

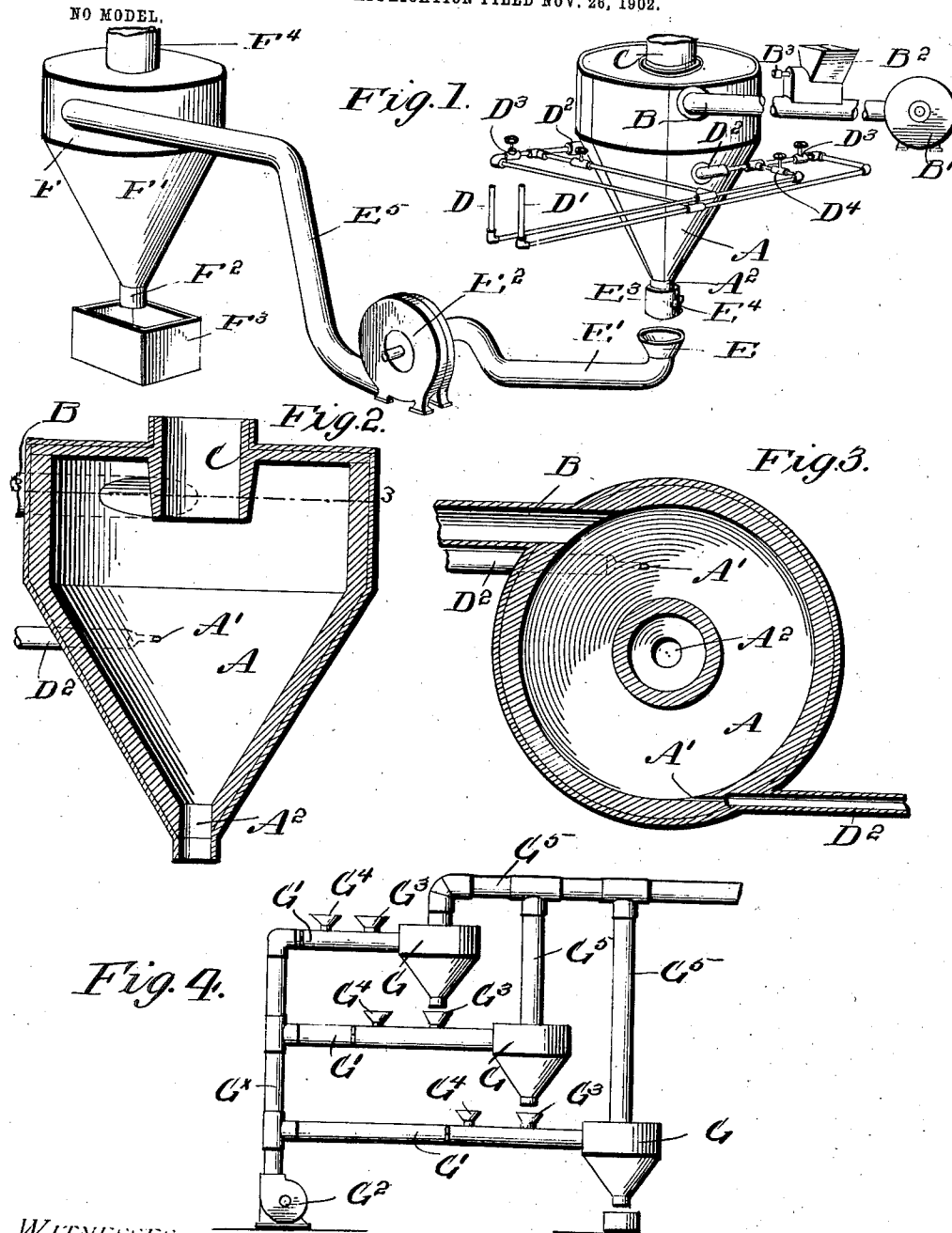
No. 729,009.

PATENTED MAY 26, 1903.

H. M. SUTTON & W. L. & E. G. STEELE.

PROCESS OF ROASTING ORES.

APPLICATION FILED NOV. 26, 1902.

