

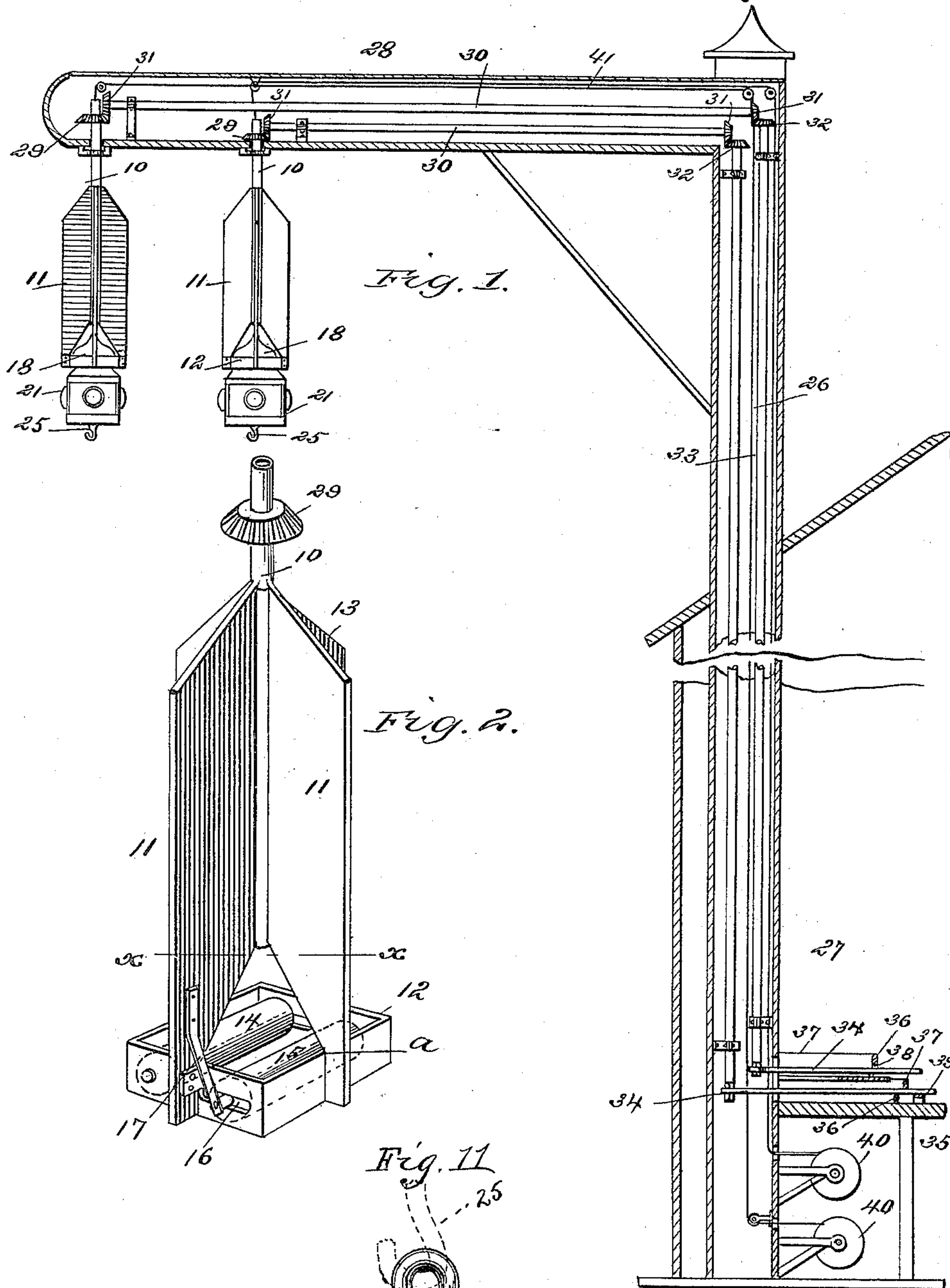
(No Model.)

3 Sheets—Sheet 1.

A. C. WHITE.
RAILWAY SIGNAL.

No. 431,300.

Patented July 1, 1890.



WITNESSES:
W. R. Davis.
Wm. W. Luyster

INVENTOR:
A. C. White
BY Munn & Co.
ATTORNEYS.

(No Model.)

