

J. O. ELLINGSON & A. B. STOUT.

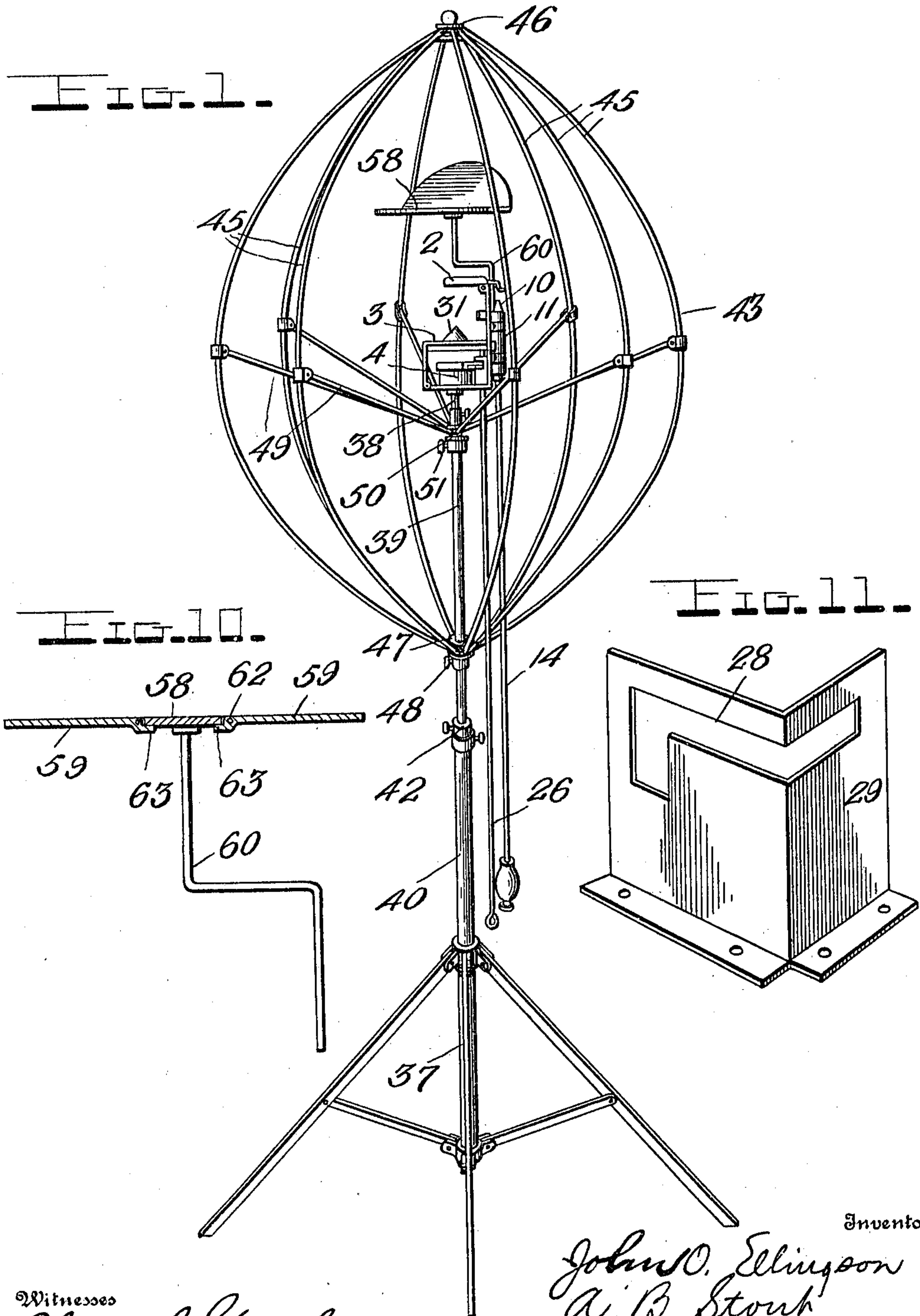
FLASH LAMP.

APPLICATION FILED APR. 29, 1909.

955,857.

Patented Apr. 26, 1910.

