

No. 742,519.

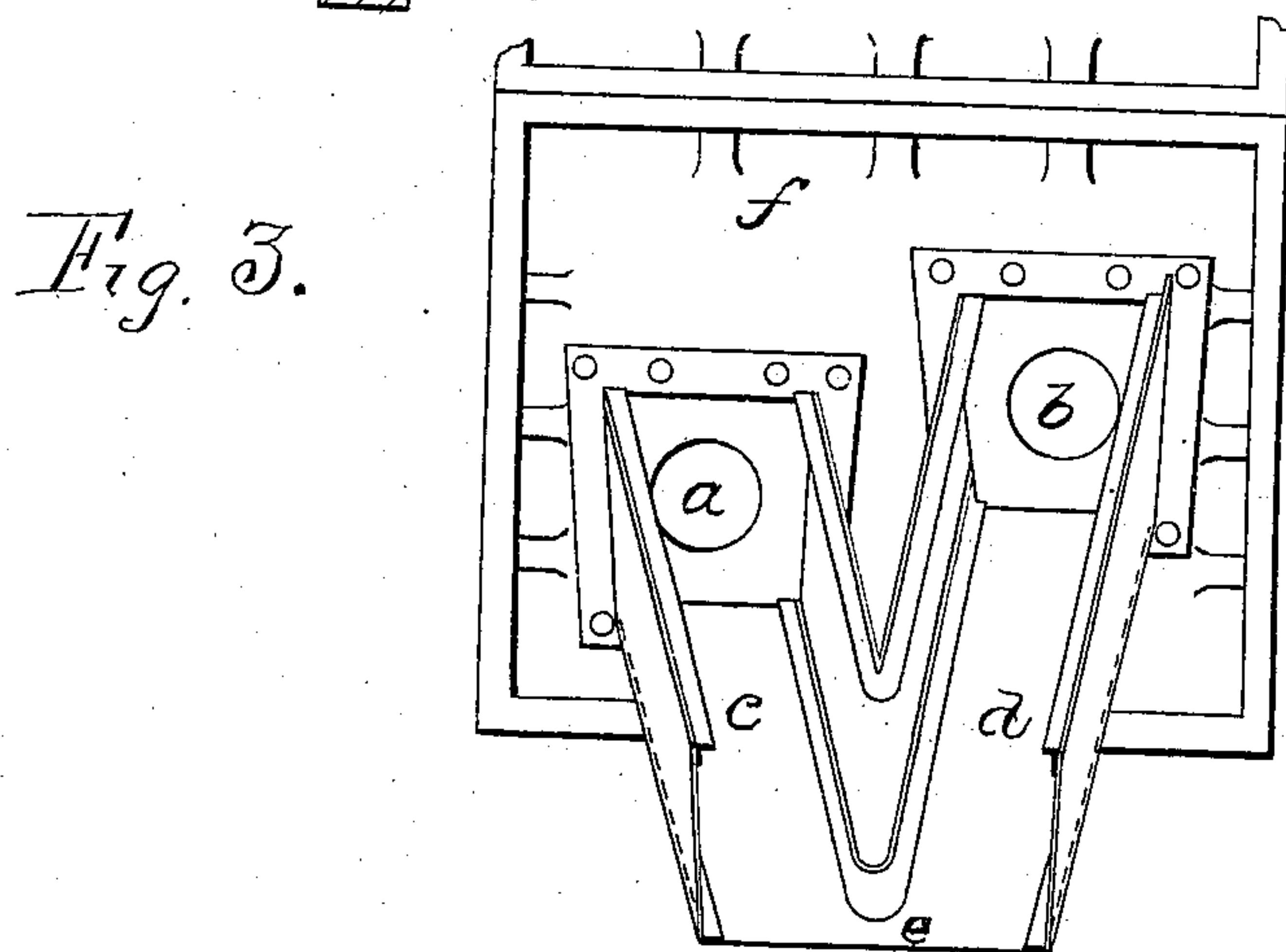
