Dec. 26, 1933. G. D. SHAVER 1,940,975

APPARATUS FOR PRODUCING MINERAL WOOL

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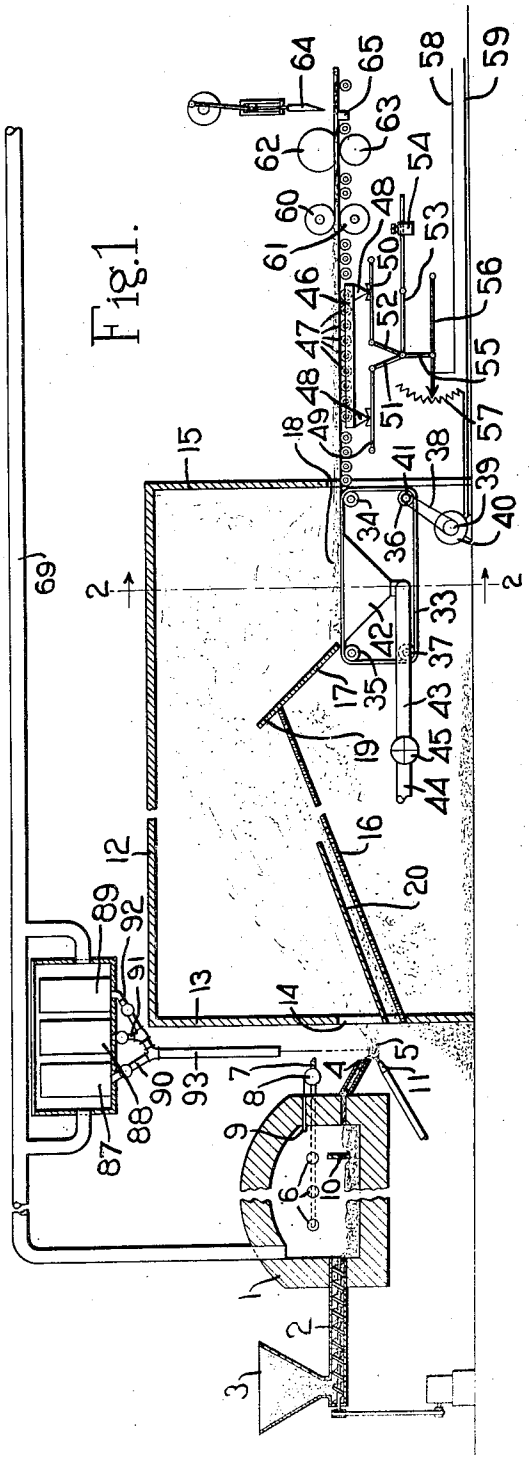


Fig. 1.

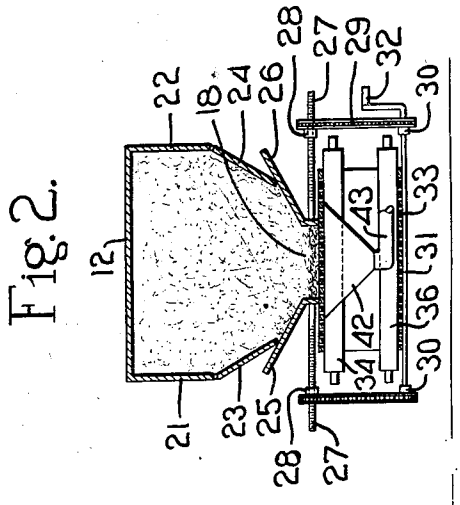


Fig. 2.

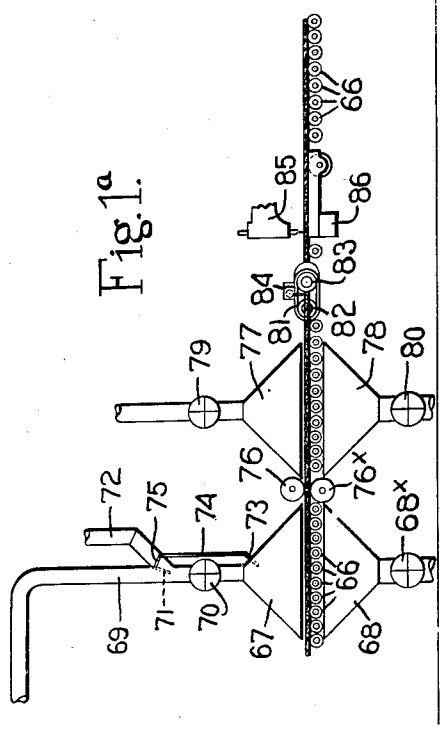


Fig. 1a.

