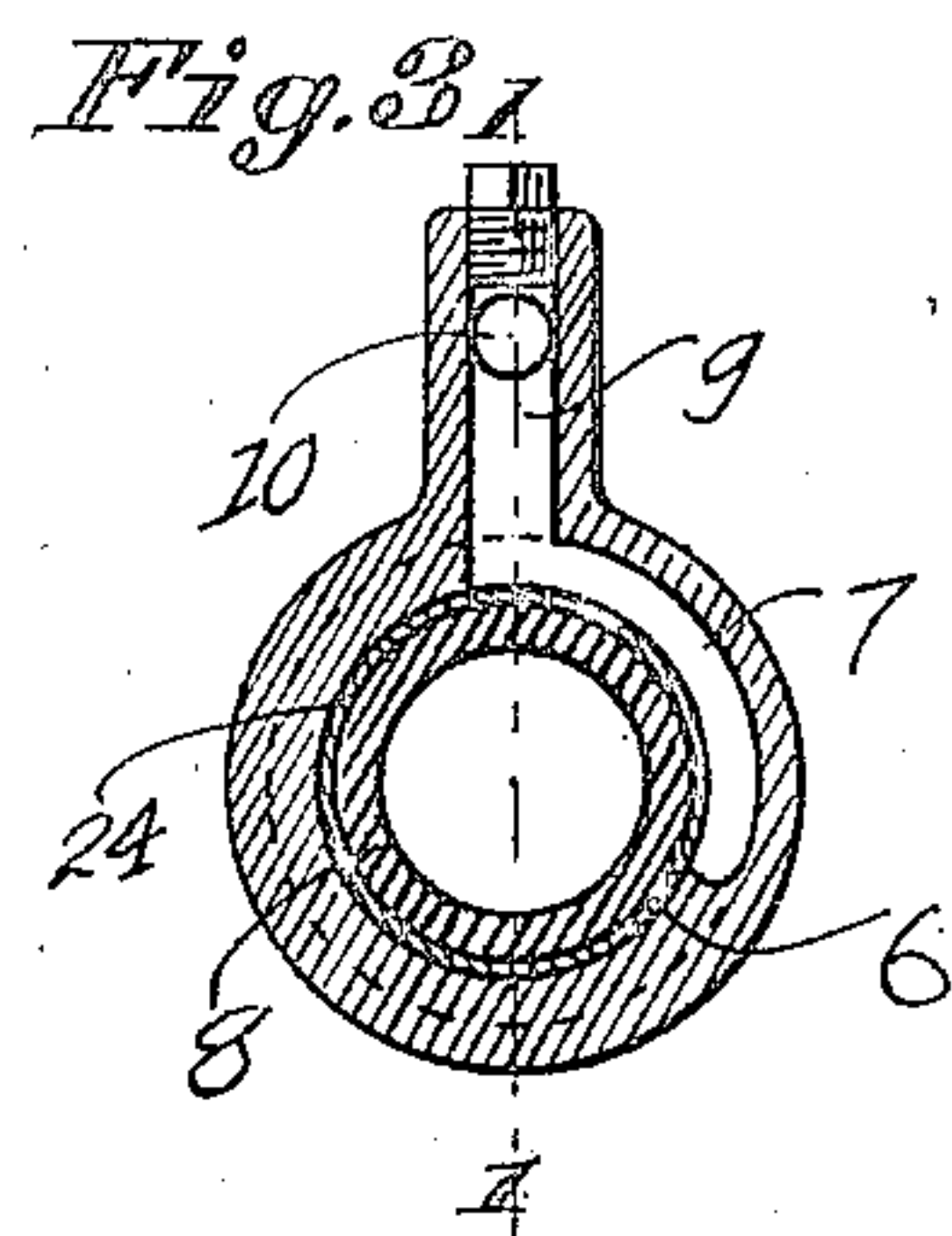
