

No. 767,179.

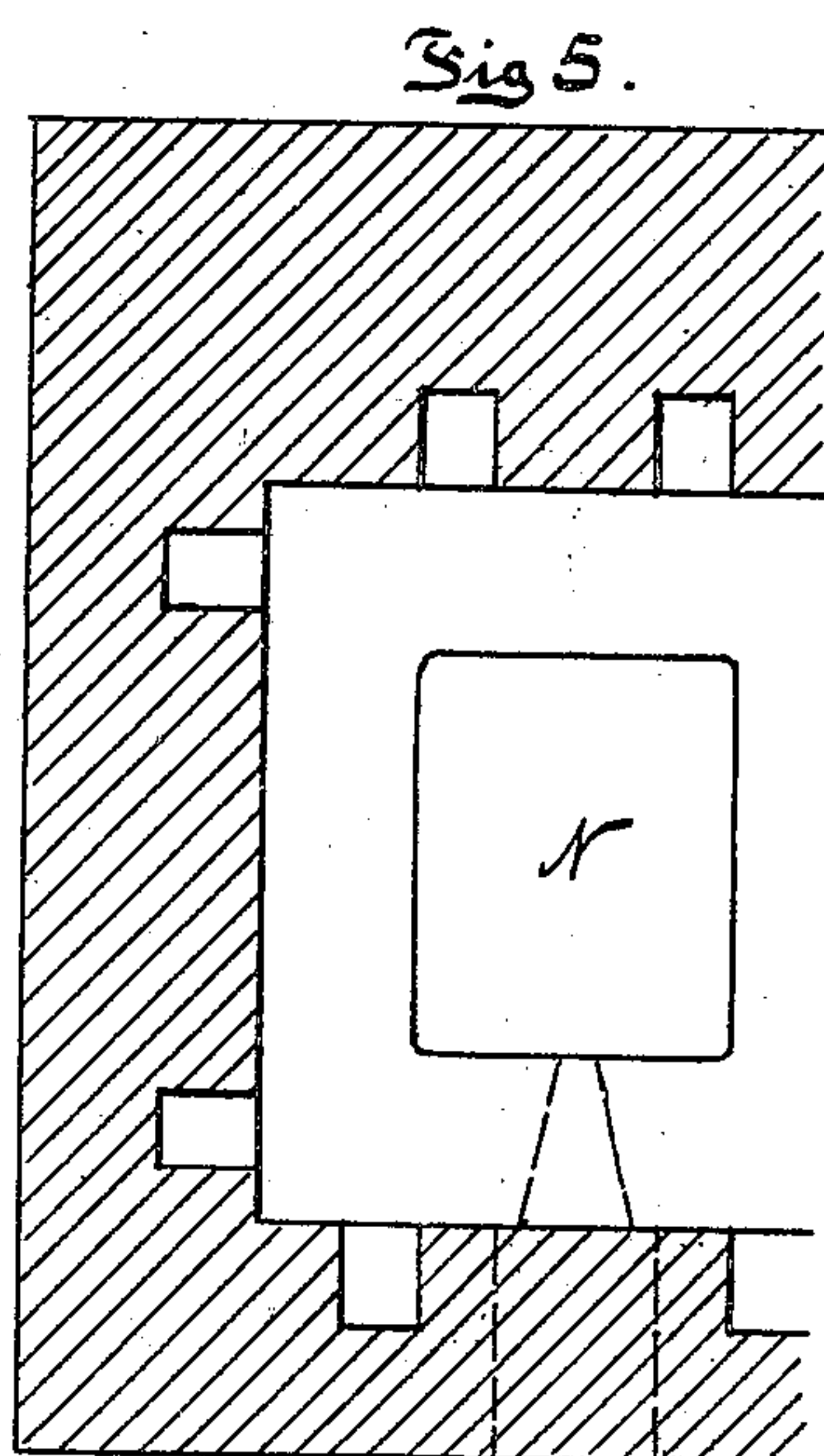