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## APPARATUS FOR PRODUCING MINERAL WOOL

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12 Claims. (Cl. 49—77.5)

This invention relates to improvements in method and apparatus for producing mineral wool, and more particularly to continuously producing rock wool insulation in the form of sheets, slabs or blocks.

An object of the invention is to provide an apparatus for producing rock wool in which the fibres of the mineral wool will be substantially freed from shot without rehandling after the wool has been blown.

Another important object of the present invention is to provide an apparatus for continuously producing rock wool sheet insulation without rehandling of the rock wool fibres from the time of their production to the completion of the sheet.

Another object of the invention is to provide an apparatus for coating the individual fibres of rock wool during their production with a suitable, preferably water-repellant, binding material, such as asphalt, in such manner as not only to render the wool or sheet non-absorbent of water, but to prevent capillary action when the wool or sheet is partially submerged in water.

Another object of the invention is to provide apparatus for progressively heating the sheet of rock wool in such manner as to cement or weld the fibres together at their points of intersection without substantially modifying the finely cellular construction of the sheet upon which the insulating value is largely dependent.

In methods now and heretofore employed for producing mineral wool, suitable mineral rock and coke are charged in alternating layers in a furnace of the cupola type, and the molten glass delivered in a small stream in the path of a jet of steam, or other fluid under pressure, which serves to blow the glass into fibres of mineral wool.

Alternatively, slag from a blast furnace is blown directly when discharged from the furnace in a small stream into mineral wool, or the slag is remelted and blown in the manner above described in respect to mineral rock.

Rock wool made from slag contains many impurities, mainly sulphur, which are detrimental to rock wool which is to be used for insulation, the sulphur content particularly being adapted to produce corrosion of metals to which the insulation is applied.

The use of suitable sand or gravel, high in silica, has heretofore not been employed because of the impossibility of fusing the same in a cupola furnace, since if sand were charged into a cupola furnace the bed of sand would be of such density as to prevent the introduction of a sufficient air blast to cause proper combustion in the furnace to melt the sand, or if a heavier blast were introduced the sand would be blown from the furnace, or at least the temperature within the furnace so reduced as to prevent the melting of the sand.

I have discovered that by the use of a "glass tank" type of furnace, sand can be introduced at a sufficiently uniform rate to maintain an overflowing pool of liquid mineral and that by properly correlating the heat supplied to the furnace to the rate at which the sand is introduced, the overflowing stream of molten mineral may be maintained at a desired uniform viscosity which will permit the production, by the usual blast across the stream, of a long-fibre mineral wool of uniform quality and of superior characteristics to those which have been heretofore attained either in the production of slag wool, or in the production of wool from the so-called wool rock.

Another of the principal objects of the invention therefore, is to provide a method and apparatus for producing rock wool from sand or gravel high in silica.

A further object of the invention is to provide means for binding the sheet during its continuous production in such manner that the edges of the sheet are wrapped and thereby prevented from fraying, and to provide means for firmly securing the wrapping to the body of the sheet.

A further object of the invention is to provide an apparatus for continuously producing rock wool sheet insulation, severing the sheet into slabs, blocks, or bricks, and fire polishing the surfaces of the blocks, slabs or bricks.

These and other objects and features of the invention will more fully appear from the following description and the accompanying drawing and will be particularly pointed out in the claims.

In the drawing:

Fig. 1 is a side elevation, mainly in diagrammatic form, of a portion of a preferred form of apparatus for continuously producing rock wool insulation in the form of sheets, slabs or blocks;

Fig. 1*a* is a side elevation of like character of the remainder of the apparatus, which is located at the right hand end of that shown in Fig. 1;

Fig. 2 is a transverse sectional view on line 2—2 Fig. 1.

