

No. 696,014.

Patented Mar. 25, 1902.

M. E. DONALLY.
OIL QUENCHING APPARATUS.

(Application filed Nov. 20, 1900.)

(No Model.)

Fig. 1.

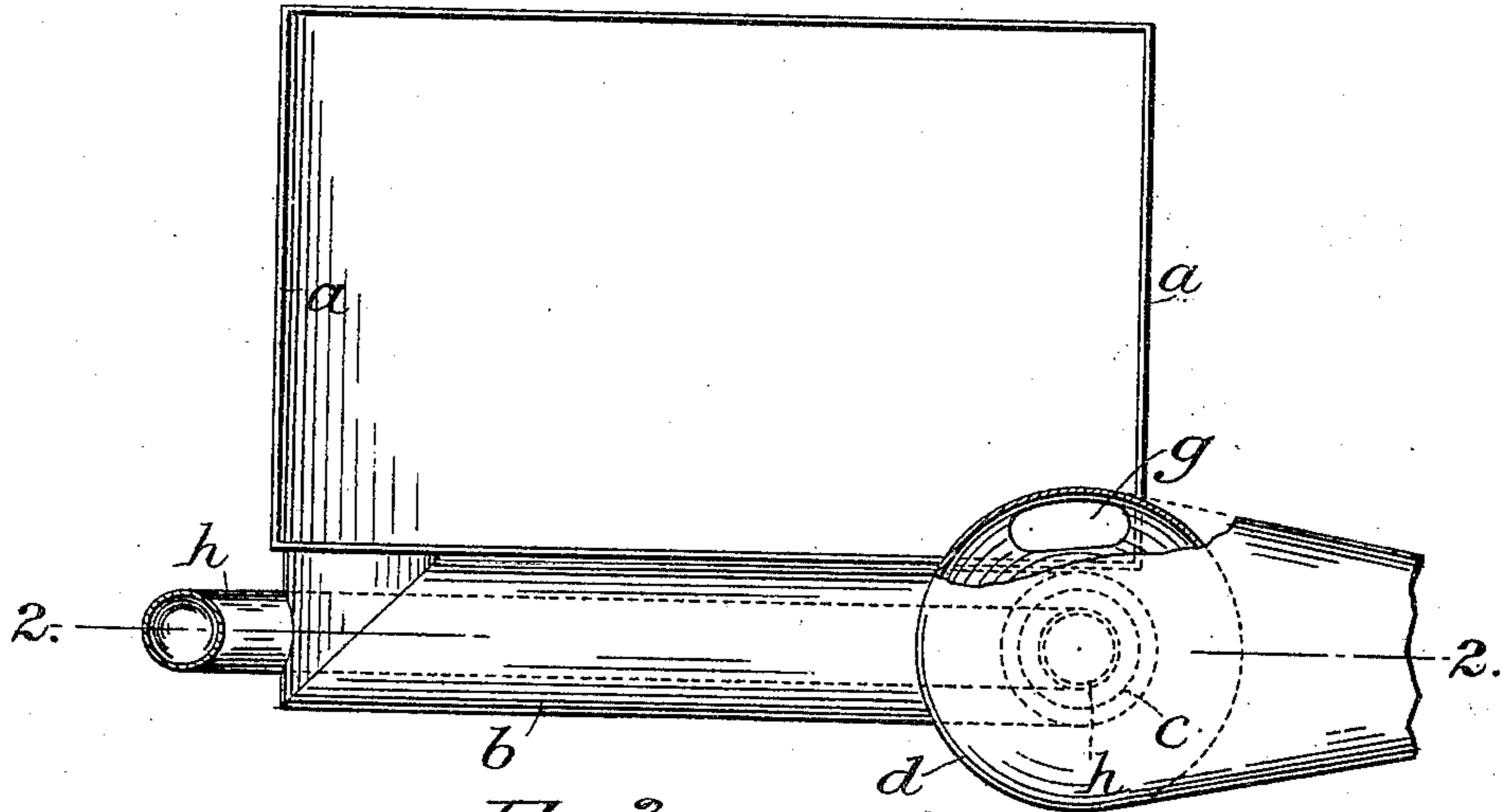


Fig. 3.

