

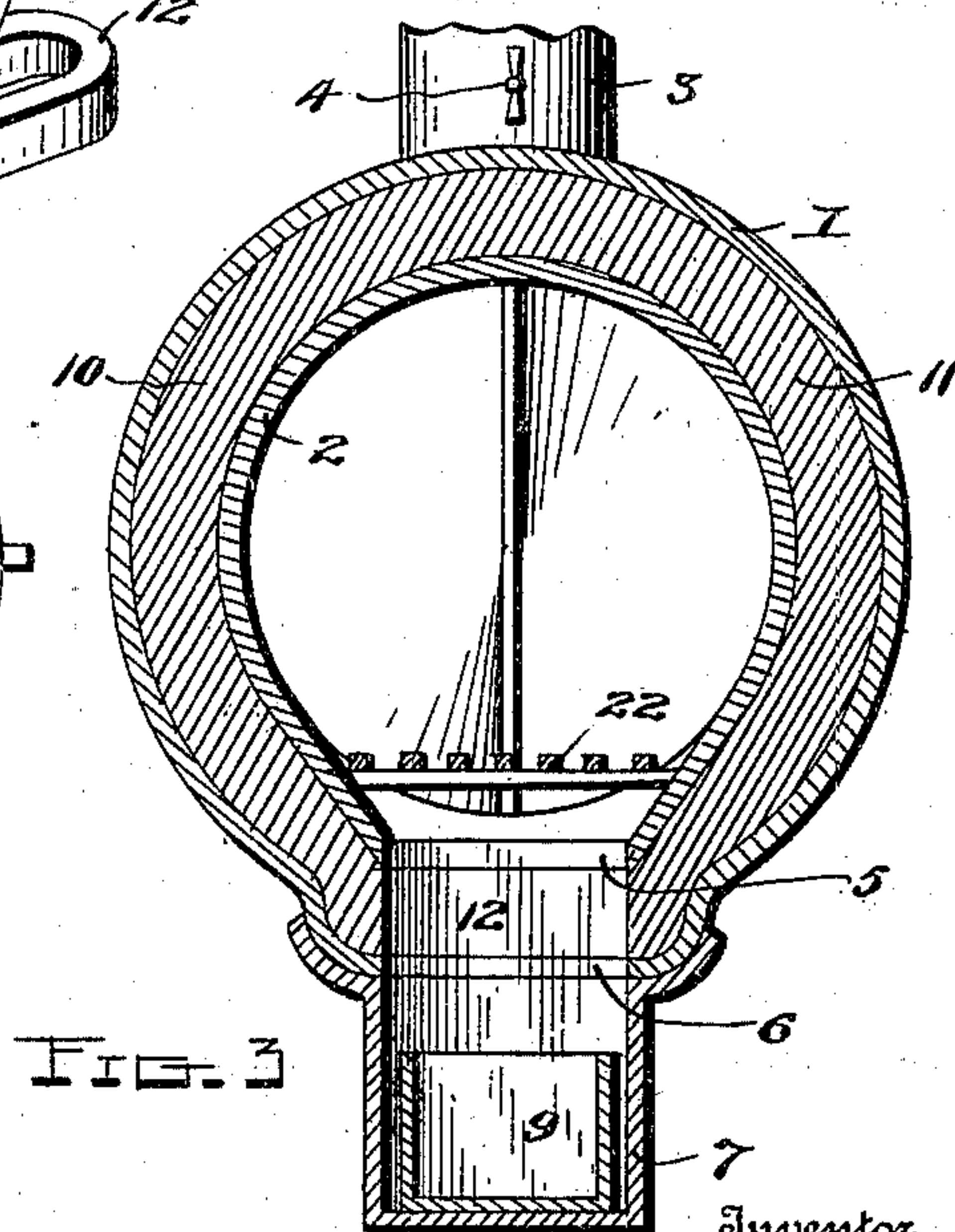