4 SHEETS—SHEET 1.



Witnesses

Chas. L. Griebner.  
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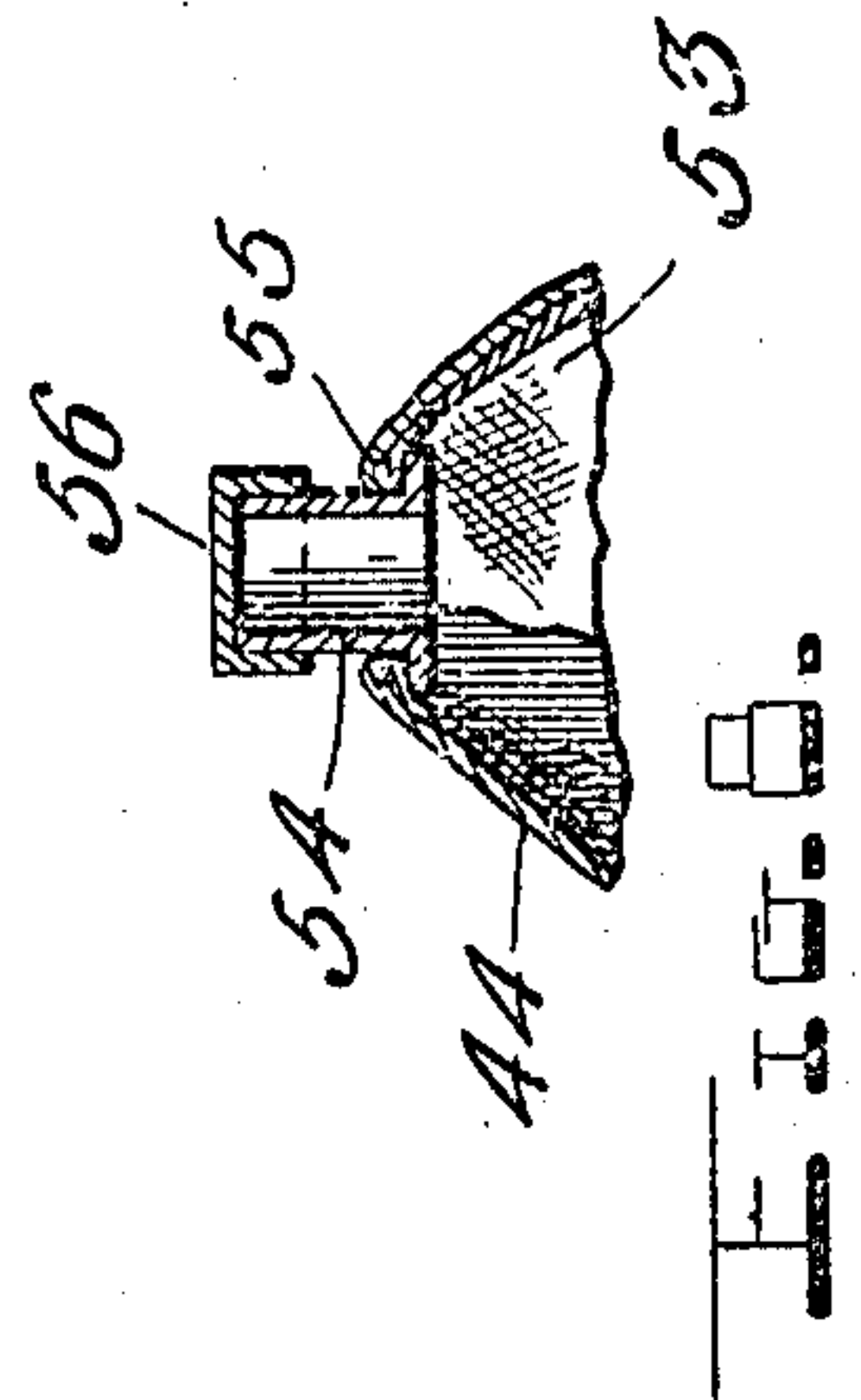