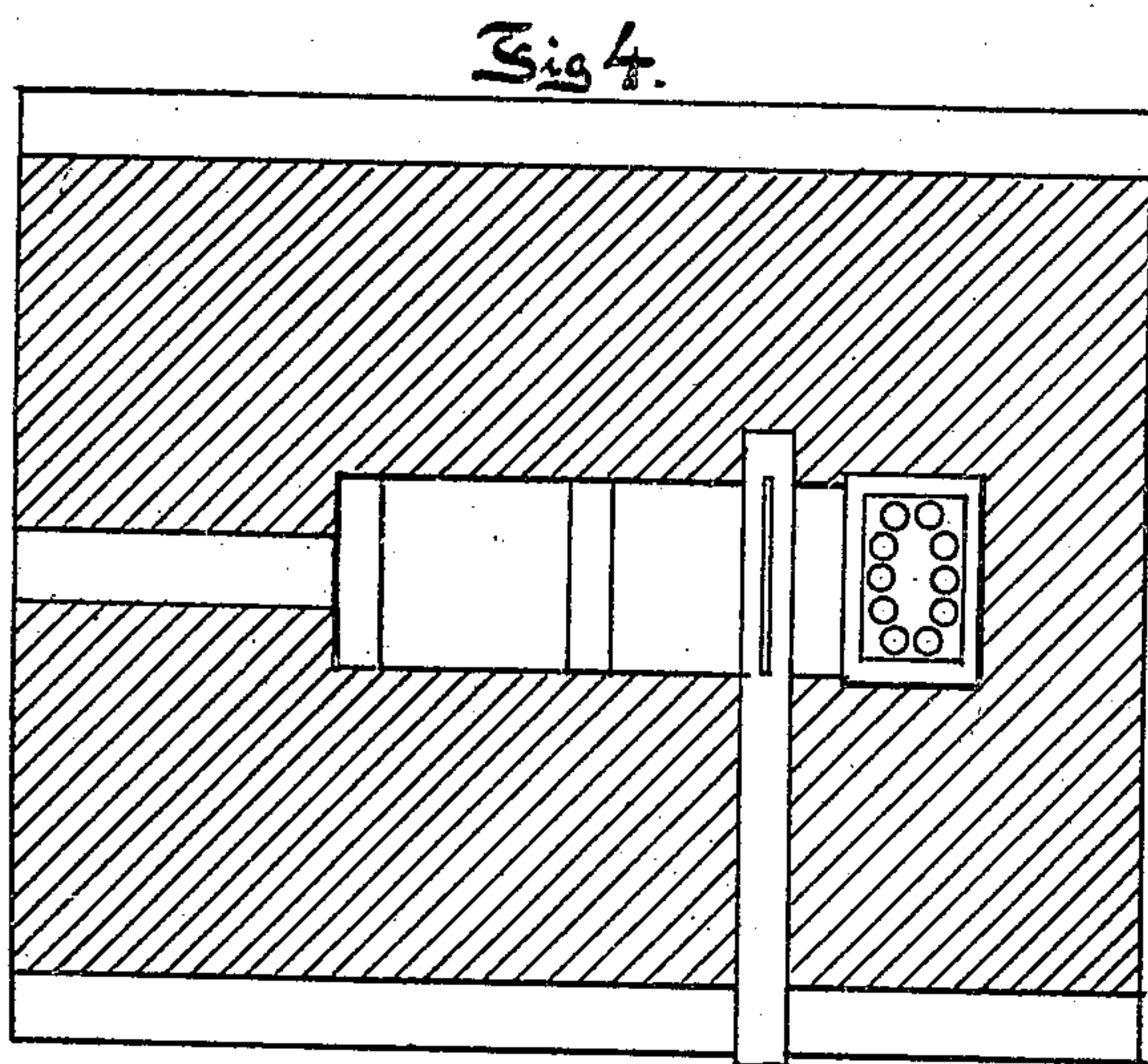
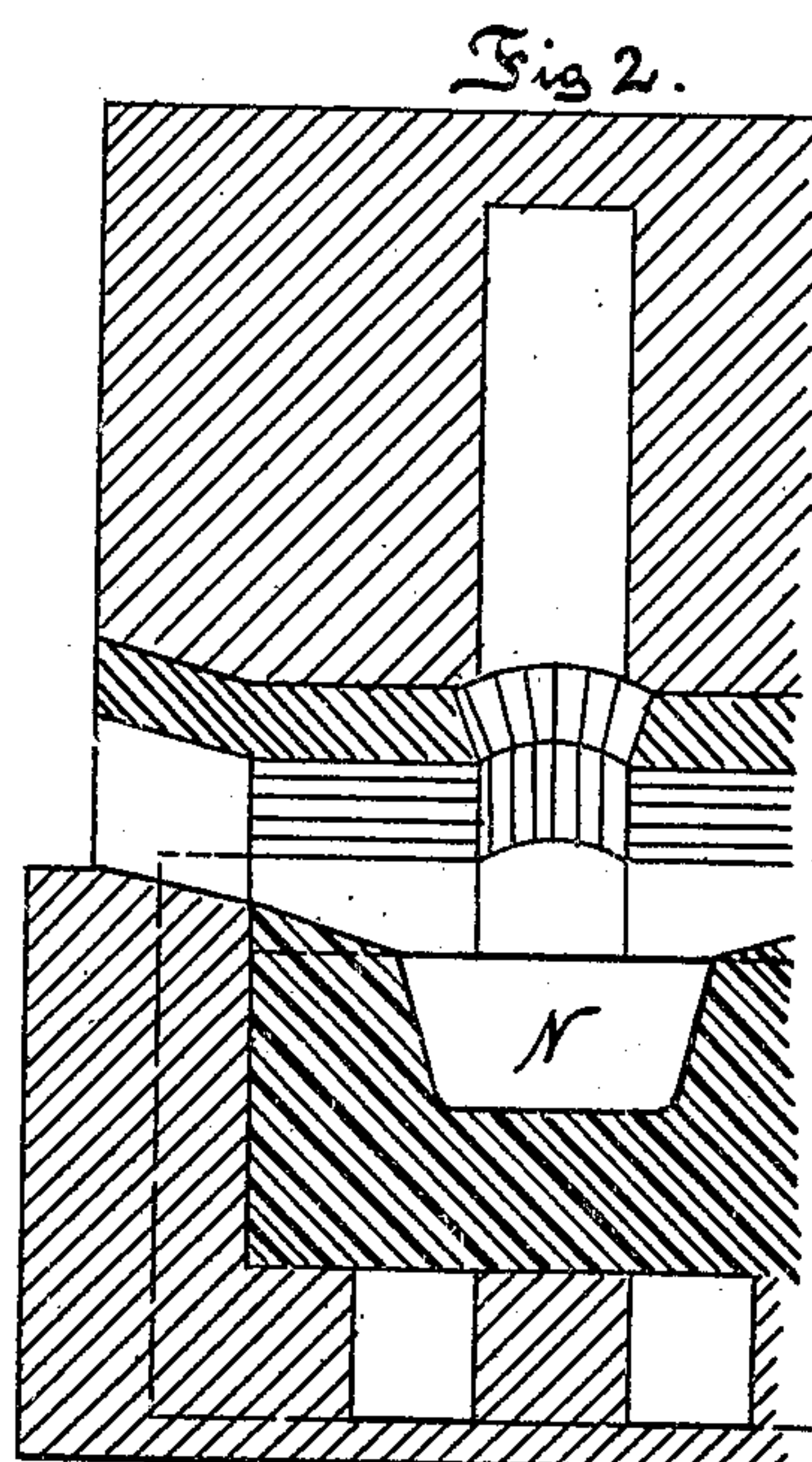