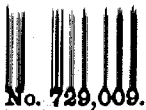


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No. 729,009.



Patented May 28, 1903.

UNITED STATES PATENT OFFICE.

HENRY M. SUTTON, WALTER L. STEELE, AND EDWIN G. STEELE, OF
DALLAS, TEXAS.

PROCESS OF ROASTING ORES.

SPECIFICATION forming part of Letters Patent No. 729,009, dated May 28, 1903.

Original application filed July 1, 1902, Serial No. 114,021. Divided and this application filed November 26, 1902. Serial No. 132,934. (No specimens.)

To all whom it may concern:

Be it known that we, HENRY M. SUTTON, WALTER L. STEELE, and EDWIN G. STEELE, citizens of the United States, residing at Dallas, in the county of Dallas, State of Texas, have invented certain new and useful Improvements in Processes of Roasting Ores, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to a process for roasting ores, and particularly to a process wherein the ore is conveyed by an air-blast to and through a roasting-chamber, as shown in application filed July 1, 1902, Serial No. 114,021, of which this case is a division.

The invention has for an object to provide a process of roasting ore in which the ore is suspended in a current of air moving in a rotary path, whereby each particle thereof is at all times entirely surrounded by the air, thus producing strong oxidizing conditions to prevent the fusing of the more readily fusible constituents of the ore and secure improved results in the concentration thereof.

A further object of the process is to cause the ore to be carried spirally in a centrifugal path through a roasting-chamber by the reduction of the air-pressure and heating the ore during this movement.

Other and further objects and advantages of the invention will be hereinafter set forth and the novel features thereof defined by the appended claims.

In the drawings, Figure 1 is a perspective of an ore-roasting apparatus for carrying out this process. Fig. 2 is a central vertical section through the roasting-chamber; Fig. 3, a horizontal section thereof on the line 3 3 of Fig. 2, and Fig. 4 an elevation illustrating a series of roasting-chambers for producing successive roasts of the ore in accordance with this process.

In the drawings, which illustrate one form of the apparatus for carrying this process into effect, like letters of reference refer to like parts in the several figures.

The letter A designates a roasting-chamber, preferably of a circular conical formation, as herein disclosed, and connected to which

is a feed-pipe L, through which the ore to be treated is fed into the roaster by means of a fan B' or other suitable blast device, and which pipe is provided with a feed-hopper B², from which the ore is fed by the rotatable feeder B³ of any desired construction to feed the ore to the furnace in predetermined quantities. The roaster A is also provided at its upper portion with an air and gas outlet C, which may be carried to any suitable dust-collector or to a reduction apparatus, if it is desirable to save the fumes caused by the combustion of the ore. At the sides of the roaster an air or steam pipe D and an oil-pipe D' are extended to feed the fuel to the burners D², located at the tangentially-disposed openings A' in the roaster A, and by this means the necessary pressure is obtained to atomize the oil and produce the centrifugal movement within the roaster. Suitable regulating-valves D³ and D⁴ are provided upon the steam and oil pipes, respectively. At the lower portion of the roaster a discharge-opening A² is provided, and beneath the same a suitable receptacle E, communicating with the discharge-pipe E', into which a suction of cold air is drawn by means of the fan E², the amount of this suction being regulated by the sliding sleeve E³, carried by the discharge from the roaster. This sleeve is adapted to be secured at any position by means of the clamp-screw E⁴. The ore after passing into the pipe E' is taken up at once by the suction from the fan E² and blown or blasted through the pipe E⁵, which may be of any desired length—for instance, one hundred feet or more—to thoroughly cool the ore while it is being conveyed to the point desired. This cooling-pipe communicates at its opposite end tangentially with a separator F, preferably provided with a conical lower portion F', having a discharge-spout F², disposed above a suitable receptacle F³, while the pressure of air is permitted to escape through the pipe F⁴ at the upper portion of the separator. This pipe F⁴ may be extended to a dust-collector, if it is desirable to save any of the extremely fine material which may escape with the expanding air.

In the form of apparatus shown in Fig. 4 a similar process is effected in the successive

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P. SYNNESTVEDT.
VEHICLE DRIVING MECHANISM.

