Jan. 2, 1923. 1,441,109

A. NEWELL.

CODING AND DECODING DEVICE.

FILED SEPT. 10, 1921.

Fig. 1.

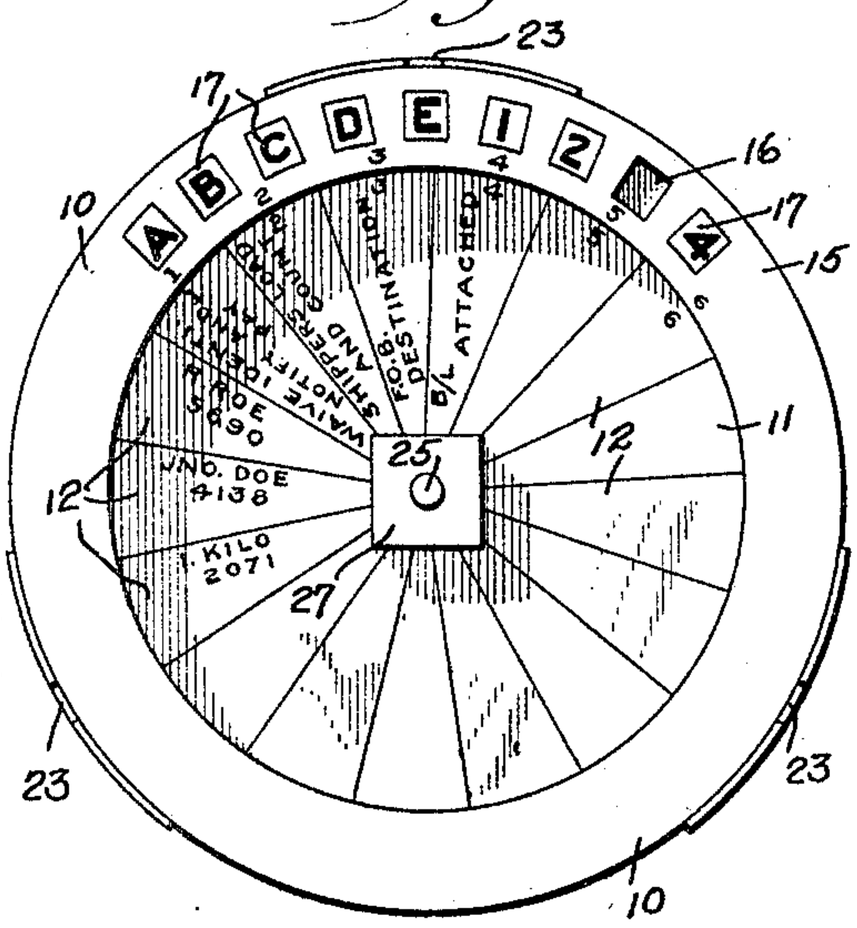


Fig. 2.

