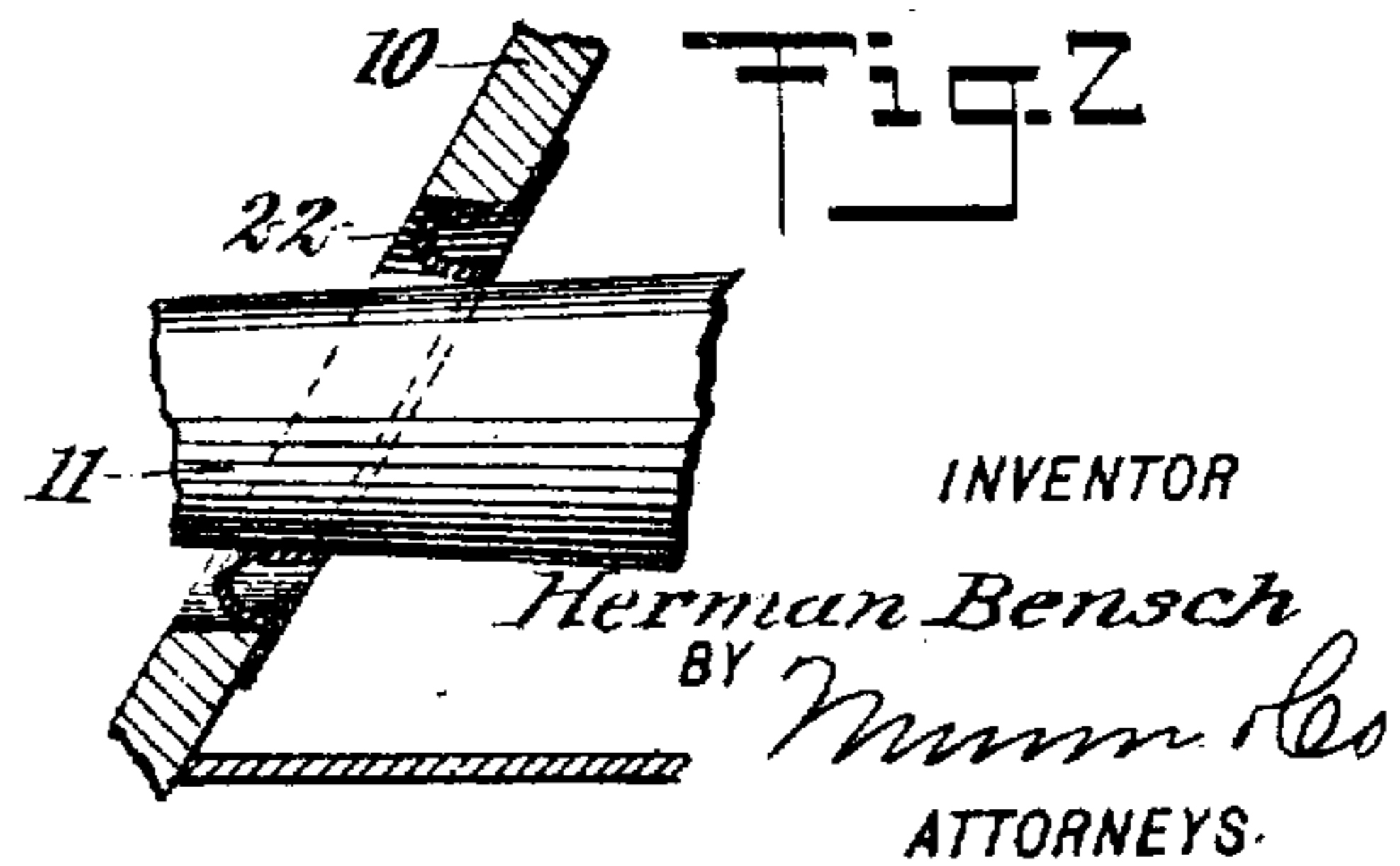
