

No. 723,566.

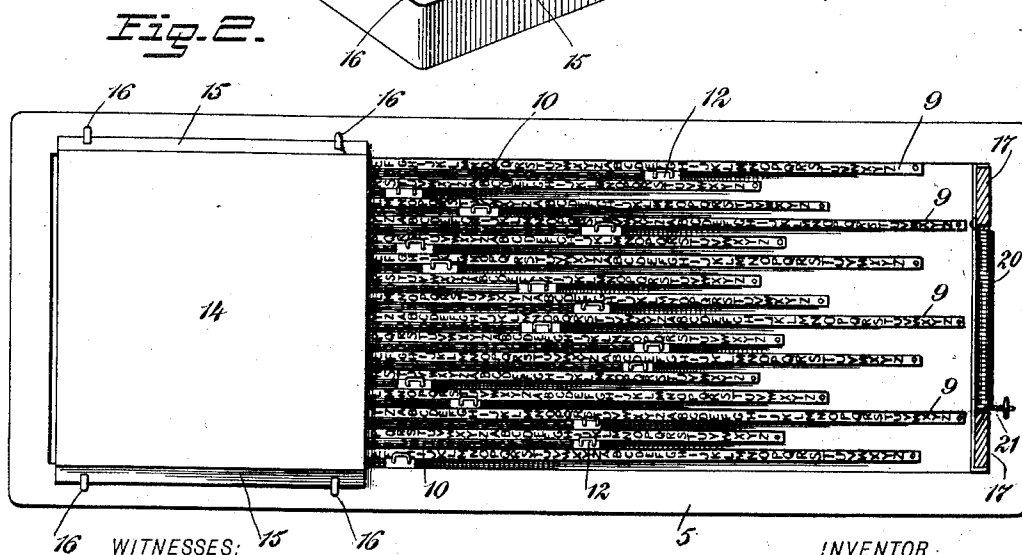
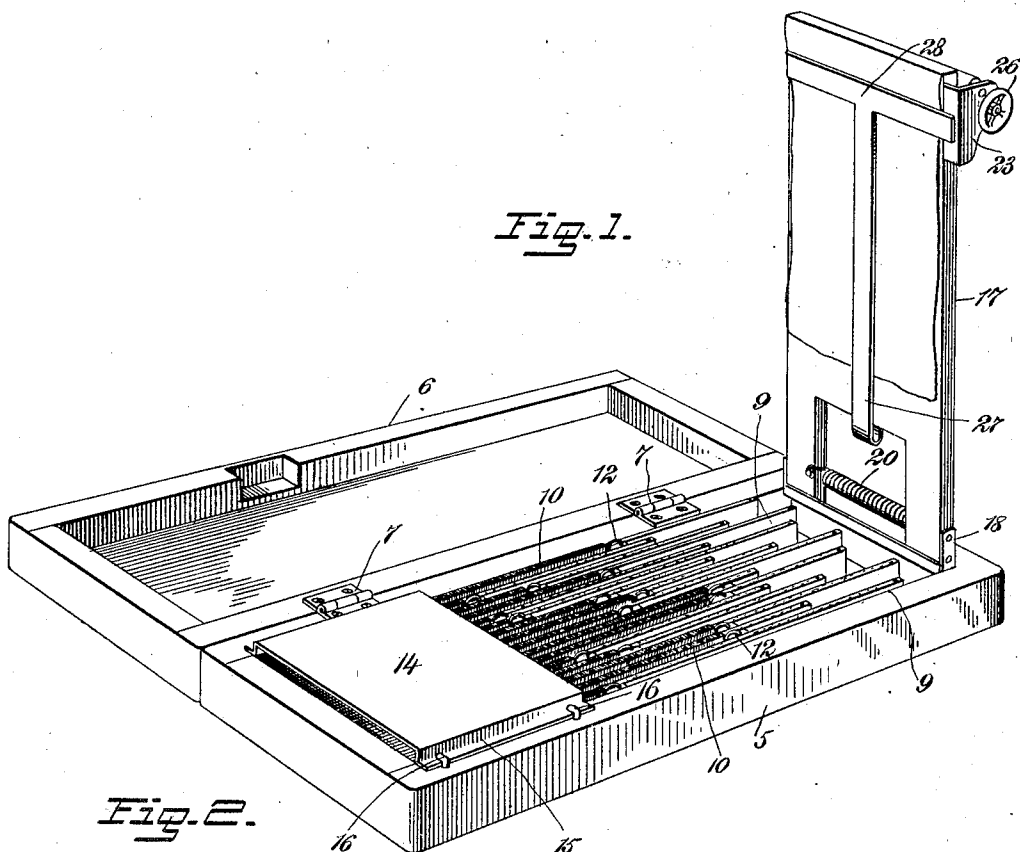
PATENTED MAR. 24, 1903.