APPLICATION FILED OCT. 15, 1900.

NO MODEL.

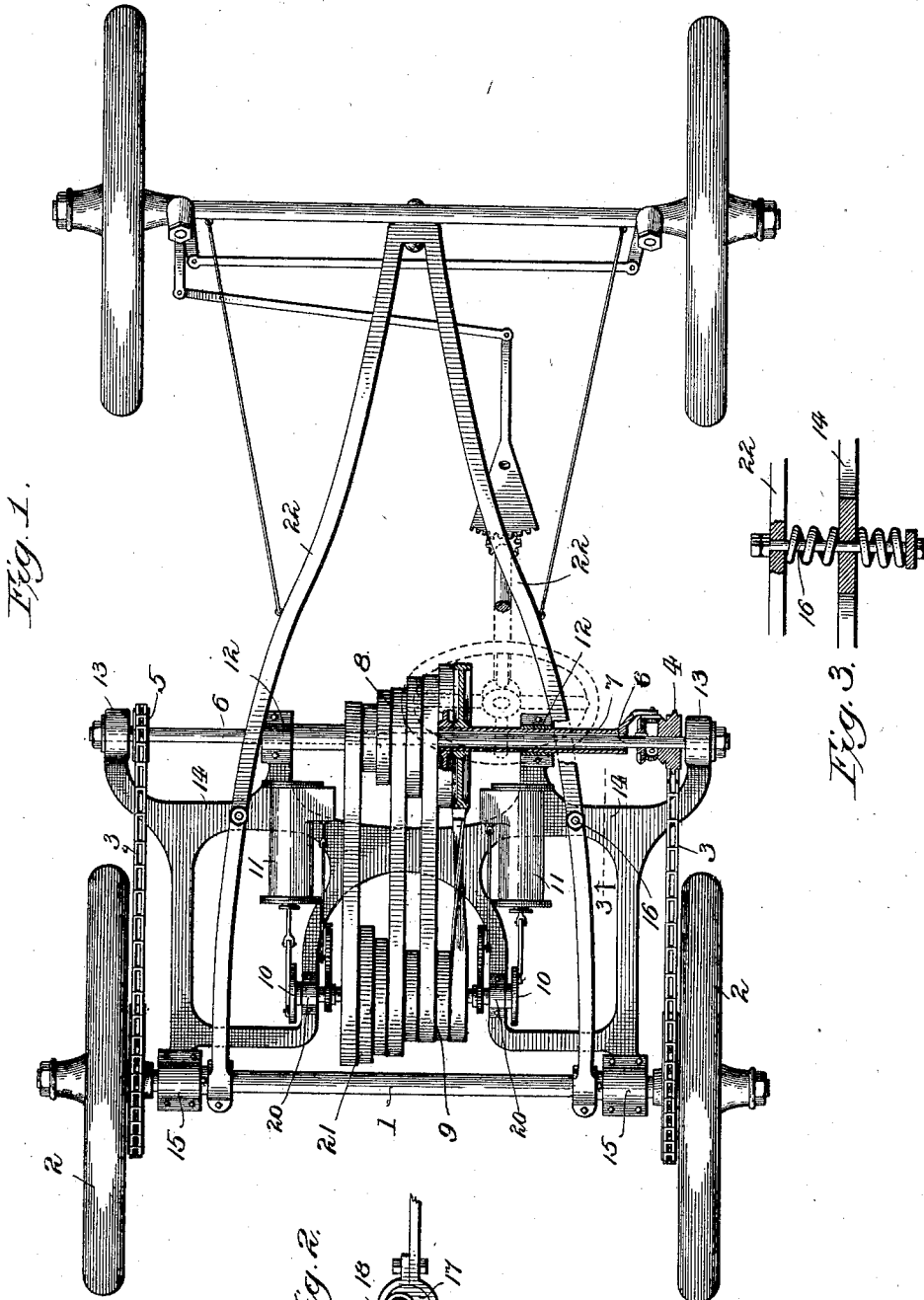


Fig. 1.

Fig. 3.

Fig. 2.

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