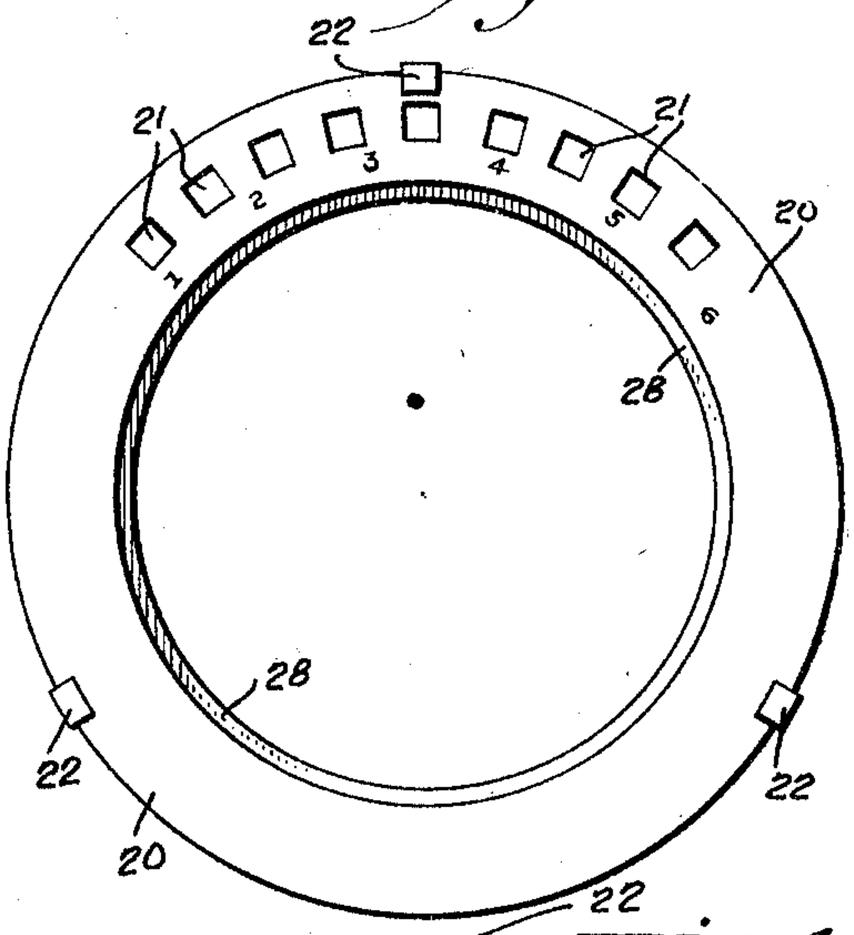


Fig. 3.

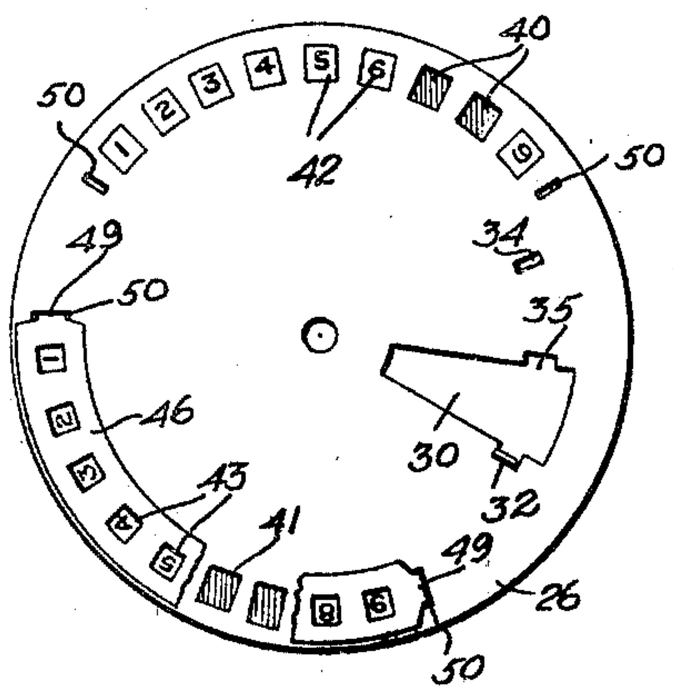


Fig. 4.