The present invention, as above stated, comprises a method of producing a high quality of rock wool from suitable sand or gravel high in silica, and comprises continuously melting sand or


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gravel together with a suitable flux, such as marl and soda ash, to form an overflowing pool of molten mineral, causing the overflow to be delivered in a small stream and projecting a blast of gaseous fluid under pressure such as steam, across the stream to produce fibrous rock wool.

The process further contemplates correlating the supply of sand and/or gravel and the temperature to which the sand or gravel is subjected during the melting operation in such manner as to produce a stream of molten mineral of a desired uniform viscosity and of such uniform size as to produce rock wool having long fibres of particularly high quality.

Any suitable means may be employed for melting the sand and/or gravel to produce an overflowing pool of molten mineral with means for delivering a uniform small stream of a desired viscosity.

Preferably a furnace, similar to a continuous "glass tank," may be employed, or a suitable electric furnace may be used.

The apparatus illustrated in the accompanying drawing comprises a melting furnace of the continuous "glass tank" type associated with other apparatus for continuously producing an insulating sheet of rock wool. It will be understood, however, that in the production of rock wool the usual cupola type of furnace may be substituted for the continuous "glass tank" type herein illustrated within the spirit and scope of the present invention, where it is desired to produce rock wool insulation from the so-called wool rock, or from slag.

As illustrated in the accompanying drawing the melting furnace comprises a rectangular confined furnace 1, having walls of suitable refractory material. Means are provided for uniformly supplying sand or gravel, or a mixture thereof, together with a suitable flux, to the furnace, such means as illustrated comprising a conduit 2 having a hopper 3 with means, such as a rotating spiral screw, for delivering the material at a predetermined rate into the furnace. The furnace is provided with an outlet port 4 at a predetermined distance above the bottom thereof through which a continuous stream 5 of molten mineral is delivered. Heat is supplied to the furnace by a series of burners 6, such as oil or gas burners, supplied from a pipe 7, with a suitable valve 8 in said pipe adapted to be controlled by a thermostat, 9, extending into the furnace. Burners of this character may extend through opposite walls of the furnace and so arranged that the jets of flame therefrom will be directed downwardly upon the sand and the pool of molten mineral formed in the furnace. Desirably a baffle 10 may be located within the furnace near the outlet port thereof to extend a short distance into the molten mineral and skim or hold back unmelted mineral or impurities which may be floating on the surface of the bath, so that such impurities will not be carried into the small stream of mineral delivered from the outlet port 4.

Suitable gaseous fluid under pressure, such as steam, may be projected from a suitable supply, (not shown) through a nozzle 11 directed across the path of the descending stream of molten mineral. The blast thus employed is of such force as to blow the stream of molten mineral or glass into long fibres which preferably are carried by the blast directly into and dispersed within a blowing chamber. The blowing chamber desirably comprises a room of considerable length and of suitable width to permit the fibrous rock wool to be properly deposited therein. Desirably the room has a closed top 12, a vertical end 13 having an inlet aperture 14 located in proximity to the descending stream of molten mineral, and the nozzle 11 is directed upwardly at such an angle that the wool fibres are carried well toward the top of the room. The opposite end of the room 15 desirably is vertical and continuous. The bottom of the blowing chamber or room desirably comprises a bottom section 16 which extends upwardly at an angle from below the inlet aperture 14 to a distance well beyond the middle of the room, and a downwardly extending bottom section 17 which leads to a discharge orifice 18. The bottom section desirably extends upwardly a short distance beyond the upper edge of the section 16 to provide a baffle 19 to aid in facilitating the deposition of the shot upon the bottom section 16 and to prevent the shot from being carried or blown over into the outlet.

The bottom section 16 desirably may be provided with perforations to permit the escape of the shot. Desirably a false bottom 20 overlies the bottom section a part of its length to permit the shot, which drops upon it, to be discharged through the inlet aperture, or other suitable delivery aperture, without being blown along the bottom section 16. The bottom section 17 desirably extends above the inner end of the bottom section 16 to prevent the blast of gaseous fluid under pressure from projecting the shot into the discharge outlet 18.