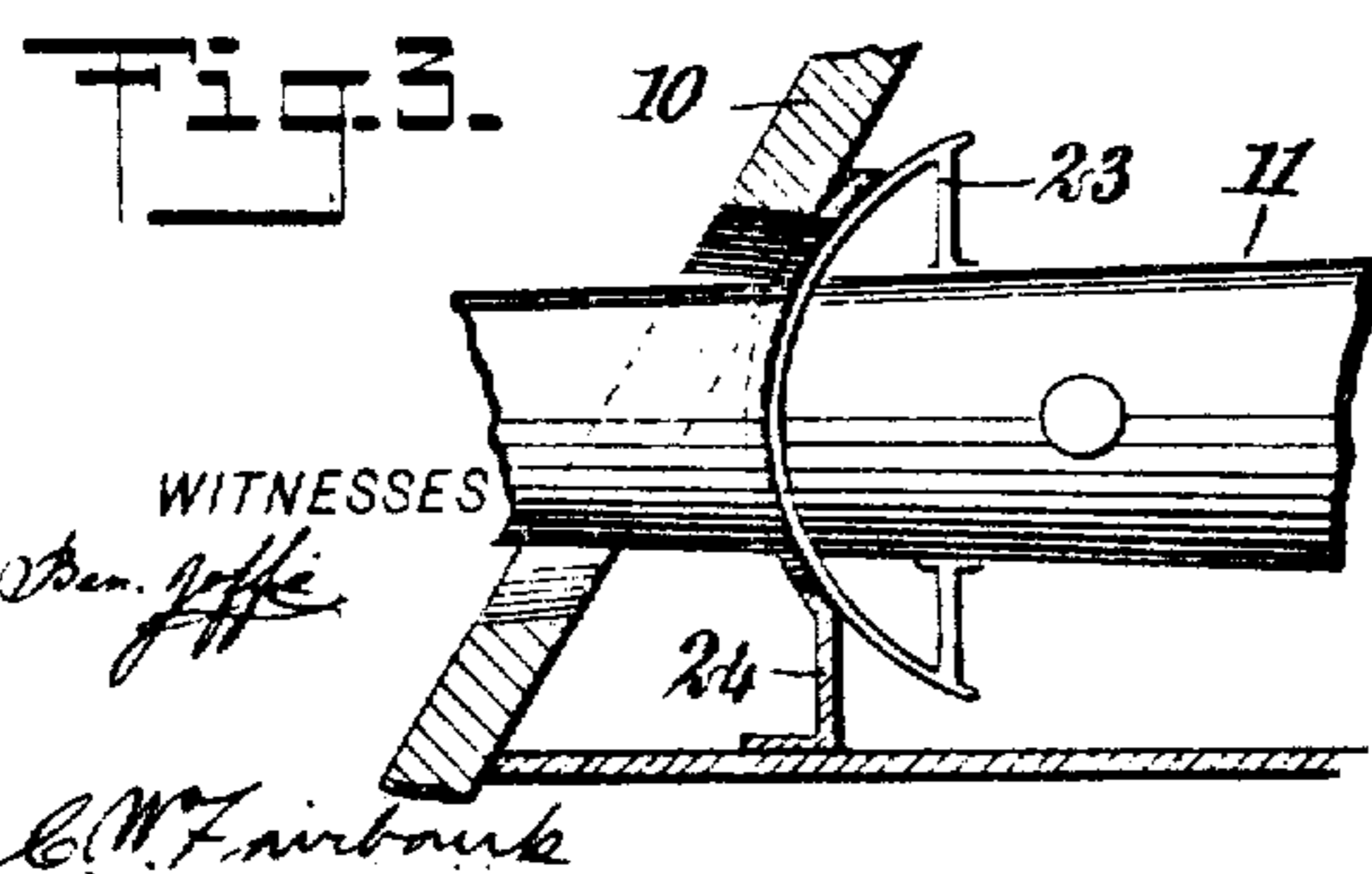