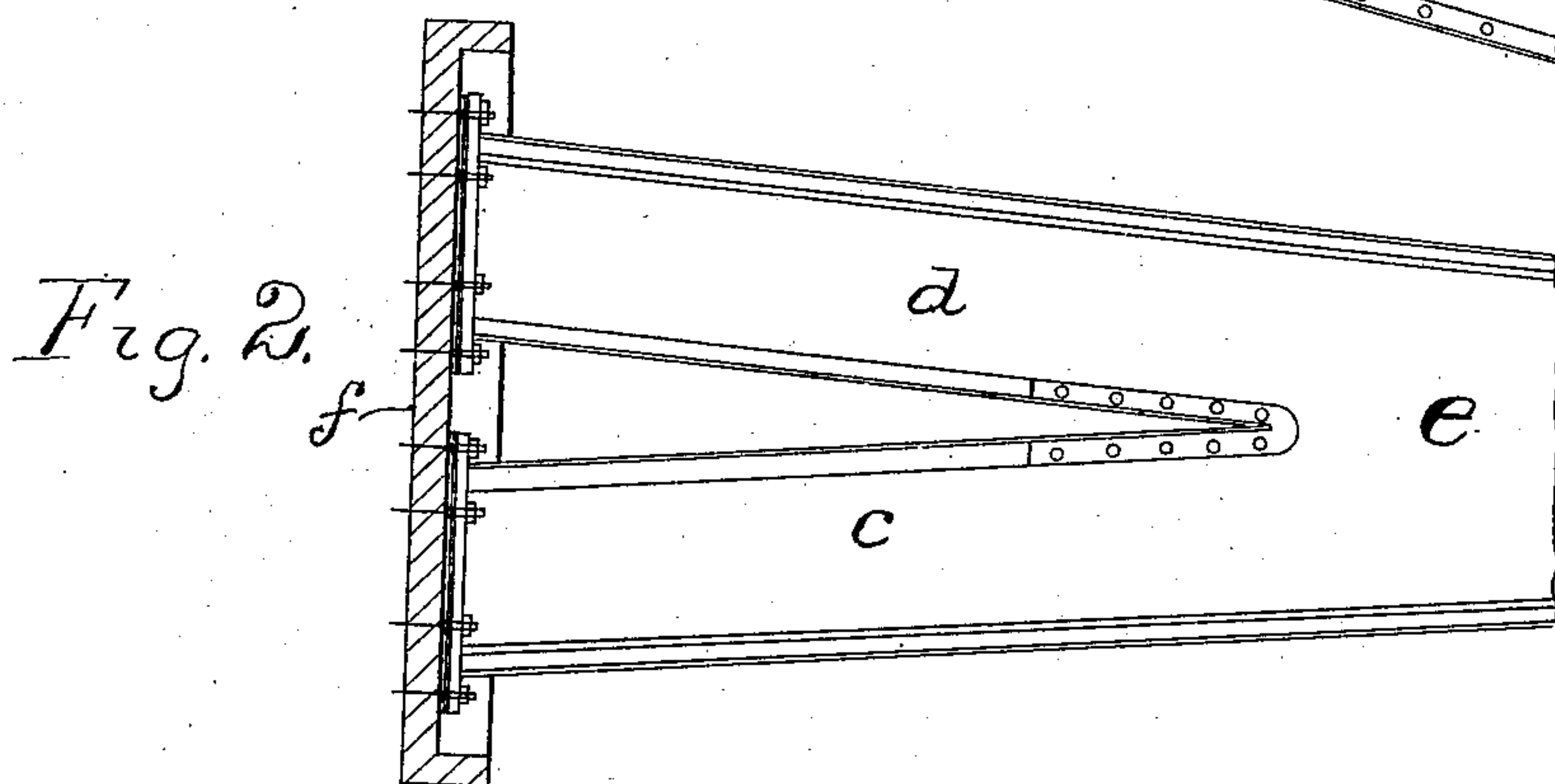