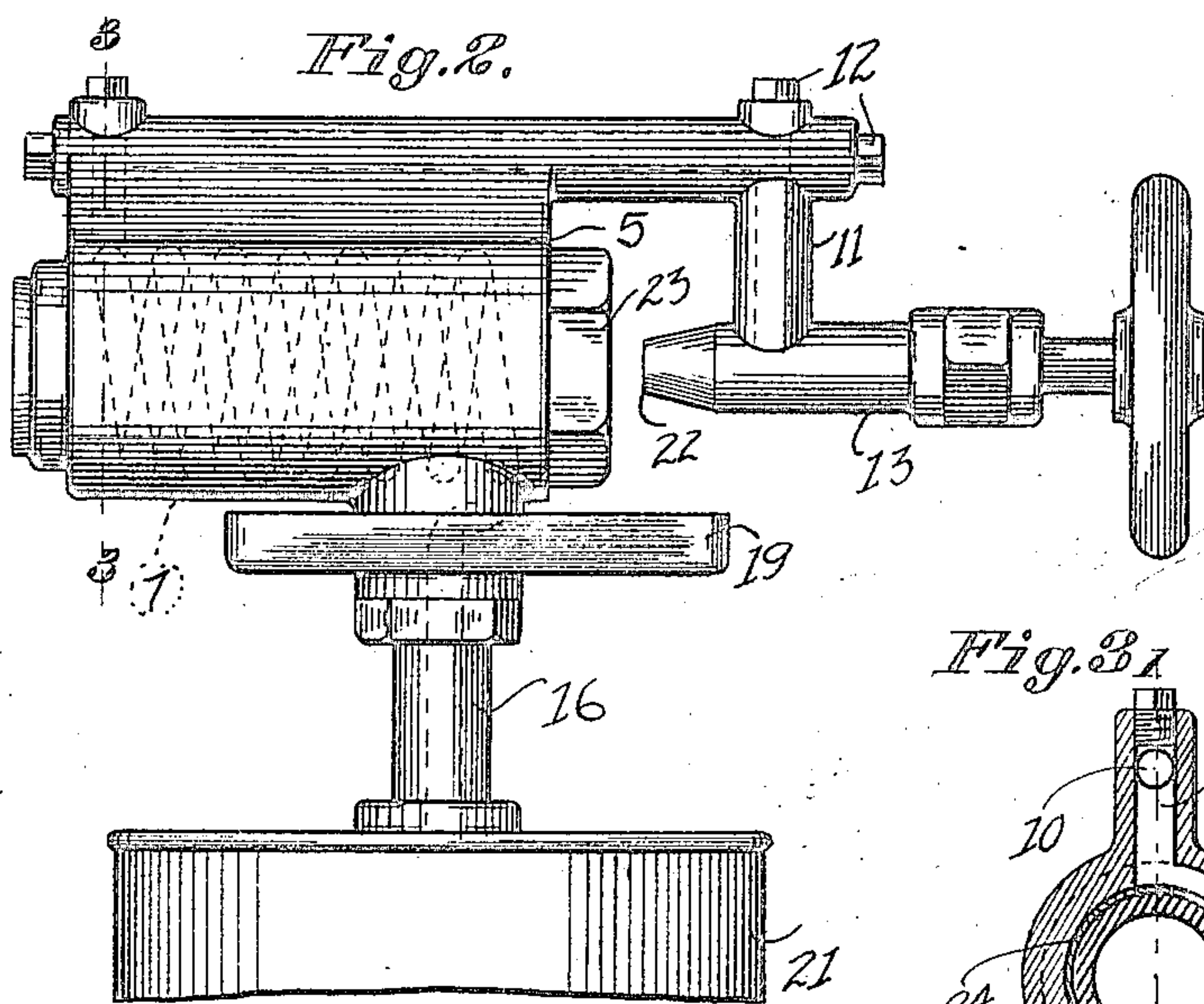
