

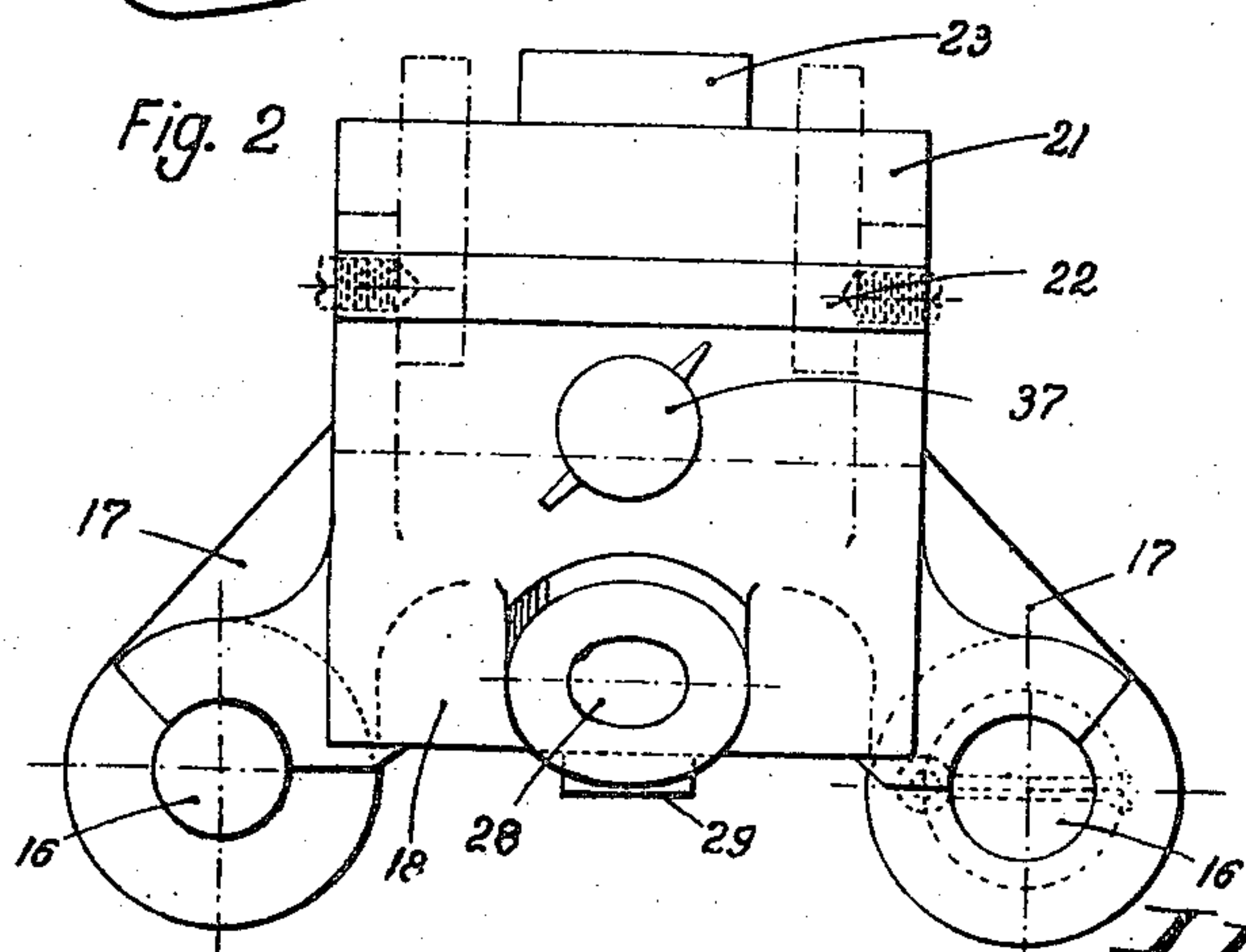
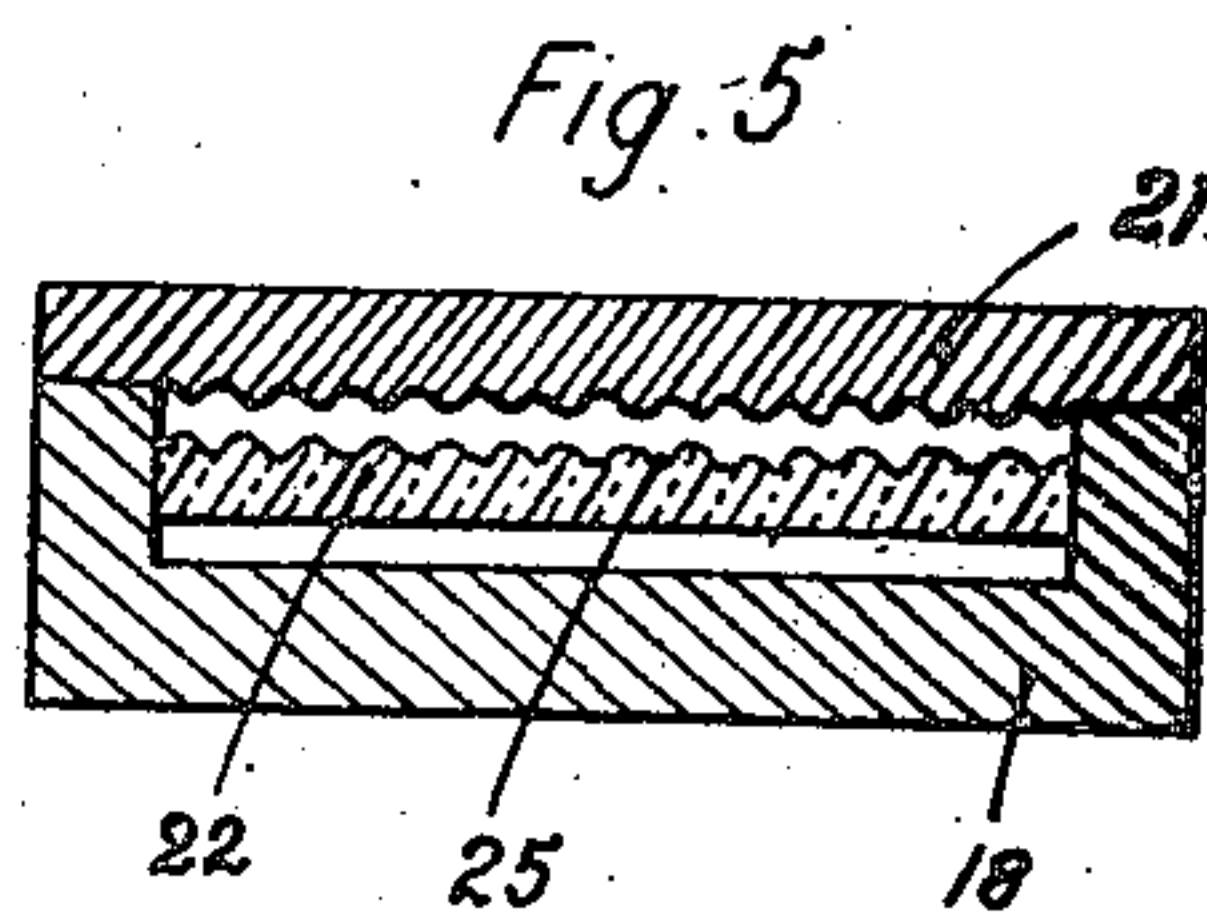
