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METHOD FOR SOLIDIFYING SULPHUR

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This invention relates to a method for solidify-
ing sulphur, and particularly to the solidification
of sulphur in bins; such sulphur generally being
produced by mining by underground fusion, as
for example, in the Frasch process.

The invention has for its object generally the
avoidance of certain difficulties heretofore en-
countered in the practice of solidifying and stor-
ing sulphur that has been mined as indicated
and is in a molten condition, and the improve-
ment of the quality of the resultant product.

A specific object is to reduce the amount of
so-called "crater" sulphur that has heretofore
accompanied the solidifying of the sulphur in
large storage blocks by reason of the slow cool-
ing of molten sulphur that forms in pools at the
discharge points.

Another object of the invention is to allow
a much larger rate of sulphur to be handled with-
out increasing the area of the bin; or the same
tonnage can be handled in smaller bins effecting
certain economies.

Another object of this invention is to reduce
the labor and difficulties of operation of the con-
ventional types of discharges that result from
the necessity of changing the point of discharge
of the sulphur.

Another object of this invention is to make a
sulphur of less friability and lower porosity there-
by resulting in a product delivered to the con-
sumer of lower moisture content and with a de-
creased amount of acid contamination.

Still another object of this invention is the
elimination of foreign substances by removing
discharges, supports, etc. to points outside the
bin.

Other objects of the invention will in part be
obvious and will in part appear hereinafter.

The invention accordingly comprises the sev-
eral steps and the relation of one or more of such
steps with respect to each of the others, all as
exemplified in the following detailed disclosure,
and the scope of the invention will be indicated
in the claims.

For a fuller understanding of the nature and
objects of the invention, reference should be had
to the following detailed description taken in con-
nection with the accompanying drawings, in
which:

Fig. 1 is a view, partly in vertical section and
partly in elevation, of apparatus adapted to dis-
charge molten sulphur and solidify the same in
accordance with the invention;

Fig. 2 is a plan view of the apparatus shown in

Fig. 1 and illustrates the distribution in the
storage bin achieved by the invention;

Fig. 3 is a vertical sectional view showing the
apparatus of the invention, taken on the line
3—3 in Fig. 2;

Fig. 4 is an enlarged fragmentary sectional
view of a nozzle provided in accordance with the
invention and disposed in discharge position over
a body of sulphur in a storage bin; and

Fig. 5 is an explanatory diagram.

In the mining of sulphur by underground
fusion, as in the Frasch process, highly heated
or superheated water under pressure is dis-
charged into the sulphur-bearing formations and
the melted sulphur resulting is raised to the sur-
face by means of an air lift. Prior to the present
invention, it was customary to collect the molten
sulphur from a number of sulphur wells, in a
common container and when a sufficient amount
had accumulated, it was pumped to a bin con-
sisting generally of four enclosing walls that are
built up from ground level as the sulphur solidi-
fies. The molten sulphur was then flowed into
the enclosure made by the four walls and was
solidified in successive layers.

The discharge of molten sulphur into the bin
was usually intermittent due to the accumula-
tion in the common container and the number
of points of discharge into the bin was usually
such with respect to the size of the bin that most
of the sulphur will have been solidified in the
interval between consecutive discharges at the
same point. In this manner, huge blocks of solid
sulphur have been formed. Such blocks may be,
for example, several hundred feet in length and
in width and sixty or more feet in height, and
contain several hundred thousand tons of sul-
phur.

The apparatus heretofore used in effecting the
solidification of sulphur, as above described, com-
prised in general a distributing system through
which the molten sulphur was pumped from the
common container to risers disposed adjacent a
side of the bin receiving the sulphur. These risers
were generally connected to discharge onto the
surface of the previously solidified sulphur
through a plurality of adjustable discharge
nozzles. The rate of flow from these nozzles was
invariably slow, since it is limited by the rate of
pumping from the common container. In conse-
quence, a relatively large number of such dis-
charge nozzles and attendant connections were
employed over a given area in the bin. A large
number of towers, which might be of either wood
or steel, were thus necessary to support the risers