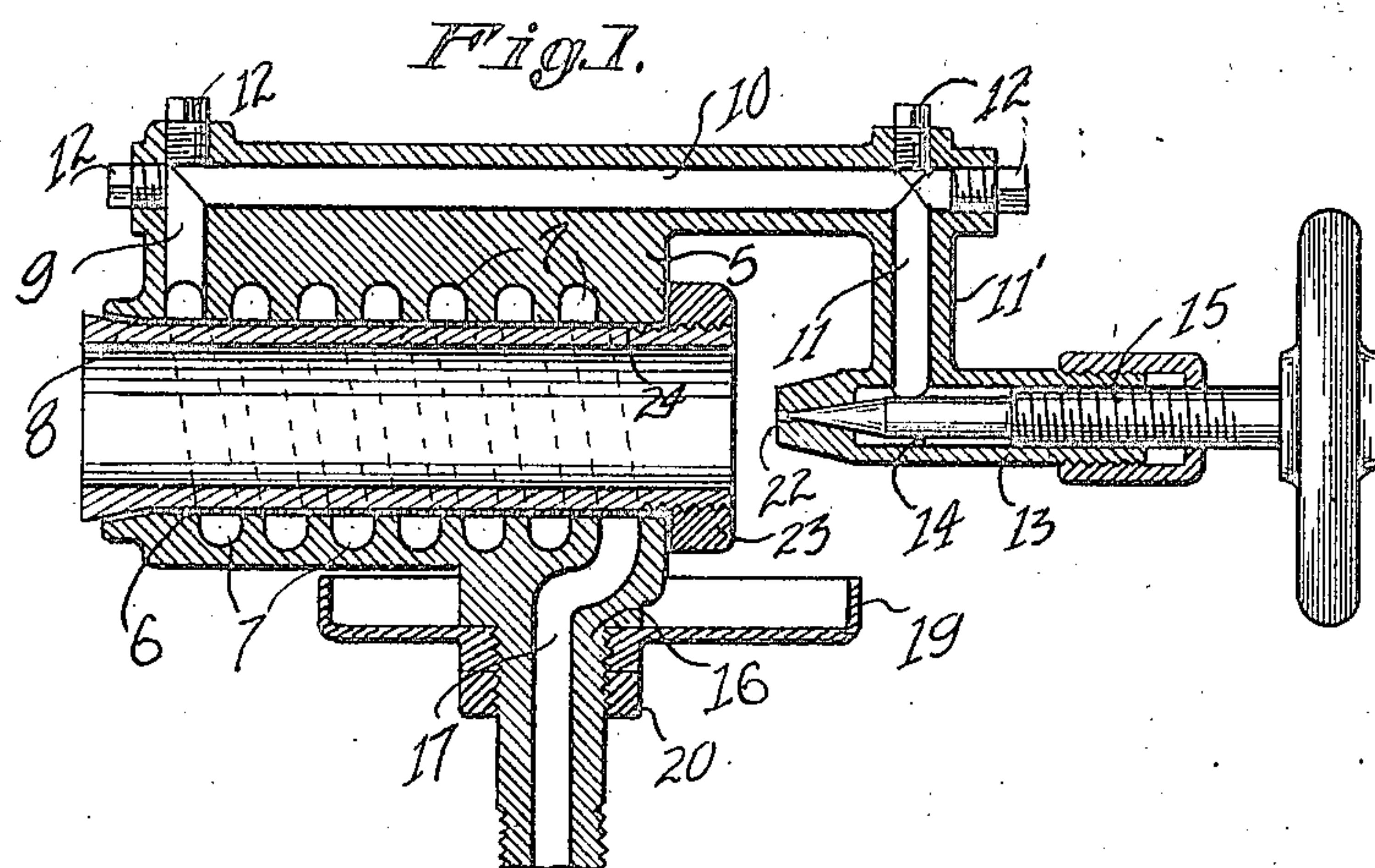