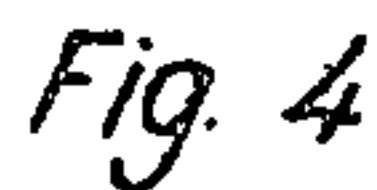
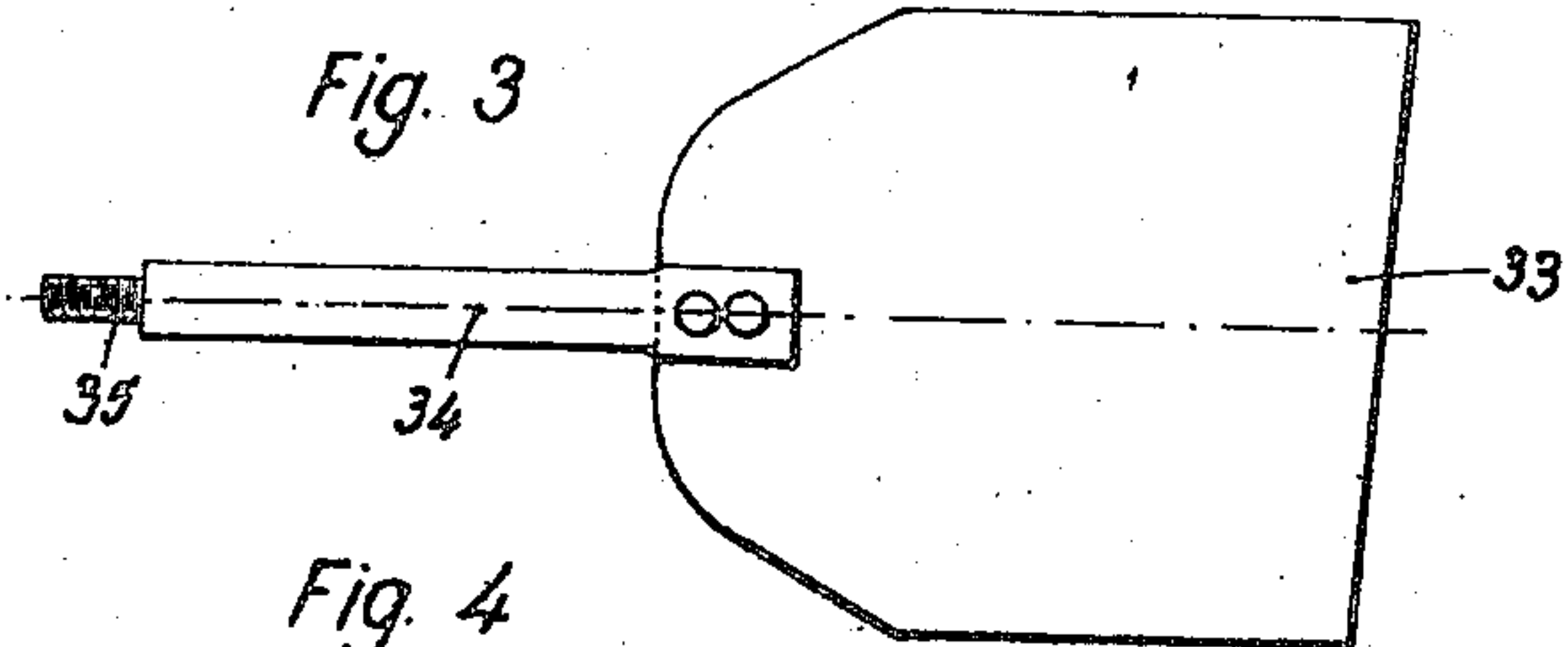
