Oct. 10, 1939. W. C. ELZE 2,175,886

MELTING KETTLE FOR TAR, ASPHALT, AND THE LIKE

Filed June 28, 1939 2 Sheets-Sheet 1

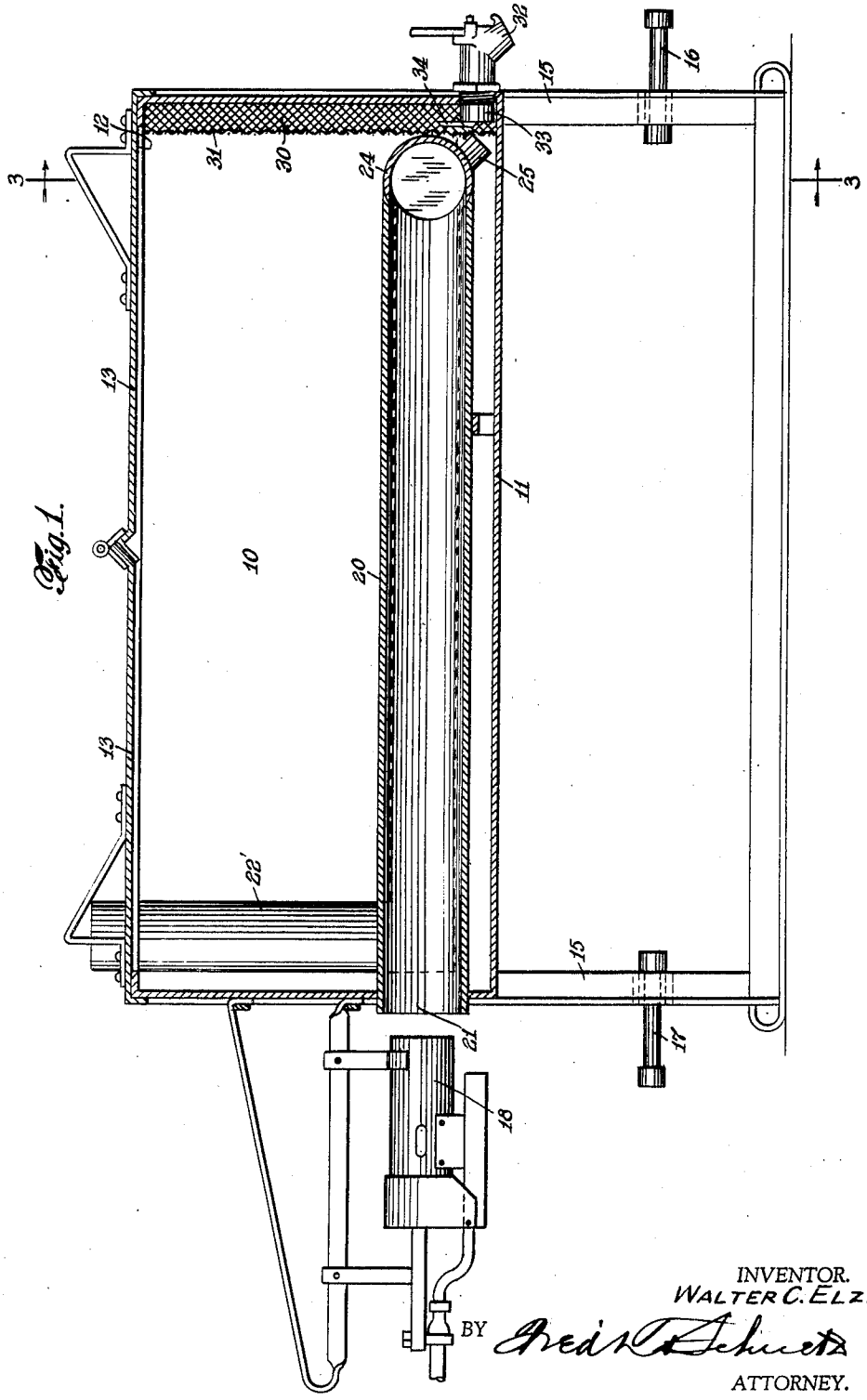


Fig. 1.

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Filed June 28, 1939 2 Sheets-Sheet 2

Fig. 3.