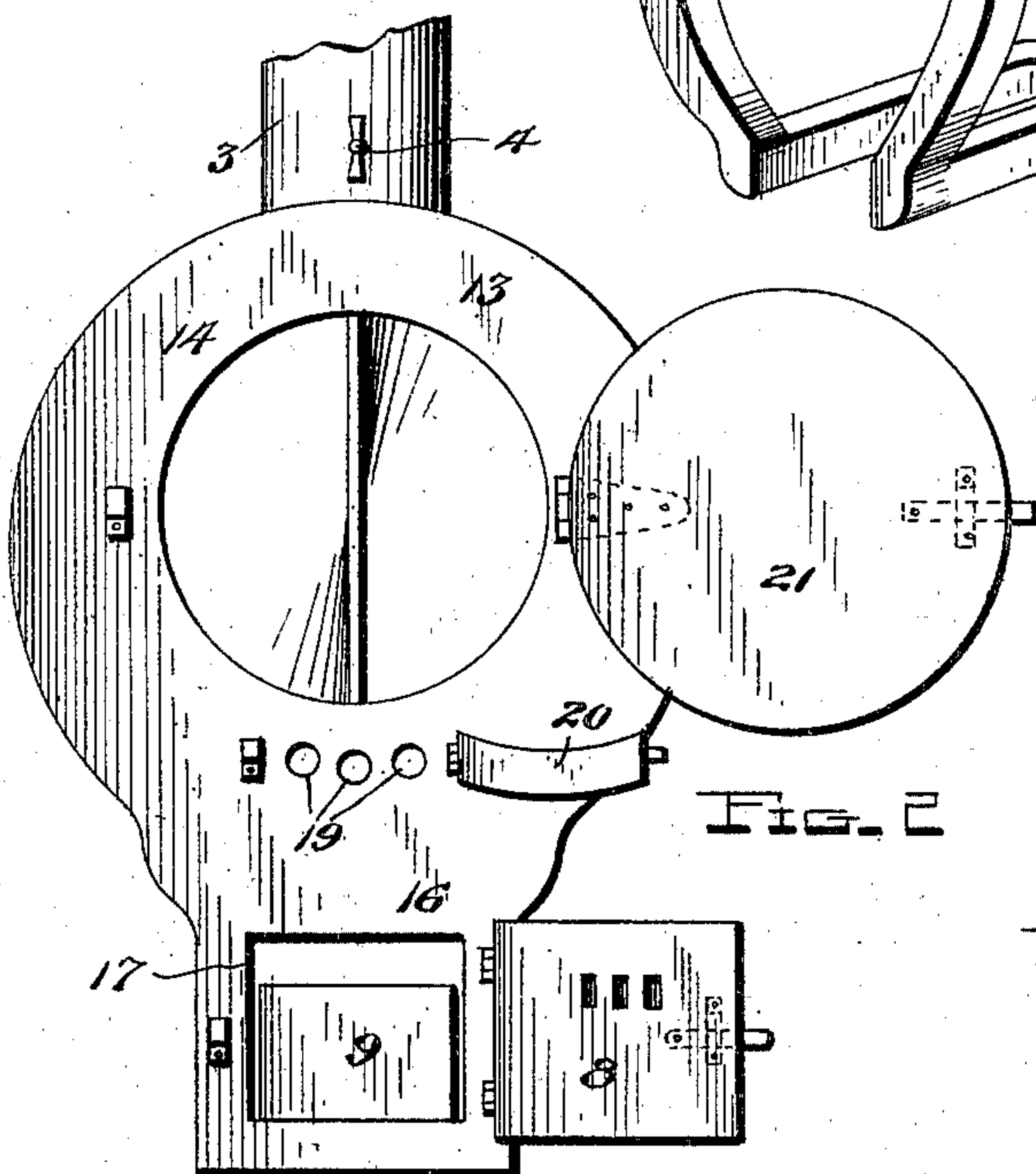