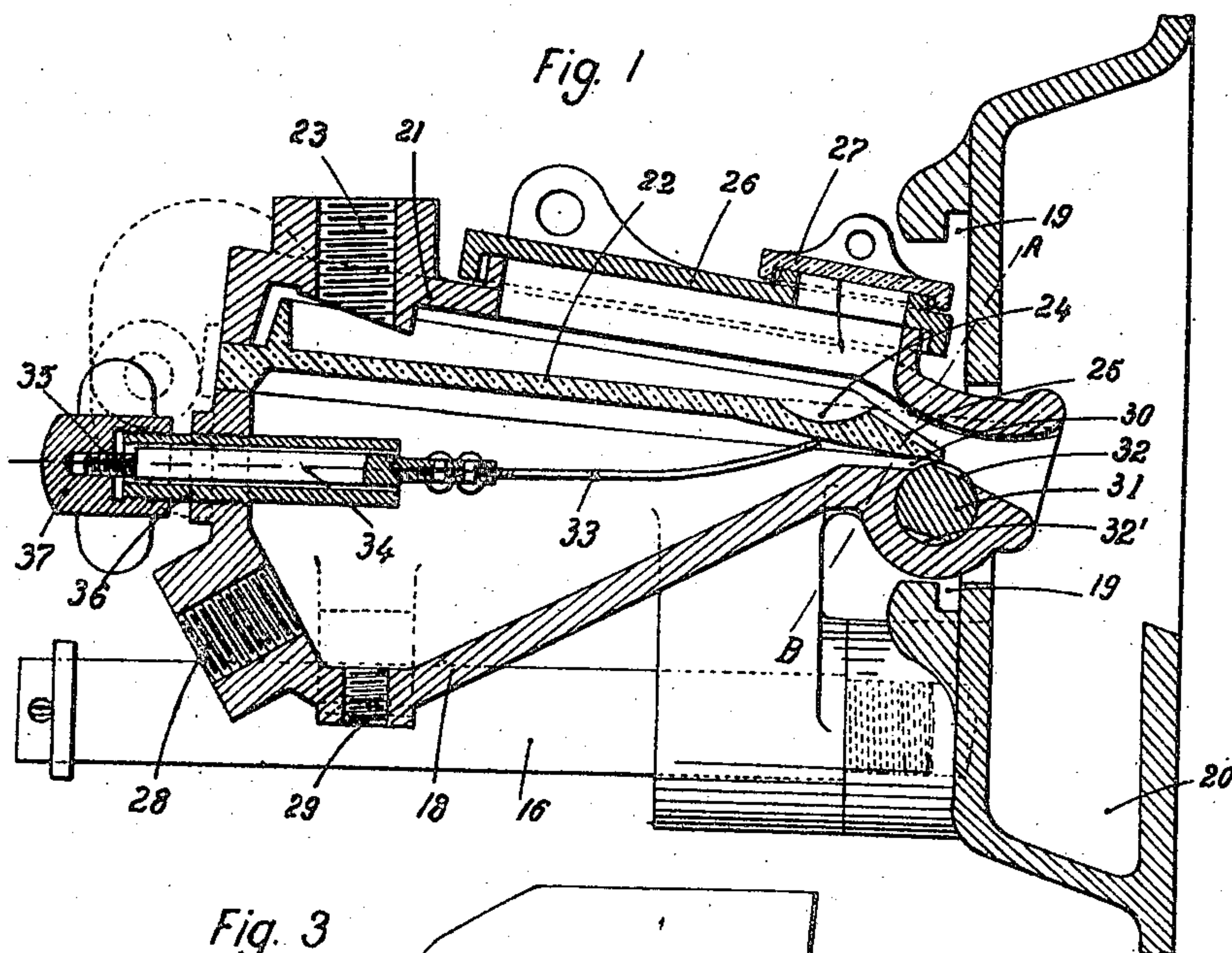
**June 19, 1923.**

