

J. W. DAVIS.
SEMAPHORE.

No. 520,756.

Patented May 29, 1894.

Fig. 4.

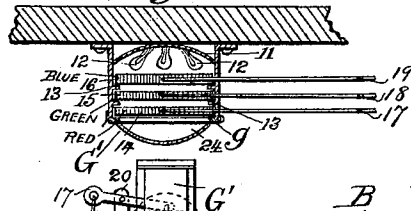


Fig. 7.

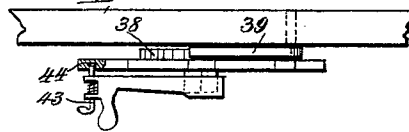
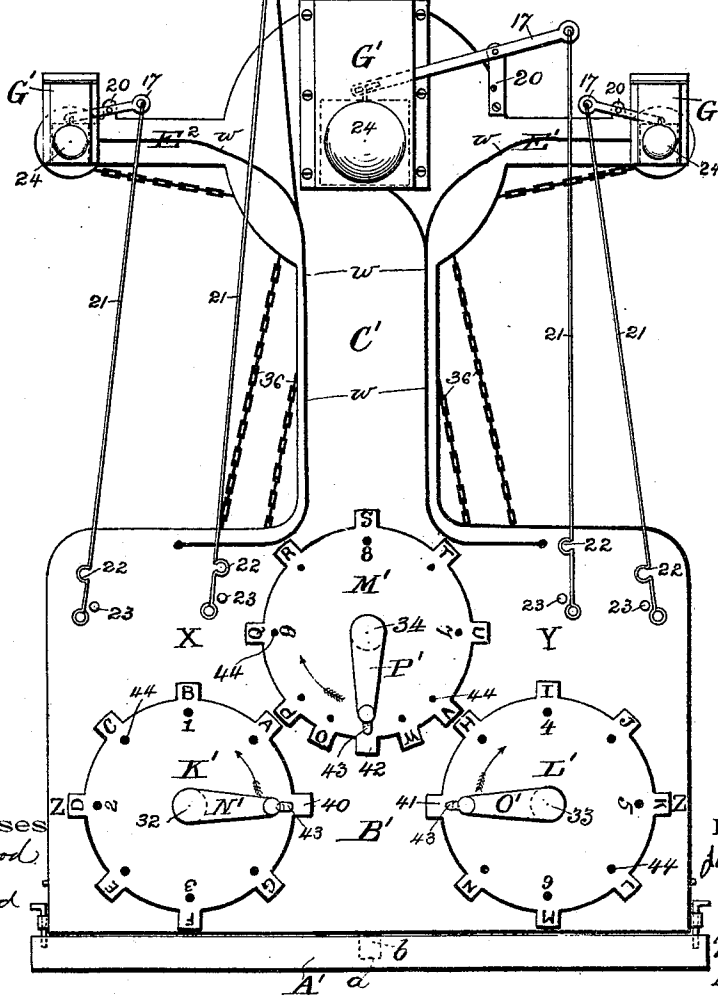


Fig. 1.