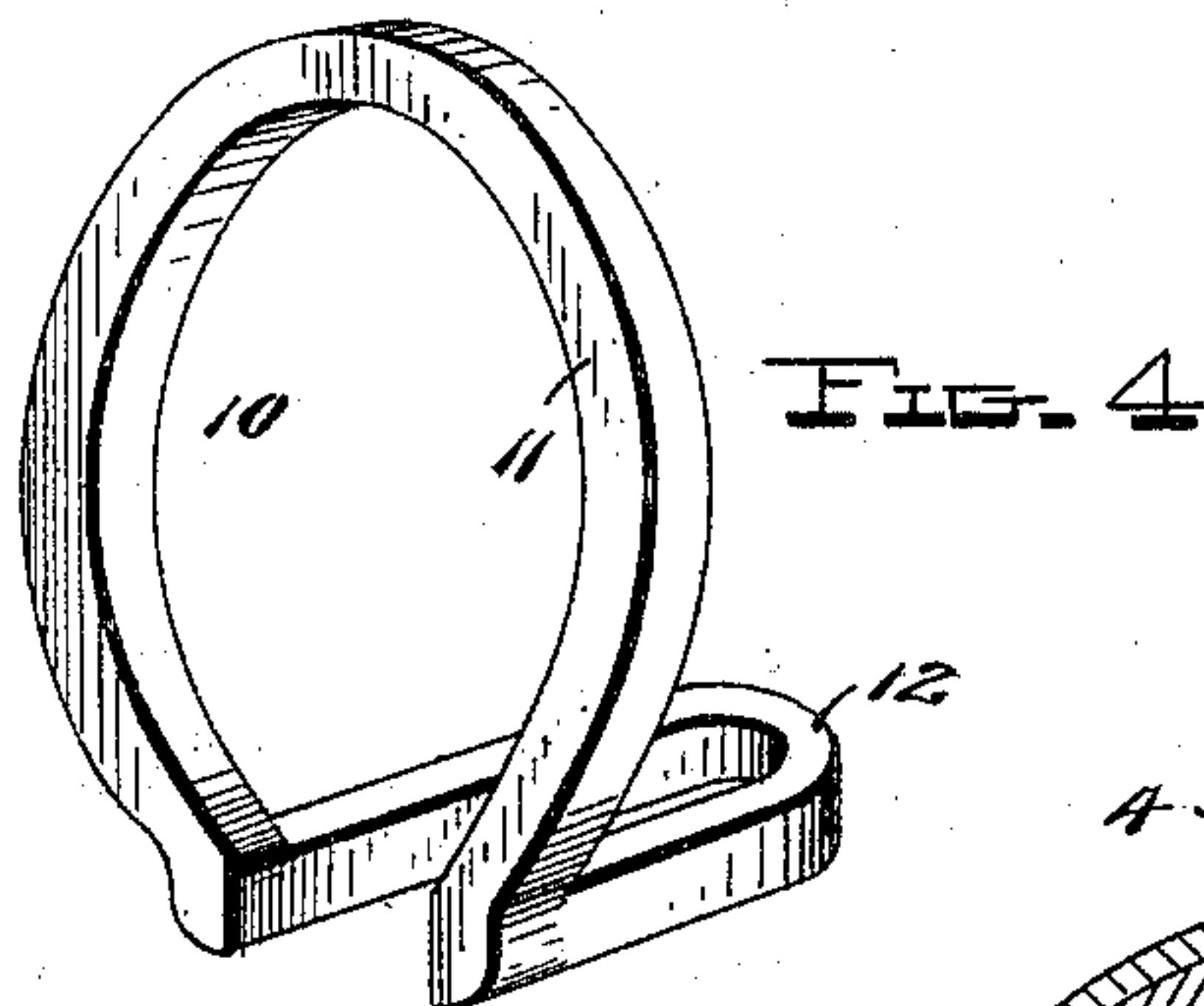