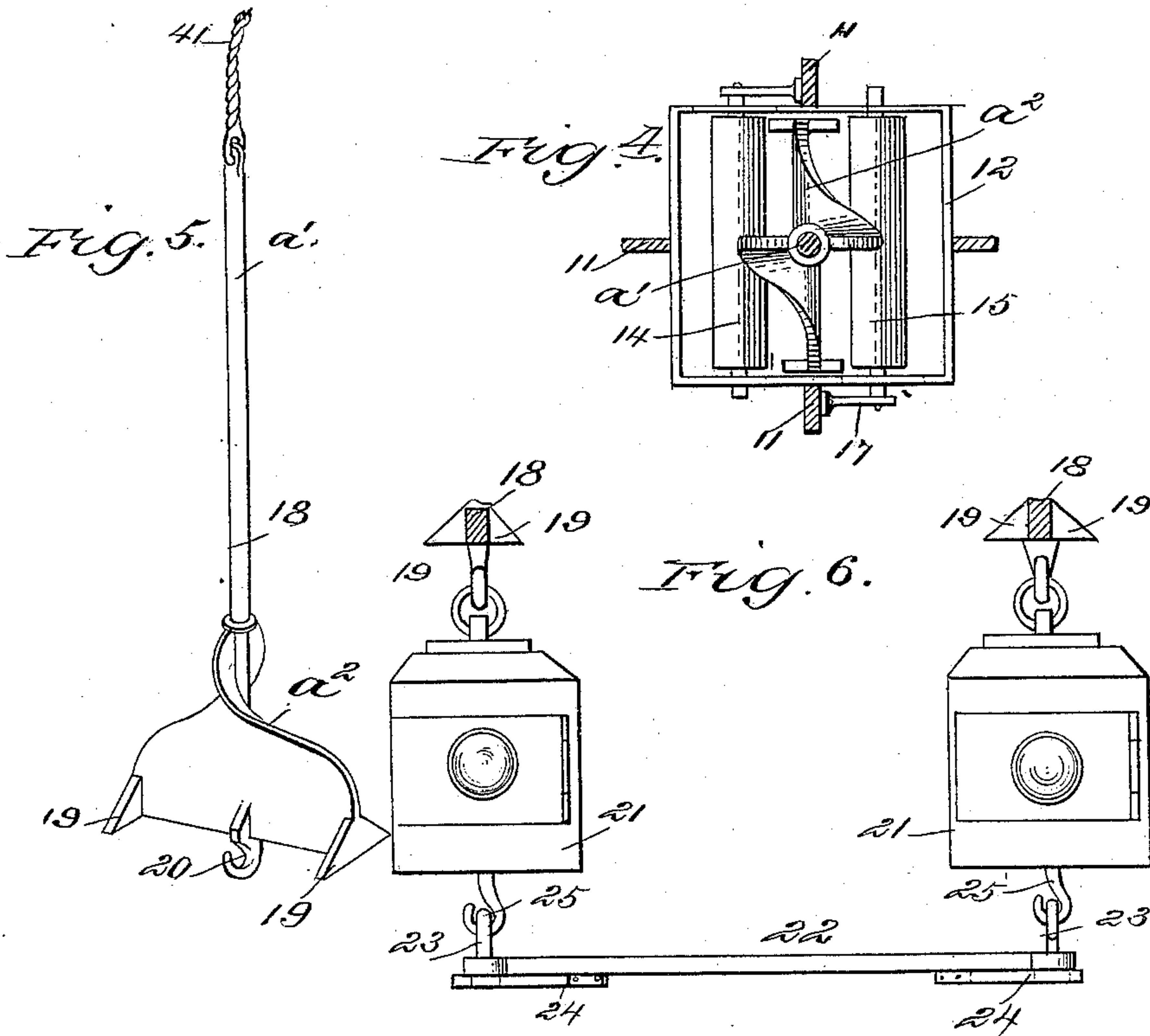
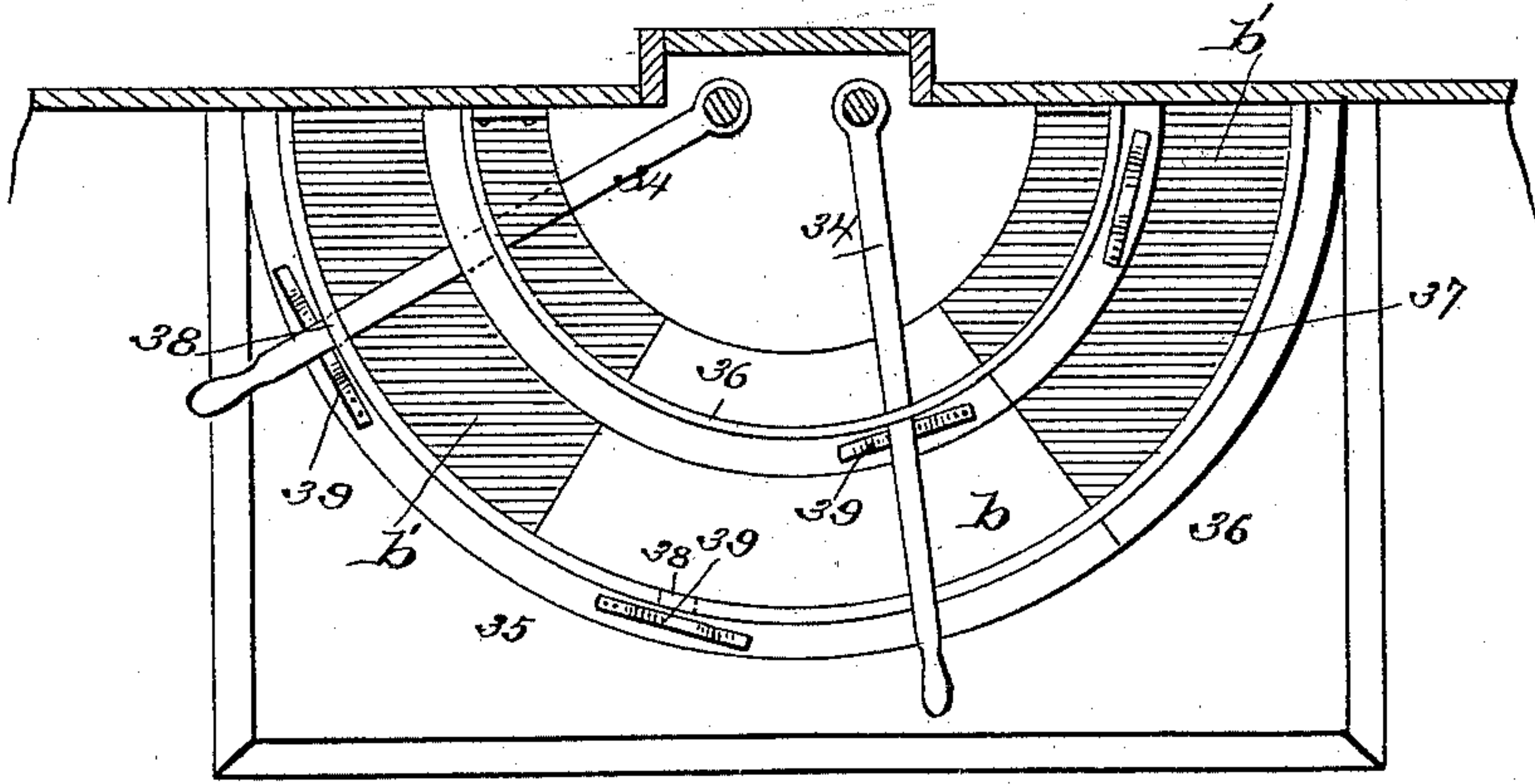