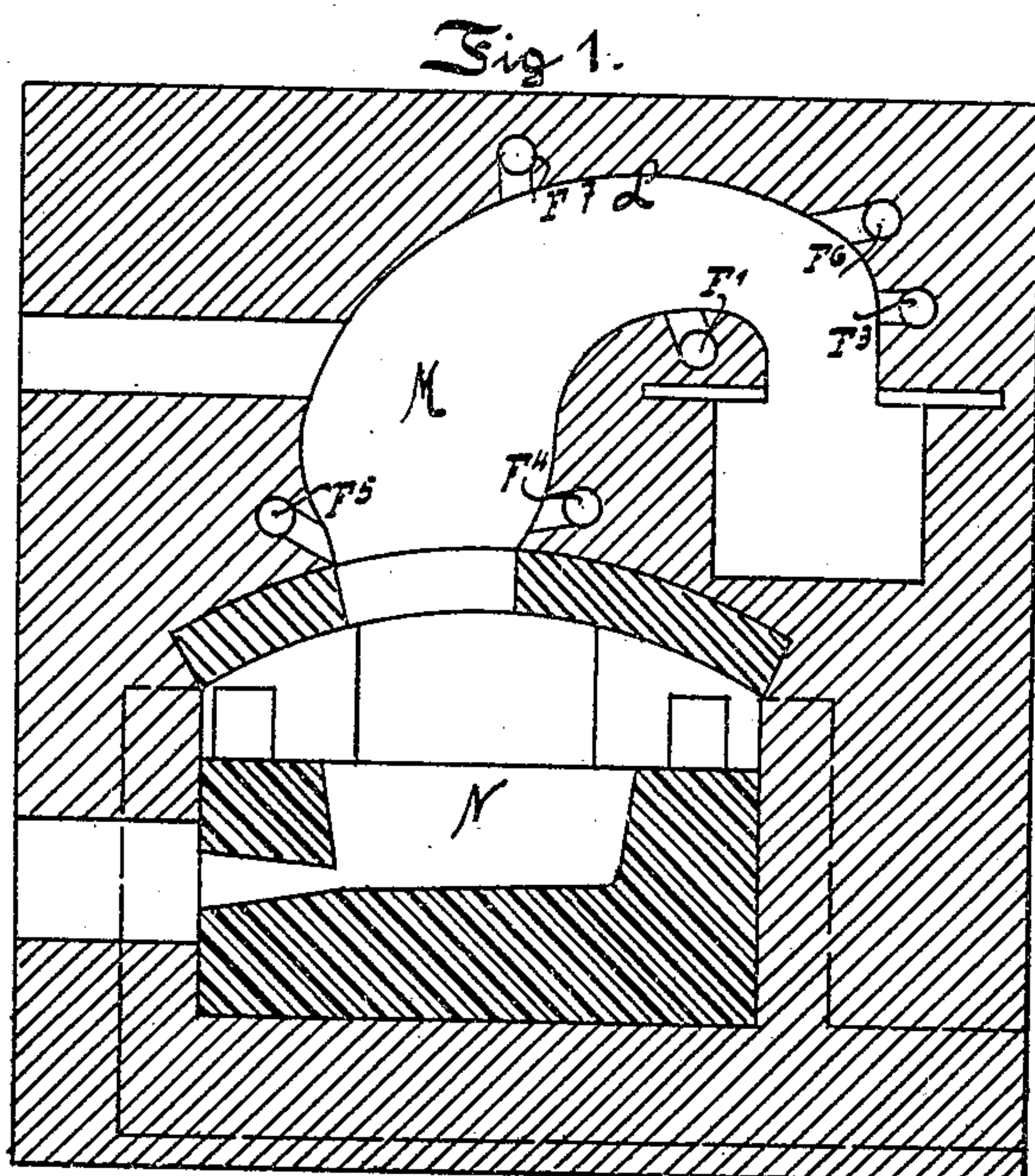
PATENTED AUG. 9, 1904.