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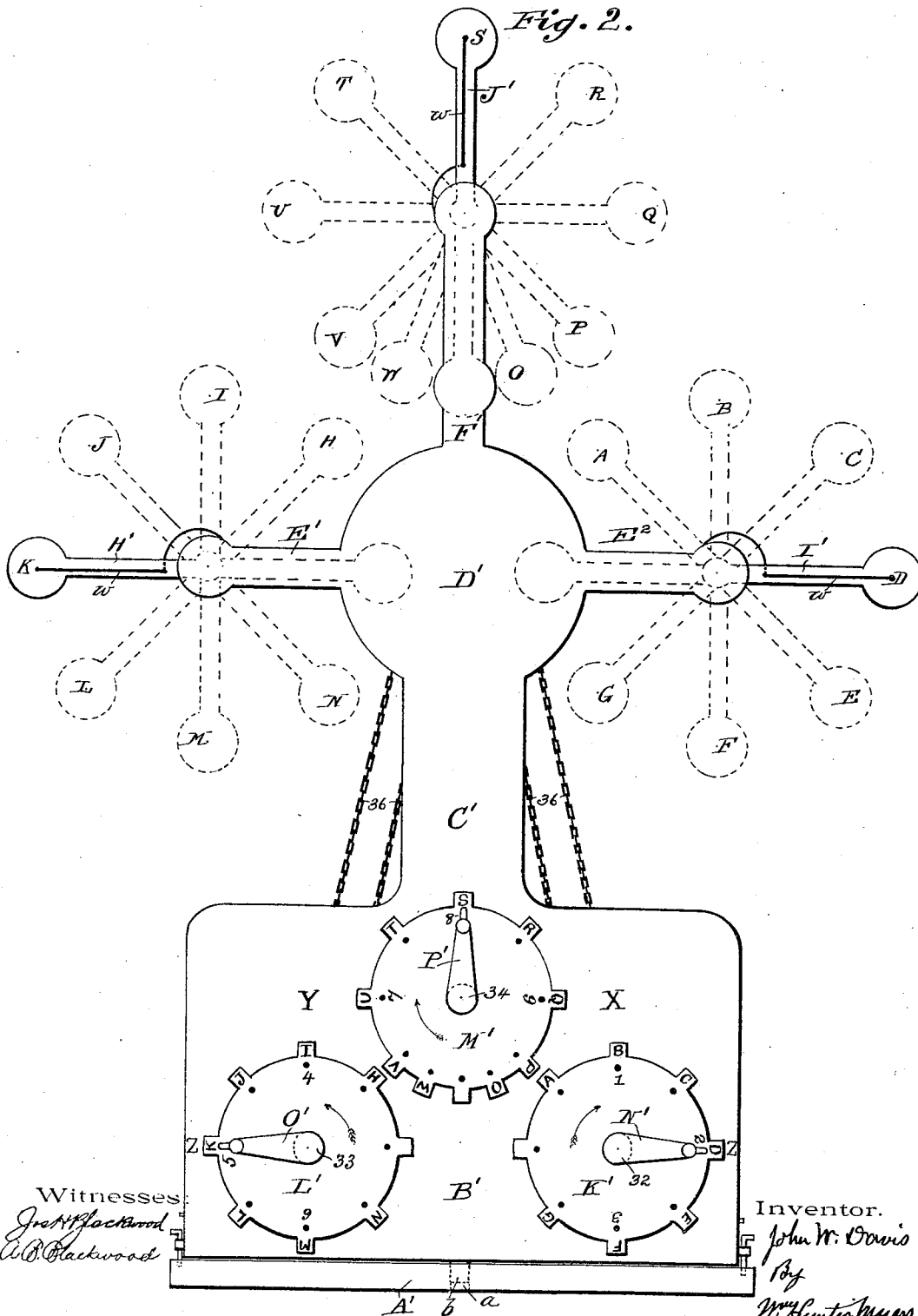
(No Model.)

