

(No Model.)

C. E. ONGLEY.
ELECTRIC ARC LAMP.

4 Sheets—Sheet 1.

No. 528,684.

Patented Nov. 6, 1894.

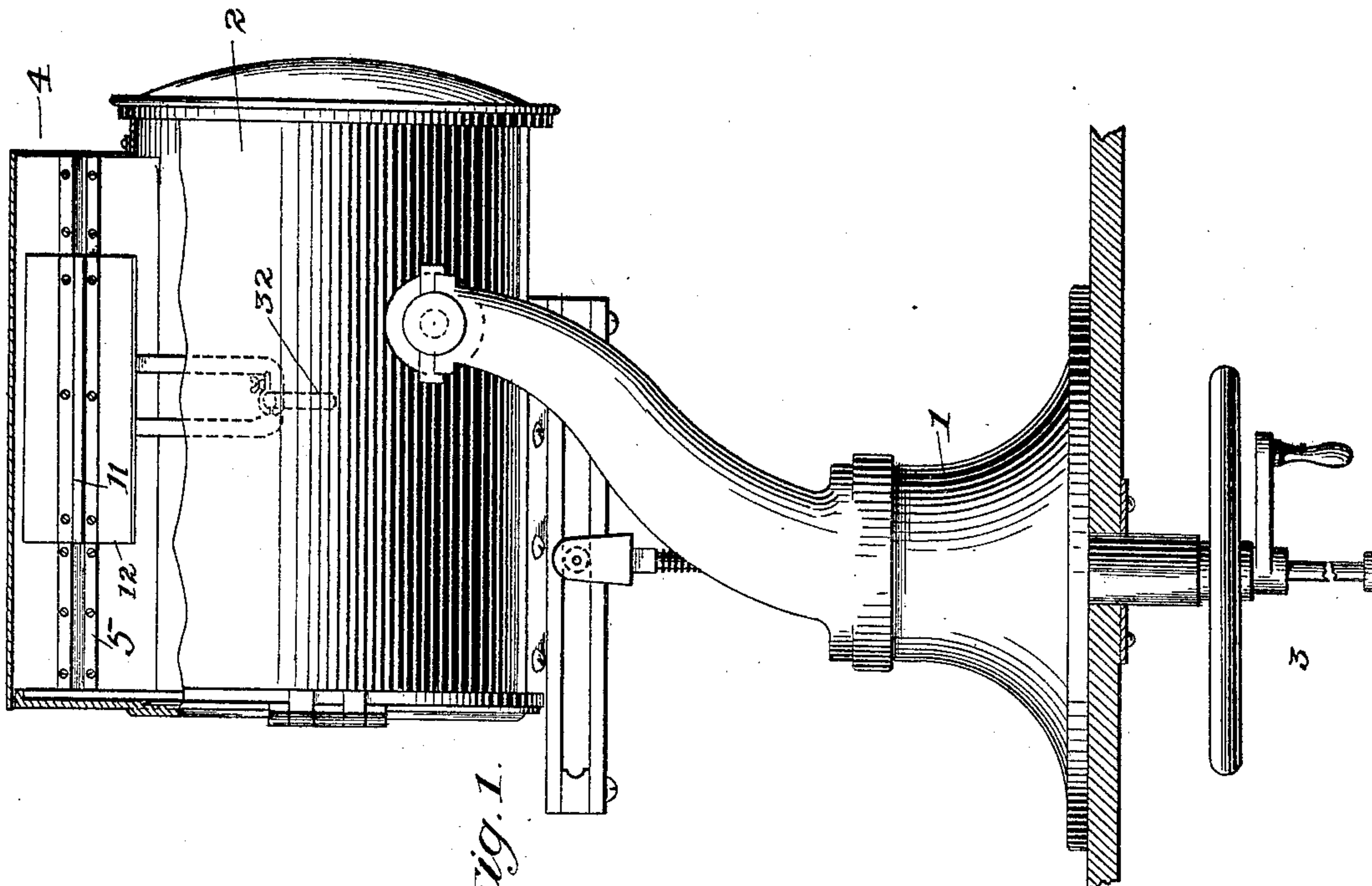


Fig. 1.