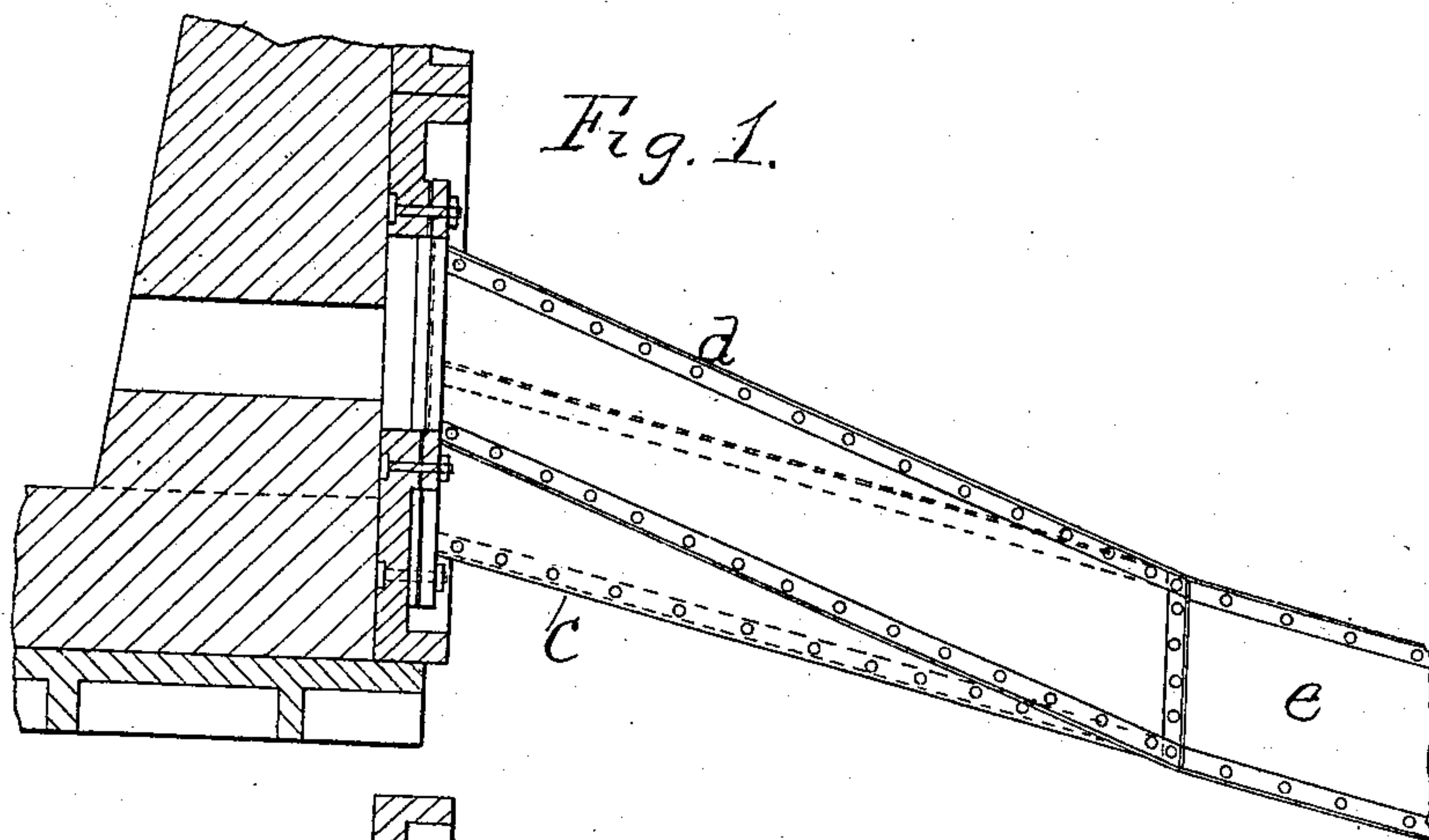
PATENTED OCT. 27, 1903.