C. SPIEGEL.
FURNACE FOR MELTING METALS OR OTHER PURPOSES.

APPLICATION FILED APR. 19, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES:
Emil Kieffer
Geo. Heinicke

INVENTOR
Carl Spiegel
by *G. S. Thomas*
Attorney

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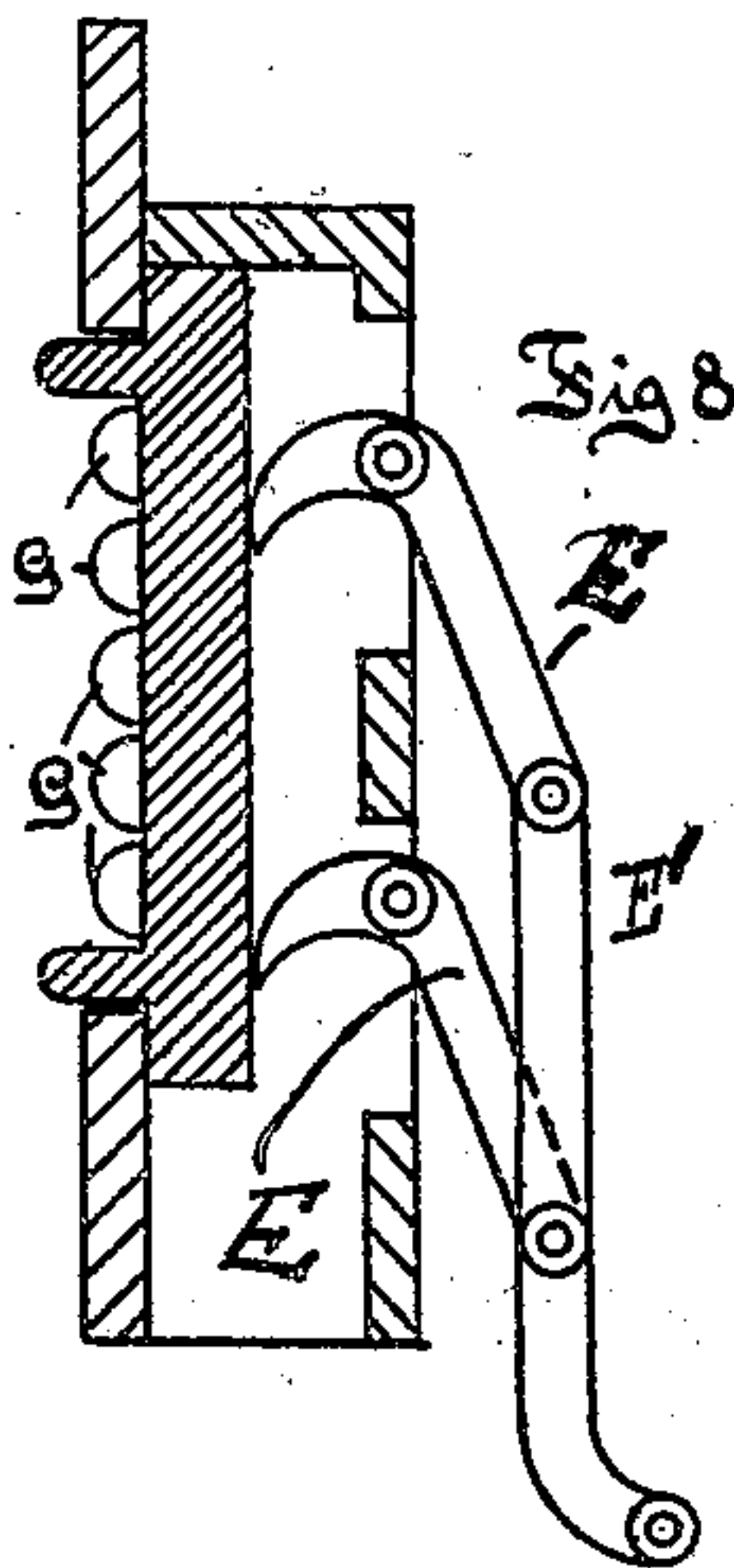
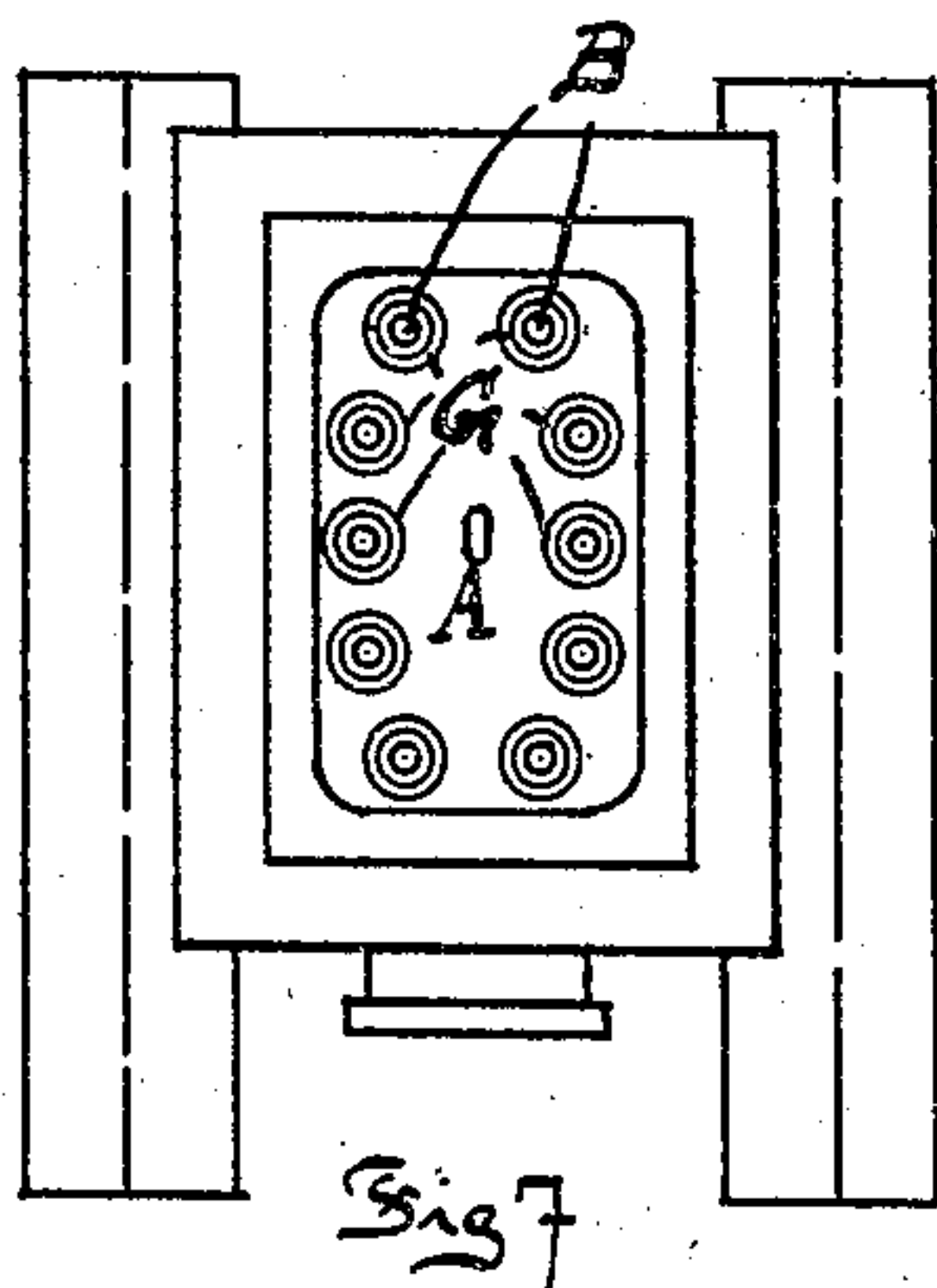
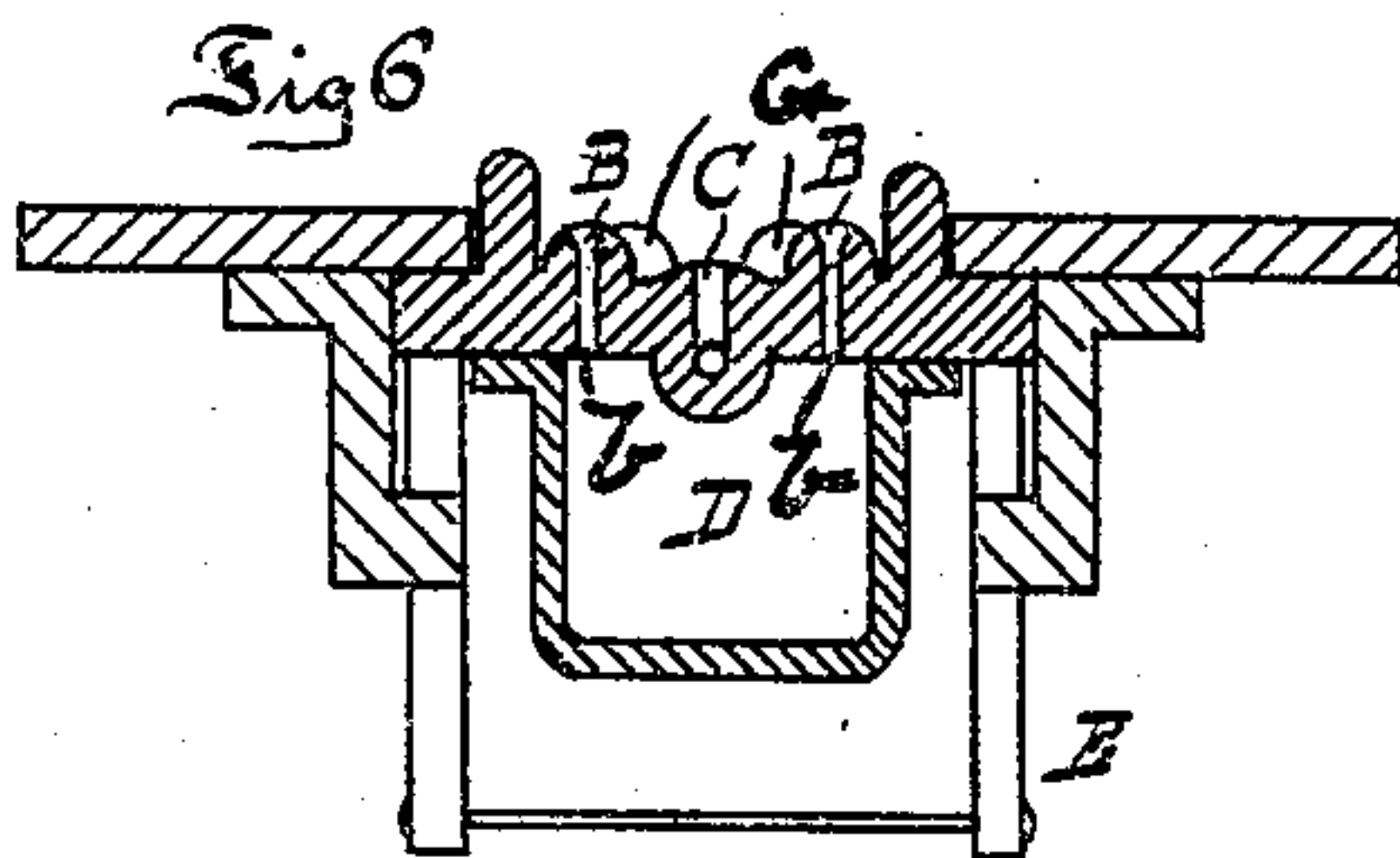
