

May 20, 1924.

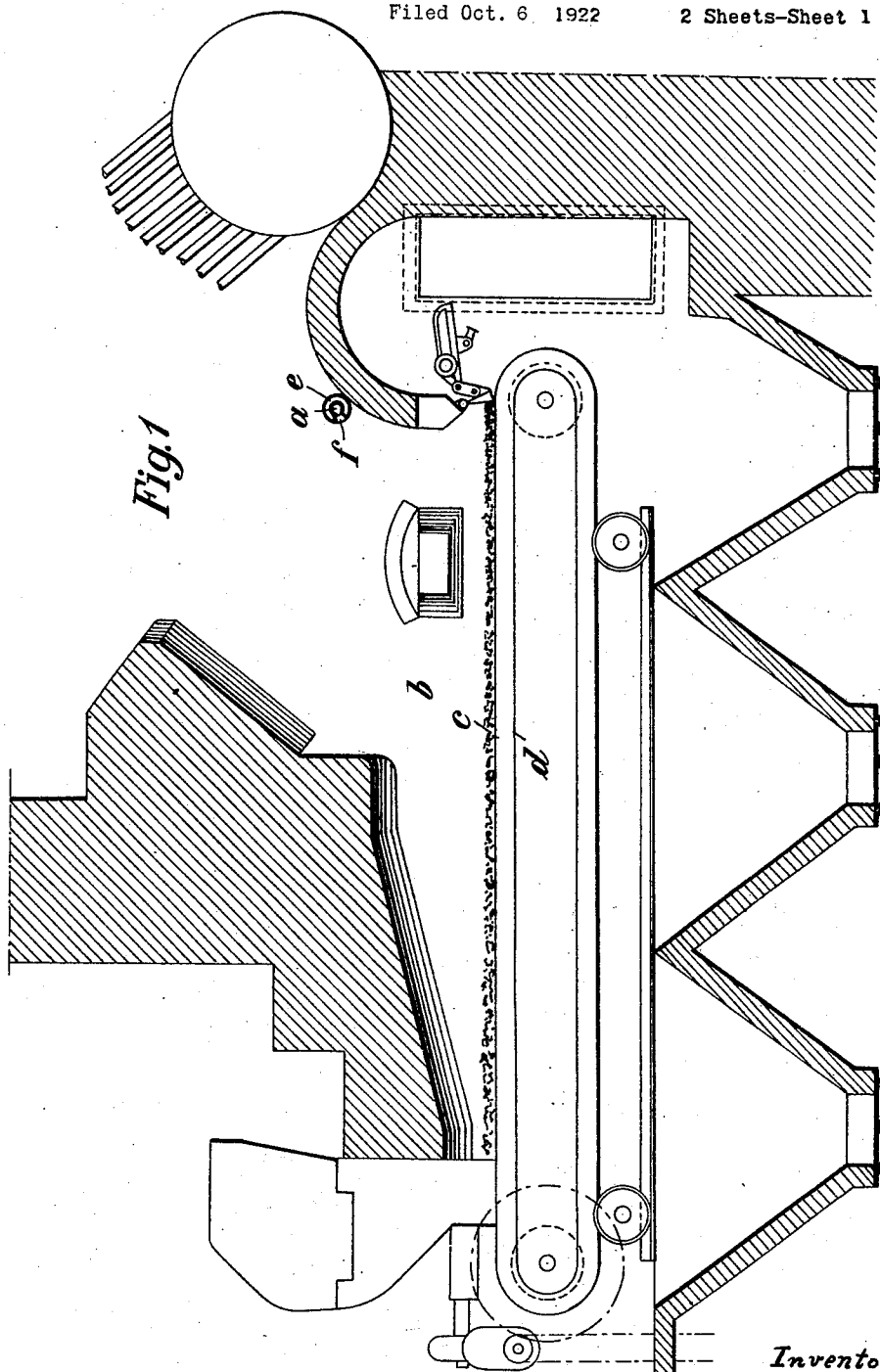
E. EISENBEISS

1,494,468

METHOD OF BURNING AQUEOUS LIQUIDS CONTAINING SULPHITE WASTE LYE

Filed Oct. 6, 1922

2 Sheets-Sheet 1



Inventor:
Emil Eisenbeiss
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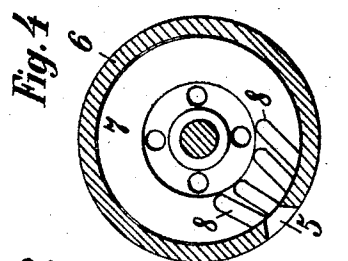
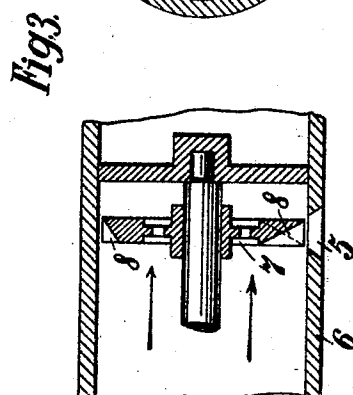
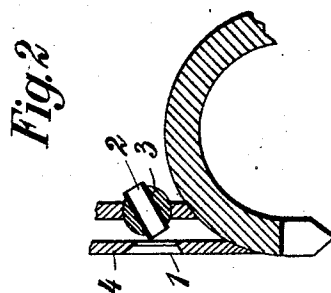
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UNITED STATES PATENT OFFICE.

EMIL EISENBEISS, OF PERLEN, NEAR LUZERN, SWITZERLAND.

METHOD OF BURNING AQUEOUS LIQUIDS CONTAINING SULPHITE WASTE LYE.

Application filed October 6, 1922. Serial No. 592,873.

To all whom it may concern:

Be it known that I, EMIL EISENBEISS, a citizen of the Swiss Republic, and a resident of Perlen, near Luzern, Switzerland, have invented a new and useful Improved Method of Burning Aqueous Liquids Containing Sulphite Waste Lye, of which the following is a specification.

With sulphite waste lye it is necessary to expel its contents of water before the combustible substances it contains can be burned upon the grate. The object of the present invention is to effect that by supplying the lye from the rear end of a grate, preferably a travelling grate and preferably oppositely to the place of charging and contrarily to the direction in which the combustion of the fuel proceeds. The sulphite waste lye is preferably atomized and the produced spray is directed immediately into the hottest part of the furnace space where it is converted into solid fuel before getting down to the grate.

