

April 14, 1959

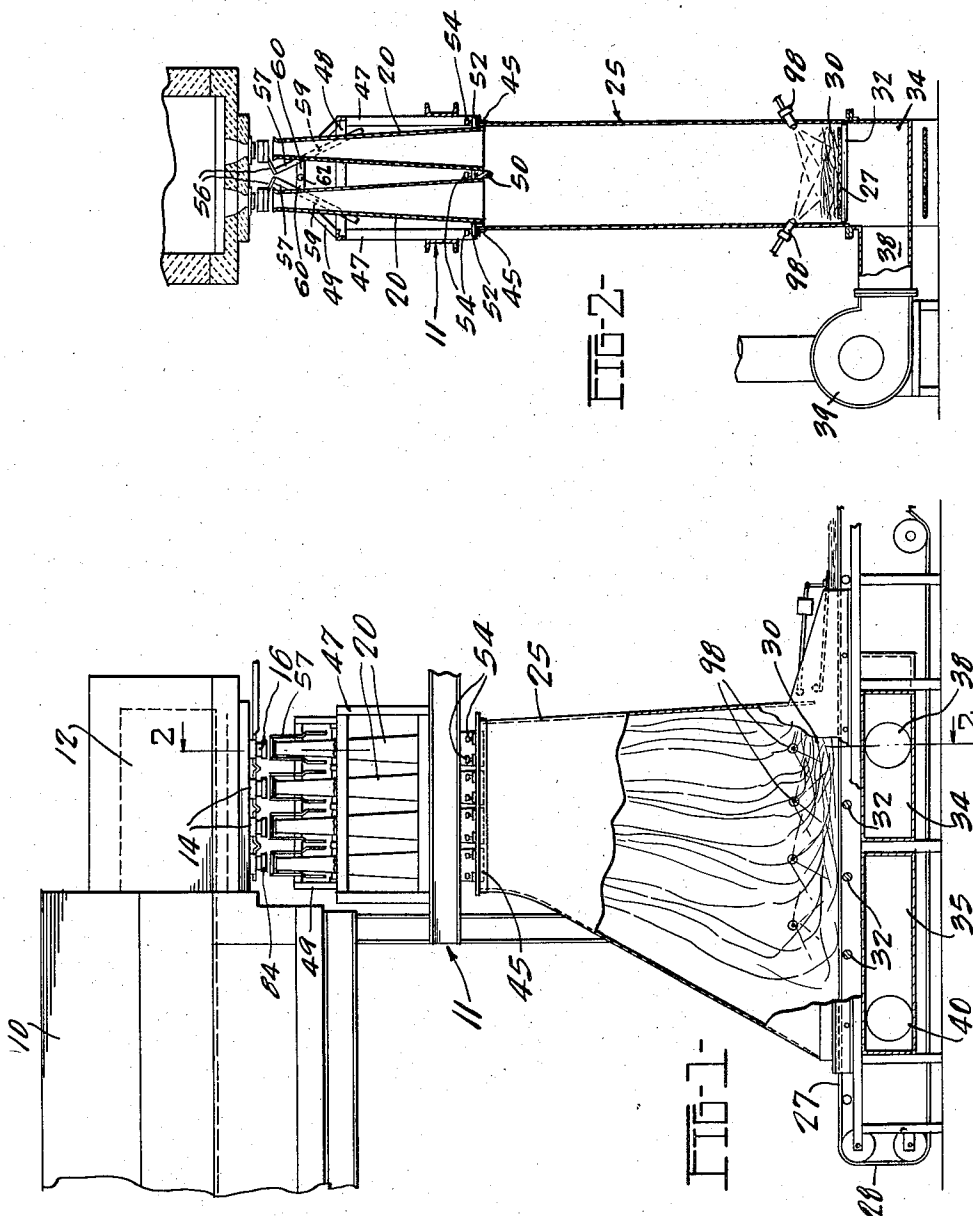
H. J. SNOW ET AL

2,881,471

APPARATUS FOR FORMING AND TREATING FIBERS

Filed Dec. 28, 1954

3 Sheets-Sheet 1



INVENTORS:
 HENRY J. SNOW,
 BY JESSE LOUIS YORK.
Shacklin & Sherman
 ATTYS.