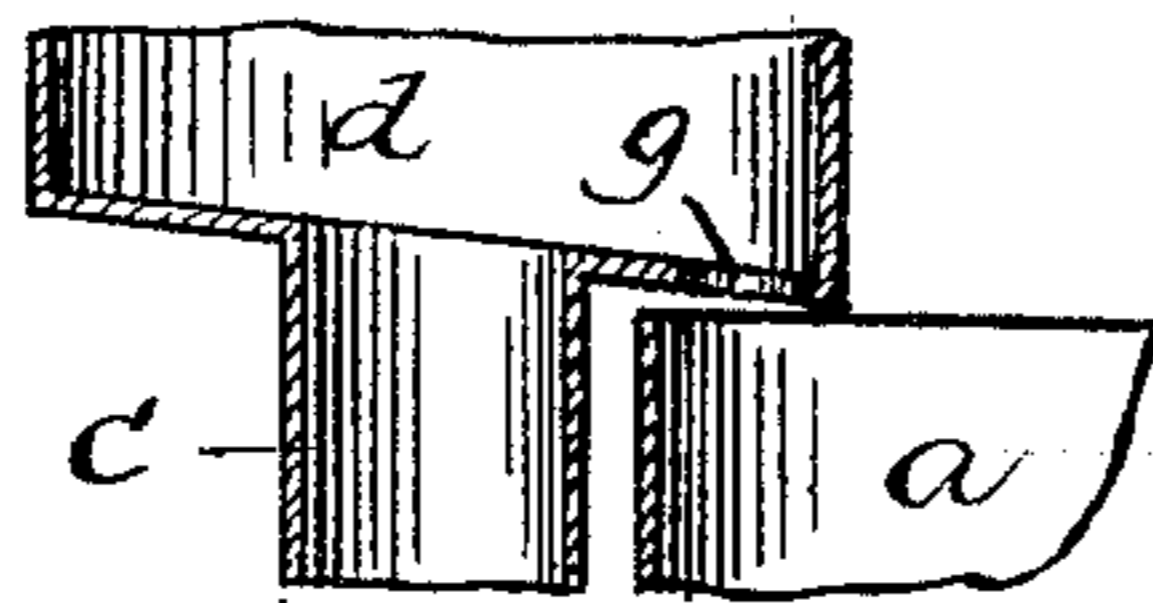
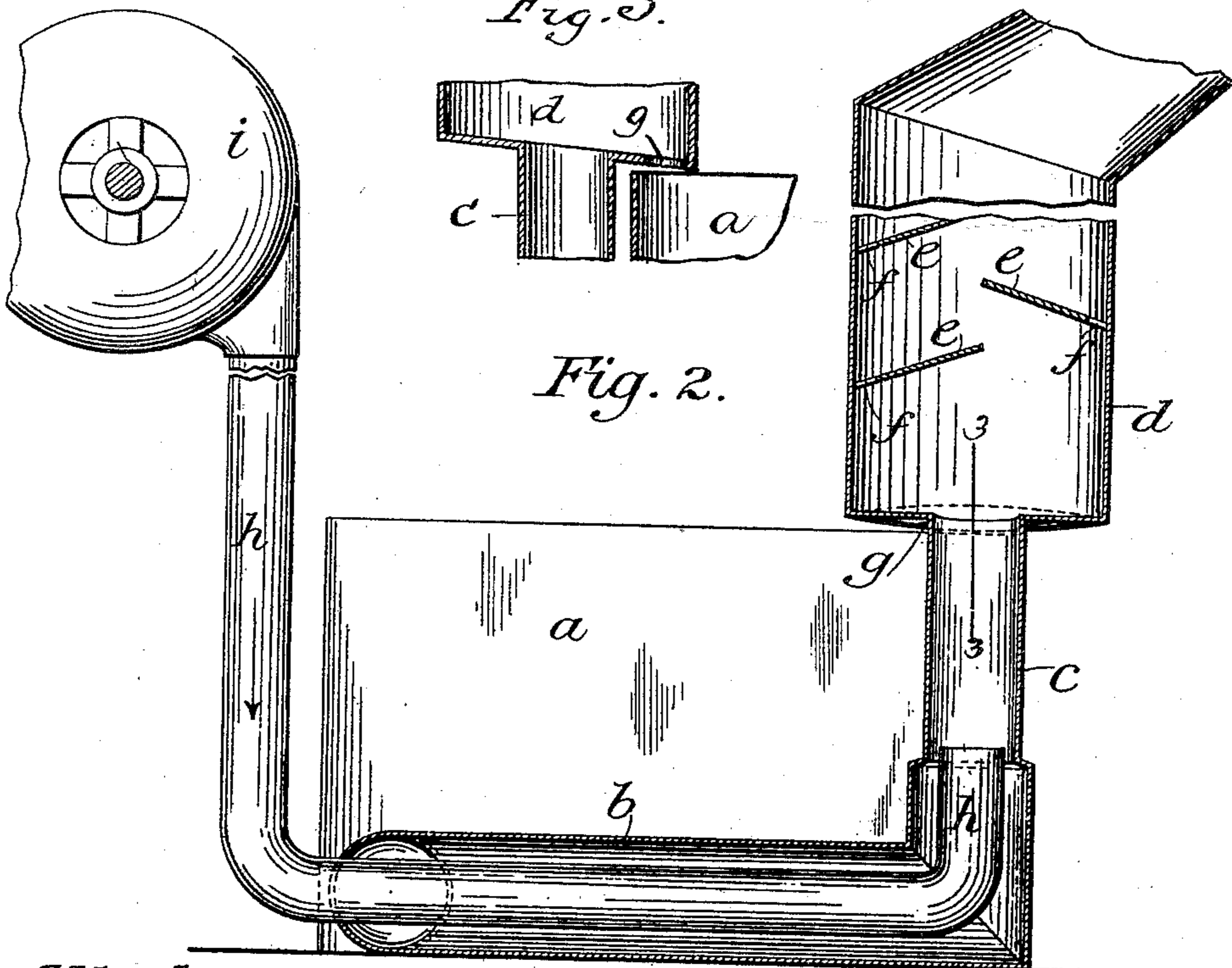


Fig. 2.