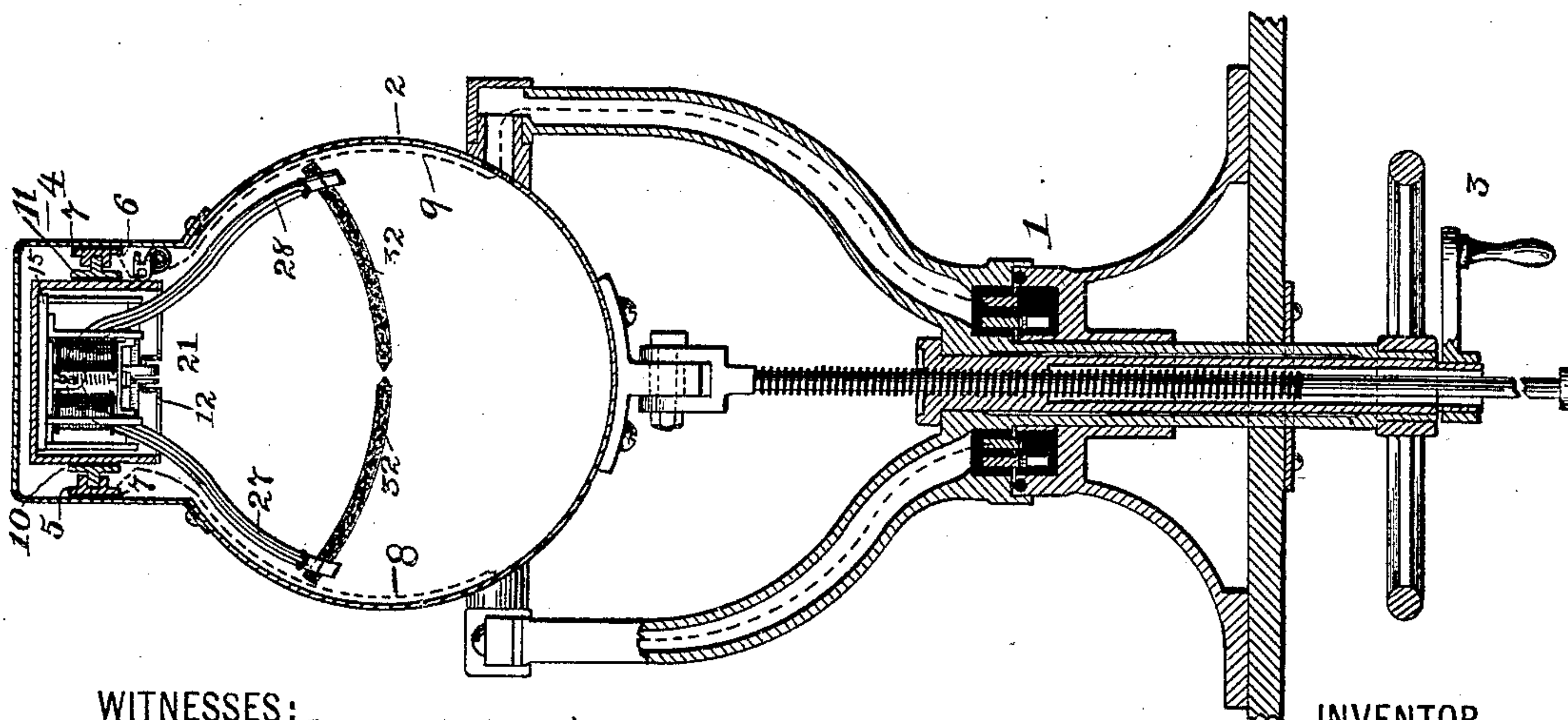


Fig. 2.