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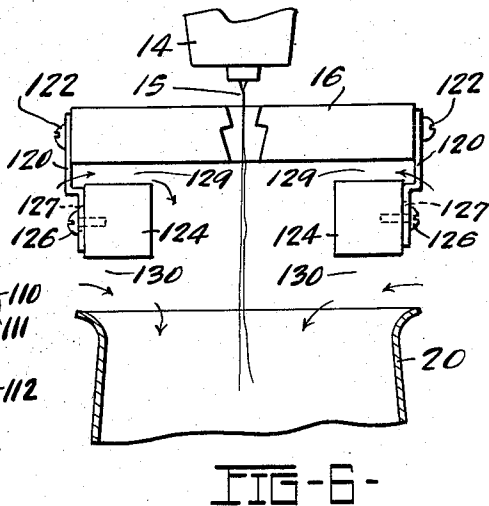
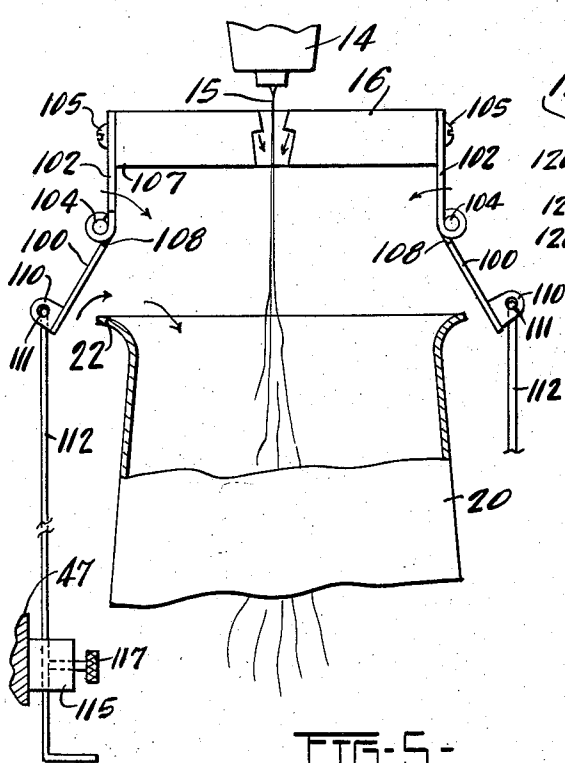
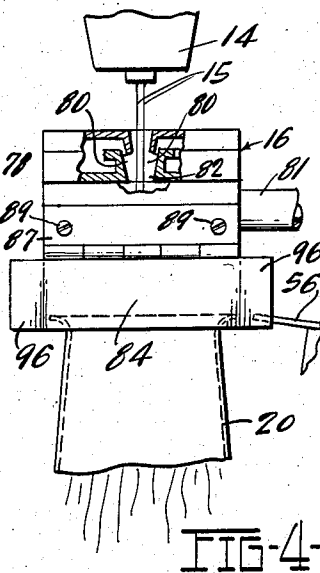
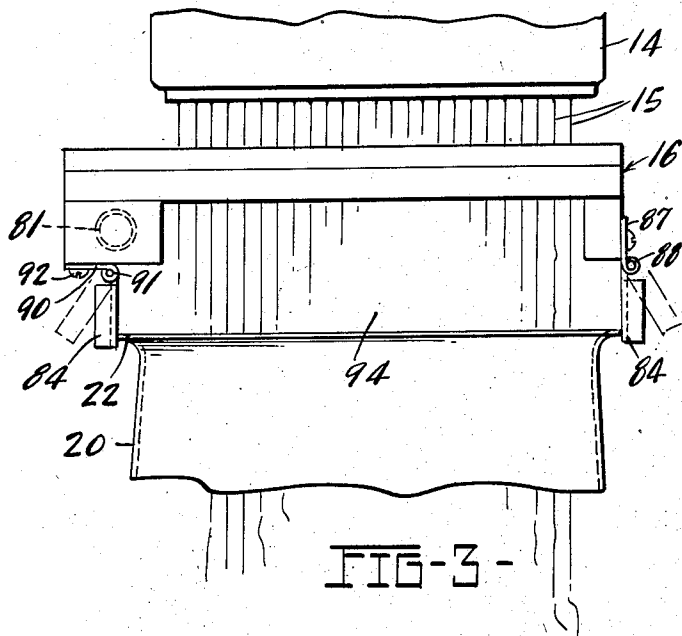
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APPARATUS FOR FORMING AND TREATING FIBERS

