No. 789,927. PATENTED MAY 16, 1905.

M. MOSSIG.

SOLDERING IRON.

APPLICATION FILED MAR. 10, 1903.

2 SHEETS—SHEET 1.

Fig 1.

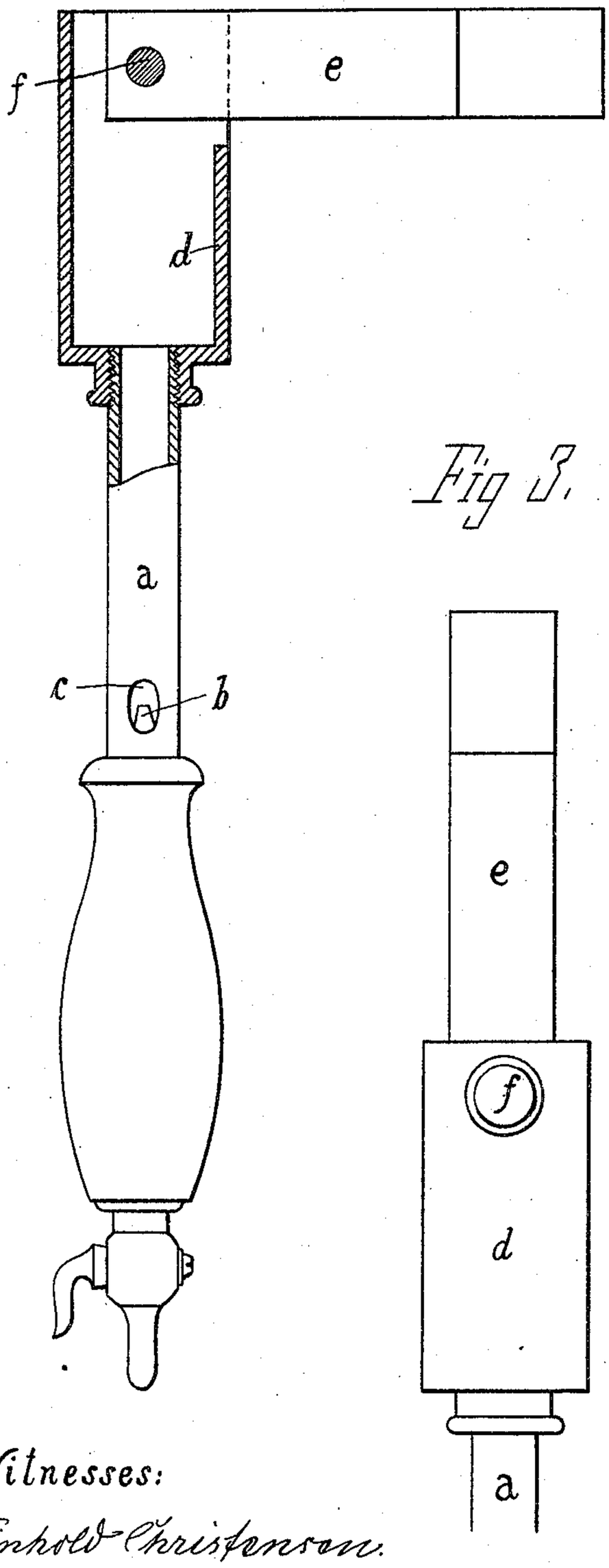

Fig 2.

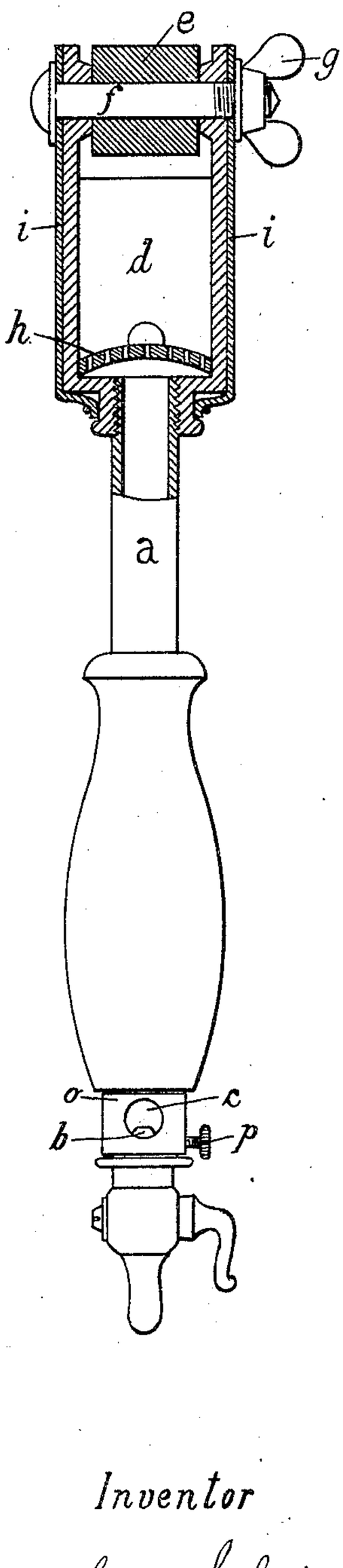

Fig 3.