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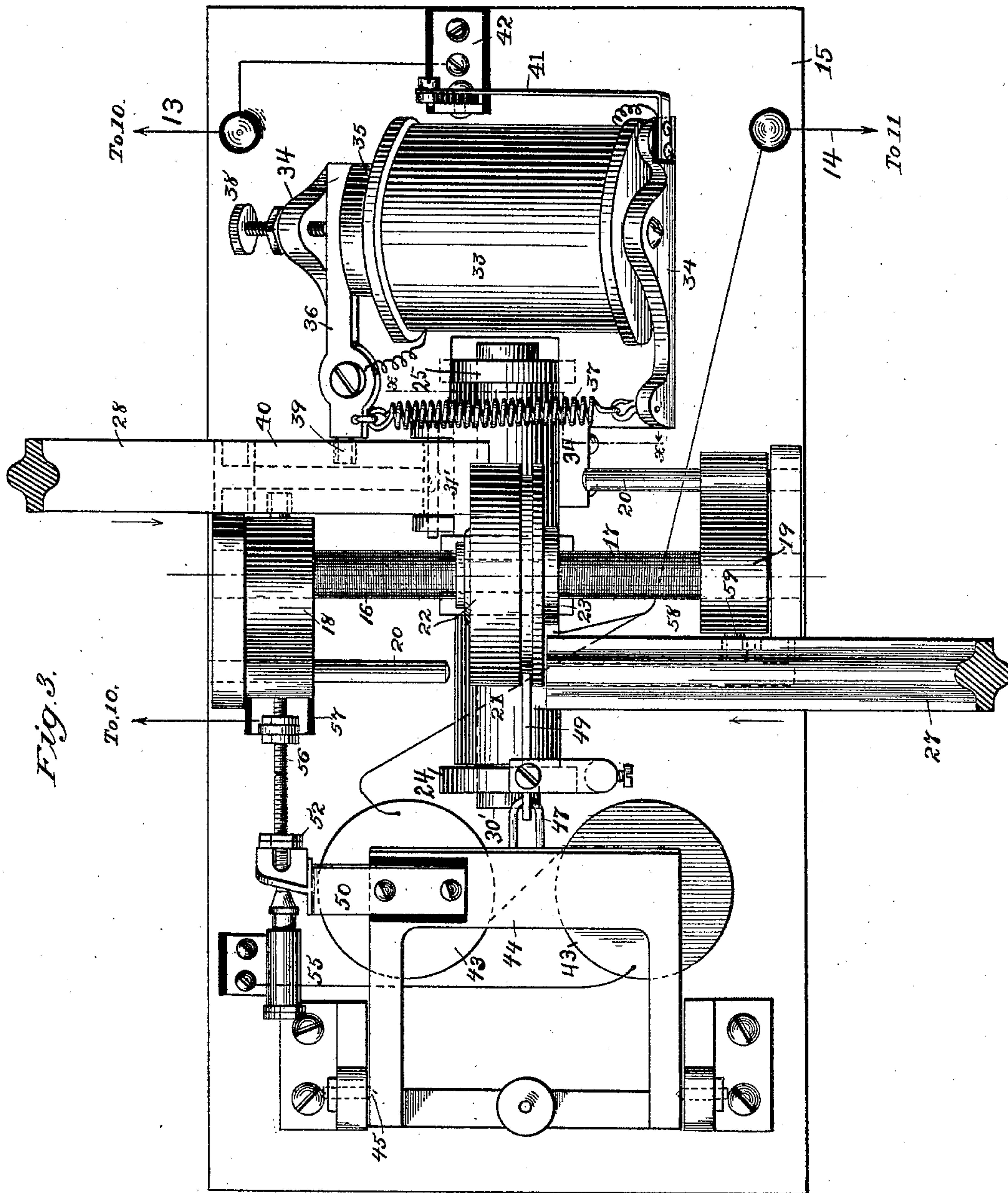
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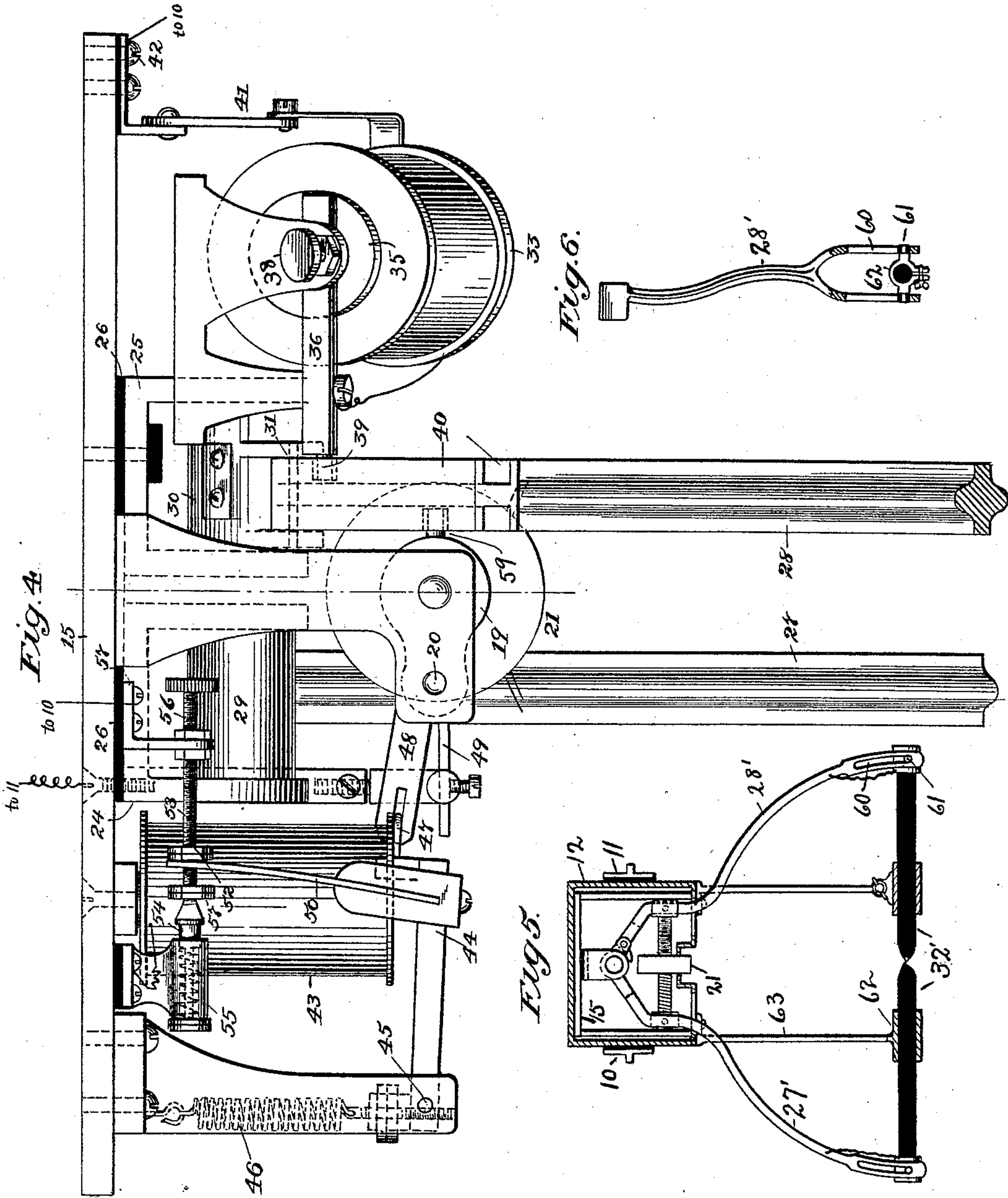
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Fig. 7.

