No. 766,442. PATENTED AUG. 2, 1904.

P. GRUENER.

STEAM HEATED TIPPING KETTLE.

APPLICATION FILED MAR. 17, 1904.

NO MODEL.

Fig. 1.

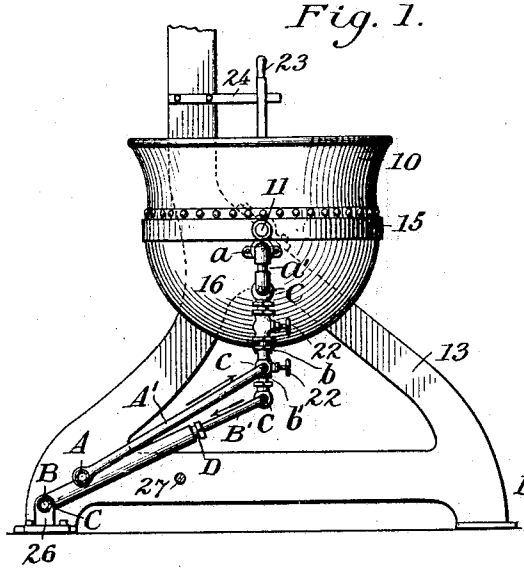


Fig. 2.

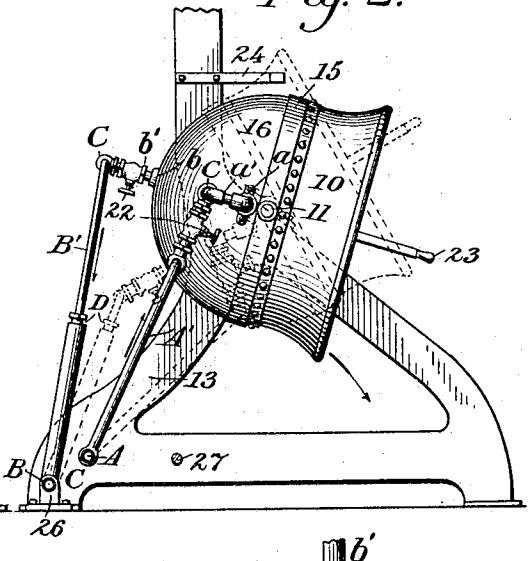


Fig. 3.

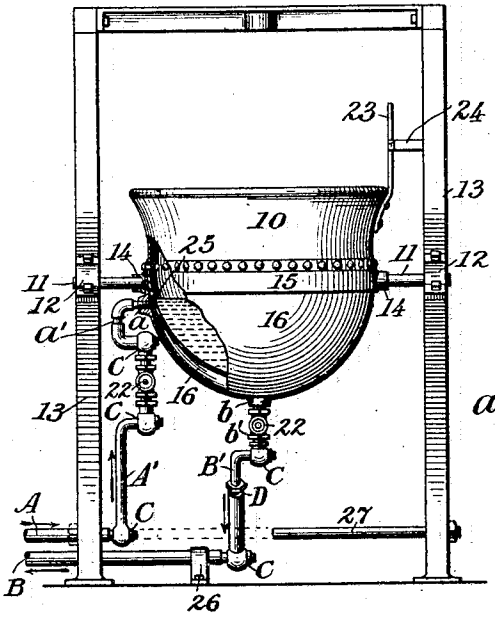
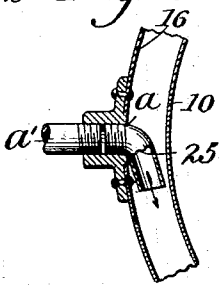


Fig. 5.



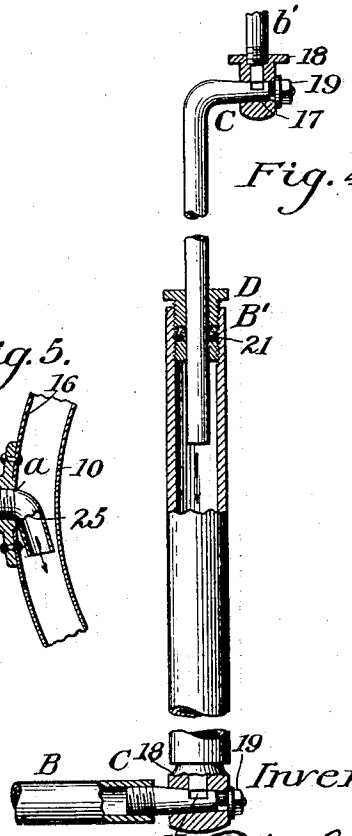


Fig. 4.

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No. 766,442. Patented August 2, 1904.

UNITED STATES PATENT OFFICE.

PETER GRUENER, OF CINCINNATI, OHIO.

STEAM-HEATED TIPPING KETTLE.

SPECIFICATION forming part of Letters Patent No. 766,442, dated August 2, 1904.