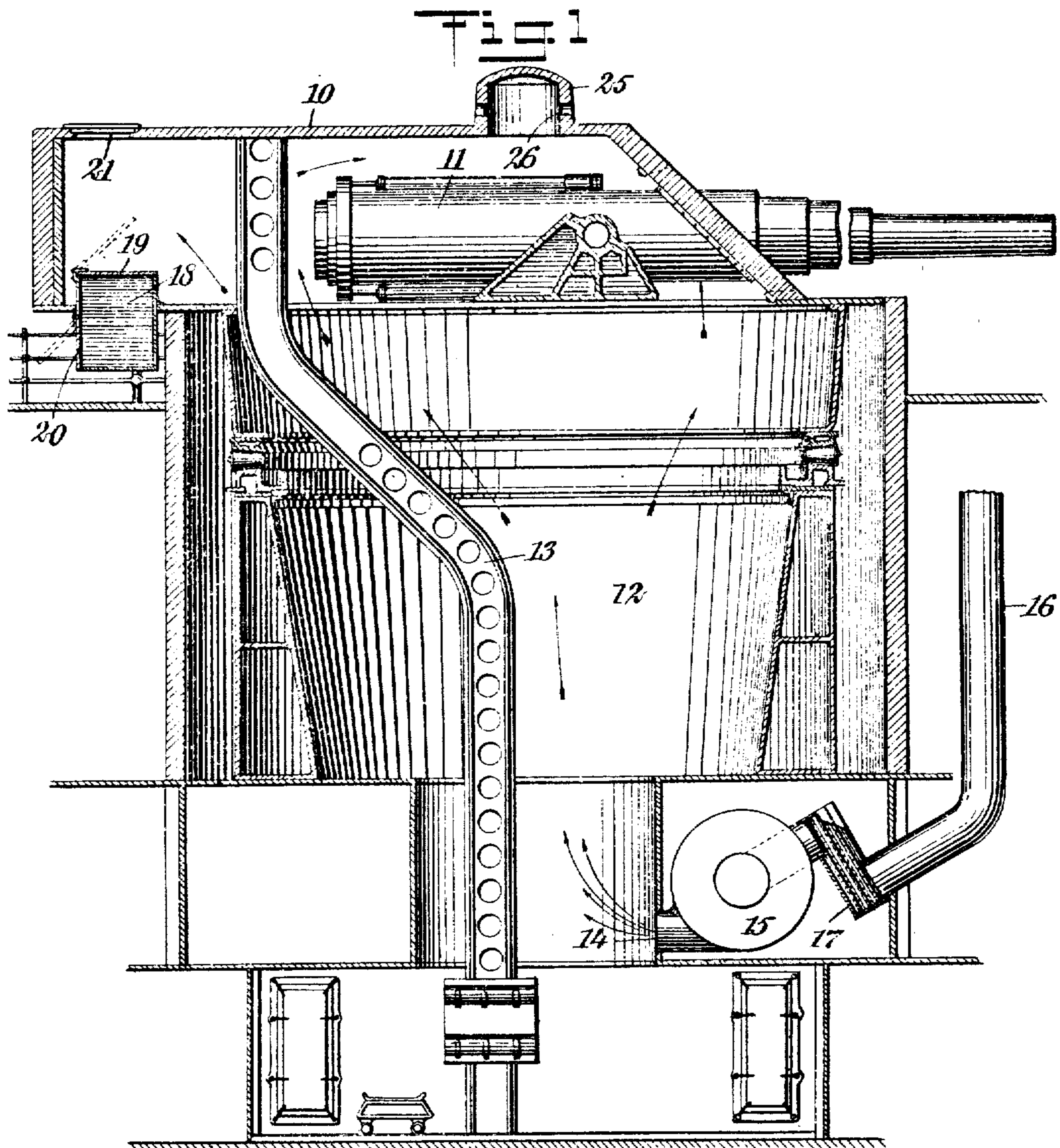