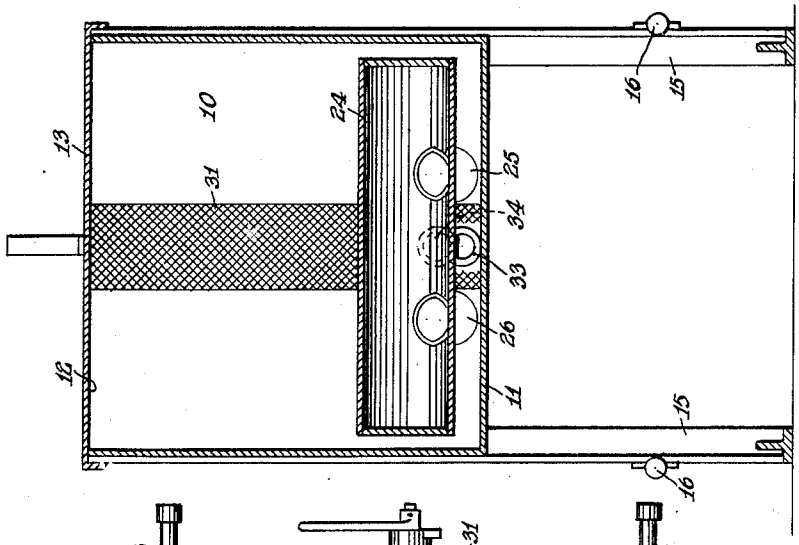
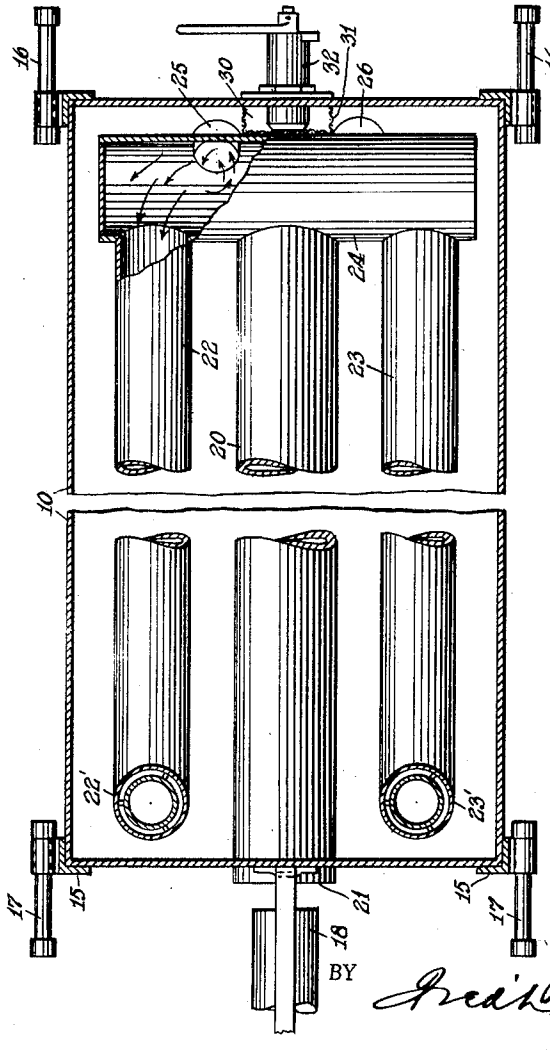


Fig. 2.



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MELTING KETTLE FOR TAR, ASPHALT, AND THE LIKE

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2 Claims. (Cl. 126—343.5)

The invention relates to melting apparatus, more particularly to melting kettles for tar, asphalt and the like, and such as are designed usually for highway maintenance, paving, roofing, and waterproofing and like operations.

It has for an object the provision of means whereby a suitable temperature is maintained at the outlet end of the kettle so that the molten material may readily be dispensed through the outlet nozzle or spigot provided and "freezing" of the same is obviated, it being understood that such spigot is located at the lowest possible level to secure best drainage. Heretofore it has been the practice to thaw the spigot by applying a torch thereto. This was necessary because the actual shut-off element of the spigot is located external to the kettle, and the material freezes completely in the outer end of the spigot. No heat developed in the kettle is sufficient to melt this solid material, and particularly not any such heat as might be present in the spent gases passing through an outlet duct. This is especially true when operations are conducted during the colder seasons of the year at which periods it may be necessary to repeat the thawing operation many times during a day's work, especially when working with the higher melting point materials. In the novel arrangement wherein the valve end of the spigot is located in close proximity to portions of the ducts at high temperatures, it is necessary, furthermore, that this location be such as to allow of the valve end of the spigot being sufficiently removed from the highest temperature zone to prevent carbon depositing in the vicinity of the valve or disk and thereby blocking its operation. The required temperatures are afforded by the novel construction hereinafter set forth.

This object of the present invention is attained in the novel construction which embodies a suitably shaped receptacle or kettle open at the top for loading of the material to be melted but provided with suitable lids for closing the kettle during the melting operation.