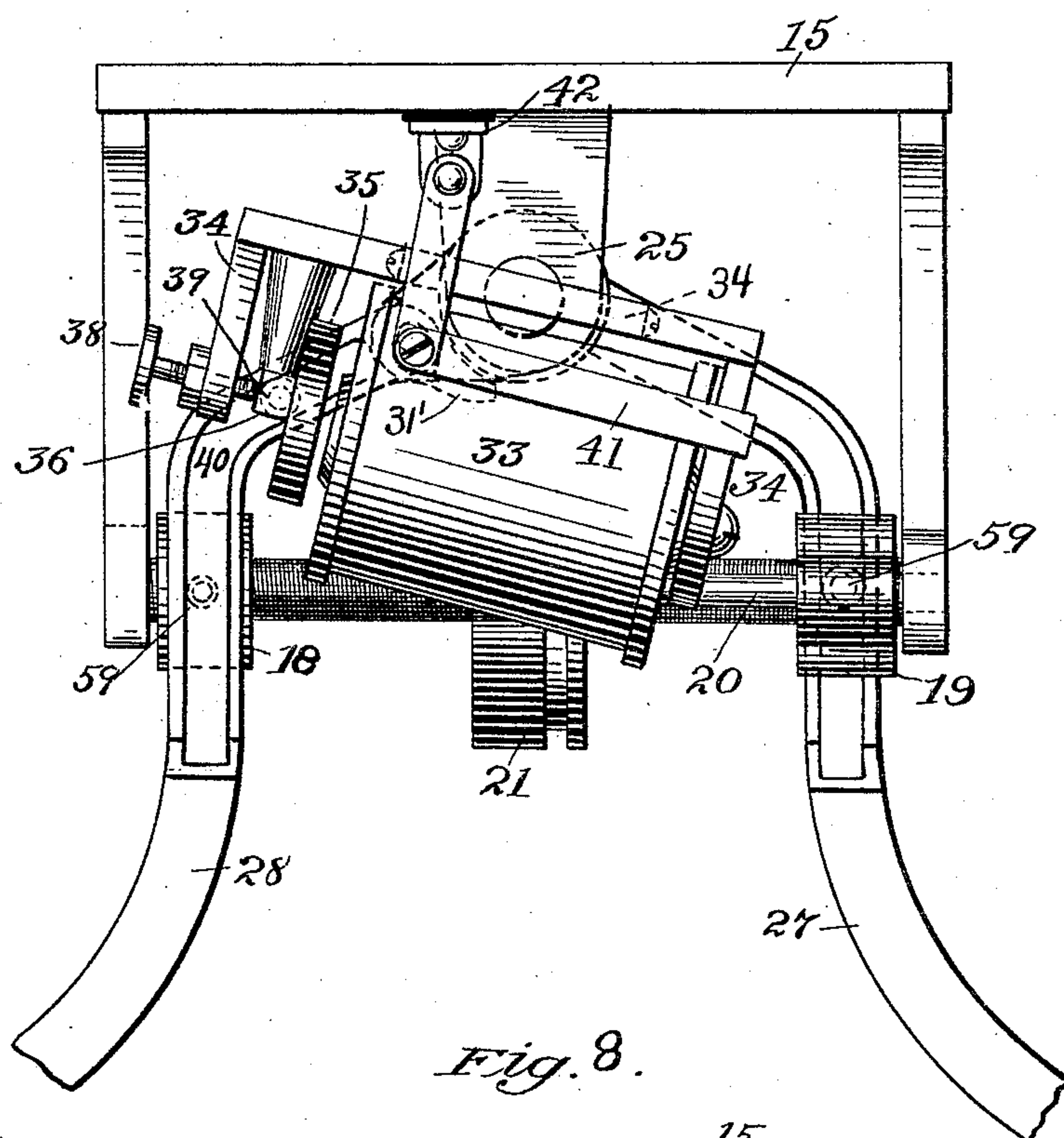
