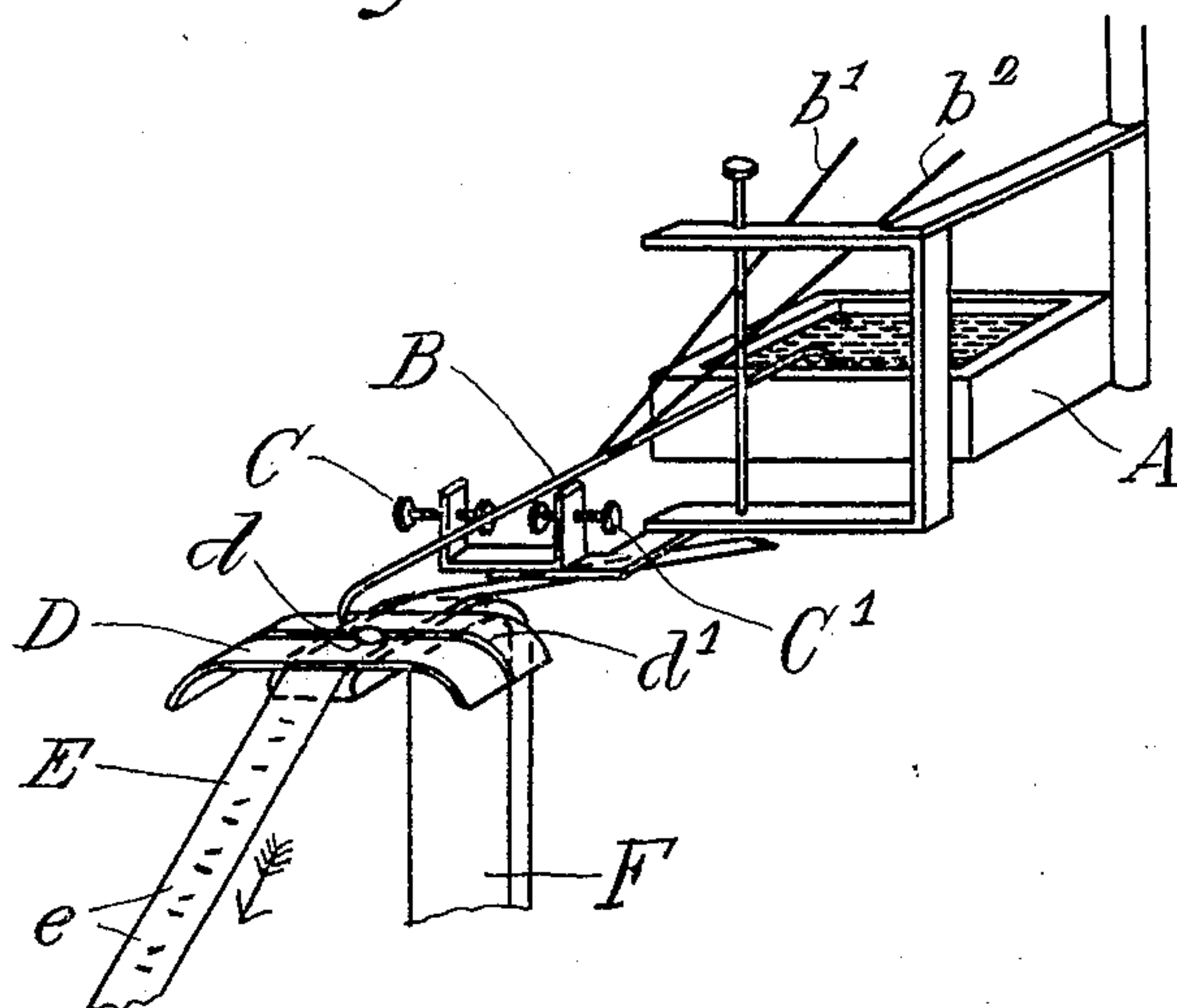


No. 792,052.

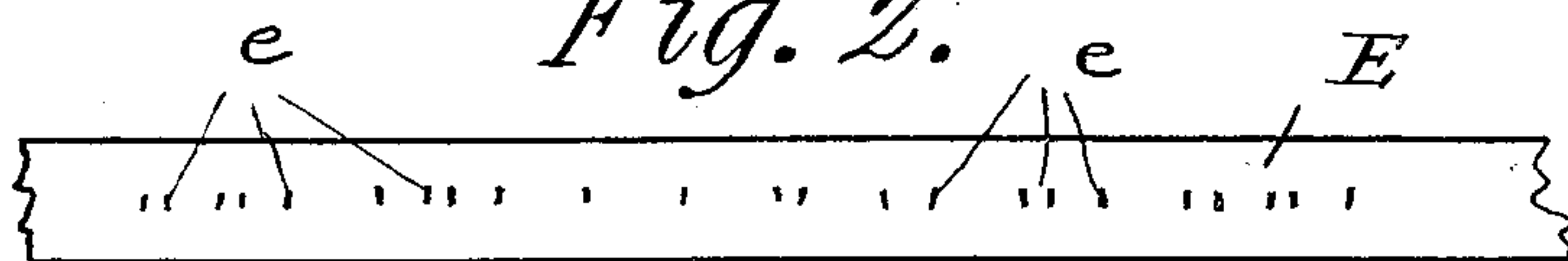
PATENTED JUNE 13, 1905.

