(No Model.) 2 Sheets—Sheet 1.

B. F. CULP.

SEMAPHORE.

No. 536,984. Patented Apr. 2, 1895.

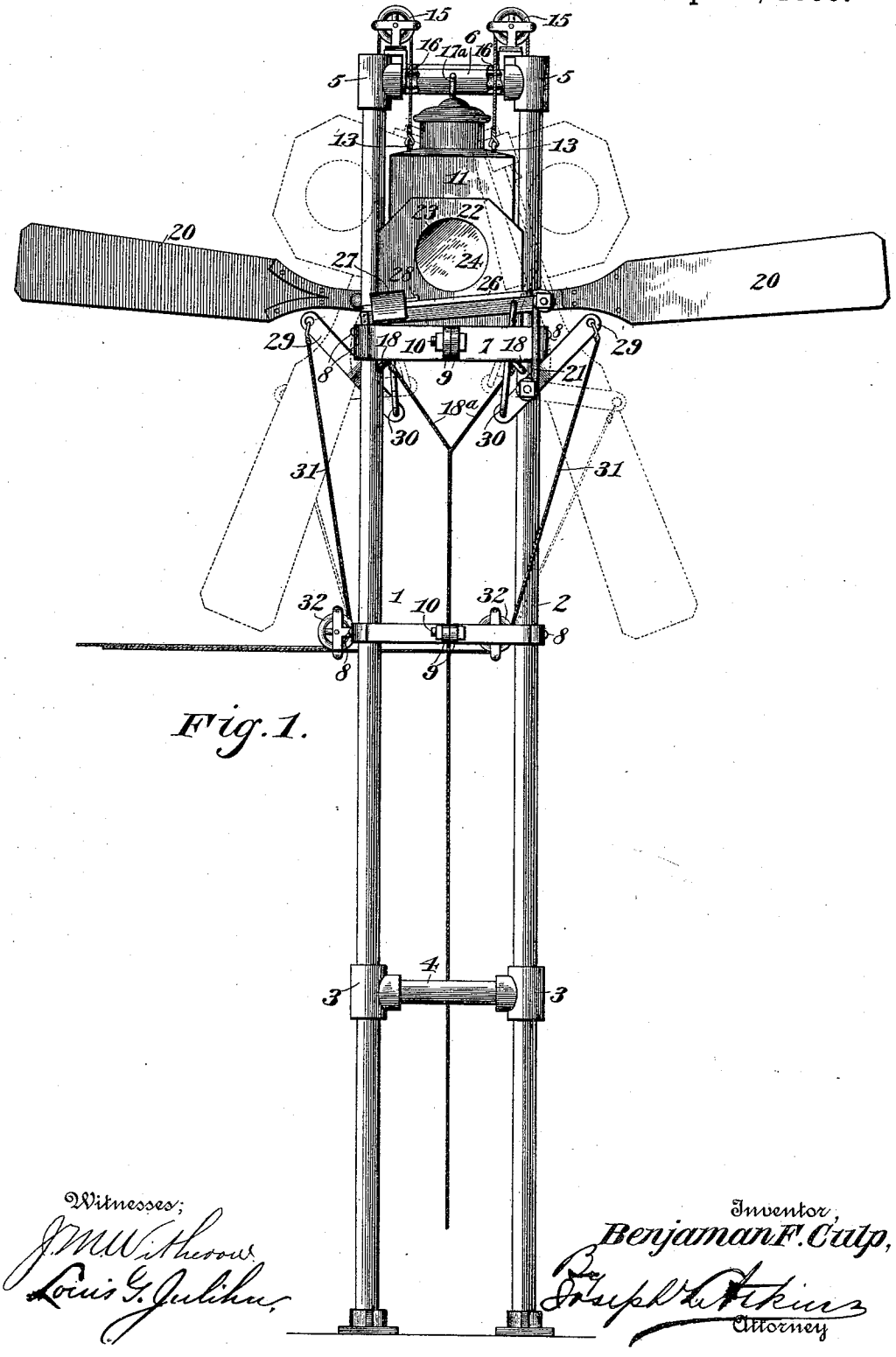

Fig. 1.

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(No Model.) 2 Sheets—Sheet 2.