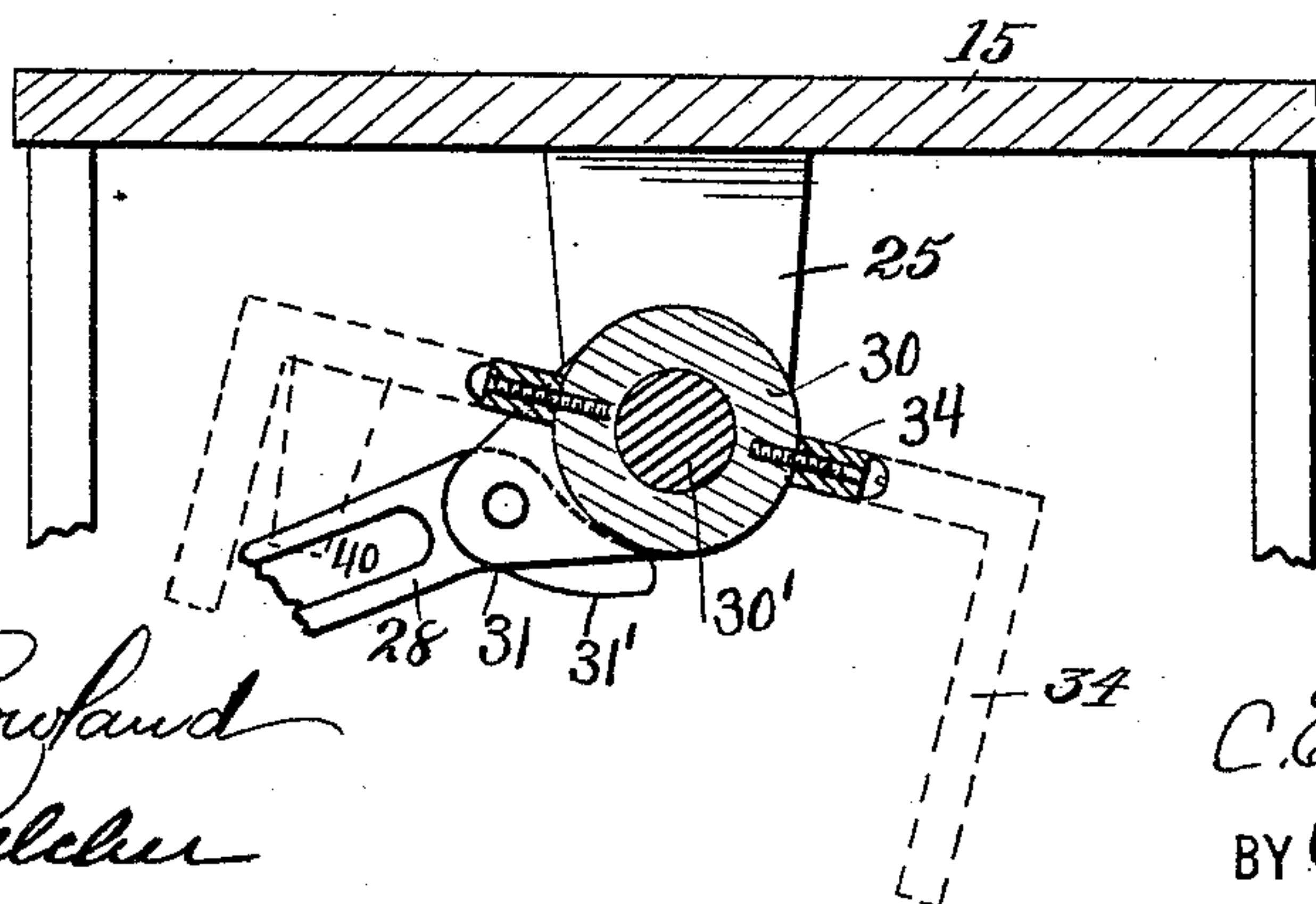


