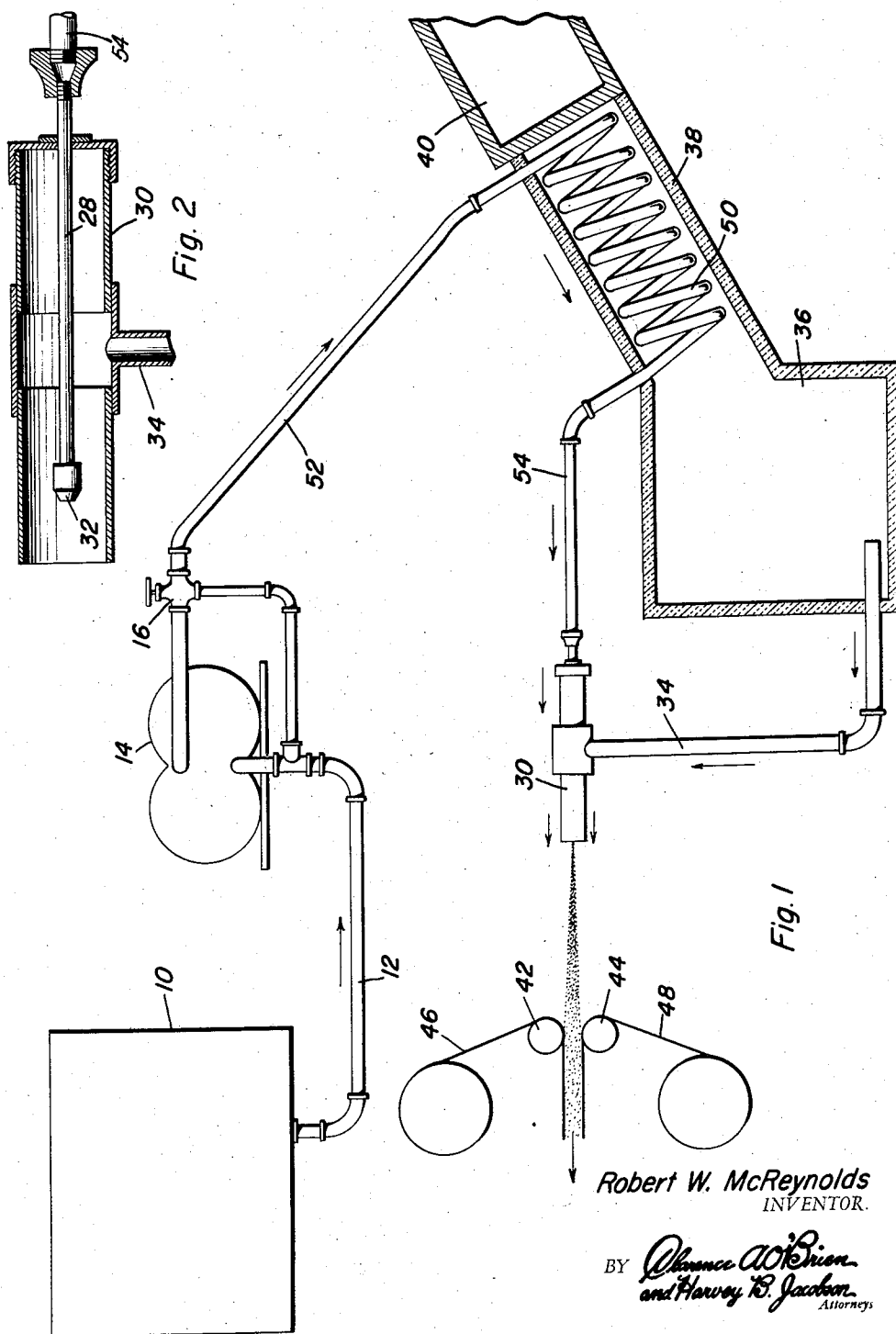


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METHOD AND APPARATUS FOR COATING A SURFACE
WITH LIGHT WEIGHT AGGREGATE
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METHOD AND APPARATUS FOR COATING A SURFACE WITH LIGHT WEIGHT AGGREGATE

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2 Claims. (Cl. 117—28)

This invention relates to a method of coating light weight aggregates and to a novel apparatus for mixing a suitable coating solution with an aggregate and projecting it outwardly so as to form suitable insulating material.

An object of this invention resides in the provision of an apparatus for mixing a solution of a suitable water soluble thermo-setting resin with a light weight aggregate such as Vermiculite, Perlite, ground cork, sawdust, or the like, in a manner so as to reduce the porosity of the aggregate. The apparatus is also adapted to project this mixture of resin and aggregate out into the atmosphere before polymerization of the resin. A continuous sheet of paper or other fibrous material may be utilized and the projected coated aggregate may be applied onto such sheet of material to thereby enable a continuous strip of coated fibrous material to be passed between rollers to form insulating sections of a desired thickness, density, and shape which may be cut or sawed into suitable panels or the like as may be desired.