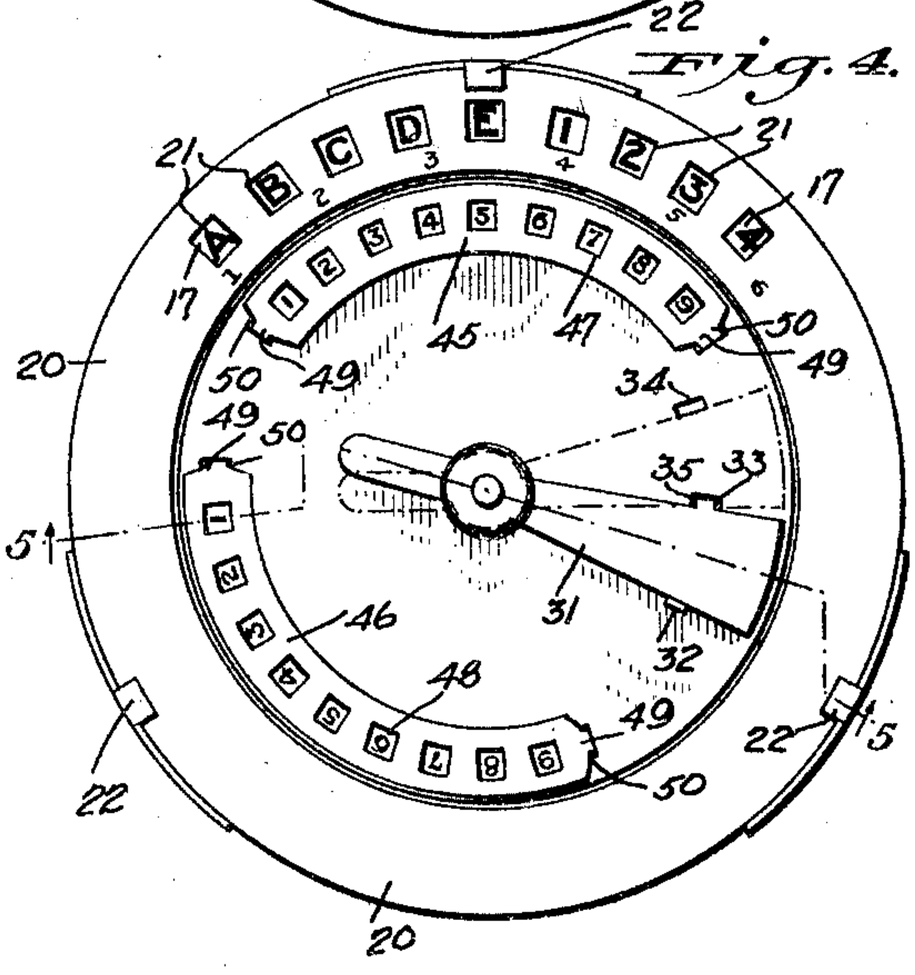
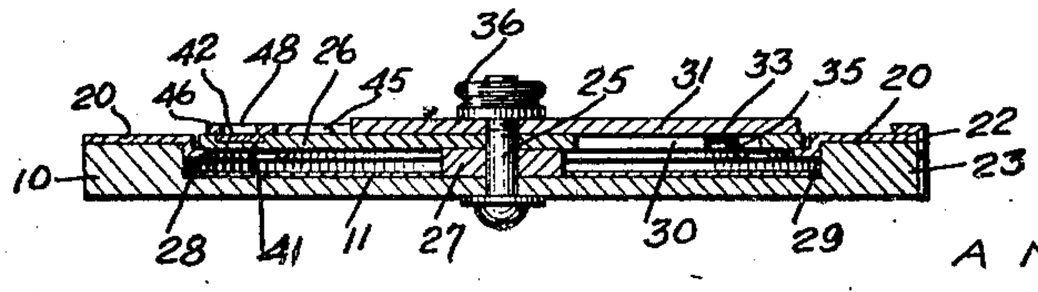


Fig. 5.



WITNESSES

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UNITED STATES PATENT OFFICE.

ALLEN NEWELL, OF ALBUQUERQUE, NEW MEXICO.

CODING AND DECODING DEVICE.

Application filed September 10, 1921. Serial No. 499,623.

To all whom it may concern:

Be it known that I, ALLEN NEWELL, a citizen of the United States, and a resident of Albuquerque, in the county of Bernalillo and State of New Mexico, have invented a new and Improved Coding and Decoding Device, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved coding and de-coding device arranged to enable the user to quickly and accurately code and de-code a message.

Another object is to provide a device of this type which is very simple and durable in construction and composed of comparatively few parts not liable to get easily out of order.

With these and other objects in view, the invention consists of certain novel features of construction as hereinafter shown and described and then specifically pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a plan view of the body of the coding and de-coding device;

Figure 2 is a similar view of the retaining ring for the removable characters on the body;

Figure 3 is a plan view of the rotatable disk with one of the retaining plates for the removable characters removed and the other partly broken out;

Figure 4 is a plan view of the improved coding and de-coding device; and

Figure 5 is a sectional side elevation of the same on the line 5—5 of Figure 4.

The body 10 of the coding and de-coding device is preferably made circular in shape and is provided with a central recess 11, the bottom of which is divided into radially disposed spaces or segments 12 each containing a record of a corresponding key number, full words and phrases that are designated by code numbers or letters, as will be readily understood by reference to Figure 1. The rim 15 adjacent the recess 11 is provided with depressions or recesses 16 arranged in a circle and spaced apart, each depression containing a character 17, such as a letter of the alphabet, a numeral or the like. By the arrangement the characters 17 are removably and interchangeably held in the depressions 16 to enable the user of the device to arrange any desired combination of characters and thus prevent an unauthorized person who may obtain knowledge of the code key from de-coding a message unless such unauthorized person was also in possession of the combination of all the characters. It is understood that in case of the loss of a code book, as now used, an entirely new and different book must be furnished each correspondent. In case of loss of my improved cipher case it is only necessary to advise each correspondent to change the characters in his device to a newly furnished combination. The characters 17 are held against accidental displacement in their depressions 16 by the use of a retaining ring 20 overlying the rim 15 and having apertures 21 registering with the characters 17 but being somewhat smaller than the characters to hold the latter in place in their depressions 16. The retaining ring 20 is held against turning by suitable means, preferably by depending lugs 22 engaging notches 23 formed in the peripheral face of the body 10.

