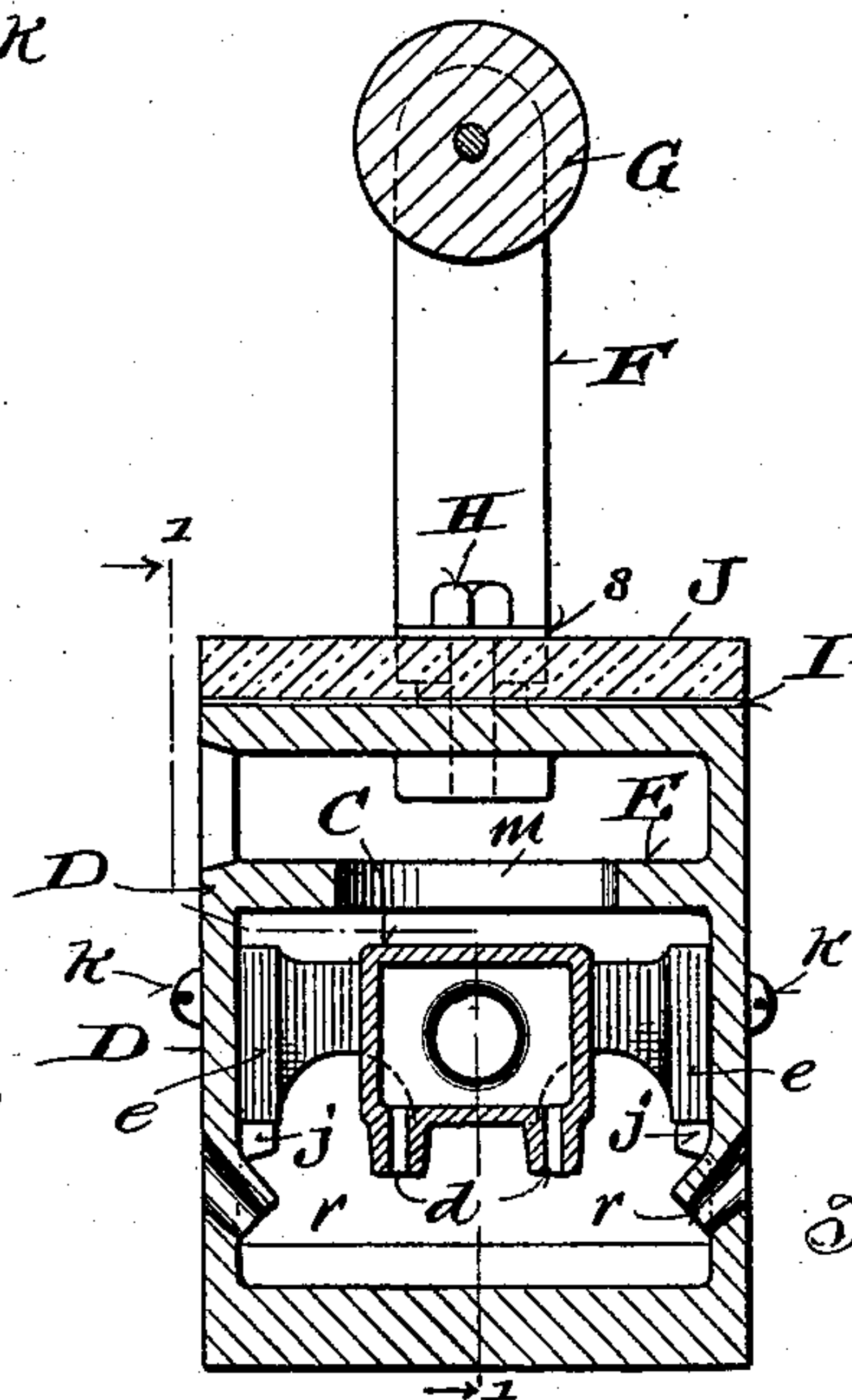
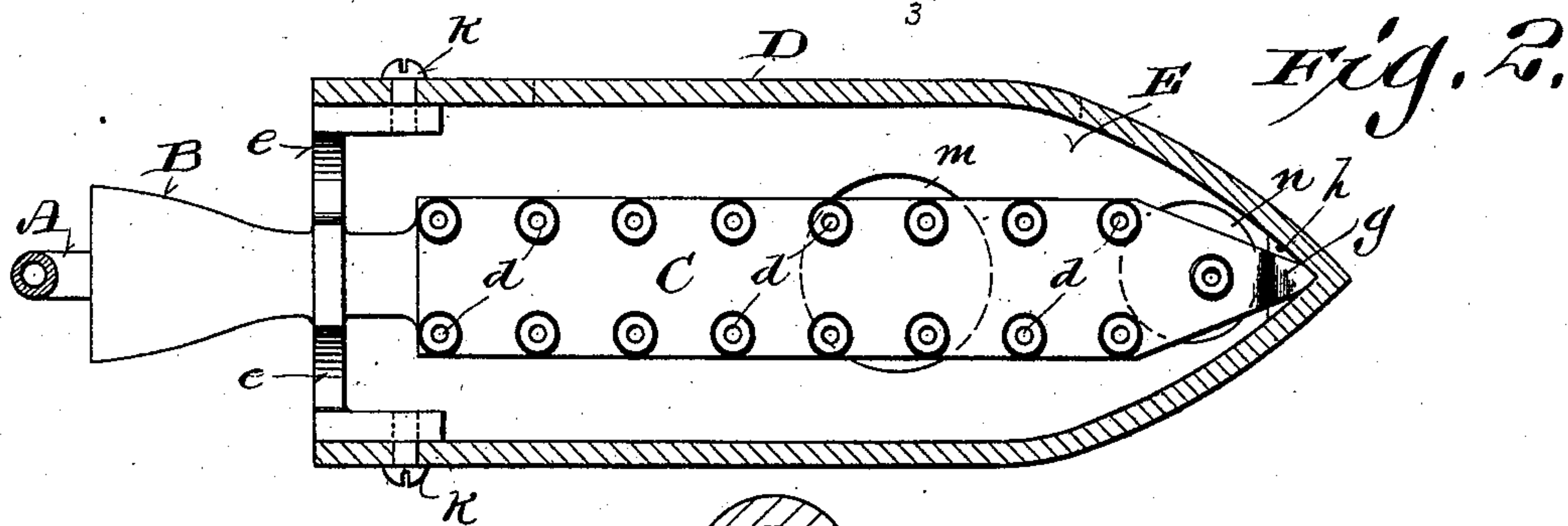