Fig. 8.



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UNITED STATES PATENT OFFICE.

CHARLES E. ONGLEY, OF NEW YORK, N. Y., ASSIGNOR TO GEORGE J. SCHOEFFEL, OF SAME PLACE.

ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 528,684, dated November 6, 1894.

Application filed February 17, 1894. Serial No. 500,550. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. ONGLEY, a citizen of the United States, and a resident of New York, county and State of New York, have invented certain new and useful Improvements in Arc Lamps for Search-Lights, &c., of which the following is a specification.

The present invention relates to arc lamps.

The main objects of the invention are to provide a lamp with improved feeding devices for the carbons; to provide such a lamp, and such means for supporting it, that there shall be a minimum of interference with the projection of light by the search light reflector, when the lamp is used for search light purposes.

The invention consists in the improvements described and set forth in the claims.

In the drawings, Figure 1 is a side view of a complete search light, with a portion of the shell broken away. Fig. 2 is a vertical sectional view thereof. Fig. 3 is a view of the feeding devices of the lamp, detached from the projector, and from the lamp inclosing box, looking up from beneath the lamp when arranged as in Fig. 2. Fig. 4 is a view of the same at right angles to Fig. 3. Figs. 5 and 6 illustrate a modified construction which will be described. Fig. 7 is a side view of the lamp looking from the right of Fig. 4; and Fig. 8 is a section on line x, x , of Fig. 3 looking in the direction of the arrow.

The supporting base 1, the body 2 of the search light projector, and the means 3 for adjusting the body vertically and horizontally, at will, to direct the light to any desired point, may be of any well-known or suitable construction. The construction shown is similar to that in my patent, No. 513,052, and does not need detailed description.

On one side of the body of the projector, preferably the upper side, as shown in Figs. 1 and 2, I form an extension 4, of suitable size and shape to receive and support the lamp.

5, 6, are channel irons, or other suitable supports for the lamp, fixed upon the sides of the extension 4, but insulated therefrom by mica, fiber, or other insulation 7. The wire leading to the lamp will be connected

to one of said supports, and the wire leading from the lamp will be connected to the other, as indicated by the dotted lines 8, 9 in Fig. 2.

10, 11 are T irons secured to, but insulated from the box 12, and adapted to be supported by and to move on said supports. The parts 10, 11 are connected by wires 13, 14, to the lamp within the box. Thus good connection is made between the exterior circuit and the lamp.

The box 12 can be adjusted backward and forward in any convenient manner to focus the light.

Referring now to Figs. 3 and 4 the lamp will be described.

15 is a metal or other plate adapted to fit into box 12, and to which the lamp mechanism is secured.

16, 17 is a shaft, supported in suitable bearings, adapted to turn, but fixed against longitudinal movement, the parts 16, 17 being oppositely screw threaded, and each part having a nut 18, 19 adapted to travel toward and from each other on the screw shaft and sliding on pins 20.

At the center of the screw shaft is a friction clutch 21, consisting of one member 22, fixed to the screw shaft, and one member loose on said shaft. These clutch members are made in any well-known or suitable manner such that when the loose member is moved in one direction the fixed member is engaged and moved forward at the same time, thereby turning the screw shaft.