Witnesses:

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2 SHEETS—SHEET 2.

Fig 4.

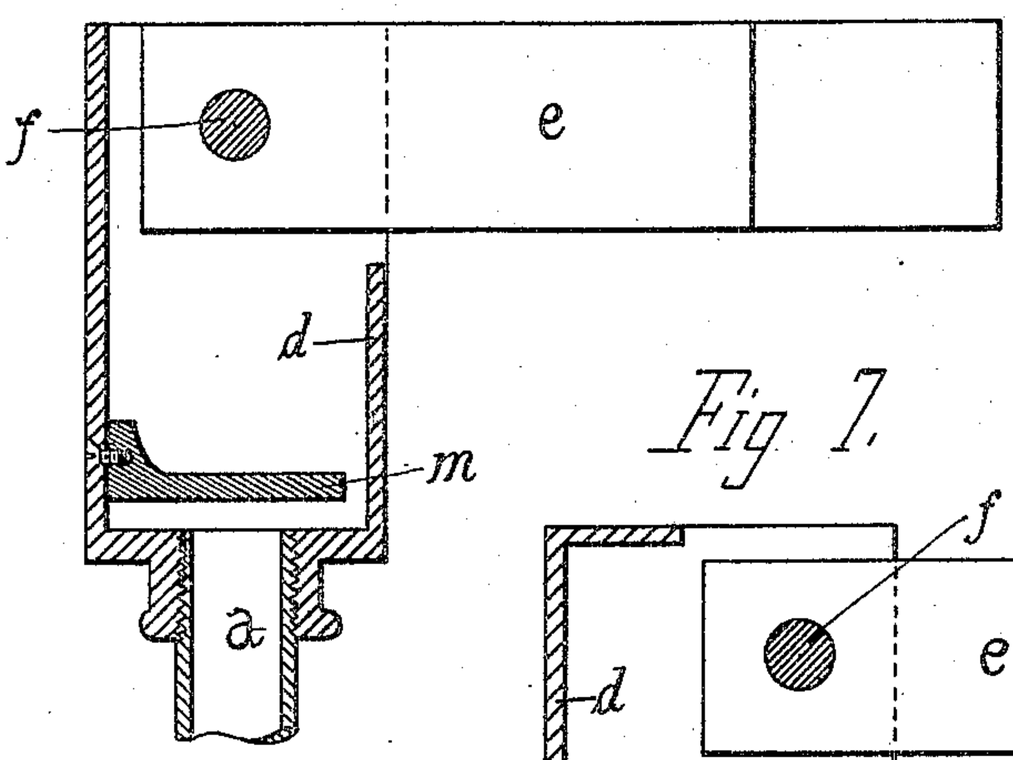


Fig 7.

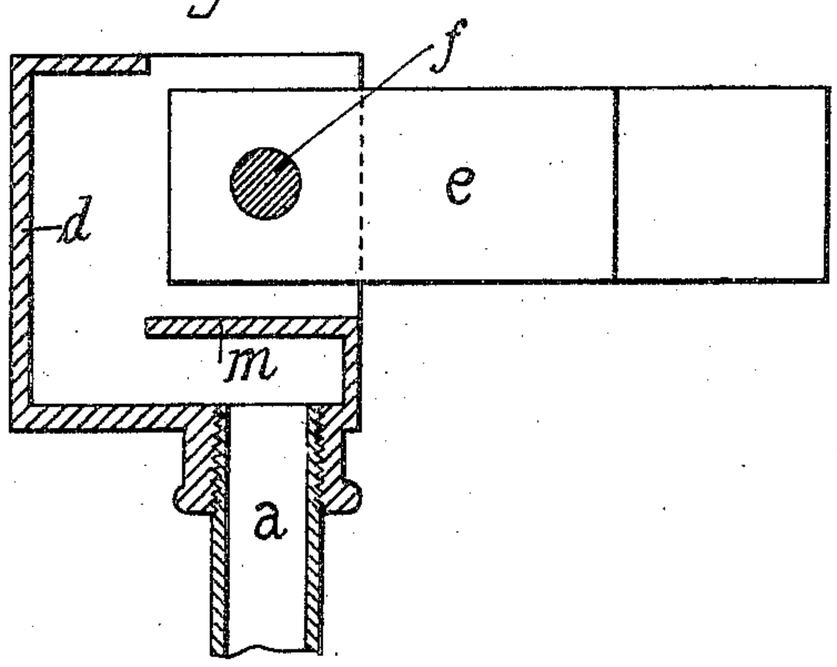


Fig 5.