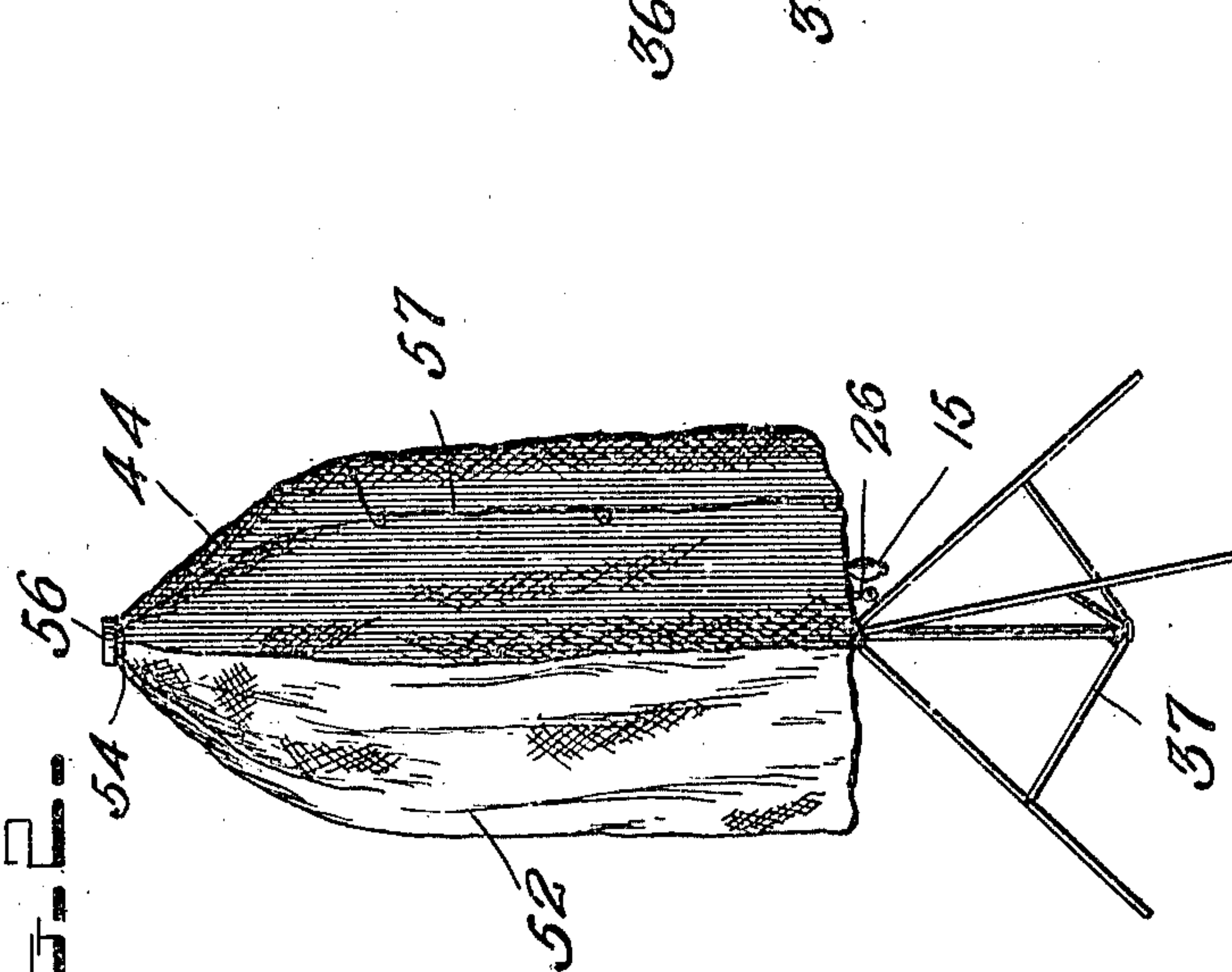
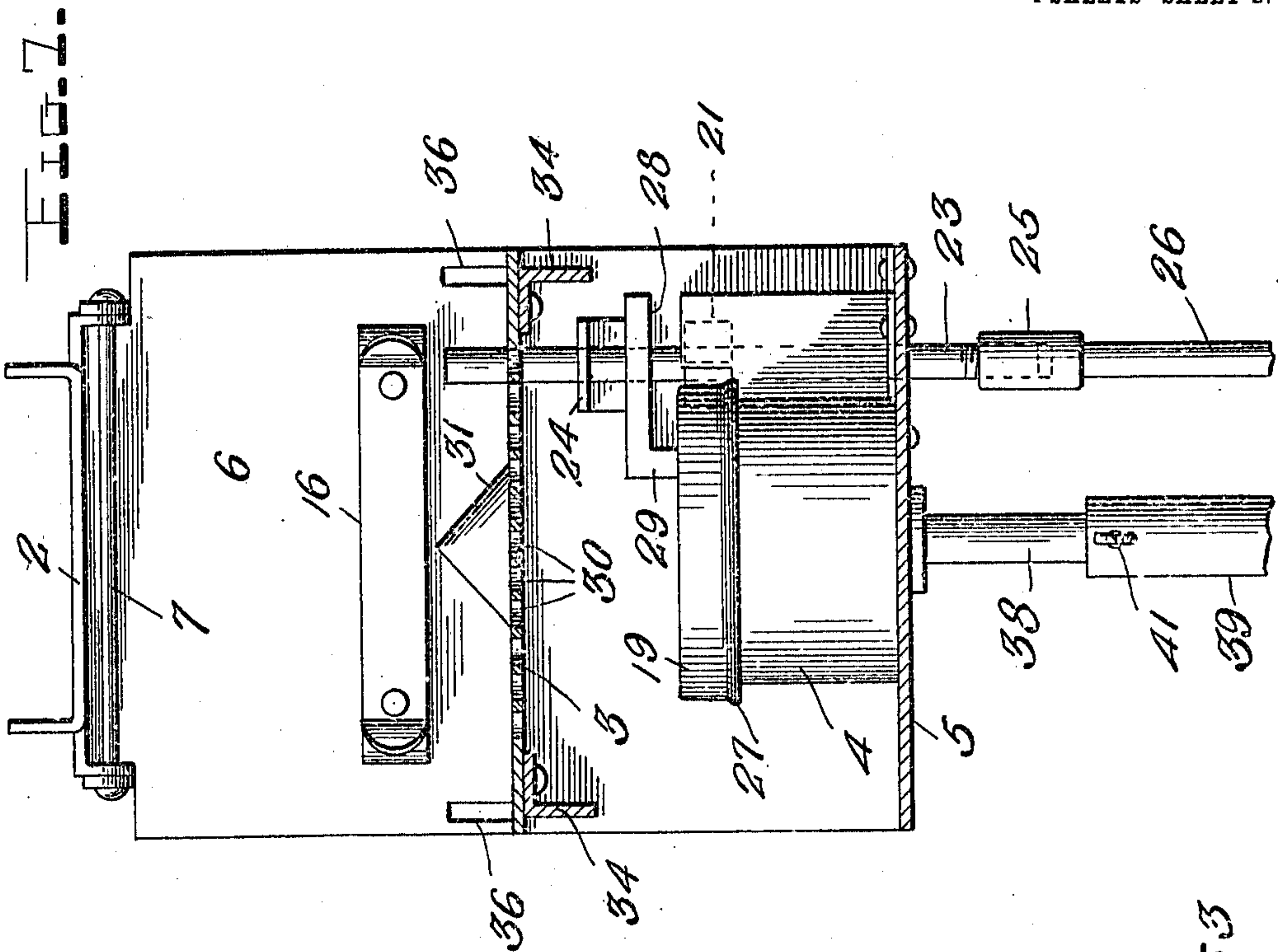
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