

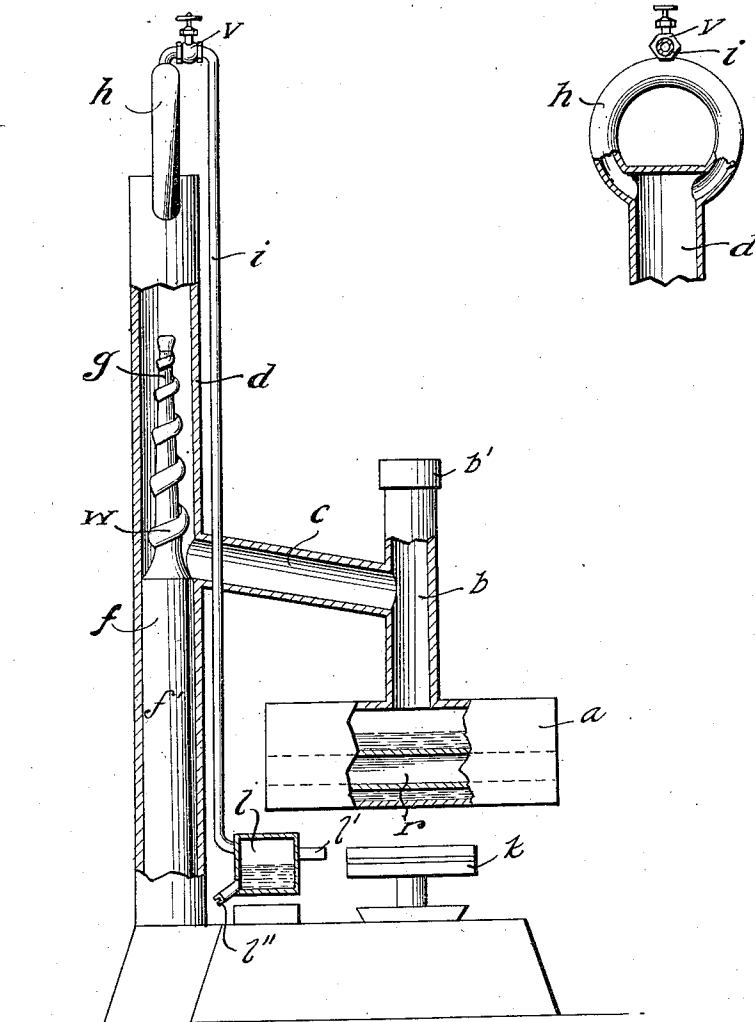
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HEATING APPARATUS FOR INSTRUMENTS.
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1,046,140.

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Fig. 1.

Fig. 2.



WITNESSES

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1,046,140.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HEINRICH BECK, a civil engineer, citizen of Meiningen, Germany, residing at Meiningen, Germany, have invented new and useful Improvements in Heating Apparatus for Instruments, of which the following is a specification.

The present invention relates to an apparatus for heating instruments such as curling tongs, sad irons or the like, whereby the instruments are treated without any danger of being overheated.

The apparatus includes a jacketed container, preferably of tubular shape, the jacket being filled with a liquid heated by suitable means such as a gas burner or spirit lamp. The vapors thereby generated and passing off from the liquid are condensed in a condenser pipe and the condensation liquid is again returned into the jacketing.

In apparatus, for heating the instruments, of the above described class, the present invention aims at obtaining as perfect a condensation of the vapors, in as short a condenser pipe as possible, and without water cooling.

Further objects of the invention are to avoid the filling of the space over the liquid in the jacketing with undesirable gases, and with this end in view, I preferably provide a gastight closure for the condenser pipe which is in communication with the jacketing. The present invention therefore admits of a compact construction with pleasing lines and greatly simplifies and cheapens the manufacture of the apparatus. For obtaining this object the hot vapors are forced, shortly after they have entered the condenser pipe, to transfer a great part of the heat to a good heat conductor projecting into the condenser pipe, which heat conductor will carry off most of the heat absorbed, in a direction opposite to that of the rising vapors. At a part as cool as possible, the condenser pipe is provided with a small opening, to which a small tube may be directly connected, or through the intermediary of a ring dome, such tube being open at the opposite end and arranged in engaging proximity to the flame of a heating burner. By the effective condensing arrangement the vapors are so strongly cooled and condensed, that practically no vapors can escape from the condenser pipe and dis-

agreeable odors are effectively avoided. Any vapors escaping, in case of a great overheating, will be conducted in this tube arrangement of the condenser pipe to the heating flame and there burned without creating any odor. This heating flame closes the tube of the condenser pipe extending into the flame while the apparatus is in use, against the entrance of atmospheric oxygenous air, so that during such time no air can enter into the interior of the condenser pipe and the jacketing and no noxious decomposition of the liquid by oxidization will be produced as would occur should the vessel be filled with undesirable gases. The opening of the condenser pipe is preferably closed by a valve of suitable design which will automatically open only when the apparatus is heated during use so as to avoid an unnecessary evaporation or leakage of the liquid while the apparatus is not in use. If the apparatus is considerably cooled say by cold curling tongs being placed in it, indifferent gases of the heating flame are aspirated through the small auxiliary tube. The pressure will always remain about equal to the atmospheric pressure, thus practically constant.