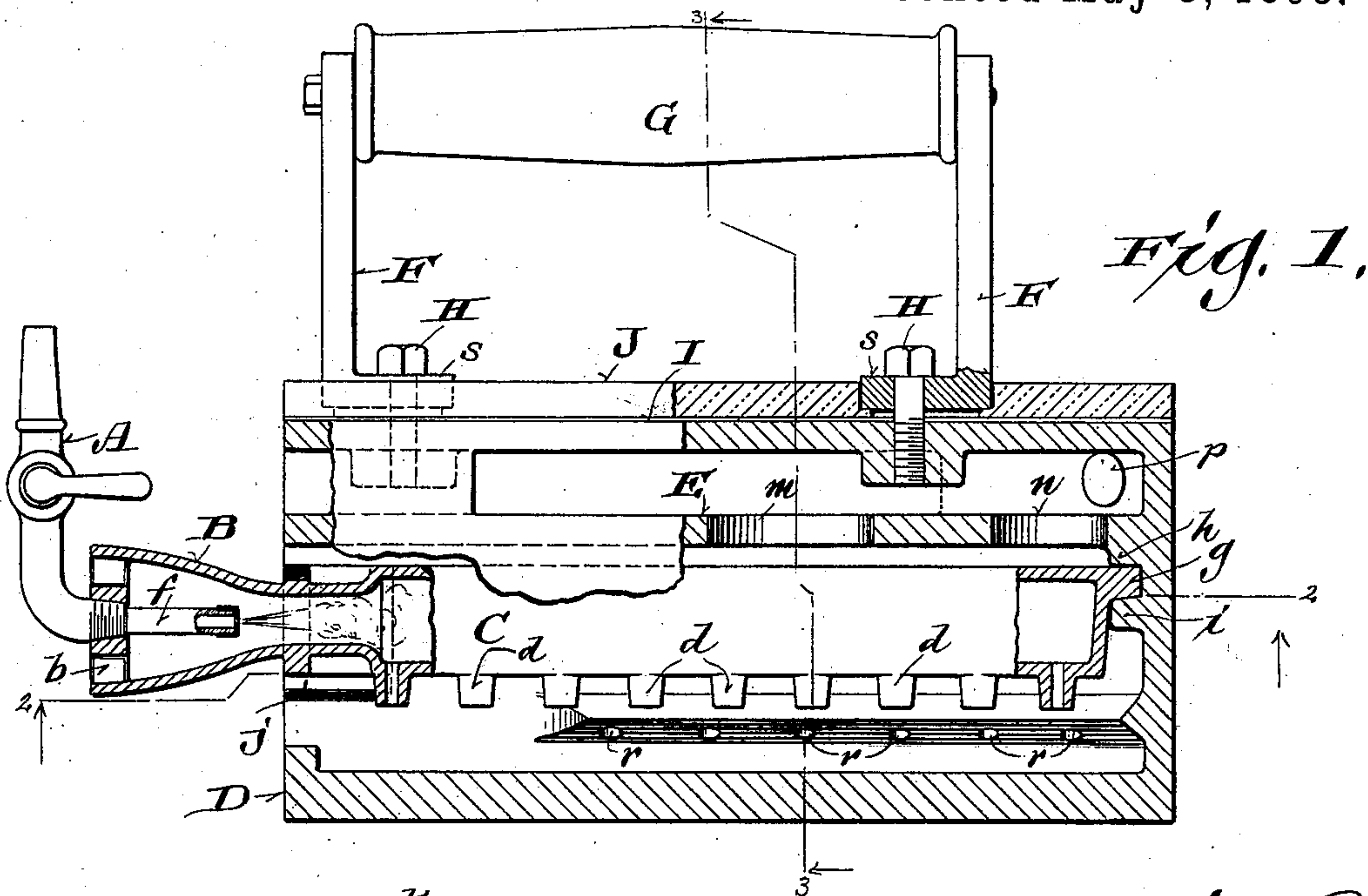