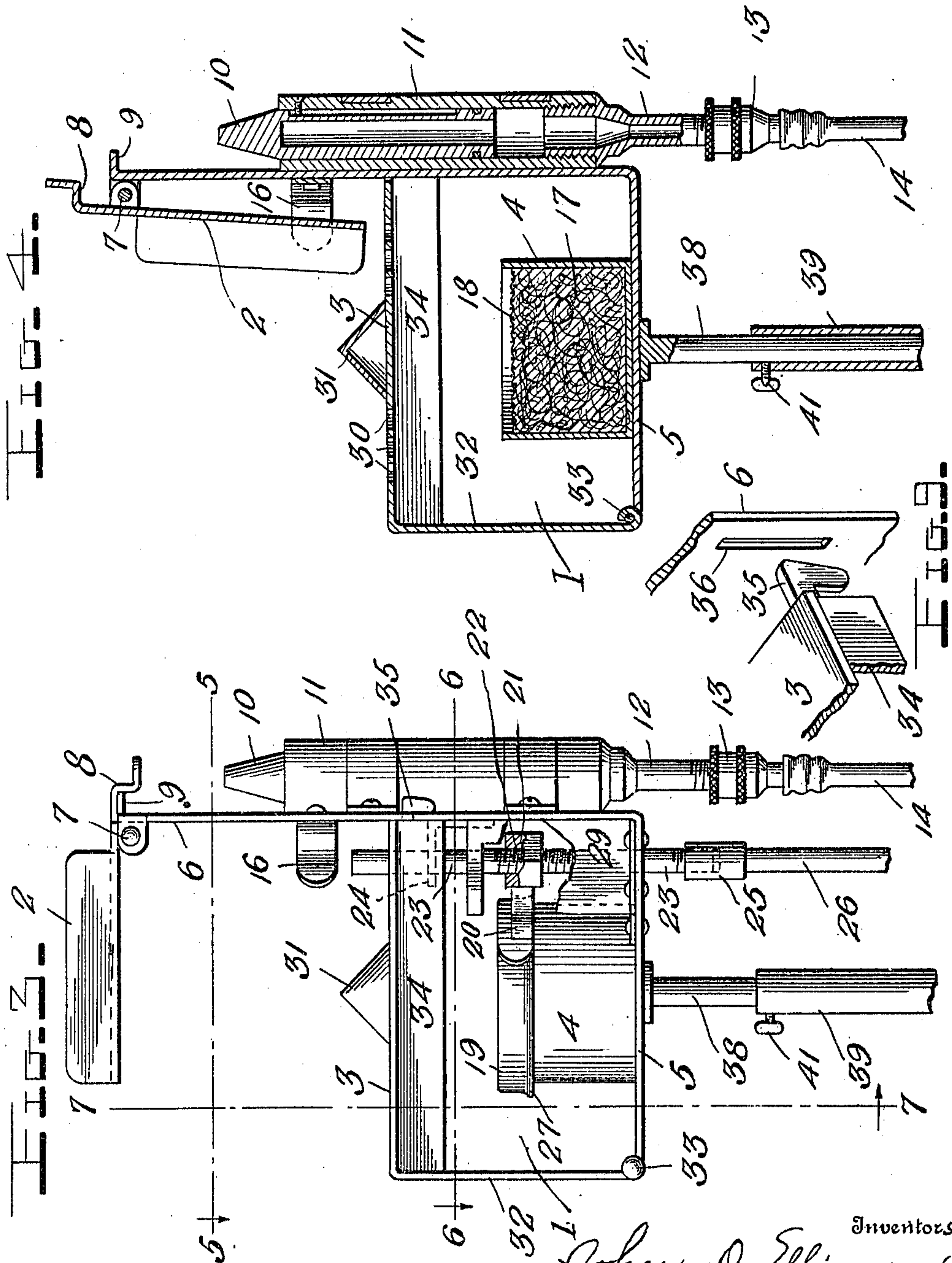
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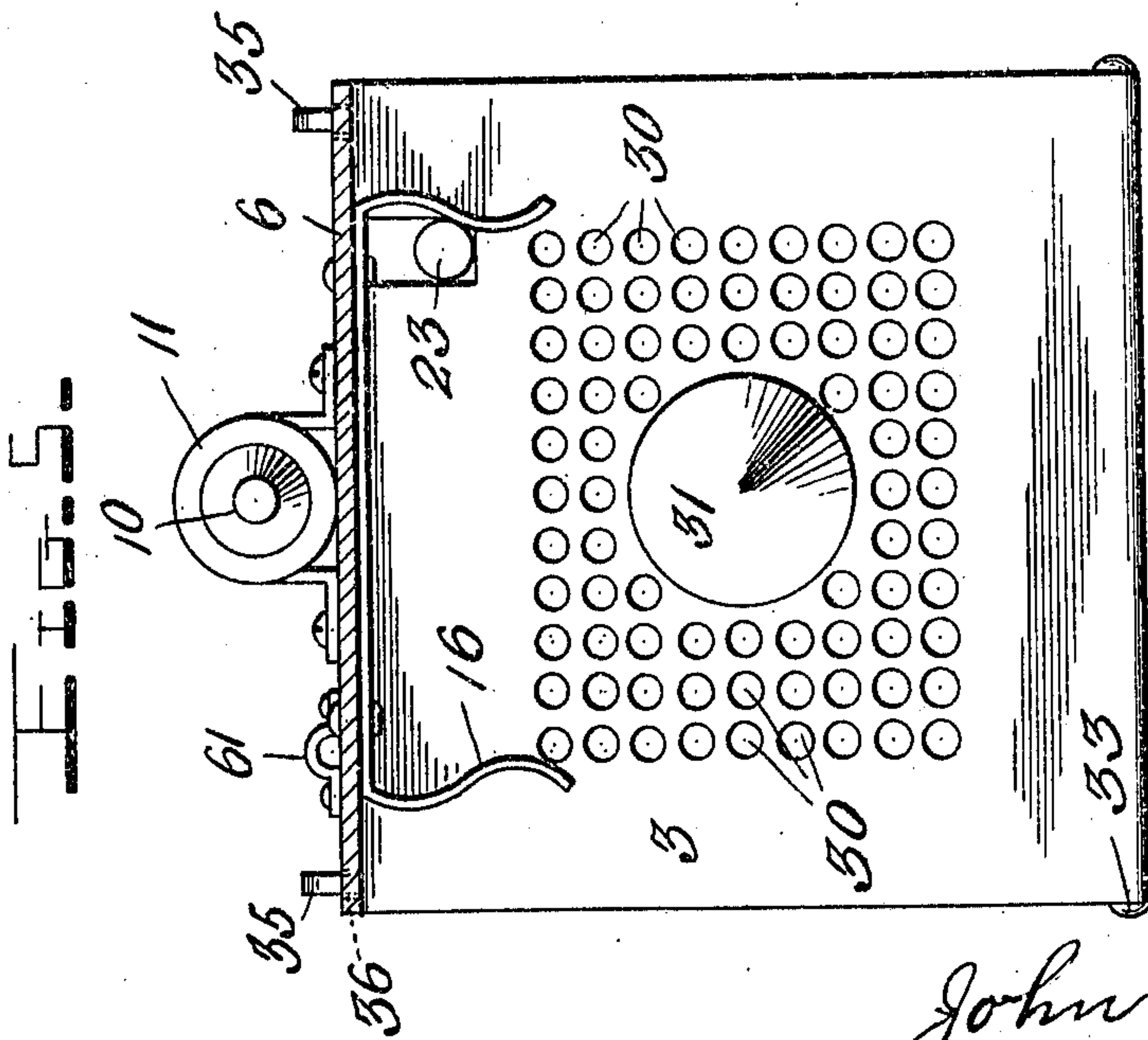
