

June 7, 1955

C. B. SHELTON
SINTERING FURNACE FLOW

2,710,182

Filed Oct. 31, 1950

2 Sheets-Sheet 1

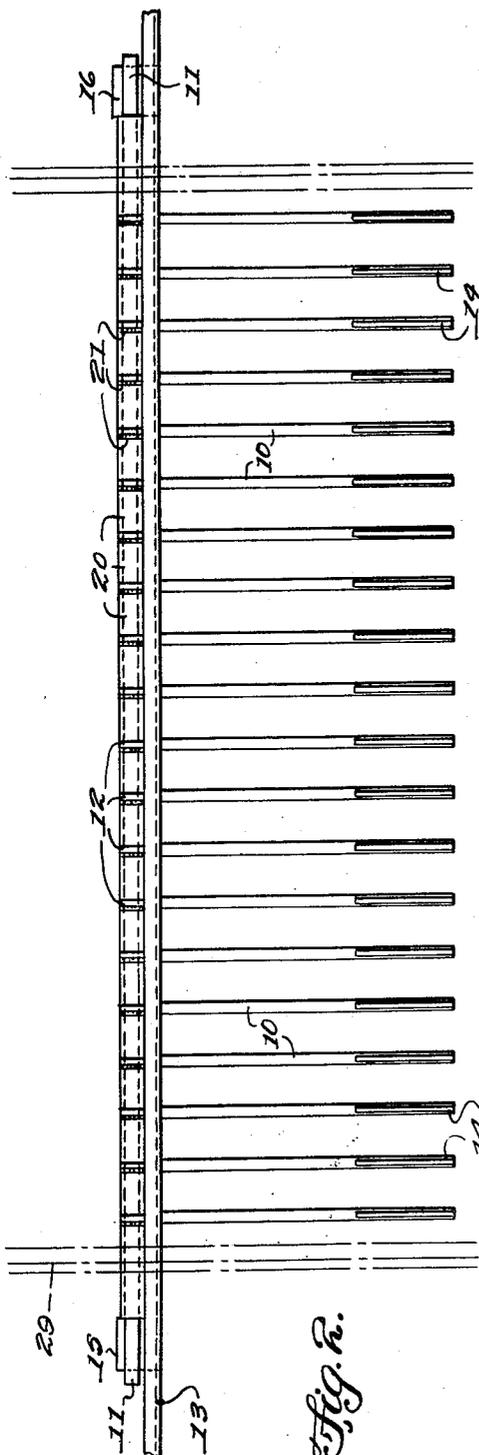


Fig. 2.

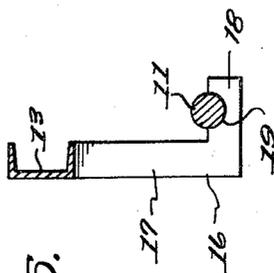


Fig. 5.

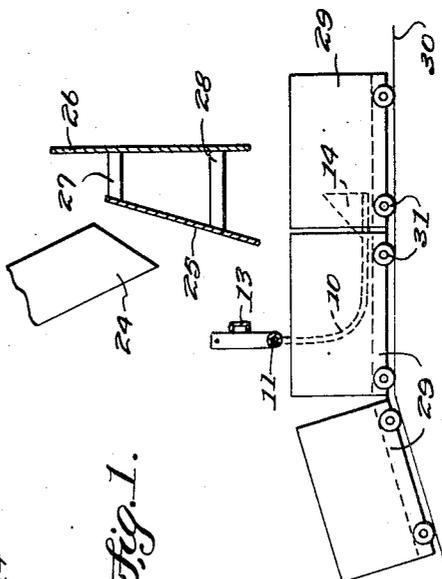


Fig. 1.

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2 Sheets-Sheet 2

Fig. 3.