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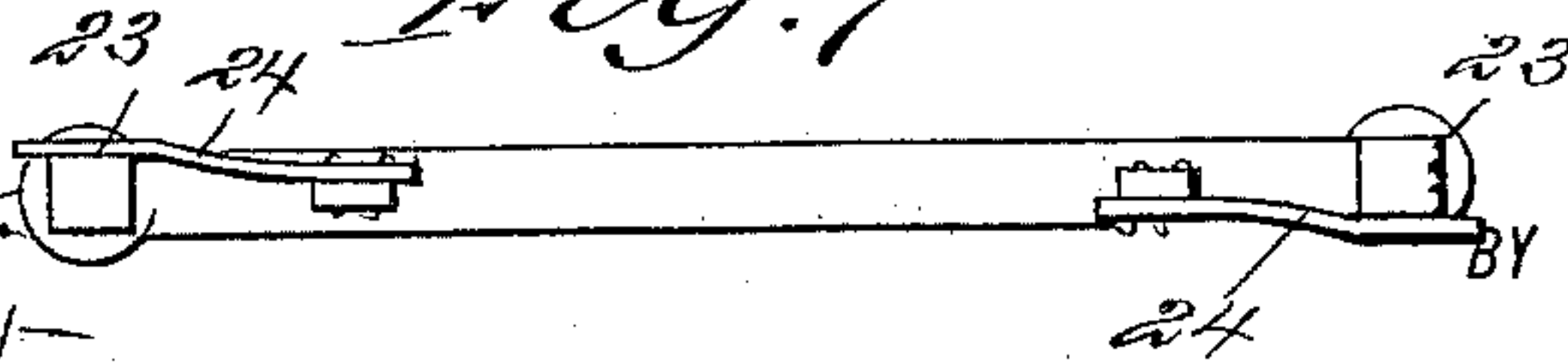
Patented July 1, 1890.