The body 10 is provided with a centrally disposed pivot 25 on which is mounted to turn a disk 26 resting at its middle on a square block 27 attached to the bottom of the recess 11. The outer portion of the disk 26 rests on an annular flange 28 forming part of the retaining ring 20 and extending a short distance down into the recess 11, as plainly indicated in Figure 5. The disk 26 is provided with an opening 30 corresponding in size and shape to one of the spaces 12 on the bottom of the recess 11 and hence on turning the disk 26 on its pivot 25 the said opening 30 can be moved in register with any one of the spaces 12 to enable the user to read the legend in the corresponding space 12. The opening 30 is adapted to be opened and closed by a door 31 preferably mounted to swing on the pivot 25 as a center, and the said door 31 when in closed position, as shown in Figure 4, abuts with its lower edge against a lug 32 struck up on the disk 26 at the lower wall of the opening 35. The upper edge of the door 31 is provided with a depending lug 33 adapted to engage an aperture 34 formed in the disk 26 to hold the door 31 in open position relative to the opening 30. When the door 31 is in closed position the lug 33

extends into a notch 35 formed in the upper wall of the opening 30, as plainly shown in Figures 3 and 4. The door 31 is held on top of the disk 26 by a nut 36 screwing on the upper end of the pivot 25 thus holding the disk 26 as well as the door 31 in proper position.

The upper face of the disk 26 is provided with two sets of circularly arranged recesses or depressions 40 and 41 adapted to contain removable and interchangeable codifying and de-codifying characters 42, 43, preferably in the form of numerals from 1 to 9. The characters 42 and 43 are removable and interchangeable for the same reason as that given above in reference to the characters 17. The characters 42 and 43 are held in place by retaining plates 45 and 46 having openings 47 and 48 somewhat smaller than the characters 42 and 43 to prevent accidental displacement of the said characters. The plates 45 and 46 are preferably segmental in shape and are provided at their ends with depending lugs 49 engaging slots 50 formed in the disk 26. It will be noticed that on removing the plates 45 and 46 the characters 42 and 43 can be removed from their recesses 40 and 41 and replaced by other codifying and de-codifying characters as the case may be.

In order to enable the user to readily identify the spaces 12 and the legends contained therein, the said spaces are preferably numbered consecutively (see Figure 1) and the retaining ring 15 is similarly numbered consecutively. Additional disk records provided with spaces 12 and legends thereon may be placed in the recess 11 below the disk 26. The said disk records are provided with centrally disposed square apertures fitting onto the lock 27 to hold the disk records against turning.

In operating the invention as a coding device a key number is first chosen consisting preferably of two or more digits. The message to be coded is then written and the key number inscribed above the same in a manner such that one digit of the key number registers with each letter of the written message, it being understood that said key number is repeated consecutively as often as may be necessary to provide a digit for each letter of the message. The message is then coded by rotating the disk 26 until some one of the characters 42 or 43 previously determined upon as a "finder" character is brought to register with the first letter of the message as found among the characters 17. With a disk in this position the first digit of the key number, namely the one appearing over the first letter of the message as written preparatory to coding, is located among the characters of the index, the "finder" of which was previously brought into register with the first letter of the message, and the letter registering with the said digit is the first letter of the coded message. This process is repeated for each letter, the "finder" being set as above described for each letter of the message.

For example suppose the message "Sell Northern Pacific" is to be coded and the number 2857 is to be used as a key number. The message and key number are arranged as follows:

2857 28572857 2857285
mvsi kkxzfvxg zdgyczg

and by the above process a code message such as the following will be obtained:—

mvsi—kkxzfvxg—zdgyczg

The coded message as obtained above may be de-coded by a simple reversal of the above process, namely the key number is written over the message in code assigning a digit to each letter of the message. The "finder" is then brought to register with the first letter of the coded message and the letter registering with its corresponding key number digit is the first letter of the original or de-coded message.

For example, take the code message obtained above and arrange the key number with respect to it as follows:—

2857 28572857 2857285
mvsi kkxzfvxg zdgyczg

and by using the de-coding method above described the original message is obtained.

It is to be noted that the two sets of characters 42 and 43 may have their individual characters arranged in a manner such that one set may be used for coding a message and the other set may be used for de-coding the message.