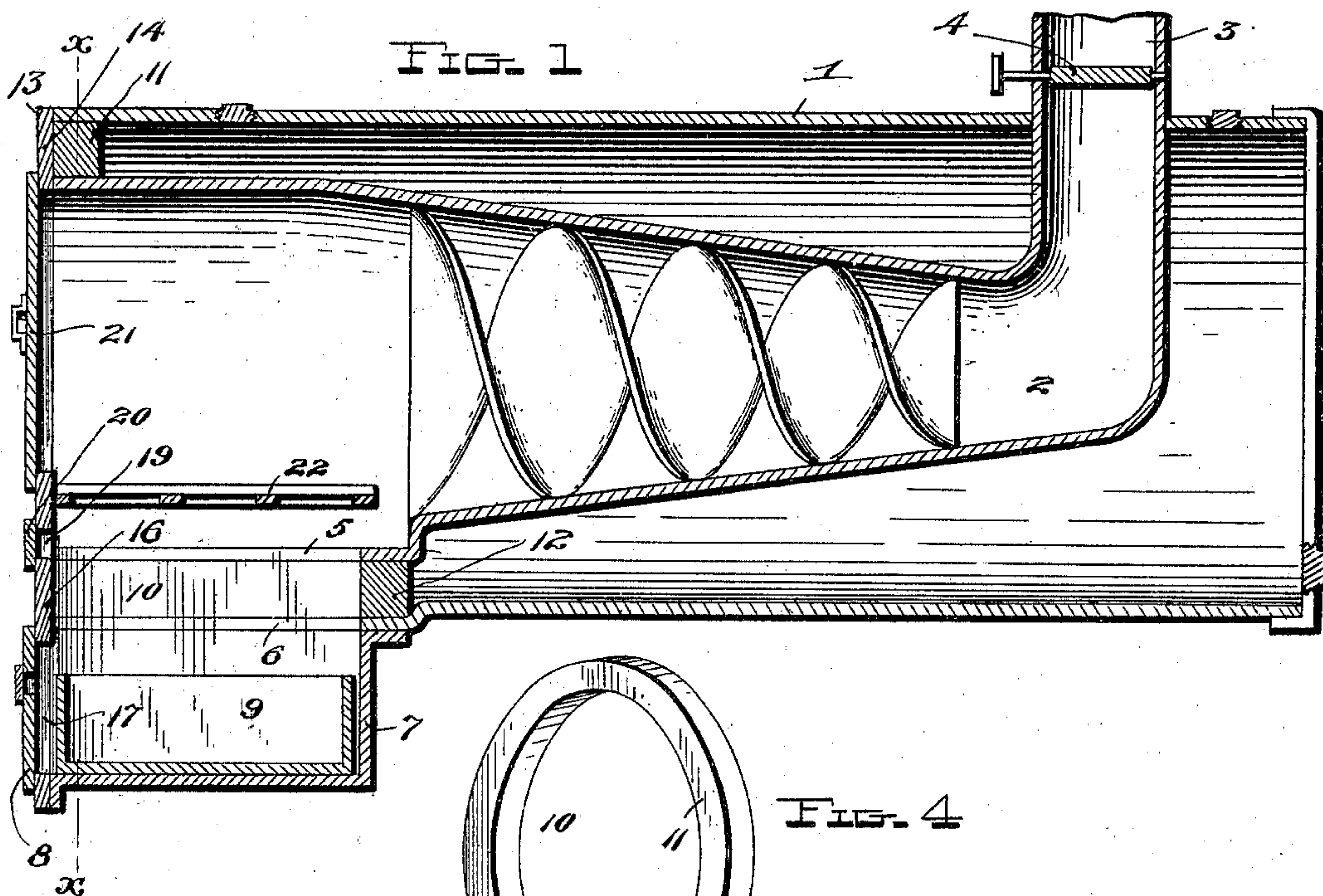
No. 708,407.