Attest:

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MELVIN E. DONALLY, OF BROOKLYN, NEW YORK.

OIL-QUENCHING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 696,014, dated March 25, 1902.

Application filed November 20, 1900. Serial No. 37,108. (No model.)

To all whom it may concern:

Be it known that I, MELVIN E. DONALLY, a citizen of the Dominion of Canada, residing in the borough of Brooklyn, city of New York, State of New York, have invented certain new and useful Improvements in Oil-Quenching Apparatus, of which the following is a specification, reference being had to the accompanying drawings, forming a part hereof.

In the process of oil-quenching the articles to be tempered are thrown into a tank of oil, which naturally becomes heated excessively unless means are provided for keeping down the temperature of the oil. Various means have been employed hitherto for this purpose, but have been effective only to a moderate extent.

It is the object of this invention to provide improved means for keeping down the temperature of the oil, so that a tank can be used continuously and have a much greater output for a given size than has been possible hitherto.

The invention will be more fully described hereinafter with reference to the accompanying drawings, in which—

Figure 1 is a plan view of an oil-quenching apparatus constructed in accordance with the invention. Fig. 2 is a view of the same, partly in side elevation and partly in vertical section, on the plane indicated by the broken line 2 2 of Fig. 1. Fig. 3 is a vertical detail section on the plane indicated by the line 3 3 of Fig. 2.

In the apparatus shown in the drawings the tank, which may have any suitable dimensions, is represented at *a*. At any convenient point near the bottom of the tank is connected a suitable pipe or channel, preferably having a horizontal portion *b* and a vertical or substantially vertical portion *c*, the diameter of the vertical portion being preferably reduced, as clearly shown in Fig. 2. The tube or conductor *c* opens into the lower end of a pipe *d*, which forms a continuation of the tube or pipe *c* and is preferably of considerably larger diameter and is carried up to a considerable height above the tank, this pipe being represented in Fig. 2 as broken out in order to save space on the drawing. Within the pipe *d* may be placed deflectors or dash-plates *e*, although they are not essential. If employed

and placed in the position represented in Fig. 2, suitable openings *f* should be provided to permit the return of oil to the lower end of the pipe, as hereinafter explained. The bottom of the pipe is also provided with a suitable opening *g*, through which the oil is returned to the tank, the bottom of the pipe being suitably inclined, as indicated by dotted lines in Fig. 2, to direct the oil toward the opening *g*. A pipe *h*, which is connected to a suitable blower *i*, is introduced within the pipe *c*, preferably terminating somewhat below the upper end of the reduced portion thereof, and in any case below the normal level of the oil in the tank *a*.

In the operation of the improved apparatus, the tank having been filled with oil substantially to or slightly above the level of the top of pipe *h* a strong blast of air is introduced through the pipe *h*. As this air-blast leaves the mouth of the pipe *h* it drives before it or carries with it in a divided condition, to which the term "spray" may be applied, be the drops large or small, such oil as runs over the mouth of the pipe. The oil-spray is carried upward within the pipe *d* by the strong current of air and is thoroughly cooled. Eventually the spray gathers or condenses within the pipe *d* and runs down within the pipe, being returned to the tank *a* through the opening *g*, above mentioned, and mingling with the oil in the tank keeps the temperature thereof down to the proper degree. It will be observed that a constant circulation of the oil is maintained by the action of the air-blast, the oil entering the pipe *b* from the bottom of the tank *a* to take the place of the oil which is carried upward in the pipe *d* in the form of spray and is subsequently condensed and returned to the tank.

I claim as my invention—

1. In an oil-quenching apparatus the combination with a tank of a pipe connected therewith near the bottom a pipe carried upward to a considerable height above and forming a continuation of the first-named pipe and having an opening through which the oil may be returned to the tank, and means for introducing an air-blast within the first-named pipe, whereby the oil is carried upward in the form of spray within the last-named pipe

and gathers or is condensed therein and returned to the tank, substantially as shown and described.

2. In an oil-quenching apparatus, the combination with a tank, of a pipe connected therewith near the bottom and having a substantially vertical portion of reduced diameter, a second pipe of larger diameter carried upward to a considerable height above and forming a continuation of the first-named pipe and having an opening through which the oil may be returned to the tank, an air-pipe ter-

minating within the reduced portion of the first-named pipe below the level of the oil in the tank, and means for creating an air-blast through said air-pipe, substantially as shown and described. 15

This specification signed and witnessed this 17th day of November, A. D. 1900.

MELVIN E. DONALLY.

In presence of—

A. N. JESBERA,
W. B. GREELEY.