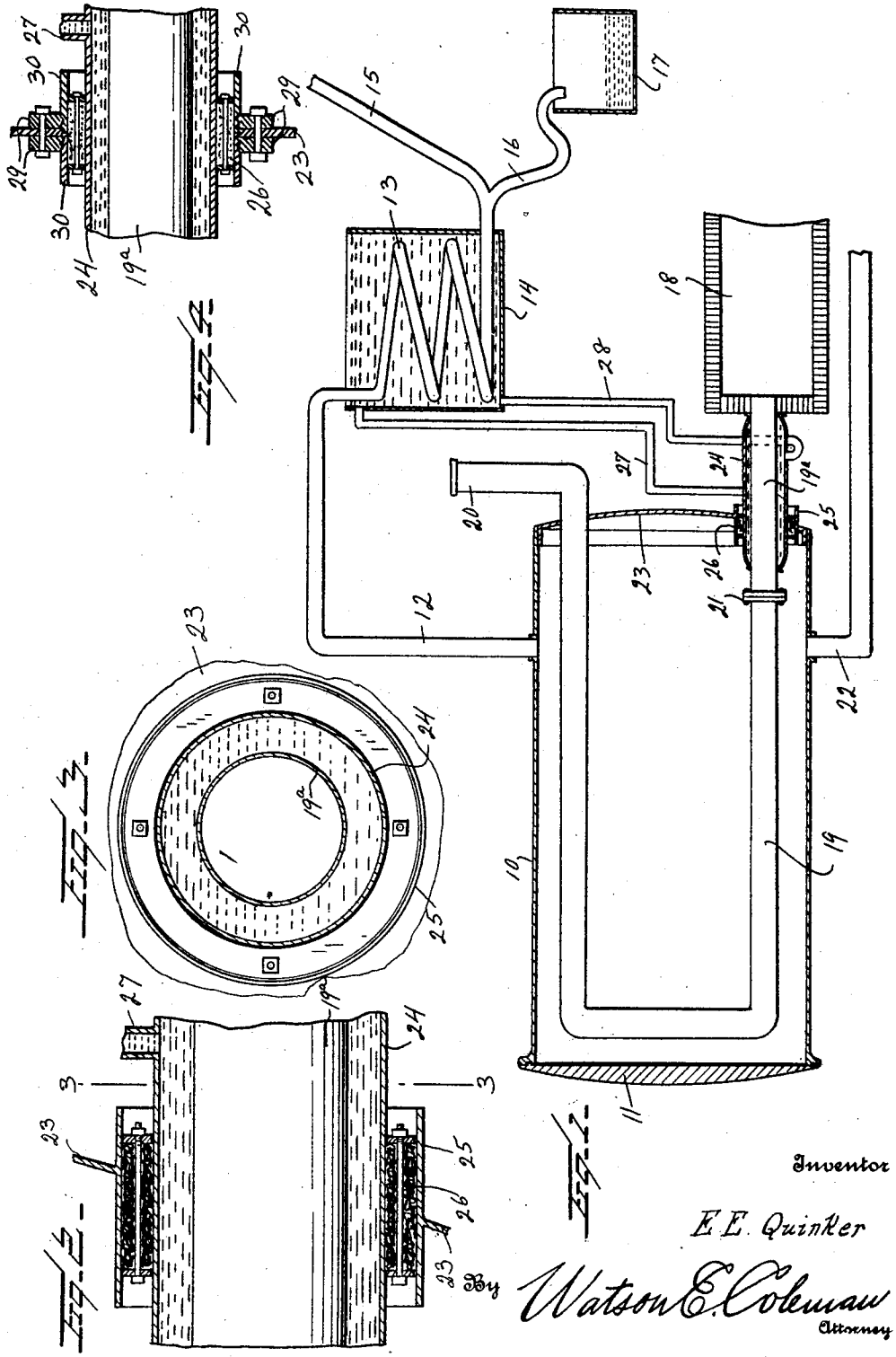
E. E. QUINKER.

PROTECTOR FOR THE HEATING PIPES OF RETORTS.

APPLICATION FILED FEB. 13, 1920.

1,383,424. **Patented July 5, 1921.**



Inventor

E. E. Quinker

By Watson E. Coleman

Attorney

UNITED STATES PATENT OFFICE.

EDWIN E. QUINKER, OF VALDOSTA, GEORGIA.

PROTECTOR FOR THE HEATING-PIPES OF RETORTS.

1,383,424. Specification of Letters Patent. Patented July 5, 1921.

Application filed February 13, 1920. Serial No. 358,450.

To all whom it may concern:

Be it known that I, EDWIN E. QUINKER, a citizen of the United States, residing at Valdosta, in the county of Lowndes and State of Georgia, have invented certain new and useful Improvements in Protectors for the Heating-Pipes of Retorts, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to retorts used for the dry distillation of wood, and particularly to means for protecting the heating pipe at the point where the heating pipe leads from the furnace into the heater.

