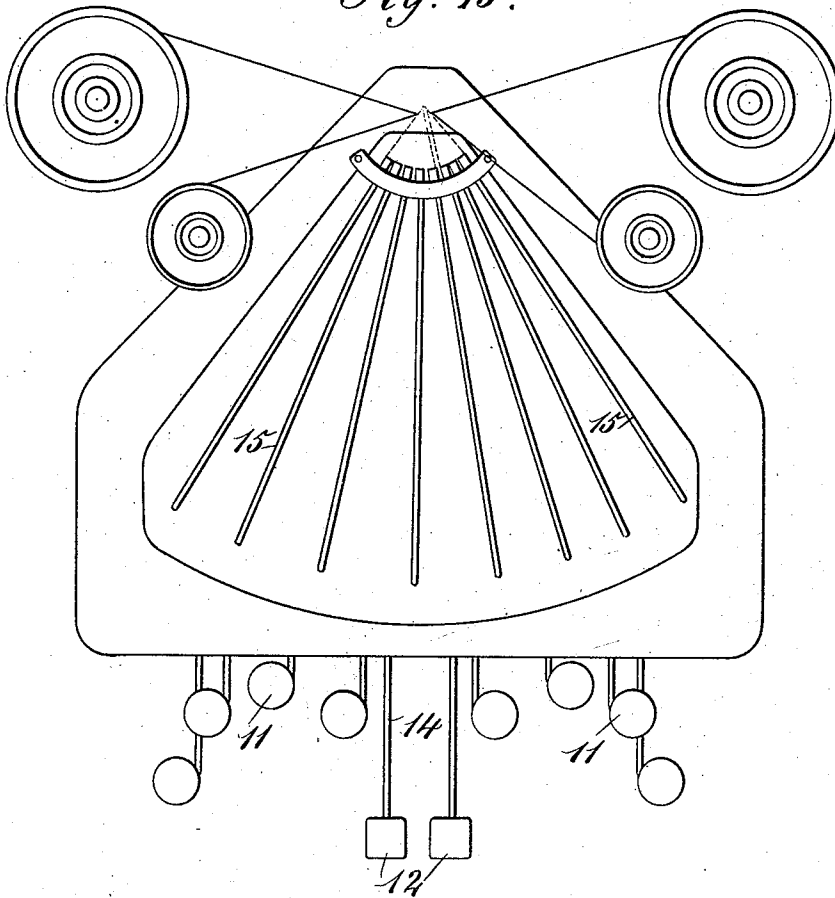


Fig. 16.

n	l	j	r
l	s	t	u
e	o	i	n

Fig. 17.

p	n	l	j	r
ch	l	s	t	u
th	e	o	i	n

Witnesses:
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UNITED STATES PATENT OFFICE.

LÉON CHAMBONNAUD, OF LIMOGES, FRANCE.

STENOGRAPHIC MACHINE.

No. 828,192.

Specification of Letters Patent.

Patented Aug. 7, 1906.

Application filed January 25, 1904. Serial No. 190,570.

To all whom it may concern:

Be it known that I, LÉON CHAMBONNAUD, a citizen of the Republic of France, residing at Limoges, France, have invented certain new and useful Improvements in Stenographic Machines, of which the following is a full, clear, and exact specification.

This invention relates to certain new and useful improvements in stenographic machines; and it has for its objects, among others, to construct a machine permitting of plain and clear stenography—that is to say, of writing speech not by means of special signs requiring for their typing or printing, as well as for their reading, a special initiation, but simply by inscribing the phonetic sounds or syllables of the words without respect to the orthography. In order to accomplish this rapidly—that is to say, to be able to type or print instantaneously all the elements composing a word or a syllable—an arrangement should be used possessing several printing-points which will be put into action by striking at the same time several keys, whence it is necessary to adapt to the machine a special keyboard determined by the maximum number of printing-points employed and by the language in which it is desired to stenograph. According to this principle the following English sentence, "Short writing is indispensable to business people," for instance, could be reproduced as follows: "Shor t ri ting iz in dis pen so bl tu biz nes pee pl."

The accompanying drawings represent several forms of carrying into effect such a machine and its accessories, in which—

Figure 1 is a view of the type of keyboard. Figs. 2, 3, and 4 are diagrammatic views of three types of keyboards, and Fig. 5 is a diagrammatic plan view of a type of machine. Figs. 6 to 10 are detail views. Fig. 11 is a diagrammatic side view of the interior parts of a type of machine, and Figs. 12 and 13 show different methods of putting into practice the controlling-levers of the typing or printing hammers. Fig. 14 shows in perspective the arrangement of the inking and typing or printing ribbons. Fig. 15 is a diagrammatic plan view of a modification of the machine, and Figs. 16 and 17 show an arrangement of keyboard for only one hand.