The construction of the clutch members is not shown in detail, since such clutches are well-known. In some cases a pawl and ratchet propelling device for the screw shaft may be used instead of the friction clutch.

24, 25, are brackets, insulated from plate 15 at 26, each supporting a carbon carrying or feeding arm, 27, 28, by means of sleeves 29, 30 on suitable pivot pins 30'. The arm 27 is preferably in one piece with its sleeve, but arm 28 is connected to its sleeve by a hinge or joint 31, so made that the arm is rigid in the direction in which it moves in feeding the carbon but can be turned backward slightly. This may be accomplished by pivoting arm 28 to lugs projecting from sleeve

30, as shown in Figs. 3, 4, 7, and 8, and providing the arm with a toe 31' which when it rests against the sleeve, as shown in Fig. 8, prevents further forward movement of the arm, independent of movement of sleeve 30, but which does not prevent said reverse movement. The arms 27, 28, are bent to bring their lower ends into line with each other, as shown in Fig. 1, and each arm carries a carbon 32, shown as forming arcs of a circle, the center of which is in the pivot line of said arms. The carbons meet at or near the focus of the reflector. Current may be taken to the carbons through the arms or through wires extending down to the carbons.

33 is the series magnet or coil of the lamp and is supported by a bracket 34, secured to sleeve 30, preferably by lugs through which screws pass into the sleeve, see Figs. 3, 7, and 8, so as to be capable of moving bodily with said sleeve and its arm 28. 35 is an armature provided with a pivoted lever 36 with a retracting spring 37 and a limiting screw 38. On the end of said lever opposite the armature is a pin 39, with or without an anti-friction roller, extending into a slot 40 in arm 28. One terminal of this magnet may be connected by a jointed arm 41 or by a flexible conductor to the insulated bracket 42, which in turn will be connected to the T iron 10. The other terminal is connected to bracket 34, sleeve 30, to one carbon, thence to the other carbon, to sleeve 29, and to T iron 11, thus completing the series circuit.

43 is a shunt magnet or coil of the lamp, suitably secured to the plate 15. 44 is the armature thereof, pivoted at 45, and having a retracting spring 46. From the armature extends an arm 47 into a slot in the end of another arm 48, which is adapted when moved in one direction to advance the loose member of the clutch, and at the same time to advance the fixed member and the screw shaft, but when moved in the opposite direction to move independently of the screw shaft, as well understood by those familiar with this class of devices.

49 is an adjustable arm bearing against the clutch to prevent backward movement.

Carried by the armature and insulated from it, is an arm 50 adapted to play between and against the adjustable stops 51, 52, on a screw or rod 53, connected to the spring pressed plunger 54, insulated from plate 15, and making end contact with a screw 56, carried by an insulated bracket 57. The terminals of the shunt coil are connected, respectively to the parts 55 and 14, see Fig. 3, and said parts will be connected to the T irons, as before stated, to complete the shunt branch through the lamp.

Arm 27 has a groove 58 in which rides a pin 59 projecting from nut 19. The pin may or may not carry an anti-friction sleeve. Arm 28 and nut 18 have a similar groove and pin, the latter being loose in its groove to allow

the arm to move back far enough to strike the arc in the lamp.

When the circuit is first closed to the lamp the series coil—if the carbons are together,—draws in its armature, turning lever 36 on its pivot, thereby, through pin 39 in groove 40, moving arm 28 back, by turning it slightly on its hinge 31, and striking or springing the arc. This throws more current through the shunt coil, attracting its armature, tilting arm 48, thereby moving the loose member of the clutch 21, and at the same time carrying arm 50 against stop 51, moving it and screw 53 toward the left, see Fig. 4, separating said screw from screw 56, opening the shunt circuit, allowing the armature to fall, and said screws to resume contact, again closing the circuit, and when the carbons have been consumed so as to need advancing, attracting the armature 44, and so on as long as the lamp is kept in circuit and the carbons last.

The parts 43, 44, 50, 53, and 56 form an automatic vibrator in the shunt circuit of the lamp, which, by means of the clutch referred to, turns screw shaft 16, 17 moving nuts 18, 19 toward each other, and carrying the carbons also toward each other to maintain the arc. This movement will be repeated as often as the resistance of the arc diverts enough current to the shunt to cause the shunt magnet to attract its armature. If the carbons are not together when the lamp circuit is first closed the vibrator will first act to bring the carbons together and then the series coil will separate them as above described.