S. SURZYCKI.

SMELTING FURNACE FOR THE CONTINUOUS PRODUCTION OF STEEL.

APPLICATION FILED FEB. 10, 1903.

NO MODEL.



Witness:  
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## UNITED STATES PATENT OFFICE.

STANISLAUS SURZYCKI, OF CZENSTOCHOWA, RUSSIA.

SMELTING-FURNACE FOR THE CONTINUOUS PRODUCTION OF STEEL.

SPECIFICATION forming part of Letters Patent No. 742,519, dated October 27, 1903.

Application filed February 10, 1903. Serial No. 142,767. (No model.)

*To all whom it may concern:*

Be it known that I, STANISLAUS SURZYCKI, of Czenstochowa, (Chenstohova,) Poland, in the Empire of Russia, do hereby declare the nature of this invention and in what manner the same is to be performed to be particularly described and ascertained in and by the following statement.

This invention relates to improvements in smelting-furnaces for the continuous production of steel.

The "continuous" process of steel-smelting, which consists in running off only a portion of the furnace charge and replacing the quantity removed by a similar quantity of liquid raw iron, with the addition of oxidizing agents—as iron ore, slag, and the like—has very considerable advantages with regard to efficiency, fuel economy, and labor, but could hitherto only be practically adopted with tipping furnaces. With ordinary stationary furnaces it was impossible to use this process, for the reason it was impracticable to interrupt the flow of molten metal. It has been suggested to use a stationary furnace with two tap-holes arranged one above the other and leading into a single trough. This suggestion is of absolutely no practical value, for the following reasons: First, the distance between the two tap-holes would have to be enormous to guarantee the required thickness of the aperture-walls; otherwise the upper tap-hole would be spoiled by each tapping; secondly, if the said aperture-walls were sufficiently thick—that is to say, if the two holes were sufficiently far apart—it would only be possible to run off very small portions of the charge, and this would reduce the efficiency of the furnace. To avoid these two disadvantages, the said arrangement of the tap-holes would only be possible with specially-constructed furnaces and not of practical use with the ordinary Martin furnace, such as is commonly used, and even in the case of a specially-constructed furnace there would be the further consideration that it is impossible to use the single ordinary discharging-trough for both tap-holes, which is absolutely essential in a regular system of working in case of corrosion of the furnace, interruption in the supply of liquid raw iron, and the like.

The present invention renders it possible to use the continuous process of steel-smelting with any ordinary Martin furnace.

The invention consists, as shown in the accompanying drawings, in arranging two or more tap-holes in a single cast-iron plate *f*, the said holes being at different levels, but not one above the other, and having separate discharging-troughs or one double trough. The lower hole *a* serves for completely discharging the furnace—as, for instance, before holidays or repairs and in case of corrosion of the furnace and the like. This hole is at the lowest level of the hearth-sole. The second tap-hole *b* (working hole) is higher up at a level which allows of discharging one-half, three-fourths, or the like, and so on, of the charge with a certain depth of the charge. The level of the working tap-hole therefore depends in each furnace on the depth of the charge. This hole serves for ordinary tapping. After the tapping the tap-hole is closed in the known manner by means of a mass of dolomite. Each tap-hole can be used entirely independently from the other or others, and it is at any time possible to run off a portion of the charge or the whole charge without any preparation. Both the tap-holes may lead into a double trough *e*, the construction of which is shown in the annexed drawings, Figure 1 being a vertical section of the arrangement; Fig. 2, a plan view, and Fig. 3 a front view. The discharging-trough has two branch conduits *c* and *d* fitting closely to the two tap-holes and is lined with fireproof bricks in the known manner. If a large number of tap-holes are desired, they are arranged in a similar manner, and the discharging-trough is given a corresponding number of branch conduits.

Having thus fully described my invention, what I claim to be new, and desire to secure by United States Letters Patent, is—

A smelting-furnace provided with a plurality of tap-holes at different levels and in different vertical planes, and a single discharging-trough provided with branches extending to each tap-hole, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

STANISLAUS SURZYCKI. [L. S.]

Witnesses:

FR. PANIANSS,  
JOSEF RYNKIEWICZ.