4 Sheets—Sheet 2.

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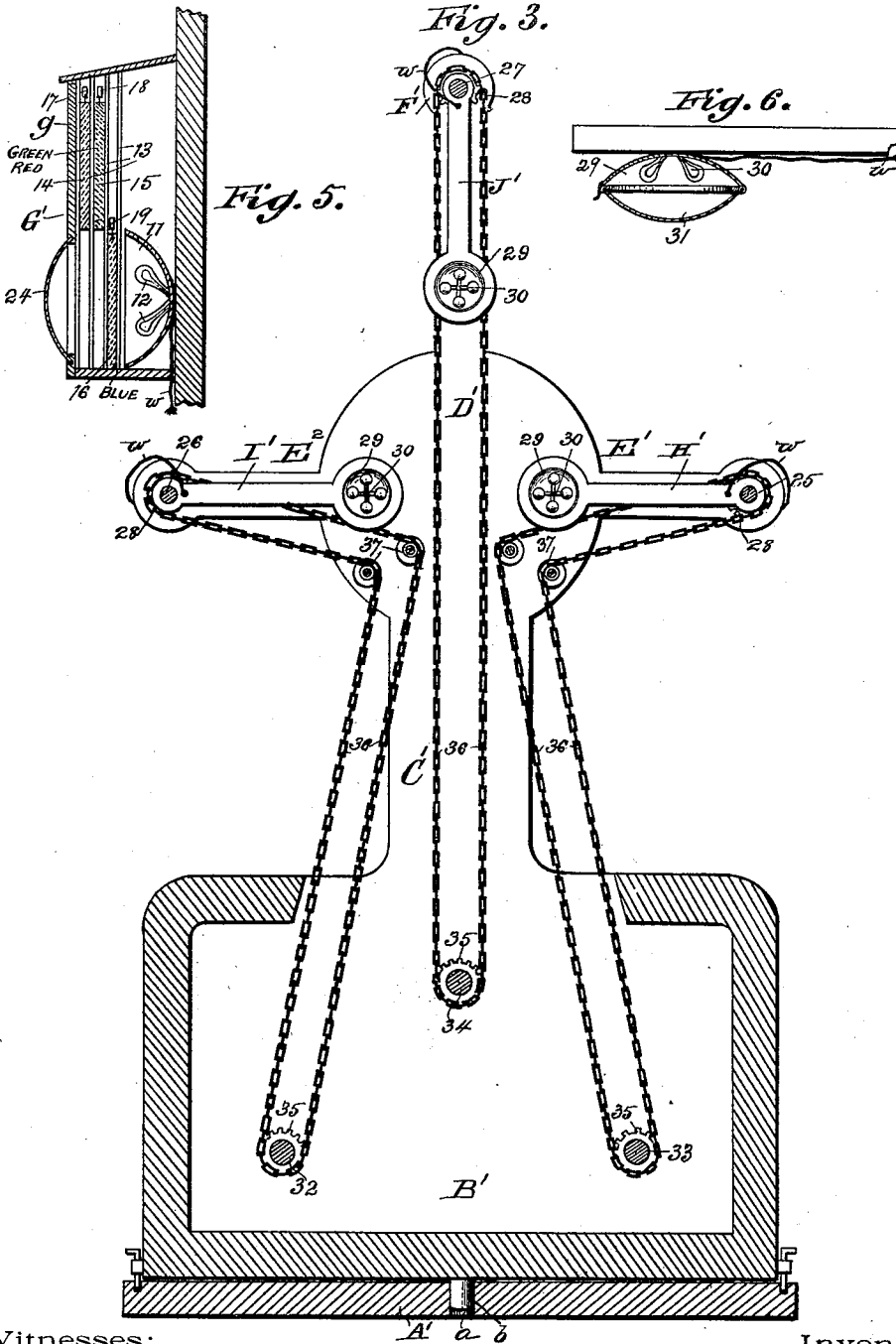
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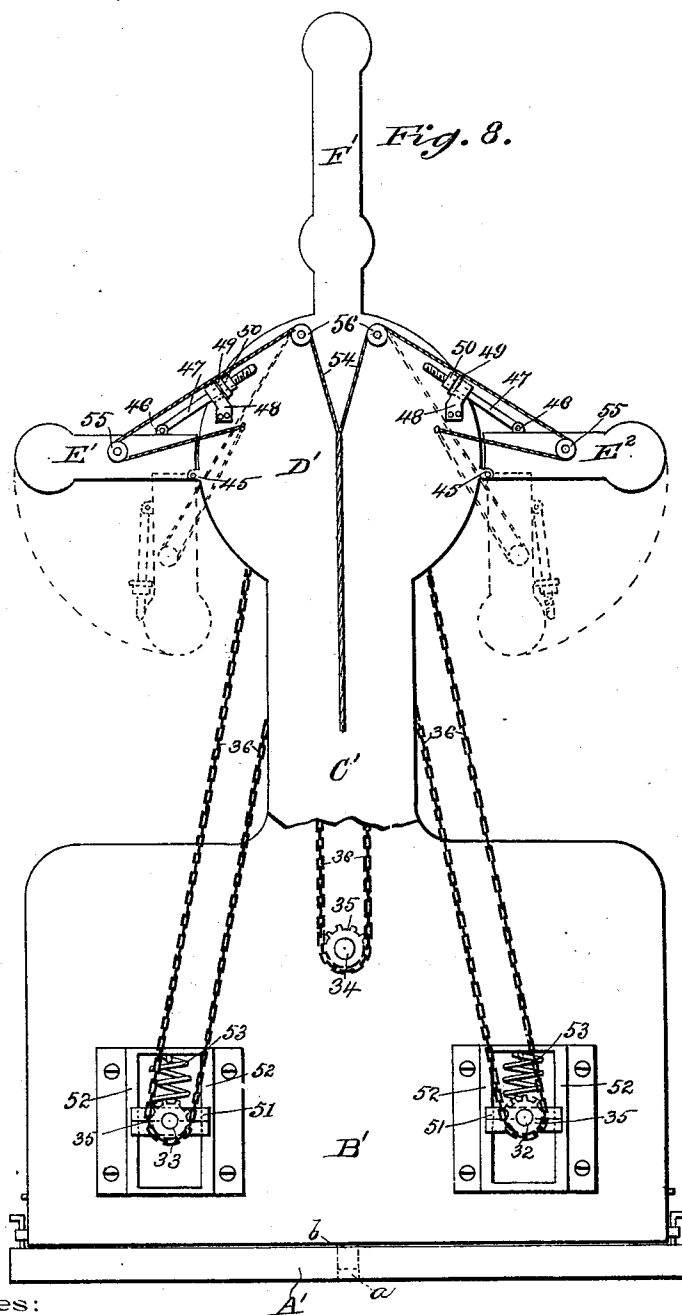
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SEMAPHORE.