Application filed March 17, 1904. Serial No. 198,586. (No model.)

To all whom it may concern:

Be it known that I, PETER GRUENER, a citizen of the United States, residing in the city of Cincinnati, in the county of Hamilton and State of Ohio, have invented a certain new and useful Steam-Heated Tipping Kettle; and I do declare the following to be a clear, full, and exact description thereof, attention being called to the accompanying drawings, with the reference characters marked thereon, which form also a part of this specification.

This invention relates to improvements in kettles used for heating purposes where the heat is supplied in form of steam and where said kettles are supported in a manner to permit them to be tipped for the purpose of evacuating their contents. Kettles of this kind are more particularly used for industrial purposes—as, for instance, cooking candy. The heat may be supplied by means of a pipe-coil to the inside of the kettle or around the outside of the same, being contained in this latter case in the space between the kettle and a jacket surrounding the same. In either case there is a supply-pipe through which the steam enters the coil or jacket and an eduction-pipe through which it leaves, the steam being kept in circulation. In the present method of construction these steam-pipes are connected at the trunnions or journals whereby these kettles are supported for tipping, the steam passing in through one journal and out at the other one. Since there is motion at these points of connection and support, it becomes necessary to provide stuffing-boxes to prevent leakage. These stuffing-boxes require constant attention and are a source of frequent annoyance, because if not always kept properly packed leakage takes place nevertheless, while on the other hand tight packing causes friction, which interferes with and retards the free motion for dumping. Another objection is that ingress and egress being through the trunnions are opposite each other at the same height, which in a jacketed kettle causes imperfect heating, since the steam in seeking the shortest passage passes from one point to the other without going through the lower part of the jacket, which fills up with water from the condensed steam and remains cool.

The main object of my invention is to provide a construction and arrangement which does away with all these objections without interfering with the heating by steam in circulation and the tipping of such a kettle; and to this end my invention consists in the main in having the ingress and egress points of the steam located at points not coincident with the trunnion-journals, so that these latter may be constructed in the ordinary way without perforating the kettle or jacket thereat. The location of the pipe connections being thus independent of the trunnions, they may also be so located as to obtain a perfect circulation.

In the following specification, and particularly pointed out in the claims, is found a full description of the invention, together with its operation, parts, and construction, which latter is also illustrated in the accompanying drawings, in which—

Figure 1 shows in a side view such a steam-heated kettle provided with the features of my invention, the heat being supplied to a jacket, the kettle being hung on trunnions between two frame-sections, one of which—the one nearest the observer—is removed. Fig. 2 in a similar view shows the same kettle tipped to empty its contents. Fig. 3 is a front view of Fig. 1. Fig. 4 is an enlarged sectional detail view showing form of the steam joints and connections. Fig. 5 is also a similar detail view and shows connection of the steam-ingress pipe to the kettle.

In the drawings, 10 indicates the kettle, having projecting from its outside at diametrically opposite points the trunnion-journals 11 11, bearing in boxes 12 12 on frame-sections 13 13. These journals may be attached in any suitable way—as, for instance, in sockets 14 14 on an annular band 15.

The heat for cooking the contents is contained in the space provided by a jacket 16, surrounding all or only the lower part of the kettle, the steam being supplied to such space. Ordinarily this supply is in through one of the trunnions and out of the other one, they being hollow for such purpose, and to avoid leakage they are provided with stuffing-boxes at their outer ends where the steam-pipes connect. The objections to this arrangement

have been pointed out. Another objection is that the steam passes from one trunnion directly over to the other one without going through the lower part of the jacket, leaving this part comparatively cool, and thereby retarding the cooking of the contents.

A and B are the general steam-circulating pipes. A′ and B′ are branches leading from them to the kettle and whereby this latter is "cut in" in the pipe system. Connection is made for the inlet-pipe at *a* at the side of the kettle and for the outlet-pipe at a point lower than this point *a* and preferably in the lowest part of the kettle or its jacket and as shown at *b*. It will be noted that these points are not at points coincident with the trunnions, and no motion taking place thereat the connection may be made rigid, doing away with stuffing-boxes. Assuming now that the arrangement and connection of the pipe branches A′ and B′ is such as to permit the kettle to be tipped, as shown in Fig. 2, it is clear that the problem has been solved of heating a tipping kettle with steam in circulation without using the trunnion-journals through which to make steam connection. For such purpose—that is, to permit such tipping—these branches A′ and B′ are longer—that is, they provide for more pipe than would be required if the branch pipes were run direct from the ends of pipes A and B to the points of connection *a* and *b* on the kettle. This excess permits the kettle to be tipped, as shown in Fig. 2, while the same remains in intact connection with the steam-circulating pipes. In order now to permit these branch pipes to return also the kettle to its normal position, and as shown in Figs. 1 and 3, they are arranged so as to yield by collapsing or kinking. This is rendered possible by the provision of what I call "floating" joints, meaning thereby joints which while they swing or move and change their position as a whole they permit also the connected members to move on each other. (Note dotted lines in Fig. 2.) This movement may be either a sliding or a turning one, the latter being the more important, and the joints are accordingly constructed.