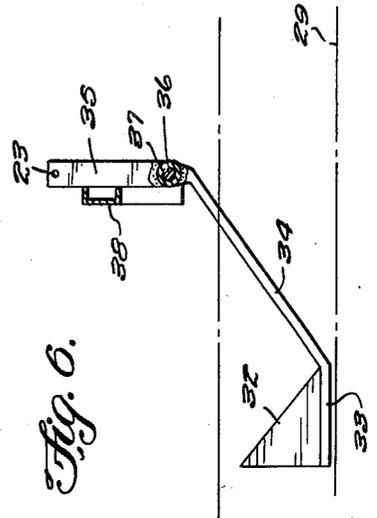
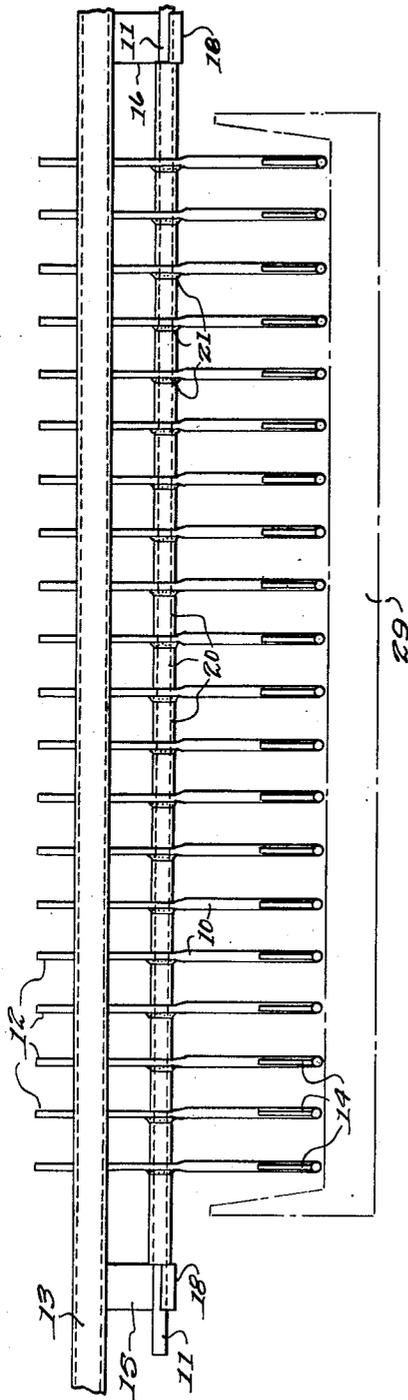
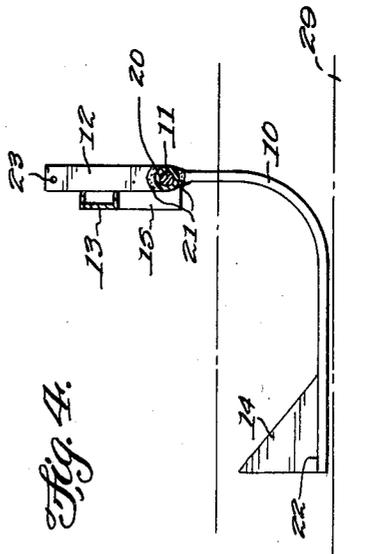


Fig. 5.



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1

2,710,182

SINTERING FURNACE PLOW

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1 Claim. (Cl. 266—21)

This invention relates to furnaces for burning sintering materials where the material is deposited upon traveling grates by a swinging spout and where the deposited material coagulates forming a continuous mat or mass through which it is difficult to draw sufficient air for ignition, and in particular this invention provides a series or gang of plows extended across the surfaces of the grates of ignition furnaces for sintering materials whereby the sintering material deposited upon the grates is broken up sufficiently to permit circulation of air there-through.

The purpose of this invention is to provide means for breaking up a solid bed or mass of sintering material deposited upon traveling grates entering ignition furnaces to facilitate burning the sintering material on the grates.

Grates of sintering furnaces are mounted on wheels and positioned to travel on tracks through ignition furnaces whereby once the material is deposited upon the grate section it remains in position undisturbed as it passes into the furnace. Owing to the consistency of the sintering material it forms a continuous mass through which it is difficult to draw sufficient air for ignition purposes. With this thought in mind this invention contemplates apparatus for suspending a plurality of plows in spaced relation in the path of the sintering material carried by the grate sections whereby the plows break up the sintering material and permit circulation of air therethrough.

The primary object of this invention is, therefore, to provide spaced plow points continuously across the upper surfaces of grates of sintering furnaces without interfering with the travel of the grates or the depositing of the sintering material upon the grates.

Another object of the invention is to provide means for suspending plows in the path of sintering material on grates entering ignition furnaces without changing the design or arrangement of the furnace or grate in which the plows are used.

A further object of the invention is to provide gang plows and supporting means for suspending the plows in traveling grates of sintering furnaces for breaking up sintering material on the grates in which the plows and supporting means are of comparatively simple and economical construction.