I. KITSEE.  
ELECTRIC TELEGRAPHY.  
APPLICATION FILED MAR. 16, 1905.

*Fig. 1.*



*Fig. 2.*



G R E E T I N G

--- --- --- --- --- Continental Morse.

Witnesses  
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# UNITED STATES PATENT OFFICE.

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## ELECTRIC TELEGRAPHY.

SPECIFICATION forming part of Letters Patent No. 792,052, dated June 13, 1905.

Application filed March 16, 1905. Serial No. 250,388.

*To all whom it may concern:*

Be it known that I, ISIDOR KITSEE, of the city and county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Electric Telegraphy, of which the following is a specification.

My invention relates to an improvement in electric telegraphy, and has more special reference to a receiving instrument.

In submarine telegraphy an instrument known under the name of "Siphon-recorder" is used as a receiver. This ingenious instrument, invented by Sir William Thomson, consists, mainly, of a stationary magnetic field and a movable coil in the region of said field, the coil provided with a soft-iron core and suspended by cocoon threads. To this movable coil is attached a fine glass tube or siphon, dipping with one end into an ink-well and placed with the other end near a moving strip of paper. The attachment of the siphon to the movable coil is such that the movement of this coil is reproduced in the movement of the free end of the siphon. The ink and the support of the paper are electrified in a manner so that a continuous spurting out of the ink from the free end of the siphon takes place, and as the coil, and therefore the siphon, moves in accordance with the impulses received, either to right or left, an inky line recording these impulses is produced on the moving paper. The instrument itself and all its parts and the working of same are well understood by persons versed in the art, and as the same do not form part of my invention I deem it unnecessary to reproduce the instrument as a whole, and I therefore only reproduce the siphon itself, the ink-well, and the paper for the purpose of better illustrating my invention, which broadly consists therein that instead of a continuous line individual short lines are produced on the paper through the movement of the siphon, for it is obvious that to move this siphon it is not necessary to have the device exactly as the one just described; but any polarized armature will, if placed between two coils, move this siphon in substantially the same manner as the moving coil,

provided that the siphon is properly connected thereto. Besides, the arrangement of the recording-siphon of today is such that the normal or zero position of the glass tube is near the center of the paper and the tube is moved sidewise, either to the right or left, through the incoming current and will always come to rest at or near the center, whereas for my purpose it is best that the tube should be suspended in a manner so as to remain on that side to which it was moved through the incoming current. In other words, whereas in the siphon of today the point of rest of the glass tube is in the center in my arrangement the point of rest is always to the side in touch with one or the other of the stops provided for that purpose.

In the method as practiced to-day in telegraphy over submarine cables the continental Morse alphabet is used, consisting, as every Morse alphabet does, of dots and dashes differently arranged for each letter of the alphabet. In most cases an impulse of positive polarity characterizes a dash and an impulse of negative polarity characterizes a dot; but in telegraphing with such alphabets a succession of dots and dashes—therefore a succession of impulses of one polarity—cannot always be avoided, and the speed has to be reduced therefor, so as to allow the cable to discharge itself before too many impulses of the same polarity can be transmitted. To avoid this difficulty, I have tried a system wherein true reversals are employed—that is, wherein an impulse of one polarity is always succeeded by an impulse of an opposite polarity. This system is clearly set forth in Letters Patent granted to me December 13, 1904, under Serial No. 777,259, and in this system one impulse (the polarity not coming into consideration) characterizes a dot and two impulses in quick succession (each of a polarity opposite to the other) characterize a dash. To record such impulses, the usual siphon-recorder as used to-day can, as was practically proven, be used; but in a good many instances it is preferable that the recorded signs should be more clearly readable, and for this purpose I have recourse to the arrangement as will hereinafter be described,



illustrated in the drawings, and more clearly pointed out in the claims following the specification.

In the drawings, Figure 1 illustrates in perspective that part of the siphon-recorder which is necessary to record the messages on the strip of paper, leaving entirely out that part which may be used to actuate the siphon proper. Fig. 2 is a plan view of a piece of tape, showing recorded thereon the characters denoting the word "Greeting."