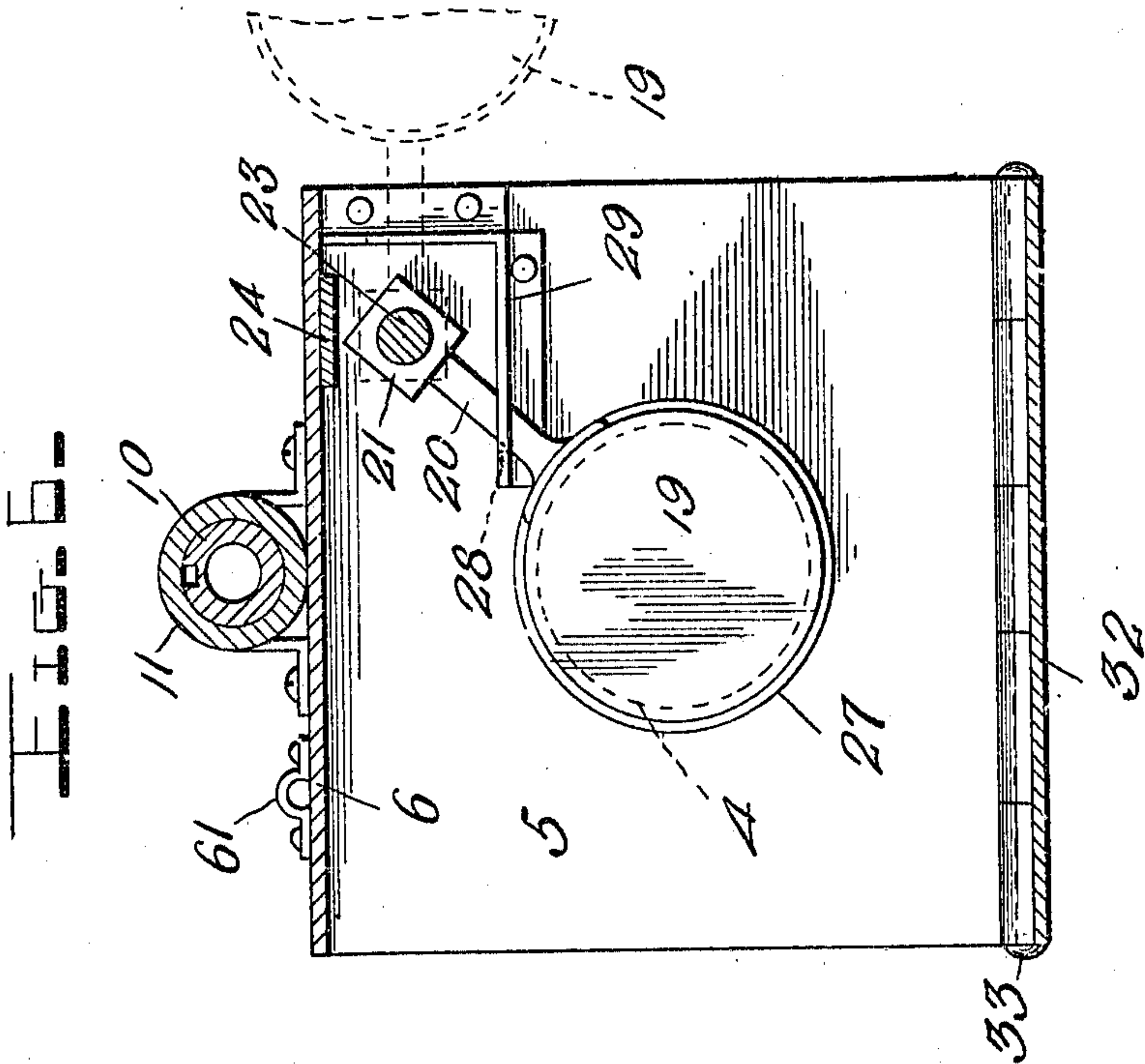
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# UNITED STATES PATENT OFFICE.