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3 Sheets-Sheet 2



INVENTORS:
HENRY J. SNOW
BY JESSE LOUIS YORK.
Stallin & Sherman
ATTYS.

April 14, 1959

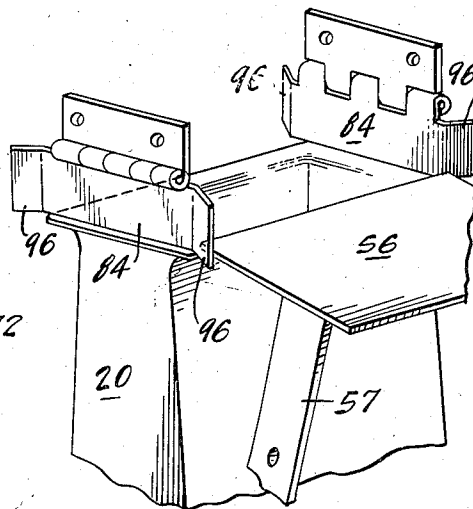
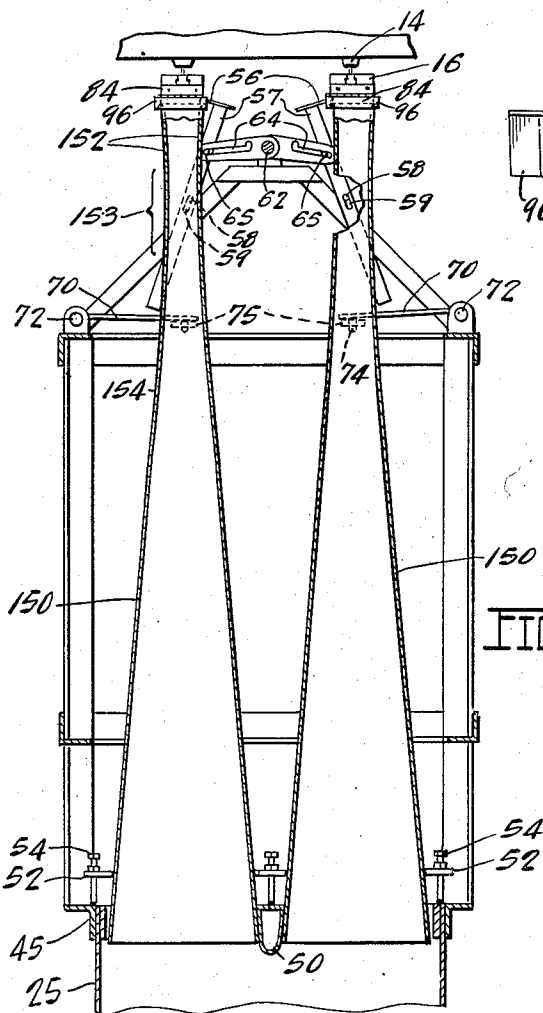
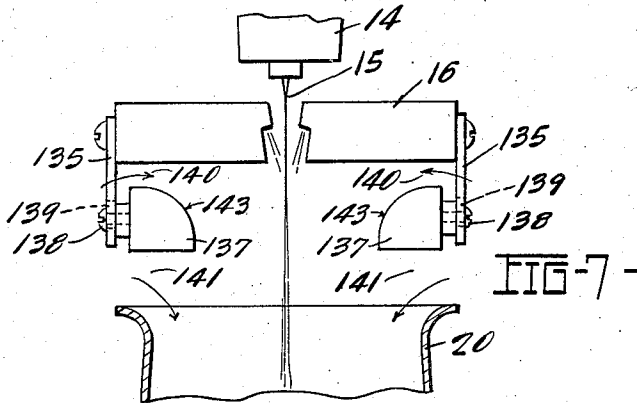
H. J. SNOW ET AL

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APPARATUS FOR FORMING AND TREATING FIBERS

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3 Sheets-Sheet 3



INVENTORS:
HENRY J. SNOW,
BY JESSE LOUIS YORK.