L. H. WESTON.  
CRYPTOGRAPH.

APPLICATION FILED AUG. 6, 1902.

NO MODEL.

2 SHEETS--SHEET 1.



WITNESSES:

James F. Duhamel.  
H. A. Bernhoof

INVENTOR

*Lewis H. Weston*

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ATTORNEYS.

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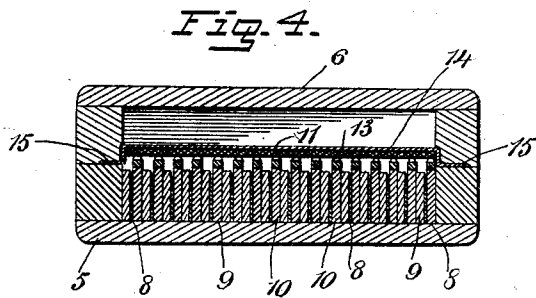
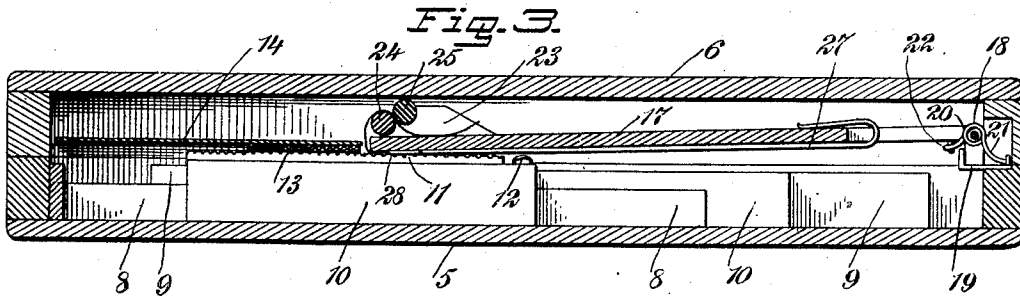
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*H. J. Bernhof*

INVENTOR

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BY *Mumford*

ATTORNEYS.

# UNITED STATES PATENT OFFICE.

LEWIS HERMAN WESTON, OF HOLBROOK, OREGON.

## CRYPTOGRAPH.

SPECIFICATION forming part of Letters Patent No. 723,566, dated March 24, 1903.

Application filed August 6, 1902. Serial No. 118,614. (No model.)

*To all whom it may concern:*

Be it known that I, LEWIS HERMAN WESTON, a citizen of the United States, and a resident of Holbrook, in the county of Multnomah and State of Oregon, have invented a new and useful Cryptograph, of which the following is a full, clear, and exact description.

My invention relates to a means by which cipher messages or other matter can be rapidly prepared and translated; and the object that I have in view is the provision of a simple, efficient, and easily-operated machine or apparatus by which messages or the like may be prepared for transmission or matter received in cipher may be translated into intelligent language.

A further object of the invention is to provide the apparatus with means by which one or more impressions of any desirable character of the cipher matter prepared for transmission or circulation may be taken or secured from the apparatus.

A further object of the invention is to so arrange the alphabetical characters employed in the component parts of the key and the impression devices that the duplication of the characters or letters in the cipher message or the like will be systematized, thus overcoming the possibility of unauthorized persons obtaining through the process of frequency or otherwise a knowledge of the key or the matter by mathematical calculations.