In the drawings, A is the ink-well, B the siphon proper,  $b'$  and  $b''$  the means to connect the siphon to the movable part of the receiving device. This connection is made in a manner so that the siphon will always rest against one or the other of the stops C or C'. The piece of tape E is resting on the support F. Directly over the tape or paper E, but not touching it, is the shield D, provided with the hole or perforation  $d$  and the groove or gutter  $d'$ .

The free point of the siphon is when centered above the hole  $d$ , but not extending into the same, and is when swinging to right or left over the solid portion of the shield, but not touching the same. The arrow indicates the direction in which the paper is going. The lines  $e$  are supposed to be the records formed on the paper through the movements of the siphon B.

The working of this instrument is as follows: Normally the free part of the siphon will rest, as said above, against one of the stops C or C'. The incoming impulse, if the same is of the required polarity, will move the siphon from the stop against which it rests across the free space between the stops and will come to rest against the opposite stop. During this movement the ink will always spurt out of the open end of said siphon, but will not be able to reach the paper or tape, for the reason that the shield intervenes between the ink and the paper; but where the shield is perforated—that is, in the center—the ink will be enabled to pass through this perforation and will reach the paper, making a record thereon, such as a short line or a period. When in its movement the free end of the siphon has passed the perforation, then the ink will again be deposited on the shield and carried off by the groove  $d'$ .

It is supposed that the siphon rests, as is shown in the drawings, against the stop C, and it is supposed that the incoming impulse will move it from this stop toward and in contact with the stop C'. During the whole progress of this movement the siphon would record an uninterrupted line on the moving paper were it not for the perforated shield D, which only permits the ink to reach the paper during the short period that the siphon is over the hole, thereby recording only a period or a short line, and as the size of the hole or perforation may vary in accordance with requirements it

is obvious that the size of the line may also be varied from a small point or dot to a line of predetermined length.

As stated in the Letters Patent above referred to and at the beginning of this specification, in the system of true reversals one impulse characterizes a dot and two impulses characterize a dash. Therefore to record a dot on the moving paper it is only necessary to send one impulse over the line, causing the siphon to move from one stop—say C—to the other stop—say C'—and to record thereby one period or one short line, and in order to record a dash it is necessary to send in quick succession two impulses over the line, the second of these two impulses having a polarity opposite to the first of these two impulses, one of these impulses causing the siphon to move from stop C' back to stop C and the second of these two impulses causing the siphon to move again to C', each of these movements causing the siphon to record a period or a short line, the second in close proximity to the first. In other words, each movement of the siphon from one stop to the other causes the free end of same to pass over the perforation, thereby allowing the ink to reach the paper, making a record, and in the case of a dot to allow a whole time unit to lapse before the next succeeding record, and in the case of a dash the free end of the siphon passes over the perforation, making a record, followed by a half-unit of time and then passing a second time over the perforation, making a second record, which is only a half-space from the first.

In Fig. 2, E is the tape, and  $e$  the characters marked thereon, said characters representing, as stated above, the word "Greeting," each letter of which and the character in the Morse continental code written below.

I have for convenience sake illustrated the mode of supporting the siphon proper by the two threads  $b'$  and  $b''$ ; but it is obvious that this mode of suspension may differ according to requirements.

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

1. In combination with a recording-siphon and a moving paper adapted to have recorded thereon characters through the moving of said siphon, a device placed between said siphon and said paper, said device impervious to the recording fluid but provided with an orifice whereby the recording fluid is allowed to reach the paper only during the period that the free end of the siphon is directly above said orifice.

2. In combination with a recording-siphon a paper adapted to have recorded thereon through the movement of said siphon characters designating the letters of a telegraphic alphabet, an intermediate device adapted to prevent the depositing of the recording fluid



on the paper during the movement of said siphon with the exception of a predetermined period or part of said movement.

3. In combination with a recording-siphon  
5 and a paper adapted to have recorded thereon characters designating letters of a telegraphic alphabet during the movement of said siphon a shield interposed between the siphon and the paper, said shield provided  
10 with an orifice, said orifice in alinement with the free end of the siphon during its movement from one side to the other, the shield of a material impervious to the recording fluid.

4. In combination with a recording-siphon  
15 and a paper adapted to have recorded thereon characters designating letters of a tele-

graphic alphabet during the movement of said siphon, a shield interposed between the siphon and the paper, said shield provided with an orifice, said orifice in alinement with  
20 the free end of the siphon during its movement from one side to the other, the shield of a material impervious to the recording fluid, said shield provided with means to carry off  
25 the fluid deposited thereon.

In testimony whereof I hereby sign my name, in the presence of two subscribing witnesses, this 9th day of March, A. D. 1905.

ISIDOR KITSEE.

Witnesses:

EDITH R. STILLEY,  
H. C. YETTER.