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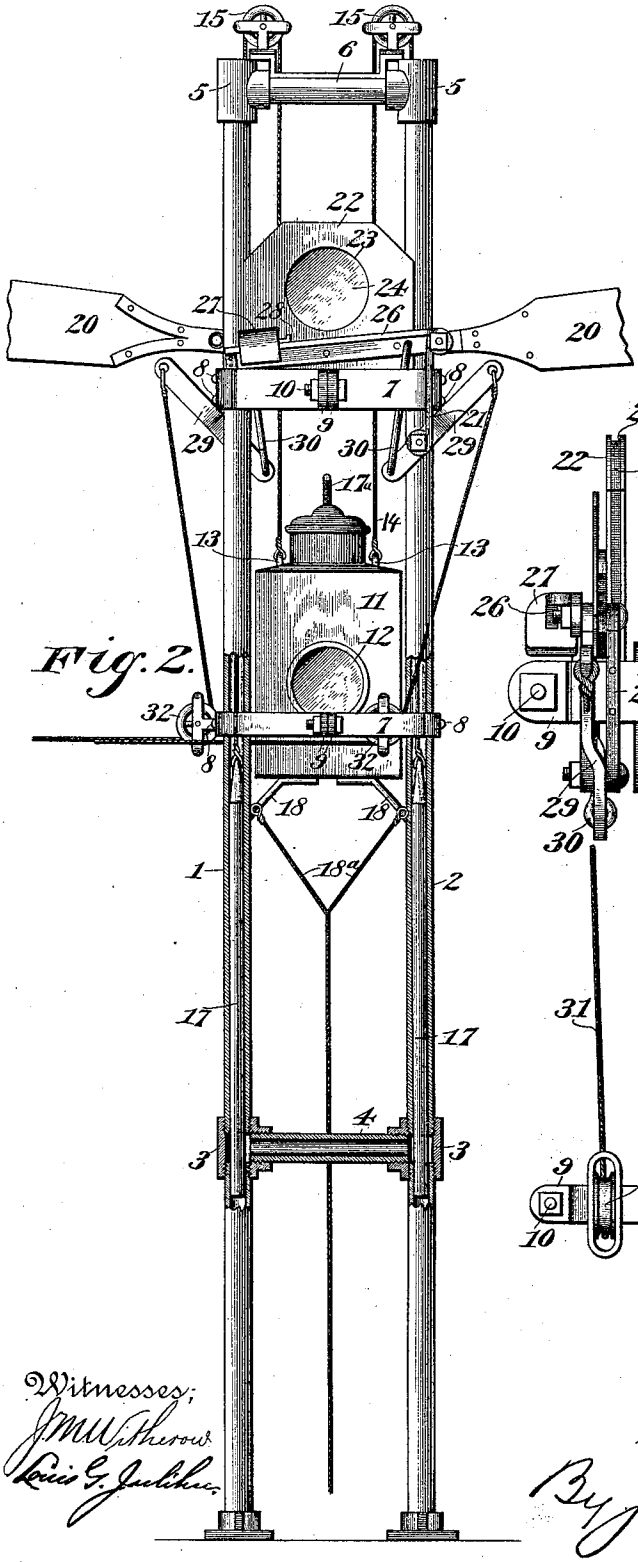

Fig. 2.

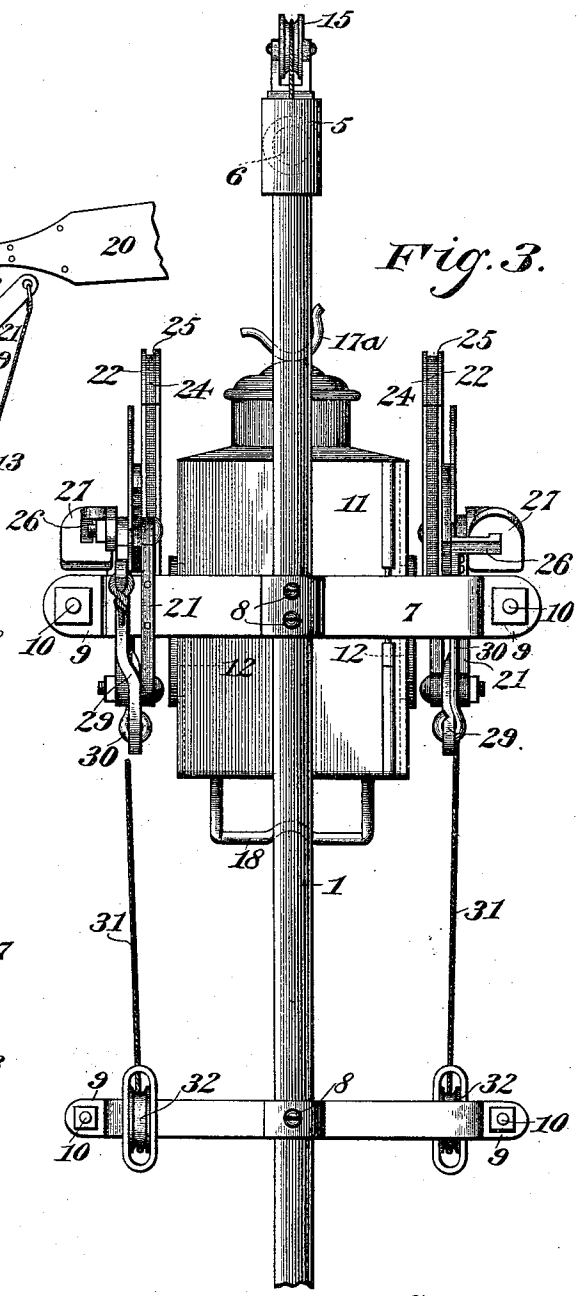

Fig. 3.