(No Model.)

J. GROSS.
SAD IRON.

No. 603,329.

Patented May 3, 1898.



Witnesses:
C. W. Young,
N. E. Oliphant

Inventor:
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UNITED STATES PATENT OFFICE.

JOSEPH GROSS, OF MILWAUKEE, WISCONSIN.

SAD-IRON.

SPECIFICATION forming part of Letters Patent No. 603,329, dated May 3, 1898.

Application filed September 20, 1897. Serial No. 652,247. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH GROSS, a citizen of the United States, and a resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Sad-Irons; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention has for its object to perfect that class of sad-irons organized for the use of fuel-gas as a heating medium. It therefore consists in certain peculiarities of construction and combination of parts hereinafter particularly described with reference to the accompanying drawings and subsequently claimed.

Figure 1 of the drawings represents my improved sad-iron for the most part in longitudinal section, as indicated by line 1 1 in Fig. 3; Fig. 2, a horizontal section of the sad-iron inverted, the plane of the section being indicated by line 2 2 in Fig. 2; and Fig. 3, a transverse section of said iron, indicated by line 3 3 in Fig. 1.

Referring by letter to the drawings, A represents a gas-cock fitted to a cross-piece *b* in the open outer end of a mixer, the latter being a preferably tapered tube B and a preferably angular expansion-chamber C, this chamber being of itself a laterally-enlarged continuation of the tube from the forward or small end of the same. Depending from the under side of the chamber C are a series of nipples *d*, through which fuel, consisting of mixed gas and air, has outlet for ignition. Atmospheric air drawn into the mixer portion of the burner by flow of gas under pressure partly combines with this gas on its way through the tubular portion of said mixer, and said air and gas expanding in the enlarged chamber portion of the aforesaid mixer they are thoroughly commingled prior to escape through the nipples.

The tube B, its cross-piece *b*, the chamber C, nipples *d*, and angle-wings *e*, extending laterally in opposite directions from said tube, constitute a fuel-gas burner designed for use within a hollow sad-iron D where heating of surface beneath the burner is necessary, and

it is preferable, as a matter of economy, to have all the parts of said burner embodied in a one-piece iron casting.

As herein shown, it is preferable to have the outlet portion *f* of gas-cock A extend some distance forward from the cross-piece *b* of mixer-tube B, its terminus being in the smaller diameter of said tube for the purpose of obtaining the greatest possible force at this point and to prevent the gas from turning back, the result being a better utilization of the gas-supply, steadier flames, and more heat than if said outlet portion of the gas-cock terminated farther back.

The forward end of the burner portion C has a lip *g*, that engages a recess formed by rearwardly-extended parallel lugs *h i* within the shell of the sad-iron at the point of the latter. The lug *i* constitutes a forward support for the burner. The lug *h* and shell-walls of the sad-iron prevent shift of said burner, and ledges *j*, extending inward from said shell-walls adjacent to the rear open end of said iron, constitute supports for the angle-wings *e* of the aforesaid burner. Set-screws *k*, engaging the shell-walls of the sad-iron and angle-wings of the burner, serve to detachably secure the latter in working position.

From the foregoing it will be understood that the burner is rigidly held in working position and cannot be detrimentally effected by violent use of the sad-iron.

In order to increase the opening for admission of air necessary to combustion when free gas is ignited in the sad-iron, the transverse portions of burner-wings *e* are notched, as herein shown.

Contained within the shell portion of the sad-iron above the burner is a horizontal plate E, constituting a partition having apertures *m n* for the escape of products of combustion that arise from the space below, and this partition also serves as a deflector for atmospheric air entering said space over said burner. A draft-opening *p* is provided in each shell-wall of the sad-iron at the point of the latter above the horizontal partition there-in. The air-space above the horizontal par-

tition is shown open at the rear and one side, but it may be open at both sides without departure from my invention in the main. The air-space just specified is employed as a means
5 for preventing undue heating of the sad-iron above the partition E, and by having one side of said air-space closed, as herein shown, the working wrist and face of the operator of said iron are protected from the heat.