Desirably the sides of the blowing chamber near the discharge end comprise vertical upper portions 21 and 22, and downwardly inclined portions 23 and 24, and adjustable lower sections 25 and 26 forming, together with the downwardly extending bottom section 17, a hopper-like construction leading to the outlet 18. Any suitable means may be provided for adjusting the lower sections 25 and 26 laterally for the purpose of producing a continuous sheet of mineral wool of desired different widths. As illustrated herein the lower ends of the sections 25 and 26 are provided with right hand and left hand nuts which are engaged respectively by right and left hand screws upon a plurality of parallel shafts 27 provided at their ends with suitable sprockets 28 adapted to be driven by sprocket chains 29 from sprocket wheels 30 upon a shaft 31 which may be actuated by a suitable crank 32. It will be obvious that by rotating the crank 32 in the proper direction the width of the outlet aperture may be accurately regulated to produce an insulation sheet of a desired width.

In order to produce continuously a sheet of rock wool fibre, a travelling carrier is caused to traverse the outlet aperture 18. The travelling carrier may be of any desired form, but preferably comprises an endless belt suitably perforated to permit the passage of air therethrough. In the preferred construction illustrated in the drawing the travelling carrier is in the form of an endless perforated belt or screen 33 which passes around guide rollers 34 and 35 located beyond the ends of the outlet opening 18, and other guide rollers 36 and 37 located directly beneath the rollers 35 and 34 respectively. The guide roller 36 is driven by a suitable belt 38 from a pulley 39 upon the shaft of an electric motor 40 and a pulley 41 upon the shaft of the roller 36.

The speed of the motor is regulated in such a manner as to correlate the speed of the travelling carrier 33 to the rate at which the rock wool

is discharged through the outlet aperture 18 and of course the rate at which the rock wool is delivered to the outlet is dependent upon the rate of its production by the blast which impinges upon the stream of molten mineral discharged from the furnace.

Desirably, but not necessarily, means are provided for producing a suction downwardly through the outlet opening 18 to facilitate the deposition of the rock wool upon the endless carrier, and also to assist in interlacing the fibres thus deposited. A convenient mechanism for this purpose, which is illustrated in the accompanying drawing, comprises a hopper 42, the upper end of which has an area at least as large as the maximum opening to which the outlet 18 of the blowing chamber can be adjusted. The hopper desirably is of general rectangular form and merges at its lower end into a cylindrical pipe 43 which communicates with a pipe 44 to which suction is applied by a suitable suction fan 45.

Suitable means desirably are provided for regulating the speed of the motor in correlation to the amount of rock wool deposited upon the endless carrier in such a manner as to produce a sheet of uniform thickness and density. In the construction illustrated this mechanism comprises a carrier having a frame 46 having a series of anti-friction rollers 47 for supporting the sheet, and downwardly extending knife edges 48 which rest respectively upon complementary supports upon levers 49 and 50 suitably fulcrumed at their outer ends and at their inner ends pivotally connected to links 51 and 52 which in turn are pivotally connected to the end of a lever 53 fulcrumed intermediate of its length and provided at its opposite end with an adjustable counterweight 54. The pivotal connections of the links 51 and 52 with the lever 53 are connected by a link 55 with a central portion of a lever 56 which is fulcrumed at one end upon a suitable support, and the other end of which is provided with a suitable contact to engage a rheostat 57. An electric current from a suitable source may be passed through a conductor 58 to the lever 56 thence through the rheostat 57 to the motor 40, a return conductor 59 upon the motor to the power supply being provided to complete the circuit.

The mechanism above described constitutes in effect a device for weighing the section of the sheet of rock wool and the movement of the frame 46 downwardly or upwardly in response to variations in the weight of the section of the moving sheet will actuate the lever 56 to vary the resistance to the current supplied through the rheostat 57 in such manner as to control the speed of the motor and consequently the speed of movement of the sheet. Thus when the sheet becomes light the carrier is slowed down to permit more rock wool to be deposited upon the carrier and when the sheet becomes heavy the motor is speeded up to increase the speed of the sheet temporarily, so that less rock wool is deposited upon it. By reason of this construction, therefore, a sheet of substantially uniform weight and thickness may at all times be assured.