In my improved apparatus I necessarily employ a key of an alphabetical nature or other character, which may consist of any desired word or phrase agreed upon between correspondents and others and changeable at the option of the parties. With the elements comprising the key are associated parts or devices by which a cipher message or other matter may be prepared or translated, said parts or devices having alphabetical characters and being shiftable relative to the similar elements of the key in order to quickly prepare the cipher message or to decipher a received cipher message or, as the latter may for convenience be designated, a "cryptogram."

The characters of the cipher-message-producing devices are preferably of such a nature that an impression (one or more) may be

taken therefrom according to any desired method in order that such matters may be conveniently transmitted. Various kinds of impressions may be secured, one of which may be mentioned as printed matter analogous to that secured by the use of a typewriting machine or a printing-press; but it is evident that the elements which are to form the cipher message or matter may be of a nature to permit impressions in wax or any other material to be taken therefrom.

The employment of my apparatus overcomes the objections to that branch of the art of cryptography known as "simple substitution" in which, for example, two correspondents agree to use the alphabet, commencing at a certain letter, as "E," and substituting it for "A," "F," or "B." In my apparatus the message or other matter is never produced in intelligent language, so that the true meaning of the matter is never apparent on its face, and a knowledge thereof cannot be acquired except by the aid afforded by the key.

In the preparation of the cipher matter it is produced a line at a time in order to facilitate the work and reduce the labor.

The apparatus may be constructed of any convenient size—such, for example, of conveniently-portable dimensions for use in the field during military operations; but the uses to which the apparatus may be placed are unlimited, the same being adapted for governmental, commercial, professional, literary, strategic, and a variety of other purposes.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view of the machine or apparatus embodying my invention. Fig. 2 is a plan view of the machine with the platen of the impression mechanism shown partly in cross-section in order to more clearly represent the plurality of key members and cipher members. Fig. 3 is a longitudinal section through the apparatus in its closed condition suitable for easy transportation, and Fig. 4 is a transverse section through the apparatus shown by Fig. 3.

In the embodiment of the invention shown by the accompanying drawings I have chosen

to illustrate the same in a portable form especially adapted for use in the field during military operations, and, as shown, the working parts are all housed or contained within a suitable casing 5, which is equipped with a cover 6, the latter being hinged to the casing at 7. Arranged longitudinally within the casing is a plurality of guides, the same being formed by longitudinal strips 8, that are secured in any suitable way within the casing so as to lie parallel to each other and to form narrow intervening guide-spaces. These guide-strips do not extend as high as the top edge of the casing, and any suitable number of strips may be employed. In the apparatus shown there are sixteen guide-strips, forming a like number of intervening guide-spaces; but I would have it understood that my invention is not restricted to any particular construction of the guides nor to the number of the parts.

The key of the cipher herein represented is of an alphabetical nature, and the alphabetical characters are provided on shiftable members, the latter being in the form of a plurality of strips 9, which are disposed within certain of the narrow guide-spaces formed by the stationary strips 8. The shiftable members of the alphabetical key are preferably embodied in the form of strips, rods, or bars, which may be made of wood or any suitable material, and these bars are provided on their exposed edges or faces with the letters of the alphabet, as shown more clearly by Figs. 1 and 2. Each shiftable bar or strip 9 is provided with two complete alphabets arranged in columns and in the proper consecutive order, and as I employ a plurality of these shiftable key members 9 it will be seen that quite a number of duplicate alphabets are provided in the key, the whole forming an exceedingly simple and compact arrangement adapted for use in connection with the shiftable members of the cipher-impression members 10. As shown, the alphabetical characters are provided on the shiftable key-strips at the top exposed edges thereof, and these characters may be printed or otherwise indelibly impressed on strips of paper and other material, which may be fastened in a suitable way to said top edges of the strips 9. I do not limit myself, however, to the construction of the strips 9 having the alphabetical characters, because they may be made in any suitable or preferred way, and, as shown by Fig. 4, these strips 9 are somewhat higher than the guide-strips 8, thus making the active edges of the strips 9 lie shortly below the top edge of the casing 5, so as to be plainly visible in the operation of preparing a cipher message or other matter and translating a cipher message which may be received into intelligible language.