H. BENSCH.
AIR PRESSURE SYSTEM FOR TURRETS AND THE LIKE.
APPLICATION FILED JAN. 31, 1908.

903,660.

Patented Nov. 10, 1908.



UNITED STATES PATENT OFFICE.

HERMAN BENSCH, OF NEW YORK, N. Y.

AIR-PRESSURE SYSTEM FOR TURRETS AND THE LIKE.

No. 903,660.

Specification of Letters Patent.

Patented Nov. 10, 1908.

Application filed January 31, 1908. Serial No. 413,521.

To all whom it may concern:

Be it known that I, HERMAN BENSCH, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Air-Pressure System for Turrets and the Like, of which the following is a full, clear, and exact description.

10 This invention relates to certain improvements in connection with high power ordnance, and relates more particularly to means whereby after the gun is fired and the breech block opened for reloading, the
15 gases of combustion are completely scavenged from the bore of the gun and "flare-backs" positively prevented.

By means of my invention, all sparks or burning particles or fragments ejected from
20 other guns or from the smoke stack of the vessel, are positively prevented from entering the turret, barbette, or other chamber encompassing the breech of the gun and in which the gunners work.

25 My invention consists in the provision of means for closing the turret or other chamber substantially air-tight, and maintaining in said turret or chamber an air pressure above that of the outside atmosphere and
30 also in excess of any wind pressure which may be directed against the muzzle of the gun or the side of the chamber.

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

Figure 1 is a vertical section through a turret and turret chamber constructed for carrying out my improved system; and Figs.
40 2 and 3 are sectional details showing different means for closing the aperture in the wall through which the gun extends.

It is well known that many accidents of a
45 very serious nature have occurred on war vessels, due to the return of the hot gases from the bore of the gun into the turret upon the opening of the breech block. These gases ignite to cause what is known as a "flare-back", and the gunners are often seriously
50 burned. Accidents have also occurred due to the entrance of burning particles through the ventilating openings of the turret and into engagement with a charge of explosive
55 about to be inserted in the breech of the gun. Under the systems at present employed, it

has been attempted to scavenge the bore of the gun after each explosion, by means of a blast of air delivered at high pressure through a high pressure air conduit, but this
60 has serious objections as the expansion of the air at the nozzle tends to chill the bore of the gun and also it occasions some delay in manipulating the scavenging apparatus after the gun is fired and before it is reloaded.
65 It is necessary that the interior of the turret or other chamber be ventilated, and the more effective ventilation is usually secured by enlarging the ventilating openings. The increase in the size of these openings increases
70 the liability of the entrance of sparks and burning fragments, but by my improved system the turret is thoroughly and effectively ventilated and the admission of all such sparks or burning fragments, is prevented.
75

In the accompanying drawings, I have illustrated somewhat diagrammatically, a portion of a war vessel having a revoluble turret 10, encompassing the supports and breech of a gun 11. Below the turret is a turret
80 chamber 12 inclosing the tracks and rollers upon which the turret is mounted and also inclosing the ammunition hoist 13 leading from adjacent the magazine. The turret and turret chamber are in open communication
85 with each other, but both are closed substantially air-tight, save for the entrance opening 14 through which air is delivered. A blower 15 draws air from the outside atmosphere through a conduit 16, and a safety
90 spark arrester 17, the latter being preferably formed of a plurality of screens of fine mesh. All entrance openings to and from the turret or turret chamber are provided with air locks
95 of any suitable type, whereby a person may enter without disturbing the established difference in pressure between the interior and exterior thereof.

As shown, the turret at the rear of the gun is provided with an air lock 18, having a
100 door 19 opening into the turret and a door 20 opening to the outside. These doors are adapted to close substantially air-tight, and one is closed before the other is opened, so that air cannot rush from the turret when a
105 person enters. Any suitable form of air lock may be employed, but as the details thereof do not constitute any portion of my invention, such details have not been illustrated.