Fig. 3.



WITNESSES:
W. R. Harris
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Fig. 7



INVENTOR:
A. C. White
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ATTORNEYS.

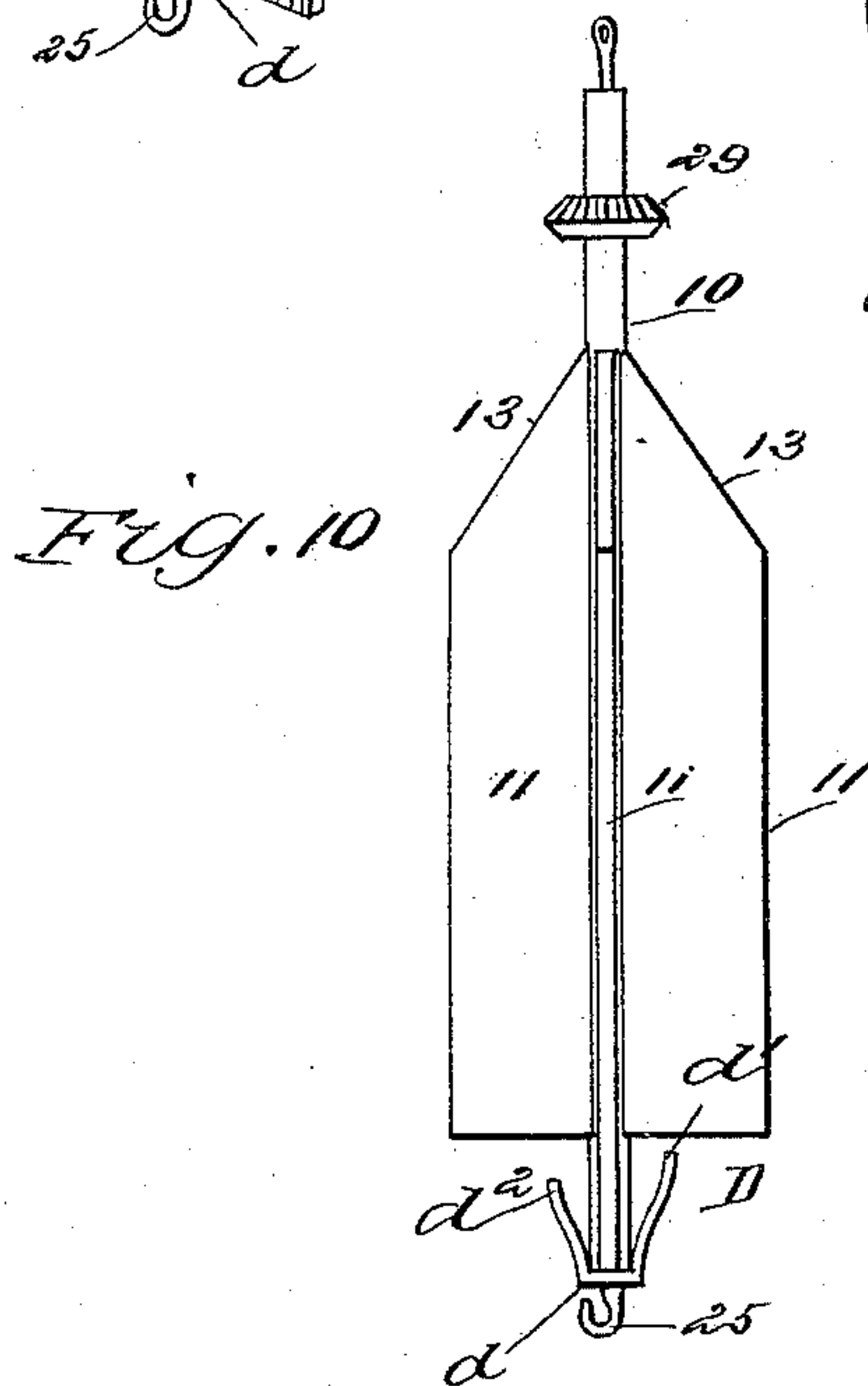
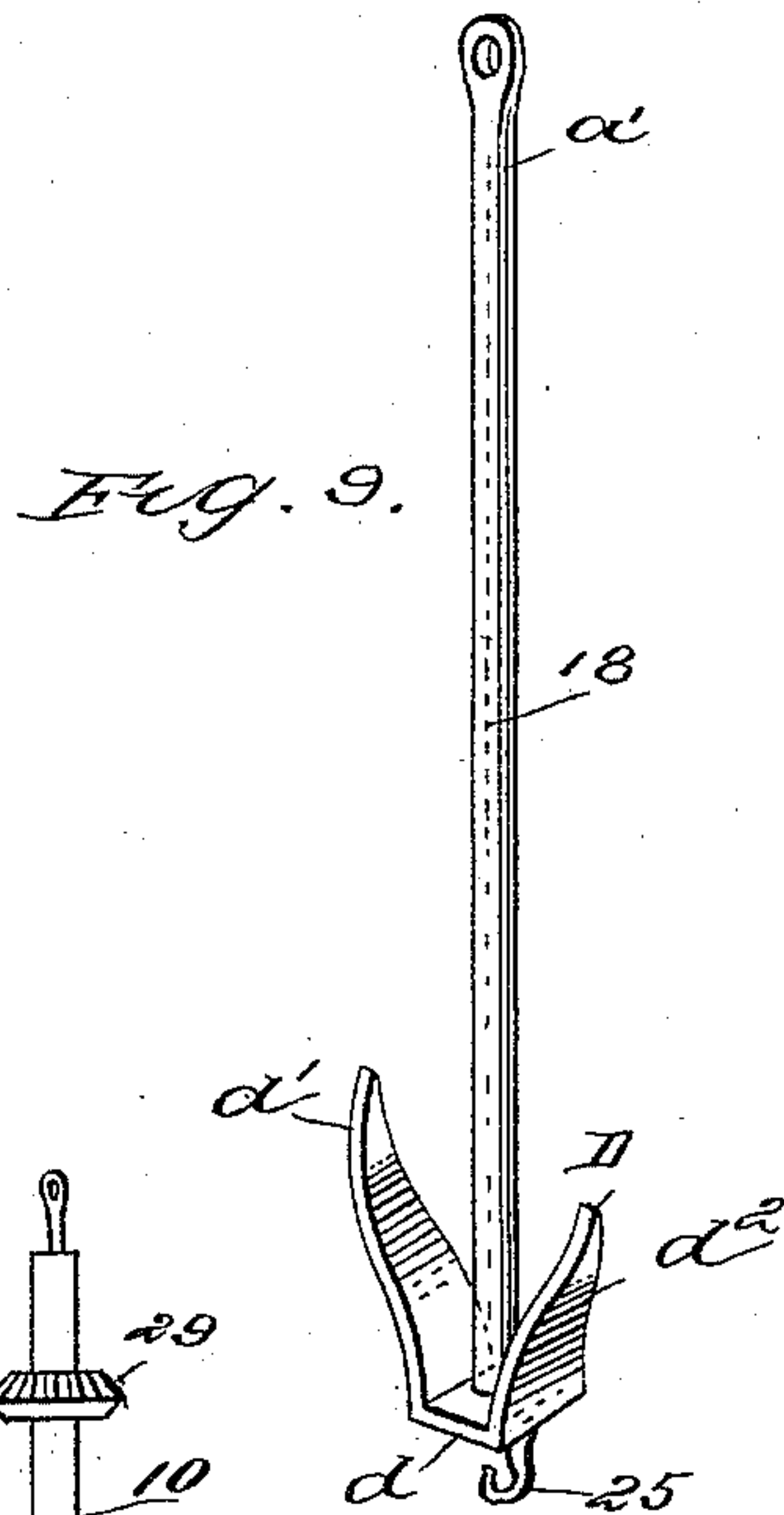
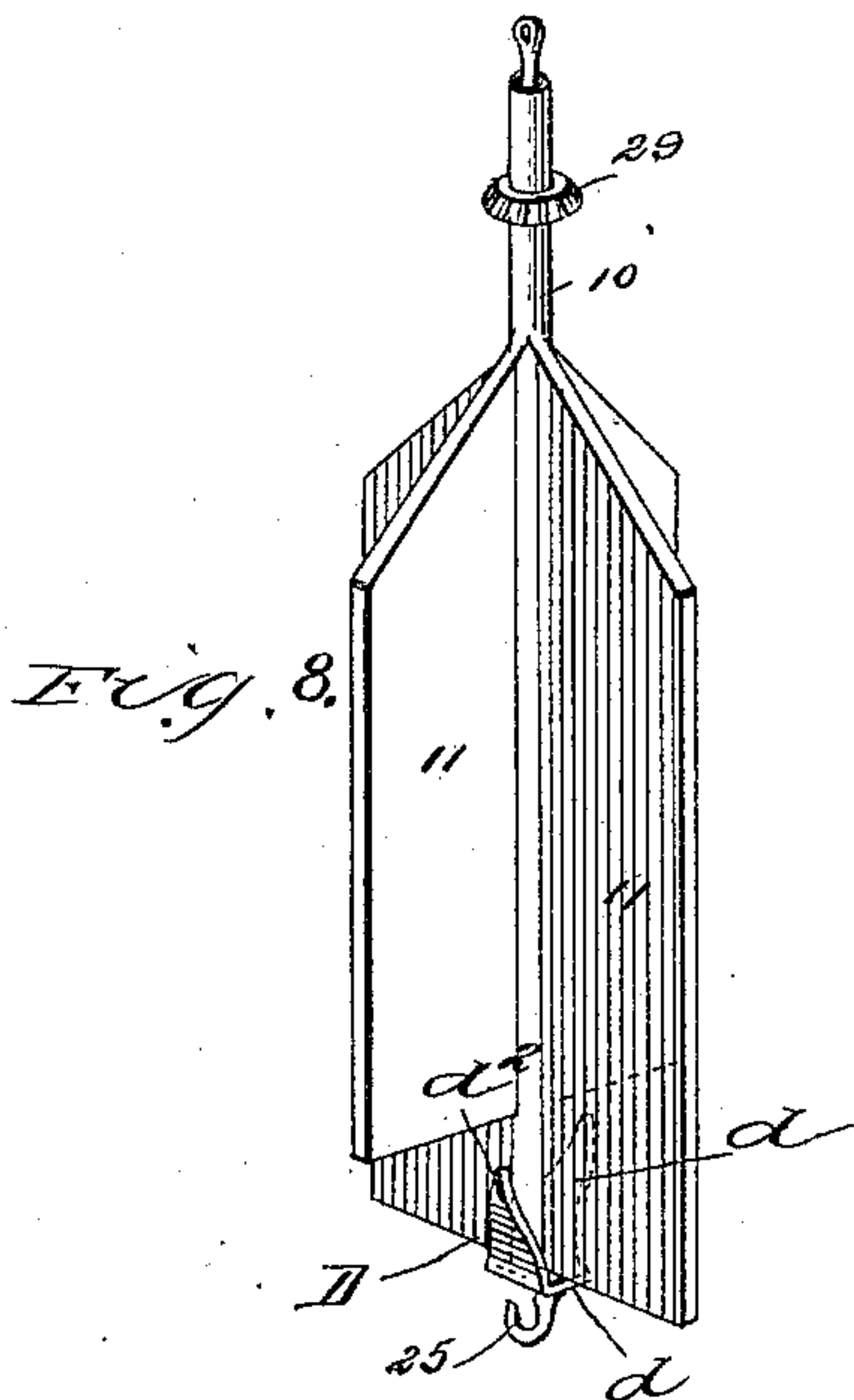
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UNITED STATES PATENT OFFICE.