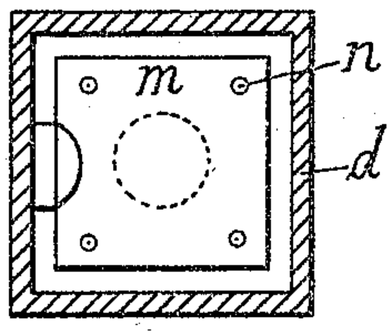
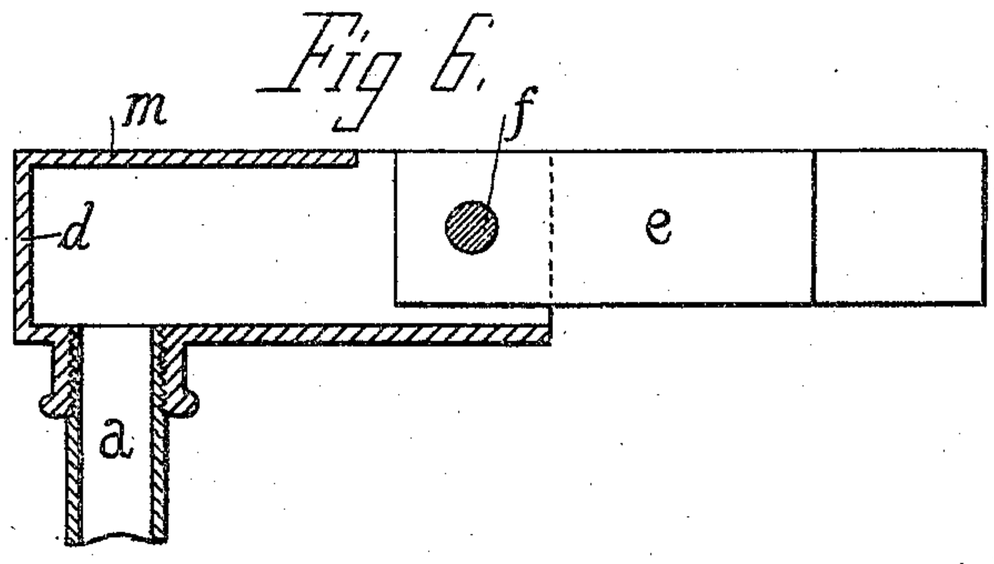


Fig 6.



Witnesses:

Reinhold Christensen.

Edmund Christensen.

Inventor

Max Mossig

No. 789,927. Patented May 16, 1905.

UNITED STATES PATENT OFFICE.

MAX MOSSIG, OF BERLIN, GERMANY.

SOLDERING-IRON.

SPECIFICATION forming part of Letters Patent No. 789,927, dated May 16, 1905.

Application filed March 10, 1903. Serial No. 147,119.

To all whom it may concern:

Be it known that I, MAX MOSSIG, a subject of the King of Saxony, residing at 20ª Bandel street, Berlin, in the Empire of Germany, have invented certain new and useful Improvements in Soldering-Irons, of which the following is a specification.

My invention relates to a gas-soldering iron in which the copper bit is heated by means of a Bunsen burner.

The object of my invention is to provide a combustion-chamber on the end of the mixing-tube of the Bunsen burner, which chamber presents no air-admission apertures, but only outlet-apertures for the combustion-gases, so that air cannot enter the combustion-chamber directly. This chamber is made wide compared with the mixing-tube in order to allow the flame to spread therein, while the narrow mixing-tube prevents the flame from lighting back, although an explosive mixture is conducted in the said tube.

A further object of my invention is to provide a soldering-iron in which the copper bit is pivotally attached to the outer end of the combustion-chamber and partially closes this latter. Thus the copper bit may be fixed in various positions with respect to the combustion-casing and is effectively heated in every one of its positions and partly directly through the flame impinging thereon and partly by transmission of heat from the combustion-casing with which the copper piece is in close contact. By this arrangement the flame is prevented from being cooled through abundant air, as would be the case with apertures which allow the admission of air direct into the combustion-chamber or, if the flame appears directly on the nozzle, in a comparatively wide tube. Further, the flame developed in the combustion-casing is more effectively protected from disturbances which might be caused through external influences, such as wind, rain, vapors of soldering acid, and the like.