10 Each side of the iron is provided with a series of lower apertures *r*, inclined at an angle of about forty-five degrees. These apertures deflect toward the bottom of the sad-iron and are preferably funnel-shaped. The air
15 that finds its way into the sad-iron through the apertures *r* insures support of gas combustion at the outlets of the burner-nipples, especially in the forward portion of said iron, and while the inflow of air through said apertures will
20 ordinarily tend to check the tendency of flames to issue therefrom it will be understood that in case there should be issue of flames the latter will be guided up and away from the fabric upon which the sad-iron is
25 employed. In order to provide for increased length of air-inlets *r*, the metal of the sad-iron shell-walls is thickened where these apertures occur.

The burner-nipples are so disposed that air
30 for support of combustion has free circuit toward the front of the confined space in which ignition of the fuel-gas takes place, thus insuring consumption of all gas escaping through said nipples, and as the atmospheric
35 air entering said space above the burner naturally tends to displace the hot air below a downdraft is thus created to deflect the flames on the surface to be heated. It is also to be understood that the apertures *m n* in
40 the partition E are so arranged as to insure a free circulation of air, as the latter may come from various directions, and in a sad-iron this feature is of especial value, because the gas-flames will not flicker or go out when
45 the device is moved back and forward, side-wise, or up and down.

The standards F of the sad-iron handle G may be secured to the top of the shell portion of said iron by screws H, and to prevent ra-
50 diation of heat from the shell-top an asbestos facing I may be employed thereon. As a means for increasing weight of a standard-size sad-iron a metal plate J, corresponding in contour with the shell-top, may be mounted
55 on the latter above the asbestos facing, such a plate being herein shown provided with seats for the feet *s* of handle-standards above specified.

While the asbestos facing I has been shown
60 and described as located over the shell-top of the iron, it may be found more convenient to locate it under said shell-top.

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

1. A hollow open-rear sad-iron having lower inclined side apertures deflecting toward its bottom and an apertured horizontal partition dividing the sad-iron into upper and lower
70 compartments, the upper one of which has side and front draft-openings, together with a fuel-gas burner having support in the lower one of said compartments and comprising a tube, an expansion-chamber forming a trans-
75 versely-enlarged continuation of the tube at the forward end of same, a series of nipples depending from the expansion-chamber, and a gas-cock supported in said tube.

2. A hollow open-rear sad-iron divided by an apertured horizontal partition into upper
80 and lower compartments, the upper one of which has side and front draft-openings, a recess in the point end of the sad-iron inside the latter below said partition, and a fuel-gas burner comprising a forward expansion-cham-
85 ber having a lip that engages said recess, a series of nipples depending from the expansion-chamber, a rear tube leading into said expansion-chamber, lateral angle-wings extending in opposite directions from the tube,
90 and a gas-cock supported in said tube; rear ledges inside the sad-iron constituting rests for said angle-wings, and set-screws detachably connecting said sad-iron and angle-
95 wings.

3. A hollow open-rear sad-iron divided by an apertured partition into upper and lower
100 compartments, the upper one of which has side and front draft-openings; together with a fuel-gas burner having support in the lower one of said compartments and comprising a tapered tube, an expansion-chamber forming
105 a transversely-enlarged continuation of the tube at the forward end of same, a series of nipples depending from the expansion-chamber, and a gas-cock supported in said tube to have its outlet in the smaller diameter of same.

4. A hollow sad-iron divided by an aper-
110 tured partition into upper and lower compartments, the upper one of which has side and front draft-openings, rear ledges inside the lower compartment, a fuel-gas burner comprising a forward expansion-chamber, a series of nipples depending from the expansion-
115 chamber, a rear tube leading into said expansion-chamber, a gas-cock supported in the tube, and lateral angular wings extending in opposite directions from said tube to rest on said ledges and have detachable connection
120 with the sad-iron.

5. A hollow open-rear sad-iron divided by an apertured partition into upper and lower
125 compartments, the upper one having side and front draft-openings and the lower one inclined apertures that deflect toward the bottom, together with a fuel-gas burner having support in the lower one of said compart-
130 ments and comprising a tapered tube, an expansion-chamber forming a transversely-en-

larged continuation of the tube at the forward end of same, a series of nipples depending from the expansion-chamber, and a gas-cock supported in said tube to have its outlet in the smaller diameter of same.

5 In testimony that I claim the foregoing I have hereunto set my hand, at Chicago, in the

county of Cook and State of Illinois, in the presence of two witnesses.

JOSEPH GROSS.

Witnesses:

FRITZ FRANTZEN,
THOS. CHRISTIANSON.