JOHN O. ELLINGSON AND ABRAHAM B. STOUT, OF CAMBRIDGE, NEBRASKA.

## FLASH-LAMP.

955,857.

Specification of Letters Patent.

Patented Apr. 26, 1910.

Application filed April 29, 1909. Serial No. 492,998.

*To all whom it may concern:*

Be it known that we, JOHN O. ELLINGSON and ABRAHAM B. STOUT, citizens of the United States, residing at Cambridge, in the county of Furnas and State of Nebraska, have invented certain new and useful Improvements in Flash-Lamps, of which the following is a specification, reference being had to the accompanying drawings.

10 This invention relates to improvements in flash-light apparatus.

One object of the invention is to provide a simple and practical flash lamp in which the flash producing powder will be simultaneously dropped and spread over a surface composed of a plurality of minute flames, whereby all of the grains or particles of powder will be simultaneously ignited to produce an effective flash.

20 Another object of the invention is to provide an improved flash lamp screen and supporting frame therefor.

Another object of the invention is to provide a spark deflector and light reflector for a flash lamp used within a screen.

25 Further objects of the invention are to provide controlling and operating devices for a flash lamp of the character above mentioned and improved means for extinguishing the lamp.

30 With the above and other objects in view, as will hereinafter more fully appear, the invention consists in the combinations and arrangements of parts and in the novel features of construction hereinafter fully described and claimed, and illustrated in the accompanying drawings, in which—

35 Figure 1 is a perspective view of the improved flash-light apparatus showing the screen removed; Fig. 2 is a similar view, on a smaller scale, showing the screen applied; Fig. 3 is a side elevation of the flash lamp; Fig. 4 is a vertical sectional view through the same; Figs. 5 and 6 are horizontal sections taken, respectively, on the planes indicated by the lines 5—5 and 6—6 in Fig. 3; Fig. 7 is a vertical section taken on the plane indicated by the line 7—7 in Fig. 3; Fig. 8 is a detail sectional view through the top of the screen and showing the outlet for the smoke and gases; Fig. 9 is a detail sectional perspective showing the detachable connection between the body of the lamp and the hinged igniting plate; Fig. 10 is a detail sectional view through the combined spark deflector and light reflector; and Fig. 11 is a detail perspective view of the slotted guide bracket for the supporting arm of the lamp extinguishing cap.

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60 The improved flash lamp comprises a suitable body 1 which carries an elevated flash powder support 2 adapted to discharge the powder upon a suitable igniting surface 3. In the present embodiment of the invention, the powder support is in the form of a pan and is pivotally mounted so as to drop the powder upon the igniting surface 3, which latter is in the form of a perforated plate arranged over a lamp 4 so that the flame of the lamp will be divided into a plurality of minute jets. The body 1 is preferably of right angular form having a horizontal bottom 5 on which the lamp 4 is arranged and a vertical back portion 6 at the top of which the pan 2 is hinged on a horizontal pivot 7, as clearly shown in Figs. 3 and 7 of the drawings. Said pan 2 is of rectangular shape and has at its side edges upright flanges which, when the pan is dropped, directs the powder off of its forward end or edge. Said pan is preferably held in its elevated horizontal position, shown in Fig. 3, by the engagement of a spring catch 8, formed or provided upon its pivoted rear portion, with a shoulder 9 formed by a ledge or projection at the top of the upright portion 6 of the body 1. While the catch 8 may be released by any suitable means, the same is preferably effected by a pneumatically projected plunger 10 arranged in an upright cylinder 11 secured by straps or other suitable means to the rear face of the upright portion 6 of the body 1. Said plunger 10 has a limited sliding movement in the upper portion of the cylinder, the lower end of which latter is closed by a reducing connection 12 externally threaded for the reception of a screw coupling 13 carried by one end of a flexible tube or hose 14. The other end of the latter carries a hand bulb 15 which when compressed forces air into the cylinder 11 to project the plunger 10. These parts are so arranged that the plunger when projected will strike the end of the spring

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catch 8 and disengage it from the shoulder or ledge 9 so that the pan 2 containing the flash powder will drop to its position shown in Fig. 4.

5 16 denotes a pan holding catch adapted to receive the pan as it drops and frictionally hold it in its lowered position so as to both cushion its downward movement and also prevent it from swinging and interfering  
10 with the ignition of the powder. Said catch 16, as more clearly shown in Fig. 5 of the drawings, is in the form of a substantially U-shaped spring secured horizontally  
15 6 of the body 1 and having oppositely curved spring arms with flared extremities to engage the side flanges or walls of the pan 2.

While any suitable lamp may be employed, the one illustrated is an alcohol  
20 lamp and comprises a cylindrical body containing an asbestos wick or packing 17 over the top of which is a woven wire or foraminous cover 18 located adjacent to the open top of the body of the lamp 4. To permit  
25 the lamp to be extinguished when the device is used within a smoke collecting screen, a removable extinguishing cap 19 is fixed to one end of an arm 20, the other end of which  
30 6 of the drawings, carries a nut 21 arranged on an exteriorly screw threaded portion 22 of an upright operating rod 23 slidably and rotatably mounted in the bottom portion 5  
35 of the body 1 and an angular bracket 24 arranged upon the front face of the upright portion 6 of the body 1. The depending lower end of the operating rod 23 has a screw threaded detachable connection 25  
40 with an extension rod or handle 26 provided for the purpose of enabling the lamp extinguishing cap 19 to be easily manipulated from a point beneath the screen, as hereinafter described. The rod 23 is slidably and  
45 rotatably mounted so that the cap 19, which has a surrounding depending flange with a flared bottom edge 27, to be raised off of and dropped down over the body of the lamp 4  
50 and also to be swung laterally or horizontally onto and off of the lamp when raised above its body 4. For the purpose of guiding and limiting said movements of the operating rod 23 and hence the cap 19, the arm 20 projects through a slot 28 formed in an  
55 angular plate 29 suitably secured to the bottom 5 of the body 1. The slotted plate or bracket 29 is shown more clearly in Fig. 11, upon reference to which it will be seen that the slot 28 has a vertical portion in  
60 which the arm 20 can move vertically to permit the cap 19 to be lowered upon or raised off of the lamp body 4, and said slot has a communicating horizontal portion in which the arm 20 can be swung laterally to move the cap 19 horizontally away from or to-

ward the lamp body 4, as will be readily understood upon reference to Figs. 3, 6 and 11 of the drawings. 65