### C. LINKÉ

**1,459,226**

# BURNER FOR LIQUID COMBUSTIBLES

Filed June 23, 1921



Inventor  
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1,459,226

# UNITED STATES PATENT OFFICE.

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## BURNER FOR LIQUID COMBUSTIBLES.

Application filed June 23, 1921. Serial No. 479,899.

*To all whom it may concern:*

Be it known that I, CHARLES LINKÉ, engineer, citizen of the French Republic, residing at Paris, in the Department of the Seine, France, have invented certain new and useful Improvements in Burners for Liquid Combustibles, of which the following is a specification.

The invention has for its subject improvements in burners for liquid combustibles which permit of obtaining complete combustion without smoke of liquid combustibles of any density and the invention relates more particularly to liquid combustibles of the less fluid type such as mazout, naphtha, heavy oils, etc.

In its simplest form, the burner essentially comprises a casing divided in two superposed compartments one of which receives the liquid combustible, the other being in communication with a suitable source of fluid under pressure. The two compartments which are of rectangular cross section are very shallow and lead to a nozzle or distribution mouth-piece disposed in a horizontal plane in such a manner as to direct into the furnace a sheet of atomized combustible which escapes from the burner.

In the accompanying drawing:

Figure 1 is a transverse section of a burner constructed according to the invention.

Figure 2 is an end view of the same burner, in elevation.

Figure 3 is a plan view of the cleaning tool of the burner.

Figure 4 shows the handle of the cleaning tool shewn on Fig. 3.

Figure 5 is a cross section through the nozzle-line A—B, Fig. 1.

The burner, Figures 1 and 2, is mounted on two rods 16—16 fixed to the front wall of a furnace. These rods pass through two brackets 17—17 cast integrally with the bottom part 18 of the burner; the two rods act as slides on which the burner can be moved back when cleaning is necessary. The connections of the burner with the mains is made by flexible pipes and proper knee joints. If desired, the two rods could be made of tubing, through which the air necessary to the combustion could pass.

On the furnace wall are provided two grooves 19—19 also, in which can be slid a plate, in order to close the opening in the

wall and protect it, when the burner is set back; cold air is then prevented from entering the furnace and injuring its parts.

The front wall is provided with a kind of cup 20 also cast integrally with it, and in this petroleum is poured for starting the burner.

The compartments of the burner comprise, a top part 21, a bottom part 18, and an intermediate plate 22 on which falls the liquid combustible coming from the tubing 23.

Towards its end the plate 22 is provided with a transverse groove 24 in which the liquid fuel poured on it flows, distributing itself equally across the width of the plate before flowing over the extreme end which has the shape of a weir.

The groove 24 can be placed if required just underneath the tubing or opening 23, it would act there as a kind of reservoir.