With these and other objects and advantages in view the invention embodies a transversely disposed shaft extended across the traveling grates of a sintering furnace with plow points suspended by arms mounted on the shaft and with the points retained in position by a transversely disposed beam positioned above the shaft and providing a stop for the upper ends of the plow point carrying arms.

Other features and advantages of the invention will appear from the following description taken in connection with the drawings wherein:

Figure 1 is a cross sectional view illustrating plows suspended by a shaft and positioned in traveling grates,

2

the grates being shown in elevation, and the grates being illustrated as entering the front opening or gate of an ignition furnace.

Figure 2 is a plan view showing the plows in spaced relation on a shaft and showing a channel positioned to be engaged by upwardly extended ends of arms which carry the plow points.

Figure 3 is a front elevational view showing the spaced plow point carrying arms with the shaft on which the arms are mounted and also with the channel in engagement with the upwardly extended ends of the arms.

Figure 4 is a cross section through the plow mounting elements illustrating a plow carried by an arm having an arcuate section therein.

Figure 5 is a detail illustrating a hanger for supporting the center of the shaft on which the arms of the plows are mounted.

Figure 6 is a detail similar to that shown in Fig. 4 illustrating a modification wherein the plow points are carried by straight or diagonally positioned arms.

Referring now to the drawings wherein like reference characters denote corresponding parts the sintering furnace plow attachment of this invention includes a plurality of spaced plow shares or arms 10, pivotally mounted on a shaft 11, with upwardly extended ends 12 of the arms positioned to engage a channel 13, and with plow points 14 carried by extended ends of the arms.

As illustrated in Figs. 2 and 3 the arms 10 and shaft 11 are supported by a transversely disposed channel or beam 13 with the ends of the shaft carried by bearings 15 and 16 and with the center of the shaft supported by a hanger 17 extended downwardly from the channel 13 and having a horizontally disposed arm 18 with an arcuate recess 19 in the upper surface, on the lower end, as illustrated in Fig. 5.

The flat upper ends 12 of the arms 10 are provided with hubs or spacing sleeves 20 which are secured, preferably by welding as indicated by the numeral 21 to the sides of the flat sections and with the spacing sleeves extended from one side only of the arms the plow points are maintained in alignment.

The plow points 14 are preferably triangular shaped, as shown in Figs. 4 and 6 and the lower edges of the points are secured by welding to the upper surfaces of the arms 10 and the opposite or upper ends of the flat sections of the arms are provided with openings 23.

With the parts arranged in this manner the sintering material is deposited by a swinging spout 24 against a strike plate 25 suspended from a furnace front 26, by arms 27 and 28, and as the material drops into the grates as indicated by the broken lines 29 in Fig. 3 it passes over the arms 10. With continuous movement of the traveling grates 29 which are mounted on tracks 30 by wheels 31, the sintering material is broken up by the plow points 14 so that sufficient air may be drawn through the material to accelerate the sintering rate or burning of the material.

In the modification illustrated in Fig. 6 the plow points 32 are welded to straight sections 33 of arms 34 and the arms which are provided with flat section 35 similar to the section 12 are pivotally mounted on a shaft 36 with hubs or spacing sleeves 37 between the arms and with the upper ends of the arms positioned to engage the transversely disposed channel 38, similar to the channel 13.

It will be understood that other modifications may be made in the design and arrangement of the parts without departing from the spirit of the invention.

What is claimed is:

In a gang plow attachment for a sintering furnace, the combination of which comprises a traveling furnace

3

grate, a transversely disposed supporting beam positioned above and extended across the said grate, a transversely disposed shaft carried by the beam and spaced below the said beam, L-shaped arms having horizontally disposed sections and vertically disposed sections pivotally mounted on said shaft for vertical swinging movement and positioned with the horizontally disposed sections extended over the surface of the said traveling grate, plow members carried by the ends of the horizontally disposed sections of the arms and extended upwardly from said ends, said arms having flat sections extended upwardly above the shaft and positioned to engage the said supporting beam, said supporting beam limiting downward movement of the horizontally disposed sections of the arms, and hubs extended from the sides of the flat sections of the arms providing spacing means for the arms and plows, said plow members having upwardly and forwardly inclined plow edges for

5

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15

digging under, lifting up, and breaking up a bed of material being sintered on said grate.

4

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