ALBERT C. WHITE, OF AFTON, IOWA.

RAILWAY-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 431,300, dated July 1, 1890.

Application filed October 21, 1889. Serial No. 327,667. (No model.)

To all whom it may concern:

Be it known that I, ALBERT C. WHITE, of Afton, in the county of Union and State of Iowa, have invented a new and useful Improvement in Railway-Signals, of which the following is a full, clear, and exact description.

My invention relates to an improved railway signal, and has for its object to provide a signal of simple construction capable of being manipulated in a signal-house, so as to positively display any desired colored side of the signal to the train when employed as a semaphore and any desired colored light at night.

The invention has for its further object to provide a means whereby the signal may hang very high, and the lantern may be conveniently lowered therefrom for the purpose of lighting and cleaning the same.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully described, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters and figures of reference indicate corresponding parts in all the views.

Figure 1 is a front elevation of the signals attached to the signal-tower, which tower is in vertical section. Fig. 2 is an enlarged perspective view of the body of the signal adapted for display by day. Fig. 3 is a plan view of the operating-table connected with the signal. Fig. 4 is a section taken on the line xx of Fig. 2 illustrating the lantern-bail in position within the body of the signal. Fig. 5 is a perspective view of the lantern-bail detached. Fig. 6 is a front elevation of two lanterns connected at the top with their bails, the said bails being in section and represented as united at their bottoms by a swiveled bar. Fig. 7 is a bottom plan view of the swiveled connecting-bar of the lanterns. Fig. 8 is a perspective view of the vane and bail, illustrating a modified form of the same. Fig. 9 is a perspective view of a modified form of bail. Fig. 10 is a side elevation of the vane and bail shown in Fig. 8, and Fig. 11 is a detail view of the swivel-eye.