The cipher-message members 10 are disposed in alternate relation to the key members 9, and said members 10 are also embodied in the form of shiftable bars, strips, or

rods, which are snugly fitted in certain of the guide-spaces between the strips 8, so as to have the proper alternate relation to the key members 9. The members of the cipher and the key are shiftable individually in the guide-spaces of the casing, and I prefer to arrange these parts in such a way that they can be easily manipulated by hand in order to form the word or phrase of the key and to prepare or translate the cipher message.

The cipher members 10 are distinguished in an essential respect from the key members 9, and this distinction resides in the provision of type characters on the upper exposed edges of said cipher members, said type characters being indicated at 11, and they are necessarily arranged to project above the top edges of the key members 9 and the guide-strips 8, thus making the type characters lie in a plane above that of the key members. These type characters may be provided on the cipher members by any suitable construction, and they may be of any appropriate material which will secure a sharp and well-defined impression. The type characters on the members 10 are of an alphabetical nature, and I prefer to arrange them in the well-known order on the members 10; but the order of arrangement of the alphabetical characters may be varied as may be found most convenient in practice. In like manner the alphabetical characters forming the duplicate alphabets on the shiftable key members 9 may be arranged in any suitable order; but for convenience of illustration I have shown the alphabets on the two series of members 9 10 as commencing with the letter "A." The members 10 are not as long as the key-members 9, and on these cipher members I only find it necessary to employ one alphabet. The members 10, which are individually shiftable with relation to the key members 9, are provided with pointers or indices of any suitable character, the same being indicated at 12. The pointer or index of each cipher member is shown by Figs. 1, 2, and 3 in the form of a loop, which is attached to the lower end of the member and is arranged to project laterally therefrom in order to traverse the alphabetical characters on an adjacent key-strip. The series of pointers on the plurality of cipher members are disposed in the manner described, so as to individually traverse the letters on the key-strips, and these pointers should therefore be arranged to operate across the guide-strips 8.

In constructing one form of apparatus as now contemplated by this invention the upstanding exposed type characters on each cipher member are made of celluloid, which is adapted to be cast, molded, or otherwise produced, so as to form a strip or string of the alphabetical letters in the proper order; but it is evident that the letters may be formed individually or in groups, so as to be attached to the cipher members, and that other materials may be substituted for the

celluloid—such, for example, as rubber, metal, a metallic alloy, or various other substitutes.

The apparatus herein shown is equipped with means for producing a printed message or other matter from the type-faces of the strips 10, and this means employs an inking device for the type-faces 11 and an impression device which may carry a sheet of paper or other material on which the cipher message or other matter may be impressed from the inked faces of the type on the members 10. Any suitable style of inking mechanism may be employed, but, as shown in the drawings, this inking device consists of a saturatable pad 13, which is attached to the under side of a supporting-plate 14, the latter having the bent or flanged edges 15, which rest upon the top edges of the casing 5 and are held in place by suitable keepers 16 on the casing. The pad 13 may be moistened or saturated with ink of any suitable nature, and this pad is supported by the plate so as to lie in the path of the type-faces on the members 10, said type arranged to frictionally brush or sweep the under surface of the pad, and to take or be covered with a film of ink. The types on the cipher members are adapted to be inked by thrusting said members beneath the inking-pad, and the adjustment or movement of the cipher members is facilitated by the pointers 12, which afford convenient means adapted for manipulation by the fingers.

