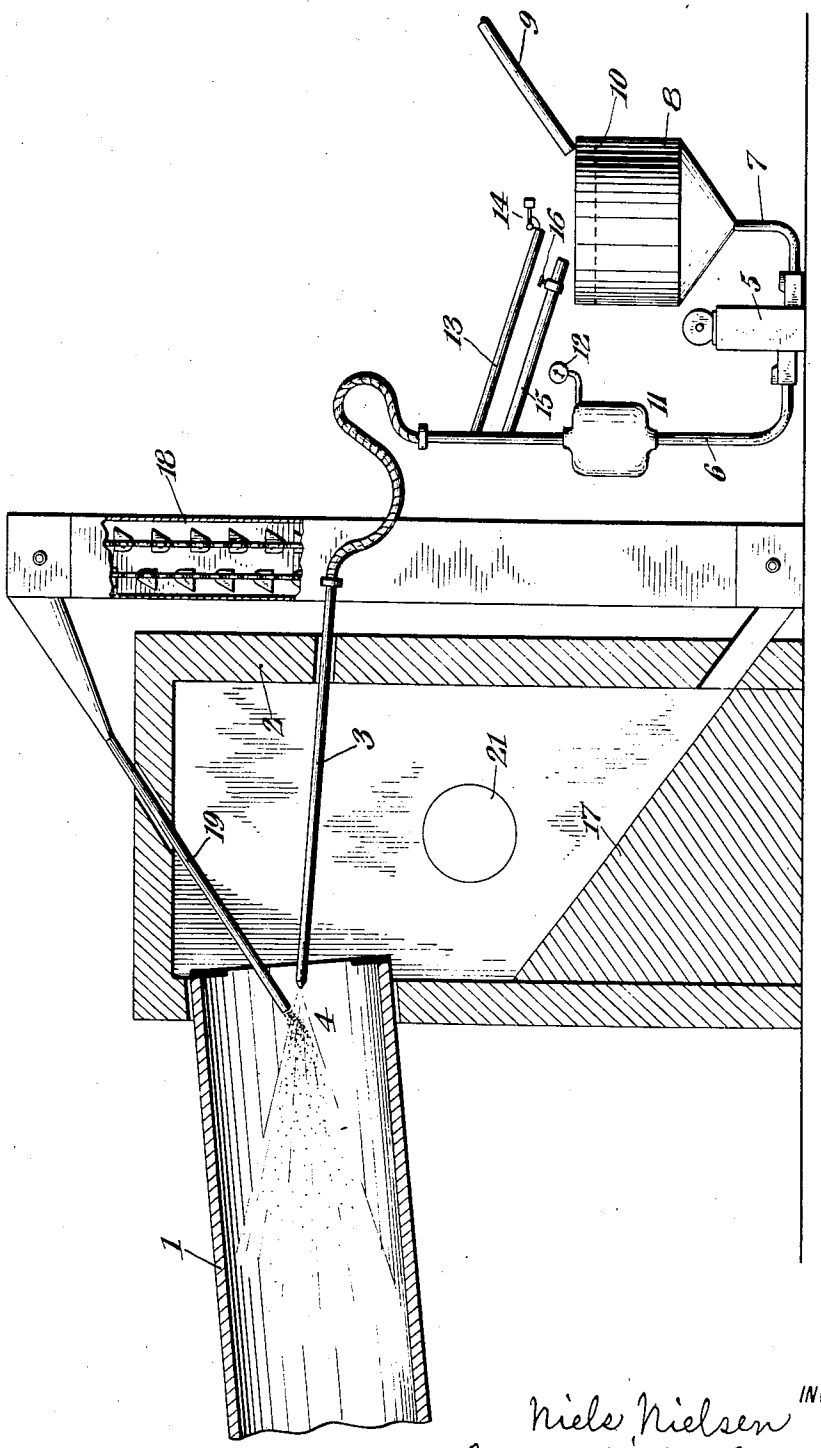
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FEEDING CEMENT SLURRY TO ROTARY KILNS

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FEEDING CEMENT SLURRY TO ROTARY KILNS.