The body of the signal consists of a tube

10, from which a series of vanes 11 radiate, which vanes extend from a point near the top of the tube to the bottom and beyond said bottom, as illustrated in Fig. 2. The lower inner edges of the vanes are beveled from the bottom of the tube 10 to a point a at or near the base, from which point the said inner edges of the vanes extend perpendicularly downward, as best shown in Fig. 2, for connection with the outer face of a rectangular skeleton frame 12. By thus cutting away the inner surfaces of the vanes an essentially conical space is provided over the center of the frame 12 and between the opposed inner edges of the vane beneath the lower extremity of the tube.

Four vanes are usually employed, extending outward at a right angle to the tube 10, and the upper edges of said vanes are also preferably downwardly inclined or beveled, as illustrated at 13 in Fig. 2. The vanes are colored differently upon opposite sides, one side, for instance, being red and the other white.

Within the rectangular frame 12 two parallel rollers 14 and 15 are journaled, the gudgeons of the rollers at diagonally-opposite ends being journaled in a slot 16 produced in the frame, and upon the projecting portion of each gudgeon a spring 17 is made to bear, the said spring being secured at its upper end to the face of the most convenient vane. By this means the rollers are rendered adjustable to and from each other to permit of the passage of an inclined or tapering body between them.

In connection with the body a lantern bail or handle 18 is employed, consisting of a rod a' , as illustrated in Fig. 5, having an eye at its upper end for the reception of a rope, chain, or cord, the lower end of which rod is flattened and enlarged and twisted to a spiral shape, as shown at a^2 . The base of the spiral is quite wide and perfectly flat, and is provided upon each side at each end with lugs or ears 19 and a hook 20 between said lugs or ears.

The rod-section a' is passed upward between the rollers 14 and 15 into the tube 10, and as the said rod is drawn upward in the said tube the spiral lower section a^2 in passing between the rollers 14 and 15 will be turned, when car-

ried to its farthest height, to a position at right angles to that occupied by said spiral section when first drawn upward.

A lantern 21, of any suitable or approved construction, is attached to the hook 20 of the spiral section, and when two signals are employed upon the one arm, as is usually the case, the lanterns are connected by a bar 22, as best shown in Fig. 6, which bar is preferably flat and provided with a swivel-eye 23 at each extremity, the shanks of which eyes extend below the bottom of the bar and are squared, while a spring 24, secured at one end to the said bar near each extremity, is made to bear at the other end upon one side of the squared portion of the swivel-eye, whereby the said eye is prevented from turning unnecessarily. The eyes 23 of the connecting-rod 22 are attached to the lanterns through the medium of hooks 25, projected from the bottom of the latter.

When the lanterns are not used—as in the day-time, for instance—the connecting-bar 22 is employed to unite the lantern bails or handles of two opposed signals, which is effected by causing the swivel-eyes 23 to engage with the hooks 20 of the bails.

In connection with the signal I employ a tower 26, which is entirely inclosed, except at the upper end, which tower is usually built from within a signal-house 27. At the upper end of the tower a horizontal tubular arm 28 is constructed, closed at its outer end, which arm extends in the direction of and over the track. The bodies of the signals are held permanently in contact with the arm 28 of the tower, and in effecting this result the upper ends of the tubes 10 of the signals are passed through suitable apertures in the bottom of the arm and are held to turn in said apertures, the inner projecting end of each tube 10 being provided with an attached bevel-gear 29.

When two signals are suspended from an arm, two parallel horizontal shafts 30 are journaled in any suitable or approved manner within the arm, carrying at both ends a bevel-gear 31, the bevel-gear at the outer end of the shaft being adapted to mesh with the bevel-gear 29 of the signal-body. The bevel-gears at the inner ends of the shafts mesh with similar gears 32 upon the upper end of the perpendicular shafts 33, journaled in any suitable manner within the tower. To the bottom of each of these shafts 33, which is square, a lever 34 is rigidly secured, which levers extend over an operating-table 35, located within the signal-house. This table is illustrated in enlarged view in Fig. 3, and for each lever a rack 36 is employed, the first rack being built directly upon the table and the next upon the first rack. Each rack comprises a bottom plate *b*, colored to correspond with the colors upon the face of the signal, as shown at *b'* in Fig. 3, and above this colored base of the rack a rod or bar 37 is located a slight distance therefrom, conforming to the

contour of the base, and in the under side of this rod or bar 37 cavities or recesses 38 are formed, as shown in dotted lines in Fig. 3, into which cavities or recesses the levers 34 are forced when brought beneath said recesses by bow-springs 39, secured upon the base in front of the bar, as is also best shown in Fig. 3.