I point expressly to the fact that the invention has nothing to do with the combustion of liquid fuels, such as oil and the like, which burn like gases; the invention relates solely to the combustion of sulphite waste lye which contains much water which is to be removed before the combustible components are burned.

In order to render this procedure as economical as possible, the sulphite waste lye is preferably strongly concentrated before it is burned. As, however, such a strongly concentrated lye is pretty thick or viscid, it is not atomized, but a continuous jet of it is conducted in regulated amounts to the several portions of the grate, or a certain distinct portion of it, in such a manner that the grate is uniformly fed with it, or uniformly covered with the combustible components respectively. If this manner of operation is employed the jet of the concentrated lye may be supplied also from another point than the rear of the grate or furnace. Supplying the concentrated lye in the form of a continuous jet is advantageous in so far as the correspondingly large nozzle is not clogged up so easily as is the case when a plurality of smaller nozzles is made use of.

The mechanical means for carrying my invention into practice are illustrated, by way of example, in the accompanying draw-

ing in which Figure 1 is a longitudinal section through a furnace having a travelling grate. Figure 2 is a modified form of construction of the parts located at the rear of the grate above it. Figure 3 is an axial section through some parts of a lye supplying device which is to be substituted for that shown in the lefthand upper portion of Fig. 2 and is drawn on a greatly enlarged scale in comparison to Fig. 2. Figure 4 is a transverse section through the parts shown in Fig. 3.