SPECIFICATION forming part of Letters Patent No. 520,756, dated May 29, 1894.

Application filed March 2, 1894. Serial No. 502,028. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. DAVIS, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Signaling Apparatus, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to an improved nautical semaphore signaling apparatus, whereby at sea vessels may communicate with each other in daylight either by means of words spelled out or in accordance with a code made up of letters or figures, and at night by the same means or by a code necessitating the display of different-colored lights.

The invention will first be described in connection with the accompanying drawings, and then pointed out in the claims.

Figure 1 of the drawings is a front elevation of the apparatus, all of the parts being in their normal positions. Fig. 2 is a rear elevation of the apparatus, the dotted lines showing the positions assumed by the semaphore-arms to indicate letters or figures. Fig. 3 is a vertical sectional view of the apparatus with the parts in their normal positions, but omitting the bull's-eyes from the reflectors carried by the arms. Fig. 4 is a horizontal sectional detail view, showing the arrangement of the different colored glasses. Fig. 5 is a vertical sectional detail view, showing the operation of the different-colored glasses. Fig. 6 is a horizontal sectional detail view of one of the semaphore-arms, illustrating the reflector and the hinged bull's-eye. Fig. 7 is a detail plan view showing the means for holding the crank-handles in any position in which they are set on the dials. Fig. 8 is a rear elevation, partly in section, of a modified form of frame, in which the side or horizontal wings are adapted to fold downward.

Referring to Fig. 1, which represents what I term the front or night side of the apparatus, (as this side is turned toward the ship being signaled at night,) A' represents a turntable, on which the apparatus is revolubly mounted, said turn-table having a central socket a for the reception of a loosely-fitting stud b rigidly secured to the bottom of the apparatus.

The framework of the semaphore comprises a base B', a stem C', a disk D', two horizontal wings E' E², and a vertical wing F', all these wings radiating from the disk and having circular enlargements at their outer ends. This framework is hollow and contains the operating mechanisms, as seen in Fig. 3. On the disk D' and on the outer ends of each wing E' E² F' respectively, is secured a box G', in each of which there is a reflector 11, within which there is any suitable light, preferably a group of electric incandescent lamps 12. In front of the reflector the box is provided with a series of vertical guide-strips 13, between which are placed different-colored glasses, as red 14, green 15, and blue 16, all capable of being elevated above the plane of the reflector, as seen in Fig. 5. These glasses are raised above and lowered in front of the reflector by means of levers 17, 18, 19, to which latter the glasses are respectively connected in any suitable manner, the levers being pivoted on a bracket 20, and each having an operating-rod 21, in which, near the lower end, is formed a loop 22 adapted to engage with a stud 23 on the base of the framework, so as to hold its respective glass elevated. The box is provided on its front side with a door g, in which, directly in front of the reflector, is set a bull's-eye 24. In the outer enlarged ends of the respective semaphore wings are loosely journaled shafts 25, 26, 27, on each of which there is a fixed sprocket-wheel 28. These shafts also carry the respective semaphore-arms H', I', J', fixedly secured thereon, the free ends of the arms being enlarged in the same manner as are the ends of the framework, for the reception on each arm of a reflector 29 and a suitable light 30, preferably a group of electric incandescent lamps, as shown, each reflector being covered by a bull's-eye 31, as seen in Fig. 6.