Beneath the table reels 40 are journaled in suitable brackets, and ropes or cords 41, attached to the upper ends of the lantern bails or handles 13, are carried up through the tube 10 of the body of the signals, over suitable friction-rollers located in the arm of the tower, and from thence downward over other friction-rollers at the base of the tower and outward, one cord being attached to each reel, as best shown in Fig. 1.

In operation, when it is desired to display the red side of the vanes to a train, the lever 34 of the signal to be operated is moved upon the operating-table until it is brought into the red section of the base and forced by one of the springs 39 into the recess in the binding-bar 37. As a semaphore by day this would complete the manipulation of the signal; but if the lanterns have not been attached and the signal is to be displayed at night, after the red semaphore-signal has been displayed to a train, the rope, cord, or chain connected with the handle or bail 18 of the signal is wound upon the drum, and the spiral lower section of the said bail or handle having the lantern attached is drawn upward between the rollers 14 and 15 of the signal-frame, and a red light is displayed to the train. Whenever the red face of the semaphore is displayed and the bail 18 is drawn upward, a red light is displayed from the lantern, and vice versa, with respect to the white side of the vanes. It is obvious that by attaching the lanterns in the manner described by slackening the cords, ropes, or chains connected with the lanterns they may be lowered to the ground and readily lighted or filled, or may be removed, as occasion may demand. It is further obvious that by reason of the swivel-eyes of the connecting-bars 22 of the lanterns both lanterns are held steady, and yet one lantern may be manipulated without interfering with the signal to which it is attached.

In Figs. 8, 9, and 10 I have illustrated a modified form of vane and bail, in which the construction is materially simplified. The white vanes of the signal are about four inches shorter than the red vanes, and the frame 12 and the rollers 14 and 15 are dispensed with, the vanes being made straight at their lower ends. The bail 18 differs from that shown in Fig. 5, inasmuch as the spiral section *a*² is omitted and an anchor *D* substituted, which anchor consists of a horizontal body portion *d*, secured to the rod-section *a'* of the bail, as best shown in Fig. 9, and flukes *d'* and *d*², one located at each end of the body, the fluke *d'* being longer than the opposed fluke. The flukes are curved upward and outward at each

side of the rod-section of the bail, and the side edges of the flukes are beveled upward to a point. The bail is turned, as drawn upward, by one of the flukes contacting with the side of the longest vane, and as one fluke is shorter than the other the possibility of both striking the vane at once and stopping the upward movement of the bail is avoided.

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

1. As an improved article of manufacture, a signal consisting of a tube, and vanes radiating at a right angle from said tube and extending longitudinally of the same, substantially as shown and described.

2. In a railway-signal, the combination, with a tube having vanes radiating at right angles therefrom, of a bail comprising a rod provided with inclined planes at one end adapted for contact with the vanes, substantially as shown and described.

3. In a railway-signal, the combination, with a tube having vanes radiating at right angles therefrom, one set of vanes being of greater length than the other, of a bail comprising a rod provided with inclined planes at one end, adapted for contact with the lower extremities of the longer vanes, substantially as shown and described.

4. In a railway-signal, the combination, with a tower and shafts journaled in the same, of signals comprising a tube carried upward within the tower and held to turn therein and connected with one of the tower-shafts, and a series of vanes radiating from said tube and longitudinally arranged thereon, substantially as and for the purpose specified.

5. In a railway-signal, the combination, with a tube having vanes radiating at right

angles therefrom, of a bail comprising a rod provided with inclined planes at one end adapted for contact with the vanes, and a lantern removably secured to the end of the bail carrying the inclined planes, substantially as shown and described.

6. In a railway-signal, the combination of a tower provided with a horizontal arm, shafts journaled in the tower and arm, signals rotated by said shafts, each consisting of a tube carried upward in the tower-arm, vanes radiating from the tube, and a bail comprising a rod adapted to slide in the tube and having inclined planes secured near its lower end capable of contact with the vanes, substantially as specified.

7. In a railway-signal, the combination, with a tower provided with a horizontal arm, a series of shafts journaled in said tower and arm, a signal having its body portion suspended from the arm of the tower and held to revolve therein, the said body consisting of a tubular center and vanes radiating from the tube, a bail capable of movement in the tubular body provided with inclined planes at its lower end, and means for attachment to a lantern, of a cord attached to the bail leading downward through the tower and its arm, an operating-table located near the tower provided with a base divided into colored divisions, levers secured to the tower-shafts adapted to slide over the colored base, and reels adapted to receive cords leading from the tower, substantially as and for the purpose specified.

ALBERT C. WHITE.

Witnesses:

BERT KEATING,
J. S. CONKLIN.