Referring to Figure 1, *b* is the fire space of a furnace having a travelling grate *d*, *c* is the fuel which is moved from the left to the right in the figure. The liquid or lye to be burned is introduced into the space *b* from a point located upon the fire-bridge where there is provided a supply tube *a* encompassed by a cooling tube *e* and having one or several atomizing nozzles *f*. The tubes *a* and *e* extend into the fire space through the side-walls of the furnace. The lye is introduced under pressure into the tube *a* and then projected and sprayed into the fire space towards the grate where the combustible components of the liquid are burned. The tubes *a* and *e* with the nozzle or nozzles are preferably rotatable at least in such a degree that the lye can be projected and sprayed over the entire length of the grate.

The configuration of the nozzle or nozzles *f* may be such that the liquid escapes in the shape of a fan.

Whilst the supplying or distributing device illustrated in Figure 1 is intended for unconcentrated or but little concentrated lye, Figure 2 shows, as another example, means to be employed if the lye is pretty strongly concentrated. 1 is a delivery aperture provided in a stationary wall or the like extending upwards from the fire-bridge. Behind said aperture is a guide tube or nozzle 2 which is supported by a ball-shaped member 3 that may be turned in any direction so as to throw the jet of the concentrated liquid to any desired part of the grate. The means for thus actuating said member 3 may be of any appropriate design, and the tube or nozzle may be connected with a flexible tube or the like through which the lye is supplied. The member 3 with the tube or nozzle 2 may be turned horizontally, as well as vertically, and the lye may, thus, be dis-

tributed over the entire area of the grate.

Proceeding in this manner permits of feeding every portion of the grate with another supply of the lye after the former supply of the respective portion has been properly dealt with whereby a good combustion is insured. The lye finds then always a strong fire acting upon it in the desired manner.

Referring now to Figures 3 and 4, the tube 6 is a substitute for the tube α of Figure 1, and the aperture 5 is a substitute for the aperture f of Fig. 1 or for the aperture 1 of Fig. 2. Within the tube 6 is a stationary wall or disk forming a bearing for a shaft 9 having a rotary disk 7 secured to it. The rim of this disk is provided with oblique recesses 8, the angularity of which is different in the direction to the shaft 9 (Fig. 3), as well as in the plane of the disk 7 (Fig. 4), and such recesses are provided on both sides of the disk. The lye projected and sprayed by the disk, or from any one of these recesses respectively, is obviously correspondingly distributed over the grate, and the number and shape of the recesses may be such that every portion of the grate is fed with lye, or with the combustible components of the same respectively.

I claim:

1. The method of utilizing sulphite waste lye in furnaces, consisting in introducing the lye in counter-current onto a fire burning on a grate at the end counter to the charging end for the fuel proper to be burned on said grate.

2. The method of utilizing sulphite waste lye in furnaces, consisting in introducing the

lye in counter-current onto a fire burning on a travelling grate at the end counter to the charging end for the fuel proper to be burned on said grate.

3. The method of utilizing sulphite waste lye in furnaces, consisting in introducing the lye in concentrated state and in counter-current onto a fire burning on a grate at the end counter to the charging end for the fuel proper to be burned on said grate.

4. The method of utilizing sulphite waste lye in furnaces, consisting in introducing the lye in finely distributed state and in counter-current onto a fire burning on a grate at the end counter to the charging end for the fuel proper to be burned on said grate.

5. The method of utilizing sulphite waste lye in furnaces, consisting in introducing the lye in a continuous jet and in counter-current onto a fire burning on a grate at the end counter to the charging end for the fuel proper to be burned on said grate.

6. The method of utilizing sulphite waste lye in furnaces, consisting in introducing the lye in a continuous jet and in counter-current onto a fire burning on a grate at the end counter to the charging end for the fuel proper to be burned on said grate, and directing said jet by and by onto every part of the grate area.

In testimony whereof I affix my signature in presence of two witnesses.

EMIL EISENBEISS.

Witnesses:

WILLIAM AMATHEO,
C. M. MILLER.