In the drawing, forming a part of this specification: Figure 1 is a side elevation of a device constructed according to my invention, part being broken away to disclose details of construction. Fig. 2 is a front elevation of the upper portion of the device as disclosed in Fig. 1, parts being broken away to disclose details of construction.

In the drawings, *r* designates a receptacle or receiving means for the instrument or instruments to be heated, such receptacle being surrounded by a jacketing *a* adapted to contain liquid. The liquid is heated by a burner *k* and the vapors given off by the liquid are conducted through pipes *b* and *c* into a main condenser pipe *d*. In this pipe a heat absorbing member *f* is arranged, which tapers as at *g* above the mouth of pipe *c* into pipe *d*, so that the hot vapors flow around this tapered part *g* of the member *f* and transfer this heat to this part *g*. The greater part of the heat absorbed by part *g* is conducted to the lower solid part *f'* of the member. This absorption of heat is so great that the condenser pipe *d* may be made comparatively short and a dome in which the pipe *d* terminates at the top, will hardly get more than luke-warm. The heat conductor portion *g*

may, with the object of increasing its surface, be provided with webs *w* made in the form of a screw which further serves to conduct the liquid back to the pipe *c*. At the top end of the ring dome *h* a small valve *v* may be arranged which will form a communication between the condenser pipe and the atmosphere during work. A small tube *i* may lead, as shown in the drawing, from the ring dome to a small collecting vessel *l* provided at the lower portion of the tube, this vessel having an egress tube *l'* or similar means opened in close proximity to the flame from burner *k* when operating. Any vapors escaping from the condenser tube will be conducted through tube *i* and emitted into the heating flame where it is consumed without creating a disagreeable odor. Should any moisture gather, or be conducted into the tube *i*, it may, by gravity, collect in the vessel *l* and be withdrawn therefrom by removing plug *l''*.

The operation of the device is as follows: Liquid is admitted into the jacketing *a* to approximate the level illustrated in the drawing, or to occupy about one-half of the content volume of the jacketing, and the burner *k* is lighted. The instrument or instruments portions to be heated are placed within the receptacle *r*, the vapor arising from the liquid is conducted successively through pipes *b* and *c* to the condenser pipe *d* and contacts with the portion *g* of the member *f*, where the heat is absorbed and the vapor transformed into liquid. The liquid flows down the portion *g* to the juncture of pipes *d* and *c*, flows through the latter to pipe *b* and thence back to the jacketing *a*, such return of liquid being through the force of gravity. It is of course, understood that the pipes *b* and *c* are of such a size as to have capacity for conveying both the rising vapor and the returning liquid, and further than that I do not wish to be limited to the exact arrangement of pipes *b* and *c*, since any construction, consistent with the object of this invention may be used whereby communication is formed between the jacketing and the condenser pipe, without departing from the spirit of my invention.

I claim:

1. A heating apparatus of the character described comprising in combination, a receptacle for receiving instruments to be heated, a jacketing therefor adapted to con-

tain liquid, means disposed exteriorly of said receptacle and said jacketing for transforming said liquid into vapor, a condenser, a heat absorbing member within said condenser, and means forming a fluid tight communication between said jacketing and the lowermost portion of said condenser for conducting vapor from the former to the latter and providing for return of the liquid to the former by gravity through said communicating means.

2. A heating apparatus of the character described comprising in combination, a receptacle, a jacketing therefor adapted to contain liquid, a burner, a condensing device, means forming a communication between said jacketing and condensing device for return of the liquid to the former by gravity, and a conducting member in communication with said condensing device and having an end opening in proximity to the flame of said burner.

3. A heating apparatus of the character described comprising in combination, a receptacle, jacketing therefor adapted to contain liquid, a burner, a condensing device, means forming a communication between said jacketing and condensing device providing return of the liquid to the former by gravity, a conducting member in communication with said condensing device and having an end open in proximity to the flame of said burner, and a collecting vessel communicating with said conducting member for collecting fluid therefrom by gravity.

4. A heating apparatus of the character described comprising in combination, a receptacle, a jacketing therefor adapted to contain liquid, a burner, a condensing member, means forming communication between said jacketing and condensing device providing the return of the liquid to the former by gravity, a conducting member in communication with said condensing device and having an end open in proximity to the flame of said burner, and a valve for controlling said conducting member, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HEINRICH BECK.

Witnesses:

M. C. DILLINGHAM,
J. HINZE.