Desirably the sheet passes from the weighing device between a pair of presser rolls 60 and 61 which desirably are relatively adjustable to determine the thickness and density of the sheet and may be driven at a slightly greater speed than the speed of movement of the sheet, so that the rolls will also serve to lay the fibres upon the top and bottom of the sheet smoothly and slightly to condense the surfaces of the sheet.

If desirable a slitting saw or saws 62 may be positioned beyond the roller 60 with a co-operating roller 63 beneath the saw or saws to slit the sheet longitudinally into sections or strips. These saws may, of course, be adjusted to produce strips of any desired width.

If it is desired to produce slabs or blocks a reciprocable knife 64 and a complementary ledger blade 65 may be located at any desired position to sever the sheet, or the strips, into predetermined lengths.

Any suitable mechanism may be provided for actuating the cutter blade 64 in such timed relation to the movement of the sheet as to cut blocks or slabs of any desired length.

Another important object of the invention is to provide means for heating the fibres of the sheet sufficiently to fuse the same together at their points of intersections without modifying substantially the finely cellular character of the sheet. Such heating also serves slightly to crust the surfaces of the sheet and if the sheet is severed into blocks or slabs also to crust or fire-polish the edges and faces of the sheet.

In the particular construction illustrated this is accomplished by providing a heating chamber at any desired location through which the sheet or blocks are passed, the sheet or blocks desirably being supported upon a series of rollers 66, an endless conveyer, or otherwise. In the construction illustrated the heating chamber comprises a downwardly extending rectangular funnel-shaped casing 67 which overlies the sheet and a complementary funnel-shaped casing 68 underlying the path of the sheet. Heat may be supplied to the heating chamber through a pipe 69 communicating at one end with the furnace, and at the other end with the casing 67. The uniform delivery of heated air from the furnace through the pipe 67 may be produced by a fan 70, located in the pipe 69 preferably in proximity to the heating chamber 67, and the temperature of the hot air thus delivered may be controlled by a pivotally mounted damper 71 located at a junction of the pipe 69, with a branch pipe 72 through which atmospheric air may be admitted to the pipe 69 slightly in advance of the fan. The position of the damper 71 may be controlled by a suitable thermostat 73 extending into the heating chamber and having means including a link 74 connected to an arm upon the pivotal shaft of the damper 71. Desirably the outlet of the funnel-shaped casing 68$x$ may be provided with a fan driven at a suitable speed to insure uniform movement of the current of hot air through the heating chamber provided by the complementary funnel-shaped casings 67 and 68.

Desirably presser rolls 76 and 76$x$ are located in proximity to the heating chambers and act upon the sheet as it is delivered from the heating chamber to smooth down and evenly surface the faces of the sheet.

If desired a cooling chamber may be positioned in proximity to the heating chamber and may be constructed in a similar manner comprising an upper funnel-shaped casing 77 and a lower funnel-shaped casing 78 through which atmospheric air may be passed at any desired rate by a fan 79 in the inlet to the casing 77, and a suction fan 80 in the outlet of the lower casing 78.

Preferably means are provided for wrapping a binder cord around the sheet transversely and over the edges thereof, together with means for

stitching the sheet longitudinally and thereby anchoring the strands of the transverse binder cords firmly to the sheet at the points of intersection of the strands and the lines of stitching. This can be accomplished by providing an endless carrier 81 mounted upon suitable pulleys 82 and 83 upon opposite sides of the sheet, with a spool holder 84 so mounted upon the endless carrier 81 that the binder cord will be wrapped around the sheet transversely in parallel strands extending across the upper and lower faces of the sheet and around the edges thereof, during the continuous movement of the sheet. If the endless carrier 81 is disposed in proper angular relation to the longitudinal axis of the sheet, and is driven at a speed properly co-ordinated with the speed of movement of the sheet, the binder cord may be laid in parallel strands at right angles to the axis of the sheet. If, however, the endless carrier is arranged at right angles to the axis of the sheet, the binder cords will be wrapped transversely of the sheet in directions at greater or less angle to the longitudinal axis of the sheet according to the relative speed of movement of the sheet and the carrier.