Still another object of this invention resides in the provision of means for heating the solution of thermo-setting water-soluble resin which utilizes the residual heat in the aggregate passing from the furnace through suitable heating coils within which the resin must pass.

Still further objects and features of this invention reside in the provision of method and means for coating selected light weight aggregates so as to provide an insulative material of a predetermined porosity which is especially ideal for insulative use and which may be utilized to form suitable slabs or panels of insulating material.

These, together with the various ancillary objects and features of the invention which will become apparent as the following description proceeds, are attained by this method and apparatus for coating light weight aggregates, preferred embodiments of the apparatus being illustrated in the accompanying drawings, by way of example only, wherein:

Figure 1 is a schematic diagram illustrating the component elements of the apparatus for coating light-weight aggregates and showing means for heating the solution of water soluble, thermo-setting resin; and

Figure 2 is an enlarged sectional view illustrating a construction of the gun used for projecting the coated aggregate.

With continuing reference to the accompanying drawings wherein like reference numerals designate similar parts throughout the various views, reference numeral 10 generally designates a tank or reservoir for a suitable thermo-setting water soluble resin. The tank 10 filled with the suitable solution is connected by means of a suitable conduit 12 to a pump 14. The pump 14 is preferably of the centrifugal or turbine type. A control valve 16 is provided for controlling flow of fluid from the pump 14 and a conduit 52 connects the pump 14 with the coils 50.

The conduit 54 connects the coils 50 with an outlet

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conduit 28 of a projection gun 30, a jet nozzle 32 being provided for the outlet conduit 28. The gun 30 is cylindrical in shape and has connected thereto a pipe or conduit 34 which is connected to a receptacle 36 containing a suitable aggregate such as Vermiculite, Perlite, ground cork, sawdust, etc. which had been previously received within the receptacle 36 by means of a chute 38 connected to a furnace 40 where the aggregate had been heated and otherwise treated as necessary. Thence, upon the operation of the pump 14 the fluid within the reservoir 10 will be transferred by means of the conduit 52 onwardly through the coil 50 and conduit 28 and is then sprayed through the jet 32. This movement of fluid outwardly from the jet 32 will suck in the light weight aggregate through the conduit 34 from the bin or receptacle 36 and thus the aggregate and the solution of resin will be suitably intermixed and projected out into the atmosphere. Suitable rollers as indicated at 42 and 44 each having a continuous sheet of paper as at 46 and 48 entrained thereabout may be utilized to receive the coated aggregate therebetween thereby enabling a continuous slab of insulated material to be formed. Obviously, the rollers 42 and 44 may be spaced a suitable distance therebetween and the coated aggregate will impinge against the paper sheets 46 and 48 during polymerization and before being fully set and hardened thereby bonding to the paper, the particles bonding with themselves. It is to be noted that the coating of resinous material will substantially reduce the porosity of the material. The slabs when hardened may be sawed or cut to shape as desired. The density of the insulative material may be varied by varying the distance of the gun 30 from the sheets of paper or other surface upon which the particles are projected. There is little tendency for the stream of projectiles to bounce off the surface, but those which do can be collected for use as a highly desirable aggregate in cementitious mixtures.

Since from the foregoing the construction and advantages of this apparatus for coating light weight aggregates and the novel aspects of the method involved are readily apparent and further description is believed to be unnecessary.

However, since numerous modifications will readily occur to those skilled in the art, after a consideration of the foregoing specification and accompanying drawings, it is not intended to limit the invention to the precise embodiments and methods shown and described, but all suitable modifications and equivalents may be readily resorted to. Further many other materials organic or inorganic such as sodium silicate may be readily utilized in lieu of the thermo-setting resin as a coating for the aggregate.

What is claimed as new is as follows:

1. A method for coating a surface with particles of a light weight aggregate comprising the steps of heating a solution of water soluble, thermo-setting resin, heating said aggregate, said first heating being carried out by passing said aggregate past said solution to heat said solution, spraying said solution on a stream of aggregate to coat the particles of said aggregate while permitting the water vapor released upon contact of said solution and said aggregate to prevent ignition of volatile elements and to prevent flash-setting of the resin, projecting said coated aggregate against a surface at atmospheric conditions while polymerization is taking place to form an insulating section of desired thickness.

2. An apparatus for coating light weight aggregates comprising a reservoir for a coating solution, a furnace, receptacle for said aggregate, a chute interconnecting said furnace and said receptacle, a pump connected to said reservoir, coils connected to said reservoir, means for heating said aggregate in said furnace, a projection gun,

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a jet in said gun, conduits connecting said jet to said coils and said coils to said pump, said coils being disposed in said chute whereby passage of aggregate past said coils will heat fluid in said coils, said gun being connected to said receptacle so that said solution spraying from said jet will cause a vacuum in said gun sucking said aggregate into said gun.

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