There is retained within this kettle a specially designed heating flue which becomes substantially immersed as a whole in the molten material, and this flue is provided at the outlet end of the kettle with means, for example, extensions or pockets, which serve not only to retard the flow of the heated gases through the flue to enhance the heating effect thereof, but because of their location in immediate proximity to, as upon opposite sides of, the outlet serve also to maintain a sufficient temperature at this location to insure proper draining of the material and quick delivery upon starting up of the kettle. Moreover, the retardation in the flow of the gases serves to lower materially the temperature thereof when the said gases are finally discharged, which is desirable as minimizing any tendency to ignite vapors arising from the molten material.

The nature of the invention, however, will best be understood when described in connection with the accompanying drawings, in which:

Fig. 1 is a vertical section taken through the novel melting kettle.

Fig. 2 is a fragmentary horizontal section, with a portion broken away.

Fig. 3 is a vertical section taken on the line 3—3, Fig. 1 of the drawings, and looking in the direction of the arrows.

Referring to the drawings, 10 designates a metal shell or more or less elongated receptacle with bottom 11 and open at the top 12. This top, however, is designed to be closed by means, for example, of a pair of hinged lids or covers 13 which are closed after filling of the receptacle with material to be melted. The kettle is mounted upon a suitable frame-work 15 which may be provided with pairs of handles 16 and 17 at its opposite ends for manually transporting the same from place to place, as required; or wheels, or like means (not shown), may be applied thereto.

The frame 15 is designed also to carry a suitable burner apparatus indicated at 18 for projecting flame and heated gases into an immersed melting member embodying the longitudinally extending flue member 20 which is located near the bottom of the kettle and extends substantially from end to end with the burner end provided with an opening 21 juxtaposed to the outlet of burner 18.

At the far end, the flue divides into two arms 22 and 23 through a T-connection 24; and the said arms 22 and 23 extend parallel to the flue portion 20 to the burner end of the kettle where they are upwardly directed as chimneys 22′ and 23′, respectively, extending through the top for discharge of the spent gases. It is preferred, also, to double-wall these upturned portions, as indicated, to prevent overheating of the mass at this point and ignition of vapors arising therefrom.

Moreover, and in accordance with the invention, there is provided at the discharge end of the kettle and communicating with the T-connection 24, a pair of stub or dead-end extensions 25 and 26 in the nature of short pipe lengths affording pockets wherein the flue gases may eddy to retard the flow through the flue proper,

as indicated by the arrows. These are inclined downwardly substantially at an angle of 45° upon either side of a discharge chamber **30** for the molten material which is provided at the end of the kettle opposite the burner and is formed by a screen **31** located in advance of the inlet of a spigot **32**. As is indicated in the drawings, the spigot is located near the bottom of the kettle wall for discharge of molten material from the kettle, and is of the type having an oscillatable cut-off disk **34** over its inner end. The two said extensions **25** and **26** embrace the discharge chamber **30** in the immediate region of the pipe **33** so that the material at this location not only is kept fluid until the kettle is fully drained upon shut-down; but it is maintained in proper condition at all times during operation of the burner, and in starting operations, molten material is quickly rendered available.

I claim:

1. A melting kettle for tar, asphalt and the like, comprising a receptacle provided with an opening at the top to receive the material to be melted and with a spigot to discharge molten material and including a pipe portion opening within the receptacle close to its bottom and extending externally of the receptacle, a heating flue mounted within the kettle for immersion in the molten material and comprising a duct having an opening at one end and said duct extending longitudinally through the kettle above the spigot, return flue means within the kettle and a cross-duct connecting the same with the inner end of said duct, a pair of flow-retarding and eddy-producing stubs for diverting a portion of the gaseous heating medium and extending from the cross-duct oppositely to the return flue means and inclined from said cross-duct toward the spigot to embrace the latter, and a burner to introduce a flame into the opening of said longitudinal duct.

2. A melting kettle for tar, asphalt and the like, comprising a receptacle provided with an opening at the top to receive the material to be melted and with a spigot to discharge molten material and including a pipe portion opening within the receptacle close to its bottom and extending externally of the receptacle, a heating flue mounted within the kettle for immersion in the molten material and comprising a duct having an opening at one end and said duct extending longitudinally through the kettle above the spigot, a pair of return flues within the kettle and a cross-duct connecting the same with the inner end of said duct, a pair of flow-retarding and eddy-producing stubs for diverting a portion of the gaseous heating medium and extending from the cross-duct oppositely to and between the return flues and inclined from said cross-duct toward the spigot to embrace the latter, and a burner to introduce a flame into the opening of said longitudinal duct.

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