This stenographic machine consists, essentially, of a complete keyboard, two to four groups of type-carrying hammers, each group having its own printing-point, a printing-

ribbon, an inking device, and levers connected to keys and transmitting the movement to the type-carrying hammers.

Before describing the details of construction of the said machine it will be convenient to specify the construction of the different keyboards which can be used.

Supposing the phonetic elements are divided into two classes and designated as "c" (the phonetic consonants) and "v," (the phonetic vowels or diphthongs,) the syllables will be, for example, of the form "c," "c," "v," "c"—that is to say, four elements. To print these four elements at once, a machine must be used with a keyboard controlling four printing-points at once. This theoretic keyboard is represented in Fig. 1, and according to the number of phonetic elements to be composed a complete keyboard will be adapted with four, three, or two separate subsidiary keyboards.

In Fig. 1, 1, 2, 3, and 4 represent the keys.

For the printing of the English language, for instance, a complete keyboard can be used, as shown in Fig. 2, composed of four separate subsidiary keyboards 5, 6, 7, and 8, the whole of the keys of which will permit of the printing of all the consonants or joint consonants, as well as the vowels and diphthongs "b, d, f, g, t, v, a, e, i, o, u, ei, ou, oi, ing." In the drawing each key carries its own indication, which it will cause to be printed, and the whole keyboard, Fig. 2, having about fifty-five keys, can be arranged, if desirable, similar to the keyboard of a piano. It will be composed, first, of the keyboard 5 of joint consonants on the left, containing twenty-two keys; secondly, of the keyboard 6 of the modifiers with four keys; thirdly, the vowel-keyboard 7, with eleven keys, and, finally, the keyboard 8 of modifiers of the second series, with eighteen keys. By the term "modifier" I mean either a consonant or a vowel following and modifying the sound of the first vowel or consonant pronounced.

It being understood that in a syllable with four elements "c," "c," "v," "c" the first consonant constitutes the one principally pronounced, the second only playing the part of the modifier of this pronunciation, the vowel being also a principal element and the consonant following only serving to modify the sound of this vowel. It would also be possible by using an arrangement already adopted in certain type-writing machines to adopt a keyboard such as represented in Fig. 3, contain-

ing twenty-eight keys 9, each of which represents two elements, and four change-keys 10. The latter permit of presenting to the printing-point either one of the two phonetic elements which represent the ordinary keys. Proceeding on the same principle, a keyboard can be adopted as shown in Fig. 4, which only contains ten keys, one for each finger, eight of these—viz., those marked 11—being ordinary keys, and two—viz., 12—shift or change keys. Each ordinary key will represent three syllabic elements, giving a total of twenty-four elements. The keyboard of the consonants (the most frequent) will comprise the first four keys 11 starting from the left, and the other four will constitute the keyboard of the vowels and the most frequent vowel-modifiers. The change-keys will be operated by the two thumbs and can also be provided with arresting-stops, as in certain other writing-machines, in order to present on the printing-point for a certain time, according to desire, the second or third phonetic element of the ordinary keys.

Fig. 5 represents a diagrammatic plan view of a stenographic machine provided with a keyboard such as is shown in Fig. 3. On a framework 13 are supported at suitable points printing-levers 14 of different types, some of which are seen in Figs. 11, 12, and 13, said levers carrying at their extremities ordinary keys 9. The printing-levers 14 are connected by convenient supports to the levers 15, carrying characters, the latter acting on the inking device, which may be a ribbon 16 (see Fig. 14) similar to those used in ordinary type-writing machines, actuated by a movement from left to right and wound for this purpose on spools 17 18. (See Fig. 14.) This ribbon passes at 19 before the printing-ribbon 20, (see Fig. 14,) a ribbon of paper identical with these used on the Morse telegraphic instruments, moving from right to left, which is unwound and wound on the spools 21. The spools are controlled either by a clock-work-movement provided for this purpose or by a spindle 23 and gear-wheels 24, utilizing the depression of the keys of the principal keyboard, or in any other known manner as already used in certain type-writing machines. The inking-ribbon and its manner of actuation is that common in the Remington type-writer.