The pressure-platen is shown by the drawings in the form of a plate 17, which is adjustably connected to the casing 5, preferably by hinging the parts together—as, for example, on the rod 18, that is supported on a bracket 19, attached to one end of the casing, as shown by Figs. 1 and 3. Around this hinged rod 18 is coiled a spring 20, having one end fastened to the casing, as at 21, and its other end, 22, arranged to press against the hinged platen in a manner to normally impel or move the same in one direction—as, for instance, in the raised upright position shown by Fig. 1. The spring is thus adapted to hold the platen out of the way of the key and cipher members 9 10, thus enabling the operator to manipulate the members or prepare and translate the matter by the aid of the characters on said members.

The paper or other material adapted to receive the impression from the type characters on the shiftable cipher members 10 is adapted to be confined on the under side of the platen 17 by suitable devices, and this platen is provided with means whereby the paper or other material may be fed or moved after one line of characters shall have been impressed across an end portion of the paper. At the free or unconfined end of the hinged platen 17 are provided the brackets 23, one of which is attached to each side edge, and in these brackets are journaled the shafts of a pair of parallel feed-rolls 24 25. These rolls may be of rubber or other suitable material adapted to

frictionally engage with the paper, and one of said rolls is provided with a suitable manipulating device, such as a thumb-wheel 26, thus making provision for conveniently turning the roll or rolls and feeding the paper sheet between them. If desired, the rolls 24 25 may be geared together in order to positively actuate them on the manipulation of the thumb-piece 26, and from the pair of rolls the sheet of paper is carried across and beneath one edge of the platen 17. The paper on the under side of the platen is held in position by the spring 27, one end of which is attached to the platen near its hinged portion 18, while the other end of the spring is formed with a cross-head 28, the latter extending across the under face of the platen and adapted to engage with a sheet of paper close to the line where the impression is taken from the type-faces on the code members.

In using the improved cryptograph two correspondents or others select a key, which may consist of a suitable word or phrase, and in order to prepare a message or other matter the key members 9 are first adjusted so as to bring the key word or phrase to a certain indexed position. In the apparatus shown the indexed position is afforded by the lower edge of the pad-supporting plate 14, and merely for the sake of illustration we will suppose that the key-word selected is "Grant." The first five members 9 are adjusted so as to bring the letters "G R A N T" in the alphabets thereof into registration with one another and immediately below the edge of the plate 14. This adjustment is also made in a similar way with the next five strips 9 and with the remaining strips 9, so that we have a series of the key-word "Grant" extending in line across the casing and below the edge of the plate 14. The cipher-strips 10 are now adjusted or manipulated in order to prepare the message or other matter which it is desired to translate in cipher, and in thus preparing the matter the pointer 12 serves to traverse parts of either of the two alphabets on the key members 9. The pointers are adjusted across the lower alphabets in the key-strips, so as to produce the despatch in intelligible language; but as the cipher-strips have the letters alined in different order the characters thereon which register with the key-words formed by the adjustment of the key members will produce the message or other matter in cipher, which cannot be read except by the aid of the key. After having prepared a line of the cipher message or despatch in the manner described the paper sheet on the platen is pressed upon the inked faces of the type on the strips, thus taking an impression of the cipher message or matter on the under surface of the paper, the platen 17 being forcibly pressed in a downward direction by hand, so as to secure the desired inked impression on the paper. The cipher message is thus printed in a line on the sheet of paper, and the platen and the

paper thereon are then raised to the position of Fig. 1. The key members are allowed to remain in their adjusted positions; but the operator again shifts the cipher members 10, so as to prepare the next line of the despatch and the cipher message or matter in the manner hereinbefore described, after which the paper on the platen is moved the proper distance and the platen and paper are lowered, so that the next line of the cipher message or matter may be impressed on the paper. This operation is continued until the desired matter shall have been converted into cipher and the proper number of impressions taken from the faces of the cipher members.

In translating a cipher message or matter the key-strips 9 are so adjusted that the key-word appears in alinement upon them. Then the alternating code members 10 are so adjusted that the cipher message or matter shall also aline with them, making both the key-word and the cipher in one line and a line at a time. The English words will then always be seen flush with the pointers 12.