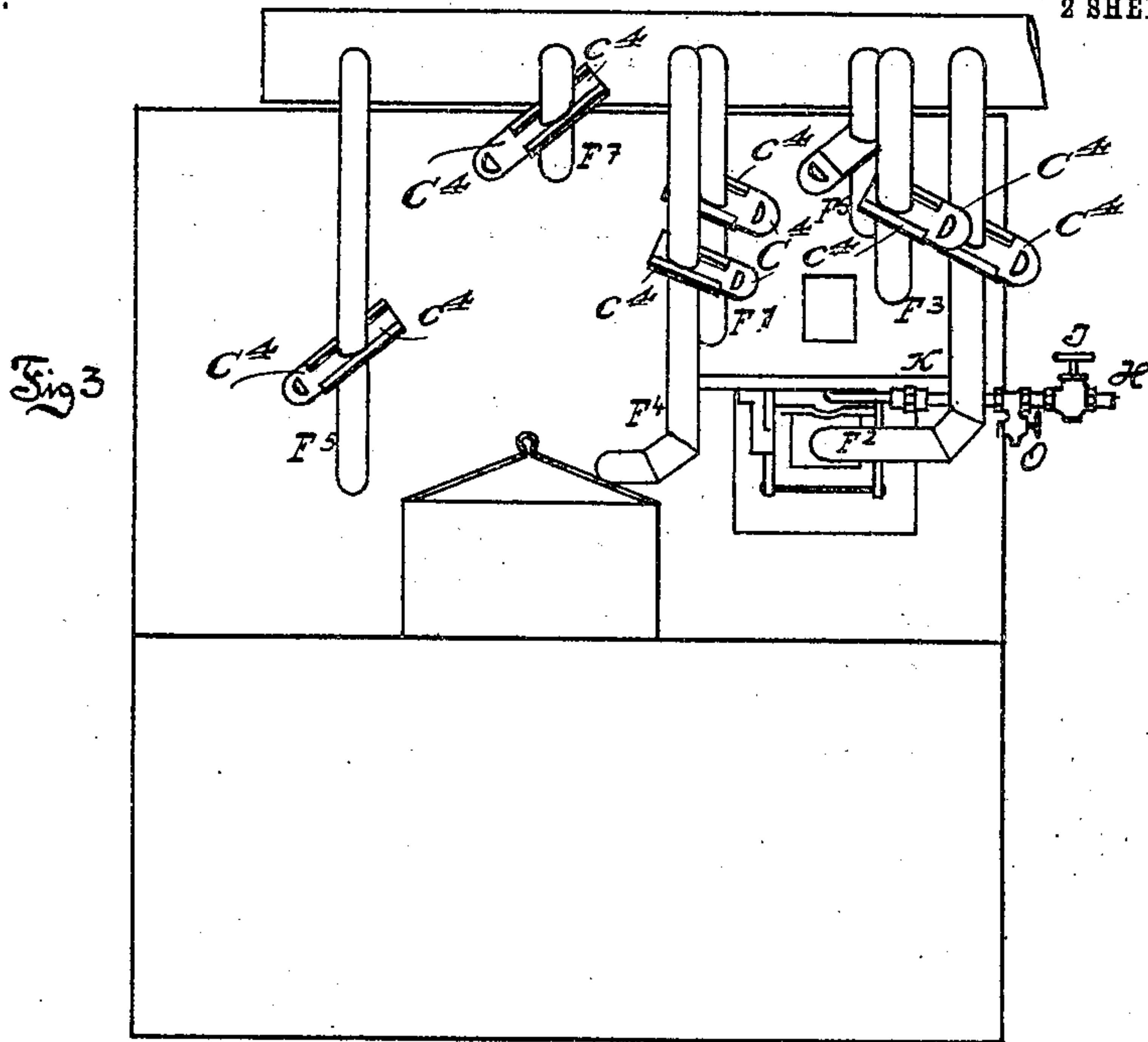
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2 SHEETS—SHEET 2.