A somewhat large opening is provided on the top part 21 of the burner, it is closed by a cover or cap 26 which is lifted for inspection or cleaning; said cap is itself provided with a smaller opening which can be closed by a cover 27 linked to a chain. When the burner is acting, cover 27 is removed and part of the air required for combustion passes through the opening, as shewn by the arrow, said air flowing from above to the point where the liquid fuel is pulverized.

The top part of the nozzle as well as the tongue 25 of plate 22 are corrugated as shewn Figure 5; these ridges produce undulations in the jet, increasing the surface of contact between the combustible liquid and the hot air supplied to the furnace, and so contributing to the total combustion.

In the bottom part 18 are provided two openings 28—29 to be connected, 28 with the pipe through which flows the fluid required for the pulverization, and 29 with a blow-off cock.

The vertical extent, as well as the width, of the passage 30 for the pulverizing fluid is regulated by a cylindrical piece 31 on the circumference of which two flat parts 32—32<sup>1</sup> have been cut, one narrower than the other. Regulation is obtained by turning round said piece 31 of the required amount. When in its right place piece 31 is fixed with a set screw not shewn.

The cleaning of the opening 30 is made with a scraper 33, Figures 1 and 3, fixed on a handle 34 on the remote end of which is



a screw 35. This handle can slide in a sleeve 36 screwed in the bottom of the burner; said sleeve, when the burner is working, being closed by a plug 37, which plug can be  
 5 screwed on the sleeve and on the screw 35 of the handle 34; the bottom part of the burner is on account of this, proof against leakage, and besides the scraper is secured in the sleeve.

10 For cleaning the plug 37 is removed and one screws the handle 38 through 39 to the screw 35 of the scraper 33. A reciprocatory motion is then imparted to the cleaning tool, and the accumulated resinous dirt or carbon  
 15 is easily scraped away, the skew shape of the edge of the tool, Figure 9, helping the cleaning. The above method of cleaning is particularly good when the chambers work regularly under pressure, it is not necessary  
 20 in this case to take the burner to pieces.

In the flat burners to which the liquid combustible is supplied from above, as described above, the cover can conveniently be made with hinges so that it can easily be  
 25 lifted in order to uncover entirely the channel in which flows the liquid. In this case it will be necessary of course to disconnect the piping which then must be provided with proper quick setting joints. If the  
 30 cover is made to oscillate horizontally on a pivot, the changes in shape of the piping may be small and disconnection avoided. If there is no pressure inside, the cover, of course, may be simply put on; in this case  
 35 closed connection between the burner and the feeding piping is unnecessary, and the liquid fuel may then descend through an opening on which a funnel could be placed.

When the burners are divided in several  
 40 parts which can be either connected or disconnected through an automatic regulator of feed, it is necessary to have as many separate pipes or funnels that there are separate burners, but in order to prevent the  
 45 tendency of the liquid fuel, in this case, to

distribute itself all over, it is good to provide some kind of guide plates from which the liquid falls in drops.

#### Claims:

1. In a burner for liquid fuel the combination of upper and lower chambers separated by a medially arranged fuel carrying plate, opposite openings formed in the walls of said chambers and extending along the margin of said separating plate, means for  
 55 maintaining a flow of gas under pressure through one of said chambers and from the said opening in the wall thereof, means for maintaining a flow of flame-nourishing air through the other chamber and from the  
 60 said opening in the wall thereof, and means for maintaining a stream of fluid fuel over said plate and from the margins thereof between the openings in the chambers.

2. In a fluid fuel burner a transversely  
 65 extending plate adapted to sustain a stream of fluid fuel and to allow the fuel to escape by gravity over its edge, a nozzle wall arranged beneath and opposite the edge of said plate and forming therewith a nozzle,  
 70 such nozzle forming the orifice of a conduit for compressed gas, and a movable member arranged adjacent the orifice formed by and between the said nozzle wall and the edge of said plate and by movement effecting va-  
 75 riation in size of such orifice.

3. In a fluid fuel burner the combination with a transversely extending plate adapted to sustain a stream of fluid fuel and to allow the fuel to escape by gravity over its  
 80 edge, a nozzle wall arranged beneath and opposite the edge of said plate and forming therewith a nozzle, means for causing a stream of compressed gas to flow through said nozzle, and a scraper borne by the struc-  
 85 ture and adapted to be advanced through said nozzle and retracted again to inactive position.

In testimony whereof I affix my signature.

CHARLES LINKE.