Although I have shown and described the key members and the cipher members as arranged to work alongside of each other in parallel lines, it is evident that the arrangement or relation of the members may be varied—as, for example, by disposing the members of one series over or below the members of the other series—and these parts may be made of any size and material. For example, I may use tapes of pliable material, which under some circumstances form an efficient substitute for the wooden or metallic strips. It is also evident that I may employ carbon-paper or its equivalent to secure duplicate impressions on sheets of paper when the platen is pressed upon the type-faces of the cipher-strips, and, if desired, the type-faces of the cipher-strips may be of such a nature that an impression may be taken therefrom as a step preliminary to preparing a matrix or molding a slug.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A cryptograph having a series of key members having suitable characters, a series of shiftable cipher members provided with type-faces forming characters adapted to be arranged relatively to the key characters, and means whereby an impression may be secured from the type characters of the cipher members.

2. A cryptograph comprising two series of members individually shiftable with relation to one another, the shiftable members of one series having characters adapted to form a cipher-key, and the shiftable members of the other series provided with characters arrangeable in different order or relation to the characters on the key members.

3. A cryptograph, comprising two series of members which are shiftable individually with relation to each other, the shiftable mem-

bers of one series having alphabetical characters which may be adjusted to produce a key word or phrase, and the shiftable members of the other series having alphabetical characters alining in different order or relation to the characters on the key members, and also provided with pointers which traverse the characters on the key members.

4. A cryptograph having two series of members which are individually shiftable, the shiftable members of one series having key characters in duplicate and the duplicate characters on each key member arranged in predetermined order, and the shiftable members of the other series having suitable characters which are arrangeable, by shifting the members, in different order or relation to the characters on the key members, and the pointers arranged to traverse the duplicate characters of the key members, the cipher members having their characters arrangeable in preconcerted order which differs or varies from the order of alinement of the characters on the key members.

5. A cryptograph having a series of shiftable members, the members of one series having duplicate alphabetical key characters, and the members of the other series having alphabetical cipher characters alined in a different order from the characters of the key members, said alphabetical characters of the cipher members being of such a nature as to admit an impression to be obtained therefrom.

6. A cryptograph having a series of key members each provided with duplicate alphabetical characters, and a series of cipher members in shiftable relation to the key members, and provided with type-surfaces adapted to be adjusted in any desired order with relation to the characters on the key members and thereby produce an arrangement or combination of letters adapted to form a cipher message or matter from which an impression may be taken.

7. A cryptograph having a series of key members each provided with duplicate alphabetical characters, and a series of cipher members in shiftable relation to the key members, and provided with pointers and with type characters, the latter being disposed in a different plane from the characters on the key members and adapted to be assembled in registration with suitable characters of the key members to produce a line of a cipher message or other matter.

8. A cryptograph, comprising a series of key members having alphabetical characters in duplicate, and another series of cipher members in shiftable relation to the key members and provided with type characters which lie in the same plane, each cipher member having an index or pointer arranged to traverse the characters on an adjacent key member.

9. A cryptograph provided with a series of key members having alphabetical characters in duplicate, a series of cipher members in alternate relation to the key members and pro-

vided with type-faces lying in the same transverse plane, and means whereby an impression may be taken from the type-faces of the cipher members subsequent to an adjustment of the latter to produce a desired message or other cipher matter.

10. A cryptograph, comprising a series of key members having alphabetical characters in duplicate, a series of cipher members having pointers arranged to traverse the key members and provided with type characters disposed in the same transverse plane, means for inking the type-faces of said cipher members, and means whereby an inked impression may be secured from the type-faces of the cipher members.

11. A cryptograph, comprising a series of shiftable key-strips confined in parallel relation and provided with alphabetical charac-

ters in duplicate, a series of cipher members disposed in alternate and parallel relation to the key members and provided with upstanding type-faces which lie in the same transverse plane, means for inking the type-faces of said cipher members, and a platen adjustable with relation to the impression-surfaces of the cipher members and equipped with means for holding a sheet of paper or its equivalent in position to receive an inked impression from said cipher members.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LEWIS HERMAN WESTON.

Witnesses:

SAM. J. BESWICK,  
GEO. WILD.