If desired, a plurality of spools may be mounted upon the endless carrier, or a plurality of endless carriers, so that parallel strands of binder cord will be continuously wrapped around the sheet. Furthermore, a plurality of endless carriers may be provided and driven in opposite directions, so that the binder cords will be laid in crossing relation upon the upper and lower surfaces of the sheet, thereby producing diamond-shaped patterns upon the respective sides of the sheet, as will be readily apparent.

The binder strands may be anchored to the sheet by suitable sewing mechanism, such as a series of sewing machine heads 85 located above the sheet, with complementary stitch-forming mechanism 86 located below the sheet, with usual mechanism for operating the stitch-forming mechanism and the feeding mechanism of the sewing machine.

Another object of the invention, as above stated, is to provide mechanism for coating the individual fibres with a waterproofing solution. In the preferred construction illustrated in the drawing this is accomplished by the provision of preferably a plurality of tanks or containers 87, 88, and 89, which are located in proximity to the furnace, and at a desirable height above the furnace, and which may be heated in any suitable manner, as, for example, by an enclosing jacket through which a regulated amount of hot air is delivered from the pipe 69 leading to the furnace. The tanks 87, 88, and 89, are respectively provided with outlet pipes 90, 91, and 92 controlled by suitable valves, and desirably all of the pipes 90, 91, and 92, communicate with a single delivery pipe 93, the outlet of which is adapted to deliver the coating material at a uniform rate in close proximity to the descending stream 5 of molten mineral. A plurality of tanks desirably is provided in order that one of the tanks may be filled, while another is being discharged, and the remaining tank or tanks subjected to the uniform heat of the chamber a sufficient time to insure uniform viscosity of the binder when discharged from such tank.

By reason of this construction the molten coating material is delivered directly into the path of the blast from the nozzle 11 and is vaporized by the blast and blown with the rock wool into the blowing chamber. By thus vaporizing the coating material simultaneously with the blowing of the molten mineral, each of the rock wool fibres will be uniformly thinly coated substantially throughout their length with the coating material. Desirably the coating material is in the form of a fusible binder, such as asphalt, or other waterproofing agent, and the rock wool sheet thus produced, with substantially all of the fibres thus coated with the waterproof agent, is of such water-repellant character as to resist capillary action when partially submerged in water.

Where a sheet of asphalt, or other binder, coated fibres is thus produced and passed through the heating chamber 67 in the manner above described, the amount of heat supplied to the heating chamber may be so controlled as merely to render the binder temporarily sticky, so that the fibres will be bound together at their points of intersection by the coating material without the necessity of sufficiently heating the fibres to weld them together at their points of intersection, as above described.

Where sheets are thus produced of binder-coated fibres, the necessity of binding and stitching may be omitted, but the sheets may be slitted into strips or cut into blocks in the manner above described by similar mechanism.

It will be understood that the apparatus for performing the method herein described is of an illustrative character, and that various changes in form, construction and arrangement of parts may be made within the spirit and scope of the following claims.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is:

1. Apparatus for producing sheet insulation of mineral wool comprising means for melting the mineral, means for projecting the gaseous fluid under pressure across the descending stream of said molten mineral to produce fibrous wool, a blowing chamber to receive the mineral wool having an outlet aperture, a travelling perforated carrier traversing said outlet adapted to receive the mineral wool discharged therethrough, means for producing suction through said carrier at said outlet to facilitate the deposition of the fibres thereupon and the interlacing of said fibres, yieldable weighing means for receiving the sheet of mineral wool transported by said travelling carrier, and means operable by the yielding movement of said weighing means to regulate the speed of said travelling carrier in correlation to the rate of delivery of fibrous mineral wool through said outlet to produce a continuous finely cellular sheet of interlaced fibres of substantially uniform consistency and thickness.