It is well known that the combustion of a mixture constituted by a proper proportionate admixture of gas and air proceeds much more speedily and efficiently than that of a mixture containing an insufficient quantity of air, the flame of which must therefore take more oxygen from the atmosphere for complete combustion. An explosive mixture of this kind is obtained in the Bunsen burner by forming at the mouth of the mixing-tube the large combustion-chamber above referred to. By this means the flame is caused to spread laterally, therefore becoming correspondingly shorter and permitting of sudden combustion. Thereby a suction effect is exerted upon the mixing-tube, and the whole of the air necessary for combustion of the gas is sucked in through the mixing-tube. This suction effect is similar to the draft caused by the chimney of a lamp. The gas and the air therefore reach the combustion-chamber as an explosive mixture and burn rapidly without requiring further supply of air, while the products of combustion escape through the passages beside the soldering-bit. As the higher or lower pressure of the gas employed has some influence on the combustion, it is convenient to provide a long mixing-tube with a high pressure and a correspondingly short tube with a low pressure for balancing the differences of effect and obtaining uniform results.

The device is illustrated in the accompanying drawings, in which—

Figure 1 shows the soldering-iron partly in section. Fig. 2 is a partial section through the soldering-iron, the plan of section being at right angles to that of Fig. 1. Fig. 3 is a side elevation of the tool. Figs. 4 and 5 are a vertical longitudinal section and a horizontal cross-section, respectively, of a constructional form. Fig. 6 shows a further modification in which the casing is directed laterally, and Fig. 7 shows an arrangement such that the flame is repeatedly deflected from its direction.

The mixing-tube *a* of the Bunsen burner contains the gas-nozzle *b* and the air-apertures *c*. Upon the mouth of the mixing-tube is screwed a casing *d*, in the free extremity of which the copper bit *e* is pivotally fixed by means of a screw-bolt *f* and nut *g*. In this manner a large chamber is formed at the mouth of the mixing-tube, in which chamber the explosive mixture burns. The bit *e* may either project laterally through a slot in the

casing, giving the device the form of a hammer-shaped soldering-iron, Fig. 1, or it may be erected so as to form a tool running to a point, Fig. 3. The walls of the casing are resilient in some degree, so that when the nut is tightened on the bolt the opposite walls, having inwardly-directed projections between which the copper bit is arranged, are approached to one another and pressed on the bit. Thus the copper bit is fixed in its position, and at the same time the transmission of heat from the casing to the bit is enabled, Fig. 2.

A sleeve *o*, having openings which correspond to the air-admission apertures *c*, may be arranged on the tube *a*, Fig. 2. A set-screw *p* is provided in the sleeve *o* for the purpose of fixing the latter in any desired position. By means of this device the air-admission is controlled by closing the air-apertures to the required degree.

The casing *d*, which is preferably made of malleable cast-iron, is, in the example represented in Fig. 2, furnished with a cover *i* of some material which is a bad conductor of heat, so as to prevent loss of heat.

In order to obviate lighting back of the flame, a wire-gauze *h* or the like is arranged between the combustion-chamber and the mixing-tube in the example represented in Fig. 2. Instead of a wire-gauze or perforated plate *h* a plate *m* may be arranged near the bottom of the chamber, leaving slit-shaped openings between its edges and the wall of the casing, as illustrated in Figs. 4 and 5. Besides these passages perforations *n* of suitable size and number may be provided in the plate *m*. When the casing *d* is laterally directed, as shown in Fig. 6, the flame issuing from the mouth of the mixing-tube *a* strikes against the opposite wall *m*, by which it is deflected toward the copper bit *e*.

In the modification shown in Fig. 7 the combustion-chamber is arc-shaped, a plate *m* extending transversely through it from one side of the casing.

I have shown a certain construction for purposes of illustration; but it is evident that the construction may be varied without departing from the spirit of my invention, and I therefore do not wish to be limited to the constructional forms shown. The casing may be of prismatic or cylindrical form, for example.

What I claim as my invention, and desire to secure by Letters Patent, is—

In an apparatus of the class described, a Bunsen burner, a combustion-chamber attached thereto of larger diameter than said burner having a longitudinal slot at its end, and a soldering-iron point movable in said slot pivoted at one of its ends on an axis at right angles to the said burner capable of a movement of ninety degrees without removal from its pivots and adapted to be fixed at any point in its path by means of a bolt and nut coincident with the axis of rotation of the said point.

MAX MOSSIG.

Witnesses:
WOLDEMAR HAUPT,
HENRY HASPER.