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STACK DRAFT CONTROL APPARATUS

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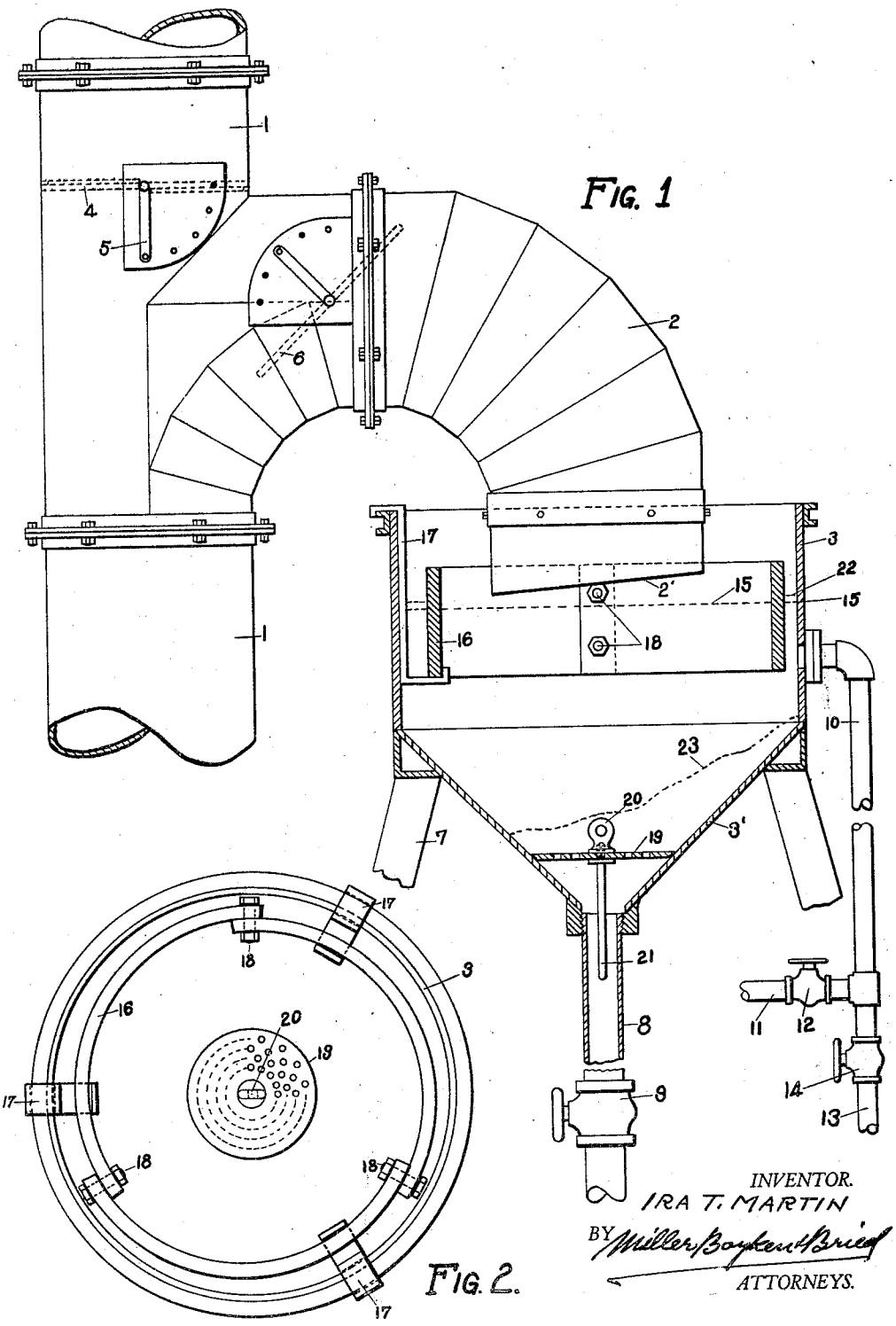

FIG. 1

FIG. 2.

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STACK DRAFT CONTROL APPARATUS

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This invention relates to stack draft control apparatus of the type shown in my U. S. Patent No. 1,798,122 of March 24, 1931, and has for its objects improvements in the water tank arrangement thereof.

In the drawings accompanying this application Fig. 1 is an elevation of a part of a smoke stack and side outlet extending into a water tank, the latter being shown in section. Fig. 2 is a plan view of the water tank only.

In further detail 1 represents part of a smoke stack of any size, height, or construction, fitted with a laterally extending and downwardly turned side outlet or return bend 2 which projects downward into a water tank 3 and there terminates, preferably at an angle to the horiontal as indicated at 2'.

This return bend branches from the stack at a point sufficiently elevated to secure a proper draft when the extreme upper end of the stack is shut off by means of a damper 4, preferably a solid one, operated by handle 5.

Another damper 6 is provided within the bend for opening or shutting off the same, or opening to the angular position as dotted in the drawings to deflect fly ash or dust in the stack gases toward the outer wall of the bend.

These dampers may be operated by remote control as shown in my patent aforesaid if desired.