When the carbons are consumed and new ones are to be inserted the clutch and screw can be turned backward by the hand applied to the clutch where it extends through the bottom of box 12, as shown in Fig. 2.

The clutch, screw shaft, and nuts engaging the pivoted arms, and constituting the feeding devices or mechanism for the carbons, give a very delicate and steady movement of the carbons. The carbons are so held that jarring such as they are frequently subject to on board ship and elsewhere, cannot cause them to fall together accidentally. The parts of the lamp which extend in front of the reflector are small and of such form as not to cut off much light. Magnet 33 being mounted as described maintains a fixed position relative to arm 28 and sleeve 30, and is always in position to move said arm for the purpose indicated above.

Instead of using curved carbons and moving them in arcs straight carbons may be used, and may be moved in straight lines, as shown in Fig. 5. The movements of arms 27', 28' can be controlled as already described. The outer ends thereof have slots 60 in which play pins 61 projecting from the carbon holding clamps 62, carrying straight carbons 32'. As the arms or carriers 27', 28' approach each other the carbons will be forced for-

ward in straight lines, being guided by the sleeves 63.

I claim—

1. In an arc lamp, the combination of piv-
5 oted arms carrying or adapted to carry car-
bons, a screw threaded shaft, nuts moved
thereby, and operatively connected respect-
ively to said arms so as to move them oppo-
sately to feed the carbons, a shunt coil and
10 means operated thereby for turning the screw
shaft to move the arms and carbons toward
each other.

2. In an arc lamp, the combination of piv-
15 oted arms carrying or adapted to carry car-
bons, a screw threaded shaft, nuts moved
thereby and operatively connected respect-
ively to said arms so as to move them oppo-
sately to feed the carbons, a shunt coil, means
20 operated thereby for turning the screw shaft
to move the arms and carbons toward each
other, a series coil and an armature therefor
operatively connected to one of said arms and
adapted to move it to strike an arc.

3. In an arc lamp, the combination of piv-
25 oted arms carrying or adapted to carry car-
bons, a screw threaded shaft, nuts moved
thereby, and operatively connected respect-
ively to said arms so as to move them oppo-
sately to feed the carbons, a shunt coil, arma-
30 ture, and circuit breaker, and a clutch con-
nected to the screw shaft to transmit move-
ment thereto and operated by said magnet
and armature.

4. In an arc lamp, the combination of piv-
35 oted carbon carrying arms provided with
grooves, a screw threaded shaft with oppo-
sately threaded sections, nuts thereon carry-
ing pins extending into said grooves for mov-
ing the arms, and means for moving said
40 screw.

5. In an arc lamp, the combination of piv-
oted carbon carrying arms, one of which is
jointed, a series coil supported by said jointed
arm on the pivot side of the joint, an arma-

ture for the magnet engaging the jointed arm 45
on the opposite side of the joint from the
pivot of the arm, and means for moving the
arms toward each other.

6. The combination of carbon carrying
arms 27, 28, screw 16, 17, clutch 21, nuts 18, 50
19, pins 20 to guide the nuts, pins 59 carried
by the nuts and engaging said arms, and
means including suitable coils for moving
said arms.

7. The combination of pivoted carbon feed- 55
ing arms, straight carbons supported so as to
be advanced by said pivoted arms, a feed
screw with nuts moved thereby and opera-
tively connected to said arms, and means con-
trolled by a shunt coil for turning the screw. 60

8. The combination with a search light or
projector body of conductors 5, 6, supported
thereby but insulated therefrom, and form-
ing circuit terminals, a lamp, an inclosing box
or case therefor, conductors 10, 11 suitably 65
insulated from each other and adapted, re-
spectively, to rest on conductors 5, 6, to com-
plete the circuit and to support the lamp,
and connected to the lamp in the box.

9. The combination with a search light or 70
projector body, of an arc lamp having piv-
oted carbon carrying arms extending into
said body in front of the reflector, and means
for moving said arms to maintain the arc.

10. The combination with a search light or 75
projector body, of an extension, 4, thereon, an
arc lamp in said extension and having piv-
oted carbon carrying arms extending into
said body in front of a reflector, and means
for moving said arms to maintain the arc. 80

In testimony that I claim the foregoing as
my invention I have signed my name, in
presence of two witnesses, this 16th day of
February, 1894.

C. E. ONGLEY.

Witnesses:

C. M. CATLIN,

C. L. BELCHER.