32, 33, and 34 are shafts passed through and revolubly mounted in the base B' of the framework, the first two being located in the same plane in the lower portion of the base, and shaft 34 in the upper portion of the base. On each of these shafts, within the base, is a fixed sprocket-wheel 35, over which passes one of three endless sprocket-chains 36, these chains leading to and over the sprocket-wheels 28 on the respective shafts 25, 26, and 27, the two

side chains being each supported by a pair of rollers 37 revolvably mounted within disk D' of the framework.

K', L', and M' are three dials, mounted loosely on shafts 32, 33, and 34, respectively, outside of the base B'. On the back of each dial is formed a ratchet-wheel 38, which is engaged by a pawl 39 pivoted to the base, as seen in Fig. 7, this ratchet-and-pawl mechanism being designed to hold the dial in any position in which it may be set. On these three dials together are marked all the letters of the alphabet except X Y Z, which are marked on the front of base B', for a purpose hereinafter stated. On dial K' are placed the letters A B C D E F G, running from right to left, with a blank 40 between the first and last letters. On dial L' are the letters H I J K L M N, running from left to right, with a blank 41 between the first and last letters; and on dial M' are the letters O P Q R S T U V W, running from left to right, with a blank 42 between the first and last letters. On dial K', below and in radial alignment with letters B, D, and F, are marked, respectively, the numerals 1, 2, and 3; on dial L', in similar relation to letters I, K, and M, are the numerals 4, 5, and 6; and on dial M', in a like relation to letters U, S, and Q, are the numerals 7, 8, and 9, the letter O on this dial serving as the cipher.

On the respective shafts 32, 33, and 34, outside of the dials, are placed crank-handles N', O', and P', each of which is provided with a spring-pin 43, adapted to enter any one of the series of holes 44 in the dial, so as to prevent the handle from being accidentally turned away from the position in which it may be set.

w represents the wires connected with the various electric lamps on the apparatus, the electricity being derived from any suitable source.

As shown in Fig. 2, the rear side of the apparatus, which is used for transmitting signals in daylight, is the same in construction as the front side, with the exception that the lights and their appurtenances are omitted and dials K' and L' are transposed, as is necessary in order that the similarly lettered dials may be on the same shaft.

In Fig. 8 I have shown a modification of the framework of the semaphore, whereby the wings E' E² may be folded downward, if desired, when the apparatus is not in use. In this case the wings are hinged to the disk D' at 45; and on the upper edge of each wing there is pivoted at 46 one end of a rod 47, its other end being screw-threaded. When the wing is elevated this rod is placed in the bifurcated portion of a bracket 48, and held in place by a washer 49 and a nut 50, as shown in full lines; and when the wing is down the arm is released from the bracket and turned forward on the wing, as seen in dotted lines. In order to keep the two side chains 36 taut

during the movement of the wings, the shafts 32 and 33 are mounted in boxes 51, having V-shaped grooves in their ends, which slide on correspondingly-shaped ways 52 inside the base of the framework, these boxes working against the stress of coiled springs 53 bearing on them. Two ropes 54, secured at one end to the disk D' and passed over rollers 55 and 56, journaled respectively on the wings and on the disk, serve to raise and lower the wings.

The operation of my signaling apparatus is as follows: Supposing it is desired to send a communication from one ship to another at night. In that case the party who is to send the communication from his ship to the other turns the semaphore so that the lights will be toward the other vessel. He then calls the attention of the other party by raising the two side semaphore-arms to a vertical position, and shows white lights on the wings and raised arms, this being done by raising all the colored glasses. The party being signaled then turns his apparatus so that the night side is toward the other vessel, and answers that he is ready by repeating the attention signal, when the sender and receiver both lower the semaphore-arms to their normal positions. It will be understood that each party operates his apparatus according to the dials on the day side, and also reads the signals by those dials. The sender then transmits his communication either by spelling out words in full or in accordance with any prearranged code based on letters of the alphabet or numerals, by turning the crank-handles N', O', and P' in line with the desired letters or numerals on the respective dials, which causes the arms H' I' J' to assume corresponding angles with respect to the wings E' E² F', as clearly shown in Fig. 2, these angles being made visible by the lights. As the letters X, Y, and Z are on the base, and not on the dials, the movement of two crank-handles to indicate each of these letters is necessary, as follows: Handle N' is moved to B and handle P' to Q to indicate X; handle O' is moved to I and handle P' to U to indicate Y; and handles N' and O' are moved to D and K respectively, to indicate Z. As evidencing the fact that the receiver understands the signals he repeats them.