The tank here shown is circular, supported on a rigid frame 7 and provided with a conical bottom 3' fitted with a central drain pipe 8 and valve 9.

Water may be maintained at any desired level within the tank by means of a pipe 10 entering the side of the tank and receiving water from a supply pipe 11 valved at 12. Pipe 10 extends below the water supply pipe as at 13 and is valved at 14 so that by manipulating the valves the water may be introduced from pipe 11, or run off to lower the level from pipe 13. The operating level of the water is usually maintained at about the line 15, and dropped a little to increase the draft or raised to gradually shut off the shaft all as explained in my prior patent. Any other arrangement of water piping may be used to control the height of the water if desired.

The tank is usually made of iron and preferably coated with a heavy coat of tar or acid-resisting paint, while within the tank is a heavy iron ring or collar 16 suspended on acid-resisting or tar-painted hangers 17 hooked over the upper edges of the tank. Iron ring 16 is preferably made in overlapping sections, and bolted together by bolts 18 at time of placing into position, and when in place the ring extends both above and below the normal water level line 15.

Also in the tank is a heavy unprotected iron perforated disk 19 fitted with a lowering ring 20 and a depending bar 21 which finds its way loosely into the drain pipe 8 so as to insure proper positioning of disk 19 in position shown when the disk is lowered into place.

While the tank is usually of painted steel or iron, and the collar 16 and disk 19 are of unprotected iron or steel, other metals may be used, the object being that the ring and disk shall be open to free attack by any acid condition of the water generated by contact with the flue gases from the return bend 2.

In the annular space between the collar 16 and tank 3 I introduce a layer of heavy mineral oil or liquid tar 22 to float on the water and thereby restore the paint or coating on the tank as the water level rises and falls.

The construction also permits reduction of effective diameter of a tank to any degree surrounding the return bend so that the working area of the water may be suited to the particular installation.

In operation the flue gases strike the surface of the water to depress it slightly in making the outward turn to escape while a spray is generated and thrown outwardly against the inside of the collar 16, while the fly ash or dust being entrapped by the water will settle through the perforated disk 19 and after filling up pipe 8 will tend to bank up in the tank as shown in the drawings at 23, and when the water and settled matter is drawn off through pipe 8 the latter will all pass through the disk so that any acid which the mass contains may become neutralized by acting upon the disk.

The water becomes so acid from the flue

gases passing over and mixing with it that it is difficult to keep the tank from being eaten up, but by painting the tank and providing the unprotected iron or other easily attached collar or ring 16 surrounding the return bend 2 the acid spray is all thrown against it, and the body of water at its juncture to the air where it is more active is always presented to the iron of the inner face of the collar for neutralizing and the formation of salts, so that in consequence the tank 3 lasts almost indefinitely.

When necessary to renew the collar, this may easily be done without touching the return bend by undoing bolts 18.

Having thus described my invention I claim:—

1. Stack draft control apparatus comprising a tank, a downwardly directed stack outlet extending into said tank, and means, presenting a surface for ready action thereon by an acid arranged within said tank between its inner surface and the downwardly directed stack, whereby the energy of acids developed in the tank will be neutralized.

2. Stack draft control apparatus comprising a tank, a downwardly directed stack outlet extending into said tank, and a collar-like device of acid attackable material between said tank and the downwardly directed stack.

3. Stack draft control apparatus comprising a tank, a downwardly directed stack outlet extending into said tank, and a collar-like device of iron between said tank and the downwardly directed stack exposed to attack of acid in the tank.

4. In a construction as specified in claim 3, said collar-like device of iron supported on hangers suspended from the tank.

5. In a construction as specified in claim 3, said collar-like device of iron assembled in separable sections all supported on hangers suspended from the tank.

6. Stack draft control apparatus including a tank into which the end of the stack is downwardly directed, and a collar of bare metal spaced within the tank and outward from the end of the stack.

7. Stack draft control apparatus including a tank into which the end of the stack is downwardly directed, and a collar of bare metal spaced within the tank and outward from the end of the stack, said tank containing water for control, through change of level, of the stack draft, and a charge of oil on said water between said collar and said tank.

8. Stack draft control apparatus including a tank into which the end of the stack is downwardly directed, said tank having a conical bottom provided with a lower drain pipe, and a strainer of exposed acid attackable material in the cone.

9. Stack draft control apparatus including a tank into which the end of the stack is downwardly directed, said tank having a conical bottom provided with a lower drain pipe, and a strainer of exposed acid attackable material in the cone provided with a locating pin extending into said pipe.

10. Stack draft control apparatus including a water tank into which the end of a downwardly extending stack outlet is directed, means for varying the water level in said tank for controlling the stack draft, a collar-like device of iron spaced around the stack extending above and below the water level to react with the acid developed in the water from contact with the stack gases.

11. Stack draft control apparatus including a water tank into which the end of a downwardly extending stack outlet is directed, means for varying the water level in said tank for controlling the stack draft, a collar-like device of iron spaced around the stack extending above and below the water level to react with the acid developed in the water from contact with the stack gases, a drain from the lower part of the tank, and an iron device above the drain exposed for attack of acid in tank contents passing to drain.

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