WITNESSES:
Emil Kieffer
Geo. Heurich

INVENTOR
Carl Spiegel
BY G. Littman
ATTORNEY

UNITED STATES PATENT OFFICE.

CARL SPIEGEL, OF ST. PETERSBURG, RUSSIA.

FURNACE FOR MELTING METALS OR OTHER PURPOSES.

SPECIFICATION forming part of Letters Patent No. 767,179, dated August 9, 1904.

Application filed April 19, 1902. Serial No. 103,781. (No model.)

To all whom it may concern:

Be it known that I, CARL SPIEGEL, a subject of the Emperor of Russia, and a resident of St. Petersburg, Russia, (postal address, Novosaakievskaja No. 4,) have invented certain new and useful Improvements in Furnaces for Melting Metals or other Purposes, of which the following is a specification.

My invention has for its object an improved construction of furnaces for burning naphtha residues, designed chiefly for melting metals, as also for other purposes.

The chief features of my furnace are, first, a peculiarly-constructed fireplace; second, a peculiarly-constructed fire-bridge; third, a vault where the gases and burning particles of naphtha residues, together with a regulated supply of hot air, are caused to mix and to be heated by the incandescent vault so as to form ultimately the working flame; fourth, a regulated hot-air supply through tubes provided with dampers.

In the accompanying drawings, Figure 1 is a vertical longitudinal section through a furnace inclosing the new device. Fig. 2 is a vertical cross-section. Fig. 3 is a front view with the air and naphtha conduits. Fig. 4 is a horizontal section. Fig. 5 is a horizontal section across the flues and the melting-pot. Fig. 6 is a vertical section through the fireplace and air-chamber, showing also the levers used to raise and lower the fireplace. Fig. 7 shows the fireplace in plan view. Fig. 8 is a vertical longitudinal section through the fireplace.

The fireplace, Figs. 3, 6, 7, and 8, to be supplied with the naphtha residue consists of a metal plate A, having hemispheric projections G, which are perforated by air-channels opening into inverted hollow cones B. Below the plate A a channel D is secured to the same, into which air is forced through the tubes F², provided with a regulating-valve or a slide-plate, Fig. 3. This slide-plate C⁴, like all the other slide-plates in the furnace, moves in a guide c⁴, having the shape of a flat box, which is secured to the pipe at any convenient place. A tube H supplies naphtha residues. It has a stop-cock T and is connected by a joint K to a pipe which communicates

with a channel or central opening C in the plate A. The plate A, with the air-chamber D, can be lowered and raised by means of supporting-levers E E and connecting-rod E', Fig. 8. If it is desired to lower the plate A, the naphtha stop-cock T should be closed and the tube H, as well as the air-tube F², must be disconnected from the plate A respectively from the air-chamber D. Then the levers E E may be turned by means of their connecting-rods so as to lower the plate A with air-chamber D, which now can be rapidly removed for cleaning and eventually for replacing the same when worn out.

To start the furnace, air is forced through the tube F² into the chamber D by an appropriate blower, then naphtha residues are introduced through pipe H to a height somewhat below the edge of the conical openings B B B, and then burning rags or wood chips are introduced to set the naphtha residues on fire. The air passing through the naphtha residues burning on the plate A carries with it the fine particles of liquid residue and constitutes a flame, to which more oxygen is supplied by tubes F⁷ F³ F⁶, opening with a broad slot into the furnace, Figs. 1 and 3, whereby the flame is projected against the vault L, so as to make it red-hot, and the products of combustion are ultimately converted into gas, which commingles in a chamber M with more air to generate the working flame, said air being admitted through pipes F⁷ F⁴ F⁵. The direction of the working flames is regulated, if necessary, by the dampers of the hot-air tubes F⁴ F⁵. The air-tubes contribute considerably to obtain a complete combustion of the flame.

Figs. 1 and 2 show a furnace with vertical descending flame, which reaches into the melting-pot N and effectively heats the metals or other materials to be treated.

To stop the furnace, the stop-cock T is closed and a cock O is opened, so that the rest of the naphtha can drain off from the fireplace.

It is self-evident that the dimensions of the furnace and the fireplace can be varied according to the work required.

I claim as my invention—

1. In a melting-furnace, the combination of

a fire-plate A provided with a naphtha-supply means and with hemispheric projections G G, said plate being provided with perforations extending through said projections, and upwardly flaring at their upper ends and said projections being on the upper face of the plate, with an air-supply chamber D secured to and under said plate and in communication with said perforations.

2. In a melting-furnace, the combination of a fire-plate A provided with a naphtha-supply means and with hemispheric projections G G, said plate being provided with perforations extending through said projections, and upwardly flaring at their upper ends and said projections being on the upper face of the plate, with an air-supply chamber D, secured to and under said plate and in communication with said perforations, said plate being supported by levers E E to allow it to be raised and lowered and to be removed from the furnace together with the air-supply chamber D.

3. In a melting-furnace, the combination of a fire-plate A provided with a naphtha-supply means and with hemispheric projections G G, said plate being provided with perforations extending through said projections, and up-

wardly flaring at their upper ends and said projections being on the upper face of the plate, with an air-supply chamber D secured to and under said plate and in communication with said perforations, a vault above said fire-plate, and air-supply pipes arranged in the sides of said vault and constructed to admit air into the furnace substantially as described.

4. In a melting-furnace, the combination of a movable fire-plate A having hemispheric projections on its upper face, said plate being provided with perforations extending through said projections, and upwardly flaring at their upper ends, a chamber D disposed beneath and secured to said fire-plate, a guide for said plate, pivoted levers and connecting-rods for raising and lowering said plate, means for admitting naphtha residue to a point above the edge of said perforations and an air-pipe for introducing air into said chamber beneath the said fire-plate.

In witness whereof I have hereunto set my hand in presence of two witnesses.

CARL SPIEGEL.

Witnesses:

N. TSCHOKALOFF,
J. BLAU.