In using the invention to code or de-code a message by words or phrases such as shown on the segments 12 in Figure 1 of the drawings, the opening 30 of the disk 26 is brought to register with the proper legend on the segments 12 by any code number setting forth the registering characters of the disk and rim, and a character to indicate which of the disk records is to be mounted on the post 27 prior to de-coding a message.

For example, the message "Shipper's load and count, F. O. B. destination, bill of lading attached" might be sent in code by the following characters "B—234", the letter B designating the disk to be mounted on the post 25 and the digits 2, 3 and 4 signifying that the door 31 is to be positioned consecutively in coincidence with the small figures 2, 3 and 4 on the rim 15 and the legends appearing on the disk 27 at these positions transcribed to form the message.

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

1. A coding and de-coding device, comprising a body having a circular recess, the bottom of which is divided into segments

containing code matter, the face of the body being provided adjacent the recess with spaced code characters, a rotatable disk mounted to turn in the said recess and having its face provided with sets of codifying and de-codifying characters adapted to register with the said characters on the face of the body, the said disk having an opening adapted to register with any one of the said segments on the bottom of the recess.

2. A coding and de-coding device comprising a body having a circular recess, the bottom of which is divided into segments containing code matter, the face of the body being provided adjacent the recess with spaced code characters, a rotatable disk mounted to turn in the said recess and having its face provided with sets of codifying and de-codifying characters adapted to register with the said characters on the face of the body, the said disk having an opening adapted to register with any one of the said segments on the bottom of the recess, and a closure for the said disk opening to open or close the latter.

3. A coding and de-coding device, comprising a body having a circular recess and a pivot rising centrally therein, the bottom of the recess being divided into segments containing code matter and the rim of the body adjacent the circular recess being provided with spaced code characters, a disk fitting into the said recess and mounted to turn on the pivot, the disk being provided at its face adjacent the edge with codifying characters and de-codifying characters adapted to register with the said code characters on the rim of the body, the disk having an opening adapted to register with any one of the segments on the bottom of the said recess, and a door mounted to swing on the said pivot for opening and closing the said disk.

4. A coding and de-coding device comprising a body provided with removable and interchangeable code characters arranged in a circle, segmental spaces on the body within the said circle and containing code matter, a rotatable disk mounted to turn on the body and provided with an opening adapted to register with any one of the said segmental spaces, and removable and interchangeable sets of codifying and de-codifying characters arranged on the said disk and adapted to register with the said characters on the body.

5. A coding and de-coding device comprising a body having a circular recess the bottom of which is divided into segments containing code matter, the face of the rim of the body adjacent the recess being provided with depressions arranged in a circle, code characters removably and interchangeably held in the said depressions, a ring-shaped retaining cap overlying the said rim and characters and having apertures registering with the said depressions and the characters therein to hold the latter in place, a rotatable disk mounted to turn in the said recess and provided with an opening adapted to register with any of the said segments, the disk being provided with removable and interchangeable sets of codifying and de-codifying characters adapted to register with the said characters on the rim of the body, and means holding the said disk characters in place.

6. A coding and de-coding device comprising a body having a circular recess, the bottom of which is divided into segments containing code matter, the face of the rim of the body adjacent the recess being provided with depressions arranged in a circle, code characters removably and interchangeably held in the said depressions, a ring-shaped retaining cap overlying the said rim and characters and having apertures registering with the said depressions and the characters therein to hold the latter in place, the said retaining cap having at its inner edge an annular flange, a rotatable disk mounted to turn in the said recess and resting on the said flange, the disk having an opening adapted to register with any one of the said segments, the disk being provided with sets of removable and interchangeable codifying and de-codifying characters adapted to register with the said characters on the rim of the body.

7. A coding and de-coding device, comprising a body having a circular recess, the bottom of which is divided into segments containing code matter, the face of the rim of the body adjacent the recess being provided with depressions arranged in a circle, code characters removably and interchangeably held in the said depressions, a ring-shaped retaining cap overlying the said rim and characters and having apertures registering with the said depressions and the characters therein to hold the latter in place, the said retaining cap having at its inner edge an annular flange, a rotatable disk mounted to turn in the said recess and resting on the said flange, the disk having an opening adapted to register with any one of the said segments, the disk being provided with sets of removable and interchangeable codifying and de-codifying characters adapted to register with the said characters on the rim of the body, and at least one record member held removably and against turning in the said recess beneath the said rotatable disk.

ALLEN NEWELL.