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UNITED STATES PATENT OFFICE.

BENJAMAN F. CULP, OF COLUMBUS, OHIO, ASSIGNOR OF ONE-HALF TO JOHN FRANKLIN KNIGHT, OF SAME PLACE.

SEMAPHORE.

SPECIFICATION forming part of Letters Patent No. 536,984, dated April 2, 1895.

Application filed April 20, 1894. Serial No. 508,354. (No model.)

To all whom it may concern:

Be it known that I, BENJAMAN F. CULP, of Columbus, in the county of Franklin, State of Ohio, have invented certain new and useful Improvements in Semaphores, of which the following is a specification, reference being had to the accompanying drawings.

The object of my invention is to produce certain improvements in semaphores whereby the cost of manufacture is diminished and the facility of operation is increased.

My invention consists of certain improvements in the frame, vanes, and lantern actuating mechanism of a semaphore as will more fully and at large appear in the specification and drawings and which is succinctly set forth in the appended claims.

In the accompanying drawings, Figure 1 is a side elevation of my semaphore, showing the lantern in the elevated position, with the vanes in the normal position, the depressed position being shown in dotted lines. Fig. 2 is a view, showing the lantern partly lowered and showing the side pieces partly cut away to illustrate the position of the counter-weights. Fig. 3 is a view taken at right angles to that shown in Fig. 1, designed especially to illustrate the head guide piece of the lantern.

Referring to the figures on the drawings, 1 and 2 indicate the tubular side pieces of my frame. They are preferably divided near their lower ends and are screwed into the opposite sides of T-fittings 3. That arrangement provides a convenient form of cross brace 4 that is screwed into the opposite openings of the T-fittings. At the same time the side pieces are left perfectly hollow and unobstructed. The upper ends of the side pieces are provided with T-fittings 5 which receive between them an upper cross brace 6, while their upper ends are open to leave free access to the interior of the side pieces.

7 indicates what may be called band braces, being preferably two pieces of flat metal, each shaped to form one-half of a rectangle and being secured, as by screws 8 to the side pieces. Their ends are bent outwardly, as indicated at 9, and may be secured together by bolts and nuts 10. The side pieces, cross braces, and band braces united as described and illustrated, combine to produce an exceedingly rigid, cheap and serviceable semaphore frame, and possess also special adaptation for the employment of the lantern actuating mechanism immediately hereinafter described.

11 indicates a lantern of suitable shape and construction and of dimensions which permit it to move freely between the side pieces of the frame and through the band braces. It is provided preferably upon opposite sides with transparent disks, as of glass, 12. To its upper part, upon opposite sides, as by hooks 13, is fastened the ends, respectively, of flexible bands 14.

15 indicates pulleys carried upon a suitable frame upon the top of the upper cross brace 6 and of a diameter sufficient to direct the flexible pieces that are passed through vertical openings 16 in the cross brace from the perpendicular line by which they ascend to a perpendicular line of descent midway of the tubular side pieces. The opposite ends of the flexible pieces are, respectively, fastened to counter-weights 17 of a suitable size to move freely within the tubular side pieces and of a weight sufficient to counter-balance that of the lantern.

The head of the lantern is provided with a slightly resilient buffer and guide piece 17^a which, when the lantern is allowed to move toward the elevated position, under the action of the counter-weights, serves to guide it accurately in place, and when in place to prevent its undue oscillation. Upon the bottom of the lantern are fixed brake guide pieces 18 which co-operate with the head guide piece to steady the lantern both in its travel and in its position in use, and which also, projecting outwardly into contact with the side pieces, serve, by a slightly resilient action against the side pieces, to act as a brake, thereby tending to prevent the too swift ascent of the lantern and providing means for holding it in a fixed position below the upper cross brace, which serves as a final barrier and defines what may be called its normal or operative position.

For operating the lantern and the brake guide pieces, I provide flexible connecting pieces 18^a fastened to the brake guide pieces and which, united a little below them, descends midway between the side pieces to a place within reach of the hand of the oper-

ator. By the use of this flexible piece the lantern may be pulled downwardly from its normal position the force of the pull operating upon the brake guide pieces to prevent their operation against the side pieces. After the lantern has been pulled down and trimmed or otherwise attended to, it may be restored to its normal position by the operator holding the ends of the flexible piece. The gravity of the counter-weights is such that a slight pull upon the flexible piece will be sufficient to retract the guide brake pieces, but not sufficient to prevent the steady rise of the lantern. Upon release, however, of the flexible piece the guide brake pieces will immediately engage the side pieces and bring the lantern to a standstill.