2. Apparatus for producing mineral wool sheet insulation comprising means for melting suitable mineral, means for projecting gaseous fluid under pressure across the descending stream of said molten mineral to produce fibrous mineral wool, a blowing chamber to receive the mineral wool having downwardly converging adjustable walls providing an outlet aperture, means for symmetrically adjusting said walls to determine the width of said aperture, a travelling carrier located beneath and traversing said outlet aperture and having a width exceeding the maximum width thereof to receive the mineral wool discharged therethrough to produce sheets of different widths, and means for correlating the speed of said carrier to the rate of production of said

fibrous material and the width of the outlet aperture to produce a continuous finely cellular sheet of interlaced fibres, of uniform consistency and of a predetermined width and thickness.

3. Apparatus for producing clean mineral wool comprising means for melting a suitable mineral, means for producing a descending stream of said molten mineral, a blowing chamber having an inlet aperture in proximity to said stream and an outlet aperture remote therefrom, means for projecting gaseous fluid under pressure across said stream and upwardly through said inlet aperture to produce fibrous mineral wool and to disperse the same in said chamber, an inclined shot-receiving bottom section in said blowing chamber extending upwardly from beneath said inlet aperture lengthwise of said chamber, and a downwardly inclined bottom section leading from the upper end of said upwardly inclined section to said outlet aperture.

4. Apparatus for producing clean mineral wool comprising means for melting a suitable mineral, means for producing a descending stream of said molten mineral, a blowing chamber having an inlet aperture in proximity to said stream and an outlet aperture remote therefrom, means for projecting gaseous fluid under pressure across said stream and upwardly through said inlet aperture to produce fibrous mineral wool and to disperse the same in said chamber, an inclined shot-receiving bottom section in said blowing chamber extending upwardly from beneath said inlet aperture lengthwise of said chamber, and a downwardly inclined bottom section leading from the upper end of said upwardly inclined section to said outlet aperture, a travelling carrier traversing said outlet adapted to receive the mineral wool fibres discharged through said aperture, and means for correlating the rate of production of said mineral wool fibres and the speed of the travelling carrier to produce a finely cellular clean sheet of interlaced fibres of substantially uniform consistency, width and thickness.

5. Apparatus for producing clean mineral wool comprising means for melting a suitable mineral, means for producing a descending stream of said molten mineral, a blowing chamber having an inlet aperture in proximity to said stream and an outlet aperture remote therefrom, means for projecting gaseous fluid under pressure across said stream and upwardly through said inlet aperture to produce fibrous mineral wool and to disperse the same in said chamber, an inclined shot-receiving bottom section in said blowing chamber extending upwardly from beneath said inlet aperture lengthwise of said chamber, and a downwardly inclined bottom section leading from the upper end of said upwardly inclined section to said outlet aperture, a perforated travelling carrier traversing said outlet aperture, means for inducing a draft from said chamber through said outlet aperture, and carrier, to facilitate the deposition of mineral wool fibres upon said carrier, and means for correlating the rate of deposition of mineral wool fibres on said travelling carrier and the speed of said carrier to produce a finely cellular clean sheet of interlaced fibres of substantially uniform consistency, width and thickness.

6. Apparatus for producing mineral wool sheet insulation comprising means for melting the mineral, means for projecting a gaseous fluid under pressure across a descending stream of said molten mineral to produce fibrous wool, a blowing chamber to receive the mineral wool having an outlet aperture, a travelling carrier traversing said outlet adapted to receive the mineral wool discharged therethrough, means for correlating the rate of production of said fibrous material and the speed of said travelling carrier to produce a finely cellular sheet of interlaced fibres of substantially uniform consistency and thickness, and means for fusing the interlaced fibres of the sheet together at their points of intersection, thereby to increase the rigidity of the sheet and the permanence of the cellular structure.

7. Apparatus for producing mineral wool sheet insulation comprising means for melting the mineral, means for projecting a gaseous fluid under pressure across a descending stream of said molten mineral to produce fibrous wool, a blowing chamber to receive the mineral wool having an outlet aperture, a travelling carrier traversing said outlet adapted to receive the mineral wool discharged therethrough, means for correlating the rate of production of said fibrous material and the speed of said travelling carrier to produce a finely cellular sheet of interlaced fibres of substantially uniform consistency and thickness, means for securing the interlaced fibres of the sheet together at their points of intersection by fusion, and means for surfacing the faces of the sheet while in heated condition.