Jan. 2, 1923.

1,441,062.

T. R. CAMPBELL.
BURNER AND HEATER.
FILED DEC. 10, 1921.



Inventor.
T. R. Campbell
By Victor J. Evans attorney

UNITED STATES PATENT OFFICE.

THOMAS R. CAMPBELL, OF SAN DIEGO, CALIFORNIA, ASSIGNOR OF ONE-HALF TO
JOHN R. CARLISLE, OF SAN DIEGO, CALIFORNIA.

BURNER AND HEATER.

Application filed December 10, 1921. Serial No. 521,441.

To all whom it may concern:

Be it known that I, THOMAS R. CAMPBELL, a citizen of the United States, residing at San Diego, in the county of San Diego and State of California, have invented new and useful Improvements in Burners and Heaters, of which the following is a specification.

This invention relates to improvements in burners and heaters used for soldering, brazing, welding, preheating in connection with acetylene or other autogenous welding, burning off paint and other like purposes.

The principal object of this invention is to provide means in the form of spiral grooves provided in the casing of the device and positioned about the combustion or heating tube thereof, so that the casing can be readily freed of carbon or other deposits, which cleaning action cannot be easily performed when the usual spiral coils, as now employed, encircle the heating tube or are disposed within the same.

A further object of this invention is to provide a heating tube of such construction that it can be readily replaced in the casing at a minimum cost and thus provide a burner which will be economical to manufacture and yet at all times highly serviceable and efficient.

Other objects and advantages will be apparent during the course of the following description.

In the accompanying drawings forming a part of this specification and in which like numerals are employed to designate like parts throughout the same,

Fig. 1 is a vertical central longitudinal section through the burner on the line 1—1 of Fig. 3,

Fig. 2 is a side elevation of the burner, and

Fig. 3 is a sectional view through the device, on the line 3—3 of Fig. 2.

In the accompanying drawings wherein for the purpose of illustration is shown a preferred embodiment of my invention, the numeral 5 designates a casing centrally bored as at 6 and having a plurality of spiral grooves 7 formed therein and so positioned with relation to the casing that they surround a tube 8 inserted in the bore of the casing. Adapted to communicate with the spiral grooves adjacent the front of the casing is a short passageway 9 formed at a right

angle to the tube 8 and then continuing in a plane parallel to said tube as indicated by the numeral 10, and finally terminating in a short passageway 11 formed in the casing and disposed parallel to the passageway 9. Plugs 12 are conventionally disposed adjacent the points of communication of the respective passageways in order that access may be had thereto when it is desired to clean these parts of the casing. As shown to advantage in Fig. 1 the passageway 11 is formed in an extension 11' of the casing, which extension has connected thereto a tubular valve casing 13 provided with a channel 14 which leads to the passageway 11. In this passageway 14 there is provided the conventional form of needle valve 15.

Disposed in the lower portion of the casing 5 and formed integral therewith is a depending vertical portion 16 provided with a distorted channel 17 which is adapted to communicate with the rear extremity of the spiral grooves 7. The numeral 19 designates a cup or priming pan which is detachably secured to the vertical portion 16 by a locking nut 20. This priming pan is adapted to hold the liquid used in the initial heating of the tube and, as conventionally used, the pan is first filled from a container or receptacle 21 which serves as a source of fuel supply. The liquid then in the priming pan affords a quick and efficient heating and priming medium prior to the direct use of the device as a burner.

From this construction it will be apparent that liquid to be burned as fuel, after the initial priming action has been completed, will pass from the receptacle 21 through the spiral grooves 7 and then into the respective communicating passageways and finally into the enlarged passageway 14. By virtue of the construction of the needle valve 15 the discharge from its nozzle 22 will be regulated and limited and thus the fuel will be only discharged after being converted into a highly combustible gas.

It is well known in a device of this nature, that the conversion of the liquid to a gas is caused by a continued and intensive heating process that the liquid is subjected to, as it passes through either the heater per se, or the spiral coils of the device. In this device, as the liquid passes through the spiral grooves and circulates about the heating tube 8, the heat is maintained by a continued

combustion of the gas as it is discharged from the nozzle 22 of the valve casing 13 and then passes through the tube 8 for use beyond the front extremity of the same.

5 By employing the spiral grooves 7 it will be obvious that I have entirely avoided the use of the ordinary spiral coils, which either surround the heating tube or are disposed therein, the construction of the said coils, 10 making them difficult to be cleaned and freed of the usual carbon or other deposits. With my improved burner it is only necessary to remove the heating or combustion tube 8 and access may be had to the spiral grooves for 15 the purpose of readily cleaning the same, by use of any conventional cleaning article, preferably constructed of wire, that may suggest itself to the user or manufacturer.