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In the manufacture of cement by the wet process the slurry is commonly fed into the feeding end of the kiln by gravity through a suitable chute or pipe. The possible advantages under some conditions of feeding the slurry to the kiln by a fine spray or atomization have been recognized but hitherto the loss of cement material blown out with the hot gases from the kiln as dust formed by the rapid drying of the minute drops of slurry by the hot gases within the kiln has rendered the practical use of the method of feeding by atomization uneconomical and therefore undesirable. It is the object of the present invention to enable the method of feeding slurry by atomization or fine spraying to be used without substantial loss of cement material as dust and therefore to enable the advantages of this method of feeding slurry to be realized without economical loss. In accordance with the invention, provision is made for the separation of the dust from the hot gases as they escape from the kiln and for the return of such dust in a dry state to the kiln in such manner that it will not be blown out of the kiln immediately, preferably by discharging it into the path of the jet or spray of slurry as it enters the kiln so that it will be carried on with the slurry into the kiln.

The invention will be more fully explained hereinafter with reference to the accompanying drawing in which the single figure, partly diagrammatic and in sectional elevation, shows an apparatus adapted for the practice of the invention.

In the apparatus represented in the drawing, the upper or feeding end of the kiln 1, from which the hot gases escape, is extended as usual into a dust chamber 2 which communicates through an opening 21 with the usual stack, not necessary to be shown. The slurry is discharged into the heating and drying zone of the kiln, in a condition of fine spray or atomization through a pipe 3, provided at its extremity with a nozzle 4, of suitable form, adapted to deliver the slurry in the form of a fine spray. The slurry is delivered from its source of supply, indicated by the pipe 9, through a screen 10, provided for the purpose of preventing the passage of particles of solid material large enough to block the atomizer or spray nozzle, into a tank 8, from which it is drawn through a supply pipe 7 by a suitable pump 5 and is delivered through a discharge pipe 6 suitably connected with the injecting pipe 3. The discharge pipe 6 may be provided with a pressure equalizing chamber 11 which may be fitted with a pressure gauge 12 and provision is made through the pipe 13 and the safety valve 14 for the return to the slurry tank 8 of the slurry if the atomizer nozzle should become blocked or the discharge of slurry prevented in any other way. Provision is also made for regulating the flow of slurry by the connection into the discharge pipe 6 of a pipe 15 provided with a regulating valve 16, through which excess of slurry may be returned to the tank 8.

The dust which is carried out of the kiln with the hot gases is separated therefrom by precipitation in the dust chamber 2, from which it may be discharged continuously by the inclined bottom 17 into the foot of an elevator 18, of usual construction, by which it is raised to a point sufficiently above the end of the kiln 1 to permit it to be discharged by gravity in a dry state through a pipe 19 into the heating and drying zone of the kiln, preferably into the path of the jet or spray of slurry as it issues from the atomizer or spray nozzle 4, so that in a dry state it shall be mingled with such spray and carried onward into the drying and heating zone of the kiln.

It will be understood, however, that the dust might be returned to the kiln by means other than those illustrated herein.

I claim as my invention:

1. In combination with a kiln for the manufacture of cement wherein hot products of combustion are passed over cement forming slurry in the kiln, and dust formed by the dried slurry passes out the feed end of the kiln with the exhaust gases, means for delivering the slurry into the kiln as a fine spray, means at the feed end of the kiln for withdrawing the gases from the dust carried thereby and collecting the dust, and means to deliver separately such dust, in a dry state, into the path of the slurry spray as it enters the kiln whereby the spray of slurry carries the dust into the kiln.

2. In combination with a kiln for the manufacture of cement wherein hot products of combustion are passed over cement forming

slurry in the kiln and dust formed by the dried slurry passes out the feed end of the kiln with the exhaust gases, means for delivering the slurry into the kiln as a fine spray, a dust chamber at the kiln end from which the hot gases are exhausted, said chamber receiving the exhausted gases and separating them from the dust carried thereby and collecting the latter, and means to deliver separately such dust, in a dry state, into the path of the slurry spray as it enters the kiln whereby the spray of slurry carries the dust into the kiln.

This specification signed this 1st day of September, A. D. 1926.

NIELS NIELSEN.