

F. SEDGWICK.
 CIPHER TYPE WRITER.
 APPLICATION FILED AUG. 10, 1916.

1,283,715.

Patented July 17, 1917.

Fig. 1

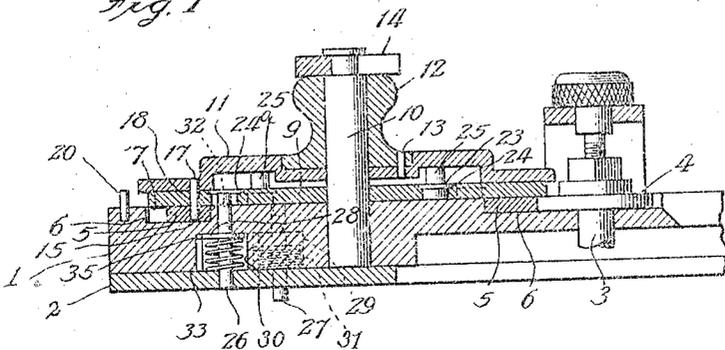


Fig. 2.

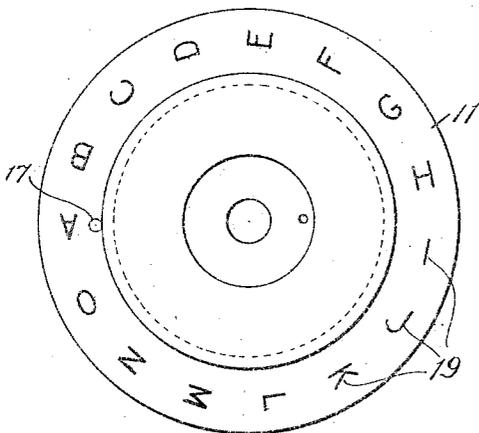


Fig. 3.

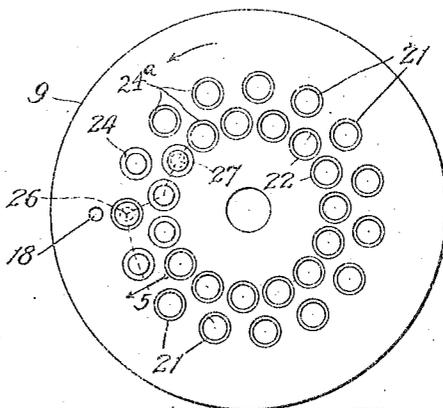


Fig. 4.

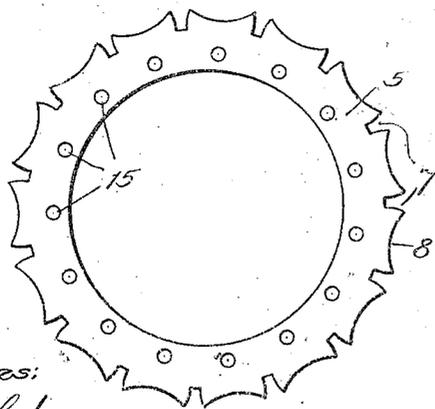


Fig. 5.

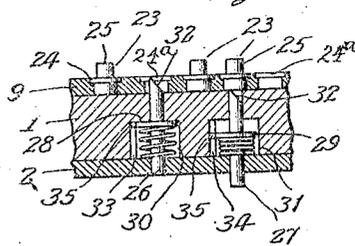
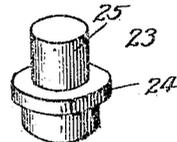


Fig. 6.



Witnesses:
 [Signature]
 [Signature]

Inventor:
 Frederick Sedgwick
 By David W. Fletcher,
 Atty.

UNITED STATES PATENT OFFICE.

FREDERICK SEDGWICK, OF CHICAGO, ILLINOIS.

CIPHER TYPE-WRITER.

1,233,715.

Specification of Letters Patent.

Patented July 17, 1917:

Application filed August 10, 1916. Serial No. 114,184.

To all whom it may concern:

Be it known that I, FREDERICK SEDGWICK, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Cipher Type-Writers, of which the following is a description, reference being had to the accompanying drawings, forming a part of this specification, in which corresponding numerals of reference in the different figures indicate like parts.