There is a turning joint C at each end of each of the branch pipes A′ and B′, one connecting them to each of the main circulating-pipes A and B and the other to two short pipe-sections *a′ b′*, rigidly connected to the kettle at the points *a* and *b*. There is an additional joint between their ends, which may be either another turning joint, C, or a sliding one, D. In the case illustrated I use three turning joints for branch pipe A′ and two turning and one sliding joint for branch pipe B′. The joints of both pipes may, however, be arranged alike. The mechanical details of construction of these joints may best be gleaned from Fig. 4. Of the two ends of the two pipe-sections to be joined one end is provided with a port 17 and fitted into a fitting 18 at the end of the other pipe-section. The joined ends are held within each other by nuts 19. The fit between the two ends is preferably a tapering one, which permits wear to be taken up by means of nuts 19. At the sliding joint (see D, Fig. 4) one pipe end telescopes within the other one, and, if necessary, packing may be provided thereat, as shown at 21. 22 represents merely valves provided in the upper pipe-section. 23 is a handle by means of which the kettle is manipulated for tipping. In conjunction with a spring-catch 24 it serves also to hold the kettle in its normal upright position. It will be seen that no motion takes place at the points where the kettle or the jacket is pierced to make the pipe connections, and hence no stuffing-boxes are required thereat. A better circulation is obtained, and accumulation in the lower part of the jacket of water from condensed steam is avoided, since the possibility of a pipe connection at the lower part renders it possible to pass the circulation through that part and draining it. In the other way by circulation from trunnion to trunnion this space was practically dead, being outside of the path of circulation, permitting the water to accumulate and keep this part of the kettle cool. My improved circulation avoids this, cooking quicker, saves fuel, and avoids accidents due to the presence of such water. It is preferable to guide the steam into the jacket in a manner to prevent interference and back action. This is done by providing a nozzle 25, as shown in Fig. 5, which discharges the steam into the jacket with an easy motion on a tangent.

The ends of pipes A and B should be rigidly supported and held, for which purpose they may be supported in the frame or in boxes, as shown at 26. 27 is a tie-rod to hold the frame together.

My invention may also be applied in part only and only as to a yielding steam-outlet pipe from the lower part of the kettle, where a steam-joint at one of the trunnions is not considered objectionable and where an improved circulation only is desired. In such case branch A′ would be rigid and lead from the end of pipe A in through one of the trunnions.

Having described my invention, I claim as new—

1. In a tipping kettle heated by steam, the combination of a kettle supported for tipping and steam-conveying, circulating-pipes connected thereto at points not coincident with the points at which the kettle is supported.

2. In a tipping kettle heated by steam, the combination of a kettle supported on trunnions and steam-circulating pipes connected thereto, the ingress-pipe entering at the side of the kettle and the egress-pipe being connected to the lowest part thereof.

3. In a tipping kettle heated by steam, the combination of a kettle supported on trunnions, main steam-circulating pipes and branch pipes connecting them with the kettle, these latter being provided with floating joints whereby these branch pipes are capable of a yielding adjustment to accommodate the motion of the kettle.

4. In a tipping kettle heated by steam, the combination of a kettle supported on trunnions, main steam-circulating pipes and branch pipes connecting them with the kettle, they being provided with a turning joint at each of their ends and an intermediate joint between their ends whereby these branch pipes are capable of a yielding adjustment to accommodate the tilting motion of the kettle.

5. In a tipping kettle heated by steam, the combination of a kettle supported on trunnions, a jacket formed around the outside thereof, main steam-circulating pipes, an inlet branch from these pipes entering the jacket at the side of the kettle and being provided with a tangent nozzle thereat and an outlet branch from the lowest part of the jacket, these branches being provided with joints whereby they are capable of a yielding adjustment to accommodate the tilting motion of the kettle.

6. In a tipping kettle heated by steam, the combination of a kettle supported on trunnions, main steam-circulating pipes, an inlet branch establishing communication between these latter and the kettle, it being connected with turning joints at its ends and having also an intermediate turning joint between its ends and an outlet branch also connected at its ends with turning joints and having a telescoping joint between them.

7. In a tipping kettle heated by steam, the combination of a kettle supported on trunnions, main steam-circulating pipes, an inlet branch tapping the kettle at the side, and an outlet branch from the lowest part thereof, the same being provided with joints so as to be capable of yielding and accommodating itself to the motion of the kettle.

In testimony whereof I hereunto set my signature in the presence of two witnesses.

PETER GRUENER.

Witnesses:
C. SPENGEL,
ARTHUR KLINE.