The customary ventilating opening 21 of
110 the turret is closed substantially air-tight during the operation of my system, and the

opening through the wall of the turret through which extends the gun, is also closed substantially air-tight. In Fig. 2 I have shown means for closing the latter opening, 5 consisting of a flexible apron 22 of non-combustible material, annular in form, and having its outer circumference secured to the inner wall of the turret and its central portion secured to the gun. The flexibility of 10 the apron permits of a free up and down movement of the gun, but prevents the escape of air or the admission of sparks. In Fig. 3, I have illustrated a different form of closing means, consisting of a shield 23 car- 15 ried by the gun and having a curved outer surface, the center of curvature being the center of the trunnions of the gun. This shield engages with a partition 24, having a curved surface for engagement therewith 20 and having an opening therethrough for the gun. The periphery of the partition 24 is secured to the walls and floor of the turret, so that air can escape from the latter only by passing through the opening in the par- 25 tition, but this is closed by the curved shield. The shield and partition have a sliding engagement which is substantially air-tight, although possibly not as effective for absolute retention of the air within the turret as 30 is the form shown in Fig. 2. The sighting-hood 25 may have the openings therein closed by small flexible aprons 26 of transparent but flexible material, or the sighting telescopes may have shields similar to those 35 shown in Fig. 2 or in Fig. 3.

The blower is so designed as to maintain a constant gas pressure within the turret and turret chamber, substantially in excess of atmospheric pressure and sufficient to overcome 40 all atmospheric conditions, as, for instance, a high wind pressure. As soon as the gun is fired, the breech is opened and the difference in air pressure between the interior and exterior of the turret causes an immediate rush of air through the gun to scavenge 45 the latter of all gases of combustion, and serves, at the same time, to remove the impure air from the interior of the turret. Not only the gases within the bore of the gun but also any burning fragments of the bag 50 containing the previous explosive charge, are swept out and are positively prevented from reëntering the turret. There is no mechanism of any kind to manipulate or operate 55 to scavenge the bore, as the mere opening of the breech block automatically permits of an escape of a portion of the air already in the turret. Of course, from a practical

standpoint, it is almost impossible to make the turret and turret chamber perfectly air- 60 tight, but any small openings or crevices that may exist will not constitute any source of danger as air will be continuously escaping through these openings to prevent the admission of outside smoke or sparks. 65

The system is illustrated in the drawings as being applied to a rotatable turret, but it is very evident that it is equally appropriate for use in connection with stationary bar- 70 bettes, movable gun shields, or any chamber whatsoever which encompasses the breech of the gun and which can be made substantially air-tight. The invention does not necessitate any remodeling or redesign- 75 ing of the present type of construction, but merely involves the installing of a blower which can maintain a substantially constant air pressure materially above that of the atmosphere or of wind pressure, and the closing of the openings to the turret substan- 80 tially air-tight.

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

1. In combination, a breech loading gun, 85 a substantially air-tight chamber for the gunner encompassing the rear portion of the gun, and means for maintaining an air pressure in said chamber substantially in excess of atmospheric pressure. 90

2. In combination, a large caliber gun, a substantially air-tight chamber for the gun- 95 ners and encompassing the supports and entire rear portion of the gun, and means for maintaining an air pressure in said chamber substantially in excess of atmospheric pres- 100 sure.

3. In combination, a gun having supports therefor, a chamber encompassing the rear portion of said gun and said supports and 100 having an opening through which the muzzle of said gun extends, means for closing said opening substantially air-tight, a blower for delivering air to said chamber and main- 105 taining therein a gas pressure in excess of atmospheric pressure, a conduit delivering to said blower, and means within said conduit for preventing the admission of sparks or burning particles.

In testimony whereof I have signed my 110 name to this specification in the presence of two subscribing witnesses.

HERMAN BENSCH.

Witnesses:

CLAIR W. FAIRBANK,
JOHN P. DAVIS.