Patented Sept. 2, 1902.

J. A. SCHLEHR.
STEAM BOILER.

(Application filed Nov. 21, 1901.)

(No Model.)



Inventor
J. A. Schlehr

Witnesses

J. A. Schlehr, Jr. By *A. B. Wilson & Co.*
J. A. Schlehr Attorneys

UNITED STATES PATENT OFFICE.

JOSEPH A. SCHLEHR, OF FRAZEE, MINNESOTA.

STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 708,407, dated September 2, 1902.

Application filed November 21, 1901. Serial No. 83,110. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH A. SCHLEHR, a citizen of the United States, residing at Frazee, in the county of Becker and State of Minnesota, have invented certain new and useful Improvements in Steam-Boilers; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it ap-
10 pertains to make and use the same.

The invention relates to steam-boilers.

The object of the invention is to provide a steam-boiler which shall be simple of construction, durable in use, comparatively in-
15 expensive of production, and which will generate the maximum amount of steam with the minimum expenditure of fuel, special provision being made whereby the draft is retarded to more effectually consume the gases
20 and products of combustion.

With this and other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in certain novel features of construction
25 and combination and arrangement of parts hereinafter more fully described, defined in the appended claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal sectional view
30 through a boiler embodying my invention. Fig. 2 is a front view of the boiler with the door open. Fig. 3 is a vertical cross-sectional view on the line X X of Fig. 1. Fig. 4 is a perspective view of the yoke-frame.

35 Referring to the drawings, 1 denotes the shell of the boiler, and 2 denotes the tapering fire-flue, which extends from one end of the boiler to near the opposite end thereof and is provided with an uptake or flue 3, extending through the boiler-shell and provided
40 with a damper 4. The front end of the flue and the front end of the boiler on their lower sides are provided with longitudinally-disposed recesses or openings 5 and 6, respectively, beneath which is secured an ash-box
45 7, closed by a door 8 and supporting an ash-pan 9.

50 10 denotes a yoke-frame for connecting the forward end of the flue to the forward end of the boiler. This frame consists of a vertically-disposed yoke 11, located between the inner side of the boiler-shell and the outer

side of the flue and riveted thereto and terminates at its lower end in a laterally and rearwardly projecting yoke 12, to which the
55 boiler-shell and the flue at points contiguous to the walls of the openings or recesses in said shell and flue are riveted, thus holding the shell and flue together and in spaced-apart relation. 60

13 denotes the head of the boiler, which consists of a ring 14, having an extension 16, formed with an opening 17. This head is bolted or riveted to the part 11 of the yoke-frame and to flanges formed on the forward
65 end of the ash-box and is provided with draft-openings 19, covered by a damper 20.

21 denotes a furnace-door, and 22 a grate arranged within the flue at the forward end thereof immediately above the ash-box and
70 below the furnace-door.

Located within the flue, immediately at the rear of the grate, is a spiral retarding device which is of a diameter corresponding to the diameter of the flue at that part in the length
75 of the flue within which the device is located, and thereby snugly fits the wall of the flue, and this retarding device preferably tapers from its forward end to its rear end, as does also the flue, the rear end of said retarding
80 device being of less diameter than the forward end.

In operation it will be noticed that before the gases and products of combustion can escape through the uptake they must first
85 wind around the spiral retarder in the flue, and as this flue is entirely surrounded by water the gases and products of combustion checked in their escape by said retarder will more thoroughly heat the water contained
90 within the boiler, thus allowing me to generate a maximum amount of steam with a minimum expenditure of fuel.

From the foregoing description, taken in connection with the accompanying drawings,
95 it is thought that the construction, mode of operation, and advantages of my improved steam-boiler will be readily apparent without requiring an extended explanation.

100 Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention, and I therefore reserve to my-

self the right to make such changes as fairly fall within the scope thereof.

I claim—

1. The combination with a boiler-shell
5 formed in its front end with a longitudinal
recess or opening, of a flue located within the
boiler-shell and formed with a registering re-
cess or opening, a spiral retarder located
within said flue, and a yoke-frame compris-
10 ing a vertically-disposed yoke to which the
front ends of the shell and flue are secured
and by which they are spaced apart, and pro-
vided with a longitudinally-disposed yoke to
which the walls of the said recesses or open-
15 ings are secured, substantially as set forth.

2. The combination with a boiler-shell
formed in its front end with a longitudinally-
disposed recess or opening; of a flue located
within the boiler-shell and formed with a reg-
20 istering recess or opening, and a yoke-frame
comprising a vertically-disposed yoke to
which the front ends of the shell and flue are
secured and by which they are spaced apart
and provided with a laterally-disposed yoke

to which the walls of said recesses or open- 25
ings are secured, substantially as and for the
purpose specified.

3. The combination with a boiler-shell
formed in its front end with a longitudinally-
disposed recess or opening; of a flue located 30
within the boiler-shell and formed with a reg-
istering recess or opening, and a yoke-frame
comprising a vertically-disposed yoke to
which the front ends of the shell and flue are
secured and by which they are spaced apart 35
and provided with a laterally-disposed yoke
to which the walls of said recesses or open-
ings are secured, and an ash-box arranged
below said openings, substantially in the
manner set forth. 40

In testimony whereof I have hereunto set
my hand in presence of two subscribing wit-
nesses.

JOSEPH A. SCHLEHR.

Witnesses:

JOHN JAPSON,

L. W. OBERHAUSER.