As already explained, the keyboards represented in Figs. 2 and 3 have four printing-points; for instance, *f r a k* as seen in Fig. 6, so that when the keys corresponding to "f," "r," "a," "k" are struck simultaneously the hammers carrying the corresponding characters are suitably placed and print the phonetic syllables "frak" of the word "fractional," for example. In the simple keyboard, such as those represented in Fig. 2, there is only one phonetic element for each key. In consequence each hammer carries only one char-

acter. Fig. 8 shows a front view and section of one of these hammers 25. The keyboard shown in Fig. 3 and adapted to the machine according to Fig. 5 is provided with hammers 25, each of which carries two characters, as shown in Fig. 9.

Fig. 15 shows in perspective a stenographic machine provided with a keyboard as shown in Fig. 4, the details of which have been described above. This form has two printing-points according to Fig. 7 and is provided with hammers carrying three letters or characters, as shown in Fig. 10. The same stenographic machine could be used for the English, French, German, Italian, or other languages by adapting thereto a suitable keyboard and with a sufficient number of keys, according to the phonetic elements to be represented. Keyboards such as those described above can also be adopted. For the designation of figures conventional letters could be adopted, chosen, preferably, in the same group of keys and placed between two dashes, for instance, in order to facilitate distinction. The system of levers designed to transmit the movement of the shift-key 10, Figs. 3 and 5, will also be seen by dotted lines in Fig. 11 and full lines in Figs. 12 and 13, such movement being transmitted to the plate which supports the hammer carrying the letters and raising or lowering this plate in such a manner that the second character, Figs. 9 and 10, or the third character, Fig. 10, fixed to the said hammer is caused to strike exactly at the height of the printing-point, Fig. 6. This arrangement is, moreover, similar to that used for the same purpose in type-writing machines with several characters on the one key. In each machine the keyboard is simultaneously operated with the fingers of the right and left hand. For the keyboard shown in Fig. 2 the fingers lower the keys corresponding to the phonetic elements of which the syllable is composed.

The levers are actuated and made to advance the hammers carrying the characters toward the printing-point to strike the inking and the printing ribbon. The syllable is printed, and under the action of springs 27 the keys rise again and return the hammers carrying the characters to their original position. During this time the printing-ribbon continues to unwind, so that it presents to the printing-points a fresh portion for the printing of the following syllables, and the inking-ribbon is displaced in the contrary direction. When the printing has terminated, the ribbon of printed paper is detached and used as desired.

To utilize the keyboards shown in Figs. 3 and 5, fitted with shift-keys, and to print the elements of the second line, the key carrying the desired element is depressed at the same time as that of the corresponding shift-key. At the same time the hammers are displaced,

as explained above, and the printing is conveniently brought about. When the shift-key is then released, the parts return to their normal position under the simple action of gravity.

In certain cases a simplified keyboard for only one hand could be used, as shown in Figs. 16 and 17, comprising two series of keys divided into four groups, each having its own printing-point. This form is operated by the combination in printing of signs of one or the other series in order to obtain new characters. For instance, with "n" and "v," "m" will be obtained by putting both together, with "c" and "j" printed and joined together "g" will be obtained, "o" and "i" will give "a," and so on.

The different parts above described can be used in certain cases in combination with other organs of existing type-writing machines, which will be thus transformed into stenographic machines.

Having thus described my invention, what I claim as new is—

1. A stenographic machine, having a complete keyboard comprising four subsidiary and separated keyboards, one of joint consonants, one of modifiers, one of vowels, and one of modifiers of said modifiers, a plurality of groups of type-carrying hammers, levers to

actuate and to advance the said hammers toward the printing-point to strike the inking and printing ribbon, said keyboard having four printing-points, so that when certain keys are struck the hammers carrying the corresponding characters are simultaneously placed and simultaneously print the phonetic syllables, substantially as described.

2. A stenographic machine having a complete keyboard comprising four subsidiary and separated keyboards, one of joint consonants, one of modifiers, one of vowels, and one of modifiers of said modifiers, a plurality of groups of type-carrying hammers, levers to actuate and to advance the said hammers toward the printing-point to strike the inking and printing ribbon, said keyboards having four printing-points, so that when certain keys are struck, the hammers carrying the corresponding characters are simultaneously placed and simultaneously print the proper phonetic syllables, a shift-key and a system of levers for transmitting movement thereto.

In witness whereof I have hereunto set my hand in presence of two witnesses.

LÉON CHAMBONNAUD.

Witnesses:

JEAN VALLADE,

EUGÈNE VALLADE.