8. Apparatus for producing mineral wool comprising means for melting a suitable mineral, means for producing a descending stream of said molten mineral, means for gradually delivering a fused binding material in proximity to said stream of molten mineral, means for projecting gaseous fluid under pressure across the stream of molten mineral and the binder to produce fibrous mineral wool having the fibres individually coated with a binder, and a blowing chamber having an inlet located in proximity to said stream and an outlet remote therefrom into which chamber the coated mineral fibres are projected and dissipated, a travelling carrier traversing said outlet adapted to receive the mineral wool discharged therefrom, and means for regulating the speed of said travelling carrier in correlation to the rate of delivery of mineral wool through said outlet to produce a continuous, finely cellular, sheet of interlaced binder-coated fibres of substantially uniform consistency, width and thickness, a heating chamber in the path of the sheet of mineral wool, and means for supplying heat to said chamber to render the binder viscous and thereby cause the binding of the fibres together at their points of intersection.

9. Apparatus for producing mineral wool which comprises a glass furnace, means for melting sand and/or gravel in said furnace, means for supplying sand or gravel and fluxing material to said furnace at a sufficient rate to produce a continuously overflowing pool of molten mineral, means for causing the overflow to be delivered in a small stream, means for projecting a blast of gaseous fluid under pressure across said stream of molten mineral to produce fibrous rock wool, a blowing chamber having an inlet aperture in proximity to said stream and an outlet aperture remote therefrom, a travelling carrier traversing said outlet aperture adapted to receive the mineral wool fibres discharged through said aperture, means for correlating the speed of the travelling carrier to the rate of production of said rock wool, a heating chamber in the path of said travelling sheet, means for supplying heat from


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said furnace to said heating chamber, and means for so regulating the amount of heat supplied to said chamber as to fuse the mineral wool fibres together at their points of intersection without substantially varying the cellular structure of the sheet.

10. Apparatus for producing mineral wool which comprises a glass furnace, means for melting sand and/or gravel in said furnace, means for supplying sand or gravel and fluxing material to said furnace at a sufficient rate to produce a continuously overflowing pool of molten mineral, means for causing the overflow to be delivered in a small stream, means for continuously delivering a fused binder in proximity to said stream, means for projecting a blast of gaseous fluid under pressure across said stream of molten mineral and said binder to produce fibrous rock wool, a blowing chamber having an inlet aperture in proximity to said stream and an outlet aperture remote therefrom, a travelling carrier traversing said outlet aperture adapted to receive the mineral wool fibres discharged through said aperture, means for correlating the speed of the travelling carrier to the rate of production of said rock wool, a heating chamber in the path of said travelling sheet, means for supplying heat from said furnace to said heating chamber, and means for so regulating the amount of heat supplied to said chamber as to produce such fusion of said binder as to cause adhesion of the mineral wool fibres at the intersection thereof.

11. Apparatus for producing mineral wool sheet insulation comprising means for melting the mineral, means for projecting a gaseous fluid under pressure across a descending stream of said molten mineral to produce fibrous wool, a blowing chamber to receive the mineral wool having an outlet aperture, a travelling carrier traversing said outlet adapted to receive the mineral wool discharged therethrough, means for correlating the rate of production of said fibrous material and the speed of said travelling carrier to produce a finely cellular sheet of interlaced fibres of substantially uniform consistency and thickness, means for wrapping a binder cord transversely around the sheet and over the edges thereof, and means for stitching the travelling sheet longitudinally through and through to anchor the strands of the binder cords to the sheet at the points of intersection therewith.

12. Apparatus for producing sheet insulation of mineral wool comprising means for melting suitable mineral, means for projecting gaseous fluid under pressure across the descending stream of said molten mineral to produce fibrous wool, a blowing chamber to receive the mineral wool having an outlet aperture, a travelling perforated carrier traversing said outlet adapted to receive the mineral wool discharged therethrough, and means for producing suction through said carrier at said outlet to facilitate the deposition of the fibres thereupon and the interlacing of said fibres.

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