In case the sender desires to communicate by numerals instead of letters, he announces this fact to the other party by lowering one of the arms only after giving the attention signal, the other arm remaining erect until answered by the receiver.

Should the sender wish to communicate by colored lights he gives notice of this fact, after the attention signal has been given and answered, as above described, by showing blue lights on the wings and on the disk, this latter being termed the field light. When the receiver responds to this notice the sender then manipulates the various colored glasses on the field and wing lights according to his

code. If this be the merchant code, the wing lights will represent the pennants and the field light the field.

In signaling in daylight the sender simply turns the apparatus so that the day side will face the other vessel, and then gives the attention signal in the manner above indicated. The person signaled then turns his apparatus so that the day side faces the sender, and responds to the signal given him, after which the sender transmits his communication by moving the semaphore-arms in accordance with the dials on the night side, and the receiver reads and answers the angles of the arms by the same set of dials.

It will be apparent that by turning the dials from their normal positions represented in the drawings, the angles assumed by the arms will be caused to represent letters or numerals in a different order, this feature being useful in the use of secret codes.

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

1. In a semaphore signaling apparatus, the combination, with a frame having a series of wings, of a series of arms journaled in said wings, a series of dials bearing characters and operatively connected with said arms, and mechanism for turning the arms and indicating their angles in accordance with the characters on the dials.

2. In a semaphore signaling apparatus, the combination, with a frame having a series of wings, each provided with a light, of a series of arms journaled in said wings, each of said arms bearing a light at its free end, a series of dials bearing characters and operatively connected with said arms, and mechanism for turning said arms and indicating the angles described by their lights with respect to the wing lights in accordance with the characters on the dials.

3. In a semaphore signaling apparatus, the combination, with a frame having a series of wings, each provided on one side with a changeable light, of a series of arms journaled in said wings, each arm provided with a light on one side at its free end, a series of dials bearing characters and operatively connected with said arms, and mechanism for turning the arms and indicating the angles described by their lights with respect to the wing lights in accordance with the characters on the dials.

4. In a signaling apparatus of the class described, the combination, with a frame having a disk, wings radiating from the disk, and lights on one side of the disk and wings, of a series of glasses of different colors arranged to slide in front of each of said lights, means for operating said glasses, a series of arms journaled in the wings and provided with lights on one side at their free ends, and mechanism for turning the arms to and holding them at any desired angle to the wings.

5. In a signaling apparatus of the class described, a hollow frame comprising a base, a stem, a disk on the stem, and wings radiating from the disk, in combination with shafts journaled in the wings and each carrying a fixed sprocket-wheel, arms fixed on the wing shafts, a series of shafts journaled in the base, each carrying a fixed sprocket-wheel, crank-handles on the outer ends of each base shaft, and endless-chain connections between the sprocket-wheels on the base shafts and those on the wing shafts.

6. A reversible signaling apparatus, comprising a hollow frame having a base, a disk, and wings radiating from the disk, changeable field and wing lights on one side of the disk and wings respectively, shafts journaled in the wings and provided with fixed sprocket-wheels, arms fixed on said shafts and bearing lights on one side, a series of dials marked with characters on each side of the base, a series of shafts passed through the base and dials and each having a fixed sprocket-wheel within the base, crank-handles on the outer ends of the base shafts, and endless-chain connections between the wheels on the base shafts and those on the wing shafts.

7. In a signaling apparatus such as described, a frame comprising a base, a stem rising from the base, a disk on the stem, and one vertical and two horizontal wings radiating from the disk, all of said wings carrying arms journaled therein, the horizontal wings being hinged to the disk in a manner to permit them to be folded down parallel with the stem, and means for holding the hinged wings elevated.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN W. DAVIS.

Witnesses:

WM. HUNTER MYERS,
DAVID W. GOULD.