My invention has for its object to provide certain improvements upon my United States Letters Patent for cipher typewriter dated February 3, 1914, No. 1,085,636, which involved among its prominent and essential features a keyboard having keys denoting certain characters, a type form and mechanism in operative connection with changeable controlling elements adapted to automatically change the relation of the printing characters with respect to the keys so that upon actuating a given key different characters would be printed thereby in such predetermined order as to produce numberless changing ciphers each different from the others, but adapted to be automatically deciphered by means of the same or a like machine upon the substitution of a complementary controlling element of like character to that used for enciphering but adapted to act in reverse order from an initial or key position on which the enciphering controller may be set. The controlling device in the patent referred to consisted of a pair of revoluble disks alternatively usable for enciphering and deciphering, each disk having spaced operating or inoperating portions or apertures therein adapted to control or effect an automatic change of the relation of the characters with respect to the operating keys, said disks each having two or more series of apertures, recesses or depressions, the series being arranged in different radii, one series being adapted to automatically effect a shifting of the characters with respect to the keys in one direction and the other series being adapted to automatically effect such shifting of the characters in the opposite direction, the corresponding series of apertures, recesses or depressions of the alternative or cooperating disks being arranged in reverse orders. While machines having such controlling

elements are adapted for use wherever a secret cipher is desirable, they are especially intended for governmental use and the objection has been made that whereas, a given controlling element is capable of a large number of permutations with respect to the relative initial position of the disk when placed in the machine, yet the apertures of all disks for a given purpose, viz: for enciphering or deciphering, as the case may be, being the same for different machines, it would follow that one party having such a machine, would possess exact data for calculating the possible permutations of the disks and a competent mathematician might, with such data, be able to translate a cipher made by any like machine.

The object of my invention is to overcome this objection by so constructing the disks that the possible permutations which may be effected thereby may be greatly increased and changed at will by the owner of any machine and that in such a manner that the possessor of another machine with like disks can thereby have no clue to the combination which may be used by another, all of which is hereinafter more particularly described and definitely pointed out in the claims.

In the drawings—

Figure 1, is a vertical section of a portion of the main supporting plate showing a controlling disk journaled upon a stud, a Geneva stop gear mechanism for actuating the same and a portion of a driving shaft,

Fig. 2, is a plan of the top-plate which is connected with the controlling disk,

Fig. 3, is a plan of a controlling disk,

Fig. 4, is a plan of the driven Geneva-stop gear member,

Fig. 5, is an irregular section taken upon the line 5, Fig. 3, viewed in the direction of the arrow there shown, and

Fig. 6, is a greatly enlarged perspective view of one of the disk plugs for varying the permutations.

Referring to the drawings, 1 indicates a top plate or "head" designated by "35" in my patent referred to, which head is in turn mounted upon a plate 2 of larger area adapted to serve as a support for a type-wheel to be driven by a gear mounted upon the driving shaft 3, said gear and type wheel with other associate parts being well known, neither is herein shown.

Rigidly mounted upon the driving shaft 3, is a one toothed pinion 4, of a Geneva stop gear mechanism which is adapted to engage and drive a gear-member 5, better shown in Fig. 4, of well known construction, except that it is annular in form and adapted to fit loosely within an annular recess 6, formed in the head-plate 1. The depth of said recess is such as to cause the upper face of the gear member 5 to be flush with that of the part 1. The usual notches 7, and stop or locking portions 8 for engaging the pinion 4 are formed upon the periphery of said gear. A controlling disk 9, Figs. 1, 3 and 5, having a diameter corresponding substantially to that of the gear member 5, is placed directly over said member and journaled upon a stud 10, secured to the head 1. A dial or cap-plate 11, Figs. 1 and 2, corresponding substantially in diameter to the disk, is also journaled upon said stud, said dial having a knob 12, detachably connected therewith by means of a pin 13 to enable it to be rotated. A swinging latch 14, of known form, serves to secure the parts in place. The Geneva gear member 5, is provided with a series of bores 15, which are concentric with its axis and equidistant from each other; there being one bore for each one of the peripheral stop-curves 8. A pin 17 is attached to the dial 11 and extended downwardly through a bore 18, formed in the disk 9 and thence into one of the bores 15 of said gear. It will thus be seen that the disk 9 is caused to bear a fixed relation to the dial 11, while the relation between the dial and disk and the gear may be varied at will by placing the pin 17 in any one of the bores 15. The dial 11, is provided with a series of indicating characters 19, upon the margin of its upper face, corresponding in number and adapted to register with the bores 15. A stationary indicator 20, is formed upon the head 1, to serve as a zero or starting point by which to set the dial to an initial cipher position, said indicator being so placed that one of the bores 15 of the gear may always stand opposite thereto. This method of setting the dial for the purpose of providing a key for deciphering purposes does not differ in principle from that described in my prior patent.