The igniting surface 3, as above explained, is in the form of a plate formed with perforations 30 through which small  
70 flames from the lamp 4 will project when said plate 3 is disposed horizontally over the lamp at a suitable distance therefrom. To cause the powder to be effectively spread  
75 over the entire perforated surface of the igniting plate 3, a cone-shaped spreader 31 is arranged centrally upon said plate, as shown. Said plate 3 is also preferably made  
removable when the lamp body 4 is fixed to the bottom 5 of the body 1 of the device, in  
80 order that said lamp may be conveniently refilled with alcohol. This mounting of the igniting plate 3 is preferably effected by making it of angular shape or with a per-  
85 forated top portion and a depending upright attaching portion 32, which latter is pivotally or hingedly connected, as shown at 33, to the front edge of the bottom 5 of the body  
1. The plate 3 is reinforced by forwardly and rearwardly extending ribs 34 depending  
90 from its bottom face and provided at their rear ends with downturned wedge-shaped hooks 35 adapted to enter slots 36 in the upright portion 6 of the body 1, whereby the  
95 igniting plate 3 will be retained in its normal position above the lamp. Owing to the resiliency of the metal from which said angular plate 3 is made, the catch hooks 35  
may be readily sprung out of the slots 36 so that said plate may be swung forwardly and  
100 downwardly to expose the top of the lamp body 4.

While the device may be supported by any suitable means, it is illustrated in the drawings as applied to the vertically adjustable  
105 standard of a foldable or collapsible stand 37. Said standard is preferably composed of three telescoping sections 38, 39, 40. The uppermost section 38 is fixed to the center of the bottom 5 of the body 1 and slides within  
110 the intermediate tubular section 39, a set screw 41 being provided for retaining it in adjusted position. The intermediate section 39 slides and rotates within the tubular lower section 40 and has adjustably mounted  
115 upon it, by means of a set screw, a stop collar 42 which rests upon the upper end of the section 40. The section 40 carries the foldable portion or tripod of the stand 37, as shown more clearly in Fig. 1. 120

Removably mounted on the intermediate section 39 of the standard of the support 37 is a foldable frame 43 adapted to support and spread a bag or balloon-like screen 44  
125 around the flash lamp for the purpose of collecting smoke and gases and also concentrating the light and directing it toward the object being photographed. The supporting



frame 43 consists of a plurality of resilient ribs 45 pivotally connected at their upper ends to a notched head 46 and at their lower ends to a notched head or runner 47 slidably arranged on the standard section 39 and adapted to be retained in an adjusted position by a set screw 48. The intermediate portions of the ribs 45 are connected to the outer ends of braces or stretchers 49, the inner ends of which latter are pivotally connected to a notched head or runner 50 slidably arranged on the standard section 39 and adapted to be secured in an adjusted position by a set screw 51. It will be seen that when the head 47 is secured at the desired point upon the standard section 39 and the head 40 is moved away from the same, the braces 49 will bow the ribs 45 to spread the frame 43.

The screen 44 is made of fabric or other flexible sheet material and has a front portion 52, preferably one-third of its circumference, made of material that is translucent while its remaining portion is made of opaque material and lined with material 53 which is white or of other color which will reflect light. The screen is in the form of a bag or balloon having an open lower end so that it may be readily placed over and removed from the frame 45 and its upper end is closed by gathering the upper edge of the material from which it is made around a tubular member 54 by the use of a draw string 55 or other means. The tubular member 54 is adapted to serve as an outlet for the smoke and gases which are collected in the screen after an explosion and for the purpose of retaining such smoke and gases in the screen until it is desired to discharge them, a removable cap or closure 56 is arranged upon the top of the member or tube 54, as shown more clearly in Fig. 8 of the drawings. To permit of access to the parts of the flash lamp when the screen is arranged over the same and without removing said screen, the rear portion of it is formed with an opening closed by a flap 57 which may be secured by buttons or other fastening devices.

For the purpose of preventing any sparks which may rise from the igniting plate or surface 3 from coming in contact with the fabric screen 44 and igniting the same, a spark deflecting or stopping member 58 is suitably supported within the frame above the flash lamp. Said spark deflecting or stopping member, as shown more clearly in Figs. 1 and 10 of the drawings, is preferably in the form of a metal plate having a central section and two foldable end sections 59, said central section being fixed to a supporting rod or standard 60 which is angular in shape and adapted to have its lower end removably arranged in a suitable

socket 61 provided upon the rear of the up-right portion 6 of the body 1. The side or end sections 59 of the plate 58 are hinged to the intermediate section, as shown at 62, and said hinges are provided with stop fingers 63, whereby said sections 59 will be prevented from dropping below the horizontal plane but may fold vertically or toward each other when the device is not in use and it is desired to pack the apparatus in a box or case. The spark deflecting or stopping plate 58 is preferably made of aluminum or has a finish that is light in color, whereby it may serve also as a light reflector.