The general object of the invention is to provide means whereby heat may be applied to or conducted into a retort for the distillation of wood without burning the retort and without burning off the end of the heating pipe where it extends on the outside of the retort.

A further object is to provide means which will prevent the intense heat from the furnace from following the heating pipe to the retort and burning out and weakening the head of the retort.

And a further object is to provide a stuffing box with packing through which the protective water jacket or shield extends into the retort.

A further object is to provide means whereby the water jacket may be connected to the condensing tank or storage tank of the retort so as to secure a circulation of water through the water jacket.

Other objects will appear in the course of the following description.

My invention is illustrated in the accompanying drawings, wherein:—

Figure 1 is a sectional view of a retort showing diagrammatically the condenser, furnace and the connections leading thereto;

Fig. 2 is a diametrical section through the water jacket and stuffing box;

Fig. 3 is a section on the line 3—3 of Fig. 2;

Fig. 4 is a fragmentary section through the retort showing another form of packing or stuffing box and showing the manner in which it is attached to the retort.

Referring to these drawings, 10 designates generally and more or less diagrammatically, a retort for the distillation of wood or for other purposes. This retort may be constructed in any usual or suitable manner, and when in use is closed at one end by means of the closure 11. A vapor discharge pipe 12 leads from the upper portion of the retort and discharges into a condensing coil 13 disposed in a condensing tank 14. From this condensing coil two discharge pipes lead, designated respectively 15 and 16, the pipe 15 being for the discharge of dry vapor, while the pipe 16 forms an oil outlet and discharges into an oil reducing tank 17.

The heat for the retort is secured from a furnace 18 of any usual or suitable construction, and the retort is heated by one or more heating pipes 19 leading from the furnace into one end of the retort and extending through the retort in a more or less circuitous manner, and then out of the retort to a stack (not shown) by means of the stack connection 20. The heating pipe may be formed in any suitable number of sections, and I have shown that portion of the pipe leading from the furnace into the end of the retort as being formed in two sections connected by a coupling or joint 21. From the bottom of the tank leads a discharge pipe 22, by which heavy tar is discharged from the retort.

So far, I have described and illustrated an ordinary and common form of retort for the dry distillation of wood and other like materials, and it is to be understood that none of the parts heretofore described are my invention but may be of any usual or suitable construction.

It will be noted that the furnace 18 is spaced some little distance from the head 23 of the retort, and that the heating pipe 19 extends from one end of the furnace through this head 23. The moisture evaporated from the wood in the course of its distillation sufficiently protects that portion of the heating pipe which is disposed within the retort and prevents it from being burned out, but ordinarily the heating pipe on the outside of the retort has no protection and this exposed portion of the heating pipe is very liable to burn off or burn out. Furthermore, the heat from the furnace passing into the heating pipe tends to burn and weaken the head 23 of the retort.

To avoid this I have provided a water jacket 24 which surrounds the exposed portion of the pipe 19 and extends from the end wall of the furnace to and through the head 23. This water jacket 24 is spaced

sufficiently from the heating pipe 19 that it may contain a sufficient quantity of water to prevent the heating pipe from being burned out and prevent the conduction of heat to the head 23. I have shown this water jacket as attached to a short section of pipe 19ª forming a continuation of the pipe 19, and which is connected to the pipe 19 by means of the pipe coupling 21. This makes it easy to form the water jacket and put it in place. I have illustrated this water jacket as extending through a stuffing box or packing gland disposed in the head 23, this stuffing box being designated generally 25, and being filled with packing 26. I do not wish to be limited to the particular form of the stuffing box or gland illustrated, as it is evident that other forms of stuffing box or gland might be used. This stuffing box is attached to the end wall 23 if the retort and permits the expansion and contraction of the heating pipe and water jacket, while at the same time preventing the outlet of any vapors from the retort, and also aids in insulating the wall of the retort from the heating pipe section 19ª. The jacket 24 is preferably connected by means of inlet and outlet pipes to any suitable source of water whereby the water in the jacket may be kept cool.

Thus I have illustrated a water outlet pipe 27 extending from the water jacket and leading to the upper portion of the tank 14, and a water intake pipe 28 as extending from the bottom or lower portion of the condensing tank into the water jacket. Thus I secure a circulation of the water from the water jacket into the condensing tank and thus secure a constant circulation of relatively cold water within the water jacket and around the pipe section 19ª.