20 indicates each of a pair of similarly constructed vanes that are preferably pivoted to an upright 21 fastened to the upper band brace. This band brace should, therefore, be adjusted so that when the vane is in the horizontal position its head 22 will be opposite the transparent disks 12 of the lantern. The head is provided with an aperture 23 preferably concentric, or nearly so, with the transparent disks of the lantern when in the elevated position, and the aperture is closed by a transparent plate 24 of a suitable signal color, for example, red. This plate is usually made of glass and is, therefore, fragile. For this reason it is desirable to have a specially formed head adapted for conveniently replacing a broken plate, or for changing the color of the plate, if it should be required. I, therefore, prefer to make the head of two sheets of material, preferably metal, and suitably spaced upon the sides, but open on the top, as indicated by the slit at 25 to receive the plate.

26 indicates a weight rack extending preferably from the pivotal point of the vane to the end of the head and forming a support for an adjustable counter-weight 27. This weight may straddle the rack, for example, and the means for fixing the adjustment may consist of a wedge 28, for example. By means of this arrangement a nice adjustment between the head and the vane may be readily effected. The head is preferably of sufficient length to span the distance between the sides of the band brace and to limit the movement of the vane in one direction. The superior weight of the head tends to keep the vane in the horizontal position, while suitable mechanism is designed to be used for lifting the head from in front of the lantern.

A preferred form of mechanism is illustrated, in which a lever 29 is pivoted to the lower end of the upright 21 and is pivoted at one end to a pitman 30 that is pivoted at the other end to the head. A flexible piece 31 is fastened to the free end of the lever 29 and is preferably passed around a directing pulley 32 that is preferably carried upon the lower band brace 7. In practice, I prefer to employ the same flexible piece for both braces, as illustrated, whereby, through the aid of the directing pulleys, either vane or both may be conveniently operated from a suitable station.

What I claim is—

1. In a semaphore, the combination with a frame consisting of parallel tubular side pieces and cross pieces, of a lantern vertically movable between the side pieces and guided thereby, flexible pieces secured to the lantern passing over guide pulleys and into the side pieces, and weights secured to the flexible pieces and movable within said side pieces, substantially as specified.

2. In a semaphore, the combination with a frame, of a vertically movable lantern actuating mechanism and brake mechanism, substantially as specified.

3. In a semaphore, the combination with a frame and counter-weighted lamp, of brake mechanism, substantially as specified.

4. In a semaphore, the combination with a frame consisting of tubular side pieces, and cross pieces, of a lamp movable between and weights movable within the side pieces, flexible pieces connecting said lamp and weights, and brake mechanism, substantially as specified.

5. In a semaphore, the combination with a frame, and lantern of lantern actuating mechanism, brake guide pieces upon opposite sides of the lantern, and means for simultaneously releasing said brake guide pieces, substantially as set forth.

6. In a semaphore, the combination with a frame consisting of parallel tubular side pieces and cross pieces, of a lantern movable between and weights movable within the side pieces, guide pulleys upon the frame, flexible pieces passing over the pulleys, and secured at their opposite ends to the lantern and weights respectively, brake mechanism, and means for actuating the same, substantially as specified.

7. In a semaphore, the combination with a frame composed of parallel tubular side pieces, a perforated cross piece and pulleys above the ends of the side pieces, of a lantern and counter-weighted flexible piece united at one end to the lantern and passing over the pulleys into the side pieces, substantially as set forth.

8. The combination with parallel tubular side pieces, perforated cross piece and pulleys, of a lantern, flexible counter-weighted piece united thereto, and a head buffer guide piece upon the lantern, substantially as set forth.

9. The combination with a frame, and counter-weighted lantern, of a head buffer guide piece upon the lantern, substantially as set forth.

10. The combination with a frame and counter-weighted lantern, of brake guide pieces upon the lantern, substantially as set forth.

11. The combination with a frame, counter-weighted lantern and buffer guide piece upon the head thereof, of brake guide pieces upon

the lower end thereof, substantially as set forth.

12. The combination with a frame and counter-weighted lantern, of resilient brake guide pieces upon the lantern, and flexible pieces fastened to the guide pieces, substantially as and for the purpose specified.

13. The combination with semaphore frame and lantern, of a band brace and vane and head pivoted thereto, of a second band brace and pulley mechanism for actuating the vane and head, and a flexible piece united to said actuating mechanism and passing around the directing pulley, substantially as set forth.

In testimony of all which I have hereunto subscribed my name.

BENJAMAN F. CULP.

Witnesses:
FRED H. CROUGHTON,
J. F. FERGUS.