The operation of the invention is as follows: The pan 2 is secured in its horizontal position by engaging the catch 8 with the stop 9, the powder is placed on the top of said pan, the cap 19 of the lamp 4 is lifted off of the same and swung to one side, as indicated in dotted lines in Fig. 6, the lamp is lighted and the screen 44 is applied to the frame 45, whereupon the apparatus will be ready for use. When the flash is desired, the bulb 15 is squeezed so that the plunger 10 will be projected upwardly to release the catch 8, whereupon the pan 2 will drop and discharge the powder on the spreading cone 31, which latter causes it to be spread over the entire perforated igniting surface 3, from the perforations in which latter small jets or flames arise from the lamp 4. The relatively large area of the igniting surface together with the instantaneous dropping and spreading of the powder over the same results in the simultaneous ignition of all of the grains or particles of powder and thereby producing an exceedingly large and effective flash from a minimum quantity of powder. As the pan 2 drops it is caught and held by the catch 16 so that it will not interfere with the flash and the smoke and gases resulting from the flash will be collected in the screen 44, which latter, owing to its peculiar construction, will concentrate the light and effectively reflect it on the person or object being photographed. The provision of the spark deflecting and stopping plate 58 above the lamp effectively prevents any sparks from coming in contact with the fabric material composing the screen 44, thereby obviating the necessity of making such screen of non-combustible material. After the flash the depending hand rod 26 is manipulated to swing the lamp extinguishing cap 19 to a point above the lamp and then lowered to drop said cap over the lamp body 4 to extinguish the flame of the same. The device may then be moved in safety to a point where it is desired to discharge the smoke and gases and the latter is accomplished by removing the cap 56 from the tubular outlet 54 at the top of the screen. The various adjustments of the



parts permit the apparatus to be quickly and easily adapted for the work in hand and also permit its parts to be disconnected and folded or collapsed so that the entire apparatus, which is comparatively light in weight, can be packed in a small box or case.

While the preferred embodiment of the invention has been shown and described in detail, it will be understood that various changes in the form, proportion and arrangement of parts and in the details of construction may be resorted to without departing from the spirit and scope of the invention.

Having thus described the invention what is claimed is:

1. In a flash-light apparatus, the combination of means for producing a large igniting flame, a foraminous member arranged over said flame-producing means to divide the flame into a plurality of closely positioned minute jets, a spreading cone centrally arranged on said foraminous member, and means for supporting a flash-light powder and dropping the same upon said cone and said foraminous member.

2. In a flash-light apparatus, the combination of a standard, an angular body plate having a horizontal portion fixed to said standard, and a rear upright portion, a flame-producing means upon the horizontal portion of the body plate, an angular swinging member having a vertical portion hinged to the horizontal portion of the body plate, and a perforated horizontal portion disposed over said flame-producing means and attachably engaged with the upright portion of the body plate, a downwardly tilting flash-light powder supporting pan mounted on the top of the upright portion of the body plate, and means for supporting and releasing said pan.

3. In a flash-light apparatus, the combination of a body having an upright portion, a horizontally and rearwardly extending projection upon said upright portion of the body, powder igniting means carried by the body, a downwardly tilting flash-light powder supporting pan pivoted to the upright portion of the body and formed at its rear edge with a spring catch to engage said projection, a vertically movable plunger upon the body to engage said catch and release it from said projection, and means for actuating said plunger.

4. In a flash-light apparatus, the combination of a body, a lamp thereon, a foraminous member arranged above the lamp, whereby the flame of the latter will be divided into a plurality of minute jets, a powder spreading cone above said member and means for supporting a flash powder above the member and dropping it thereon.

5. In a flash-light apparatus, the combination of a body plate having an upright portion formed at its ends with forwardly bent apertured ears, and with a rearwardly bent catch engaging flange, flash-light powder igniting means carried by the body, a powder pan formed from a single piece of sheet metal and having upwardly bent side flanges, downwardly bent apertured ears, and a downwardly and rearwardly bent spring catch to engage said flange, a pivot uniting the apertured ears on the pan and body plate, and means for engaging and releasing said catch.

6. In a flash-light apparatus, the combination of a body, flash-light powder igniting means carried by the body, a downwardly swinging flash-light powder supporting pan pivotally mounted on the body, oppositely disposed spring arms upon the body and adapted to receive the pan between them when the pan drops to discharge its contents on said igniting means, and means for supporting and releasing said pan.

7. In a flash-light apparatus, the combination of a suitably supported body, a lamp thereon, a perforated plate arranged above the lamp to divide its flame into a plurality of small jets and provide an igniting surface, a spreading cone arranged on said perforated plate, a downwardly tilting powder supporting pan mounted on the body above said plate and adapted to discharge the powder upon said spreading cone and said perforated plate, a catch for holding said pan elevated and means for releasing said catch.

8. In a flash-light apparatus, the combination of a flash lamp supporting standard, a head on said standard, a plurality of resilient ribs connected at their lower ends to said head, a second head uniting the upper ends of said ribs, a third head arranged upon said standard and stretchers connecting the last mentioned head to the intermediate portions of said ribs.

9. In a flash-light apparatus, the combination of a support, a body arranged upon said support, a lamp upon said body, a screen supported over the body and having an open bottom, an extinguishing cap for said lamp, an operating rod slidably and rotatably mounted in the body and having its lower end extending below the open bottom of the screen, an arm uniting said cap to said operating rod and a slotted guide carried by the body and adapted to receive said arm.

10. In a flash-light apparatus, the combination of an angular body having a horizontal bottom and an upright rear portion, a lamp upon said bottom of the body, an angular plate having a vertical portion hinged to the front edge of the bottom of the body and a horizontal portion formed with perfo-



5 rations disposed above the lamp, a detachable connection between said horizontal perforated portion of the plate and the upright portion of the body and means upon the upright portion of the body for supporting a flash powder and dropping the same upon said perforated plate.

In testimony whereof we hereunto affix our signatures in the presence of two witnesses.

JOHN O. ELLINGSON.  
ABRAHAM B. STOUT.

Witnesses:

B. F. BUTLER,  
V. R. SCHÖBER.