While I have illustrated more or less diagrammatically a particular form of retort to which my invention is applied and have illustrated the pipe section 19ª as extending into one end wall or head of the retort, it is to be understood that it might extend into the side of the retort or into any other portion of the retort, and that I do not wish to be limited to the details of construction illustrated, either as regards the general construction of the still or retort, or the detailed construction of the water jacket and the stuffing box through which it passes. The water jacket may be applied directly to the still or retort, either by bolts, rivets or flanged couplings, or in any other suitable manner instead of being attached to the pipe section 19ª. Thus, the water jacket could be applied to the head of the retort or the sides of the retort without any flanges, bolts, rivets or the use of a stuffing box and packing, as illustrated in my Fig. 2. Thus the heating pipe may be welded to the retort and then the water jacket at one end welded to the head of the retort and the other end of the jacket welded to the heating pipe where it goes into the furnace. There are objections to this method of fastening the heater pipe to the head by welding. One of the main objections is that the expansion and contraction soon cracks the welding and causes the water from the water jacket to leak into the retort. Further, a welding outfit must be used to do the welding, and as most retorts are in the woods, and as one of the objects of the invention is to provide a heating pipe protector chamber applied to a retort in actual practice, it is obvious that it would be very expensive to take a welding outfit into the woods and weld up any breaks which might occur between the water jacket and the retort.

One of the objects, as above stated, is to provide a standard water jacket that can be made in the shop and shipped anywhere where there is a still and then the owners of the still can apply the water jacketed pipe section through the stuffing box and connect it by means of the flange coupling, as illustrated in my Fig. 1. I do not wish to be limited, however, to the particular manner of forming the stuffing box illustrated in Figs. 1 and 2, and in Fig. 4 I show a construction wherein the stuffing box is formed by bolting collars 29 on each side of the head of the still, these collars being interiorly screw-threaded to receive pipe nipples 30 which form the casing of the stuffing box and within which packing is disposed in the manner heretofore stated, the packing being compressed and forced against the wall of the nipple by any suitable means, as for instance, by the longitudinally extending bolts and nuts previously described in connection with Fig. 2. The use of this stuffing box permits the device to be applied without careful fitting of the parts and without the expense of welding the parts to the still.

I claim:—

1. The combination with a wood distilling retort, a furnace spaced therefrom and a heating pipe extending from the furnace through the wall of the retort into the interior thereof, of a water jacket entirely surrounding said heating pipe along that portion which is disposed between the furnace and the retort and extending through the wall of the retort, and means permitting the water jacket to have longitudinal movement of expansion and contraction relative to the wall of the retort but preventing the escape of gases between said retort wall and the water jacket.

2. The combination with a wood distilling retort, a furnace spaced therefrom and a heating pipe extending from the furnace into the retort and through the wall thereof,

of a water jacket entirely surrounding said heating pipe and extending through the wall of the retort, and a stuffing box carried by the wall of the retort and through which said water jacket passes, said stuffing box permitting movement of the heating pipe and water jacket relative to the retort wall.

3. The combination with a wood distilling retort, a furnace spaced therefrom and a heating pipe extending from the furnace into the retort and through the wall thereof, of a water jacket entirely surrounding said heating pipe and extending through the wall of the retort, and a stuffing box carried by the retort wall and through which said water jacket passes, said stuffing box having therein heat insulating packing and permitting movement of the heating pipe and water jacket relative to the retort wall, and means compressing the heat insulating material within the stuffing box to prevent the escape of gases between the water jacket and the retort wall.

4. The combination with a wood distilling retort and a furnace spaced therefrom, of a heating pipe section extending from the furnace into the retort and passing through the wall thereof, and a water jacket disposed entirely around and carried by the first named heating pipe section and extending from the furnace to and through the wall of the retort, the wall of the retort having an opening through which said water jacket passes and larger than the jacket and said retort wall having annular flanges extending in opposite directions from the retort wall, longitudinally spaced rings disposed between said flanges and the outer wall of the water jacket, a filling of non-heat conducting material disposed between said rings, and bolts connecting said rings whereby the filling may be compressed into gas-tight engagement with the flanges of the retort wall and the jacket.

5. The combination with a distilling retort and a heating pipe section extending into the retort and passing through the wall thereof, of a water jacket disposed entirely around and carried by the heating pipe section and extending through the wall of the retort, the wall of the retort having an opening through which said water jacket passes and larger than the jacket and having annular flanges extending in opposite directions from the retort wall concentric to the jacket, longitudinally spaced rings disposed between said flanges and the outer wall of the jacket, a filling of non-heat conducting, compressible material disposed between said rings, and means whereby the rings may be forced toward each other to compress the filling.

6. As an article of manufacture, a pipe section adapted to connect a furnace with a retort, and a water jacket attached to said pipe section and surrounding the same, and a stuffing box surrounding the water jacket and having insulating packing therein, the stuffing box being adapted to be connected to the wall of the retort.

In testimony whereof I hereunto affix my signature.

EDWIN E. QUINKER.