The disk 9 is provided with two series of bores 21 and 22, respectively, Fig. 2, arranged in concentric circles and upon different radii, the bores of each series being equidistant from each other and arranged to bear a fixed relation to the characters 19 upon the dial.

The several bores of the two series are alike in diameter and each is adapted to receive a removable plug generally designated by 23, one of which is shown in detail in Fig. 6. Each plug is provided with a pe-

ripheral flange 24 which is adapted to enter a recess 24^a in the upper margin of the bore. A portion 25 is adapted to extend above the disk to enable the plug to be grasped by the operator for the purpose of removal or insertion, as well as to contact with the under surface of the dial plate so that the plug may be held firmly in the bore when in contact with a shift-pin as hereinafter set forth. When any plug is in position in a bore, its lower end should be flush with the bottom or operating surface of the disk. Shift pins 26 and 27, Figs. 1 and 5, are loosely fitted in suitable bores formed in the parts 1 and 2, said pins being provided with washers 28 and 29 respectively, located in recesses 30 and 31, formed in the part 1. Springs interposed between said washers and the plate 2, tend to push said pins upwardly into the bores 21 and 22. The pins are so formed that when the upper end is flush with the under surface of the disk the lower end of the pin is caused to extend downwardly below the plate 2, as is shown by reference to the pin 27. Each of said pins is beveled upon one face as shown at 32, in order to enable it to pass out of any given bore when the disk 9 is rotated. Inasmuch as the pins are beveled upon one side only, it is essential that they should be prevented from rotating in order to be operative. This may readily be accomplished by providing vertical grooves 33, 34 in the recesses 30 and 31, and forming a tooth 35 upon each of said washers to enter said grooves.

Aside from the beveled ends of said pins and the means for preventing their rotation, they do not differ in construction, position or mode of operation from those described in my former patent for engaging with the disk therein shown for operating the star-wheel mechanism therein described for changing the relation between the type form and the key-board to be changed at predetermined intervals for the purpose of complicating the cipher.

It is obvious that if plugs were to be placed in all of the bores of one of the circular series, the shift-pin for that series would ride past them and be depressed at all times, thereby causing the type changing mechanism to be shifted regularly in a given direction with each character; or, if a part of the plugs were placed in one series of bores and a part in the other, the mechanism would be shifted in one or another direction according to the relative position of said plugs, care being taken to so place the plugs as to cause the depression of but one shift-pin at a time. From what has been stated, it follows that the number of possible variations or permutations of a cipher would only be limited by the number of bores and plugs used, it being understood

that the plugs used in the deciphering disk should always be placed in the reverse order from that used in the enciphering disk.

Having thus described my invention, I claim:

1. A movable controlling element for cipher writing machines for actuating a shifting mechanism to change the relation between type actuating keys and the characters upon a type form, said element having operating and inoperating portions and means operable for arbitrarily changing the relation between said portions to vary the permutations.
2. A controller disk for cipher writing machines, provided upon its face with operating and inoperating portions and means operable for changing the relation between said portions to vary the permutations.
3. A controller for the purpose set forth comprising, in combination, a disk having on its face inoperative portions in spaced relation to each other, and means operable for arbitrarily rendering any of said portions operative.
4. A controller of the character described, comprising, in combination, a disk having on its face operating portions arranged in different series, inoperating portions disposed between the operating portions of each series and means operable for arbitrarily changing the relation between said operating and inoperating portions.
5. A controller of the character described, comprising, in combination, a disk having on its face a plurality of series of inoperating portions and means operable for providing operating portions in either series.
6. A controller of the character described, comprising, in combination, a disk having

on its face a plurality of series of inoperating portions, said portions in the respective series being arranged in different radii, and means operable for providing operating portions in each series.

7. A controller of the character described, comprising, in combination, alternative interchangeable disks, each provided with a series of operating portions and inoperating portions arranged therebetween, and means operable for changing the relative position of said portions in each disk, whereby the permutations of one may be varied at will and that of the other shifted in reverse order thereto.

8. A controller of the character described, comprising, in combination, a disk having a plurality of apertures and means operable for closing said apertures.

9. A controller disk for cipher writing machines, provided with a plurality of concentric series of openings and means operable for arbitrarily closing said openings, one face of said closing means being flush with the corresponding face of the disk.

10. A controller disk for cipher writing machines provided with a series of apertures therein and removable plugs for closing any of said apertures to form a smooth surface upon the operative face of the disk where the plugs are inserted and means for retaining said plugs in place when the device is operated.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses, this 7th day of August, 1916.

FREDERICK SEDGWICK.

Witnesses:

DAVID H. FLETCHER,
HARRY IRWIN CROMER.