It has also been experienced heretofore 20 that the metal, of the heating or combustion tube, is of such a nature, that after being heated for any length of time, it will become oxidized and is then a poor conductor of heat. In devices so constructed it is 25 necessary to purchase a new burner, because the heating or combustion tube is practically useless. By employing the heating tube 8 detachably secured in the casing, I have overcome this disadvantage, because the 30 heating tube employed in this device, when heated for a length of time and accordingly oxidized, can be readily replaced at a nominal cost without in any way diminishing the effectiveness of the casing and the 35 associated parts of the burner.

To prevent the danger of the tube 8 being accidentally displaced, I have provided a binding nut 23, which is threaded, as shown to advantage in Figure 1, on the rear ex- 40 tremity of the tube 8 and serves to retain the tube in the casing. The tube 8 has a flange or external taper on the front end which is brought to a tight fit in the casing by means of the binding nut 23. While not 45 necessary to make an efficient burner, but in order to facilitate the removal of the tube 8 after the burner has been used, a thin flexible copper tube 24 is interposed between the tube 8 and the casing. By a considera- 50 tion of Figure 1, it will be observed, that the copper tube serves as a gasket for the front end of the tube 8 and by being bent adjacent its rear extremity serves also as an annular gasket for the binding nut 23. When 55 it is desired to extract the tube 9, it is only necessary to remove the nut 23 therefrom and then the tube can be withdrawn from the body of the casing by any conventional extracting implement.

60 The priming pan, before referred to, is preferably used when the device is employed as a blow torch. As shown to advantage in Figure 1, it is manifest that the pan can be readily detached from the feed tube 16, 65 and the burner can then be used without

the pan. The feed tube can be positioned in a plane parallel to the plane of the tube 8. While I have shown the feed tube 16 integrally formed with the casing 5 and directly connected to the fuel reservoir, it is 70 to be understood that a flexible connection can be made between the said casing and the reservoir, and then the reservoir can be positioned at a distance remote from the burner itself. 75

It is to be understood that the form of my invention herewith shown and described is to be taken as a preferred example of the same, and that various changes in the shape, size and arrangement of parts may be re- 80 sorted to without departing from the spirit of the invention or the scope of the subjoined claims.

Having thus described my invention, I claim: 85

1. A device of the character described comprising, a casing provided with a central bore and having a plurality of continuous spiral grooves and communicating angular passageways, a combustion tube de- 90 tachably positioned in the bore of said casing, and means connected to said casing for supplying fuel through the grooves of the passageways of said casing to the said tube, substantially as and for the purpose de- 95 scribed.

2. In a device of the character described the combination, with a casing having a central bore provided therein and a plurality of continuous spaced spiral grooves and communicating angular passageways, of a manually controlled needle valve connected to said casing and having a passageway therein communicating with the passageways of said casing, and a fuel container con- 100 nected to an extension of the casing having a distorted passageway therein adapted to permit the supply of fuel to be fed to said tube through the medium of the grooves and passageways of said casing. 110

3. In a device of the character described the combination with a casing having a central bore provided therein and a plurality of continuous spaced spiral grooves and communicating angular passageways, of a manually controlled needle valve connected to said casing and having a passageway therein communicating with the passageways of said casing, a fuel container connected to an extension of the casing having 120 a distorted passageway therein adapted to permit the supply of fuel to be fed to said tube through the medium of the grooves and passageways of said casing, and a priming cup detachably secured to said casing, substantially as and for the purpose described. 125

4. A device of the character described comprising a tubular casing having a plurality of spiral grooves and communicating passageways therein, a thin tube positioned 130

in the bore of said casing and having its rear extremity bent at a right angle to the body of the tube so as to provide a gasket, a combustion tube positioned within said thin tube and provided with a binding nut on its rear extremity adapted to engage the gasket of the said thin tube, and means connected to said casing for supplying fuel through the grooves and passageways of said casing to the said tube, substantially as 10 and for the purpose described.

In testimony whereof I affix my signature.

THOMAS R. CAMPBELL.