Stallin & Overman
ATTYS.

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2,881,471

APPARATUS FOR FORMING AND TREATING FIBERS

Henry J. Snow, Newark, Ohio, and Jesse Louis York, Ann Arbor, Mich., assignors to Owens-Corning Fiberglass Corporation, Toledo, Ohio, a corporation of Delaware

Application December 28, 1954, Serial No. 478,075

4 Claims. (Cl. 18—2.5)

This invention relates to a method and apparatus for forming and treating fibers and, more especially, to a method and apparatus for forming fibers from mineral materials such as glass and applying a binder or coating material on the fibers.

It has been a commercial practice to form fibers from glass or other heat-softenable mineral materials, such as rock or slag, by engaging streams of the material with high velocity blasts of steam or compressed air moving in the general direction of the glass streams to draw or attenuate the streams to fibers. The apparatus heretofore employed for this purpose embodies a series of spouts or chambers into which the streams of glass are directed. Spaced above the spouts are blowers for directing high-pressure steam blasts downwardly into the spouts, the streams of glass being drawn out or attenuated by the blasts in the spouts and in a forming hood disposed beneath the spouts. It has been a practice to spray or deliver a binder in liquid form into the upper zone of the forming hood through the use of compressed air or steam jets so as to distribute the binder on the fibers by spacial collision with the fibers in flight and onto the fibers deposited upon a collecting surface at the lower zone of the forming hood.

Heretofore a substantial space has been provided between the upper ends of the spouts and the blowers from which the steam blasts are projected in order to facilitate the entry or flow of air into the spouts along the blasts, the air flow being induced by the velocity of the blasts. The flow of atmospheric air into the spouts at approximate room temperature imparts a cooling effect which accelerates solidification of the fibers attenuated by the steam blast and also reduces the operating temperature in the spout and hood constructions.

The admission of substantial amounts of induced air into the spouts cooled the fibers sufficiently to enable the application of binder at the upper zone of the fiber forming hood, an operation premised on the belief that the major deposition of the binder upon the fibers occurred by spacial collision with the fibers while in flight moving toward a collecting surface. The uncontrolled flow of induced air has been found to have disadvantageous effects upon the attenuating operation. The adverse effects of the induced air are manifested in substantial turbulence existing in the spouts which impairs the attenuation of the material, resulting in fibers that are relatively coarse.

The turbulence causes the binder-laden fibers to form clumps, resulting in nonuniformities in the mass or mat of collected fibers. The uncontrolled flow of air reduces the effective length of the fiber-attenuating zones of the blasts, and the turbulence set up by the induced air adversely affects the pattern of deposition or orientation of the fibers in the mat. The excessive turbulence in the forming hood, caused by the unrestricted and uncontrolled flow of induced air augmented by the jets of steam or air projected into the hood through the binder applicators, results in a tumbling or whirling of the fibers, preventing the deposition of the fibers in laminar-like orientation, a

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desirable characteristic sought to be obtained in forming mats having optimum thermal properties.

The present invention embraces the provision of a method of attenuating fibers from heat-softenable material through the utilization of high velocity blasts in which the air stream induced by the blast velocity is restricted and controlled to improve the attenuating operation and the quality of the attenuated fibers.

An object of the invention is the provision of a method of attenuating fibers by high velocity blasts and controlling or regulating the air stream induced by the velocity of the blasts whereby turbulence in the fiber-forming zone is substantially reduced or minimized to facilitate smooth or streamline flow of the gases of the blasts and induced air streams or secondary blasts in the fiber-forming zone whereby attenuation of heat-softenable material to fibers takes place through a greater linear distance to produce finer fibers of increased lengths.

Another object of the invention is an improved method of applying a resin or other coating material to mineral fibers whereby the binder or coating is applied to the fibers adjacent their zone of collection and wherein the binder or coating is distributed on the fibers without the use of a gaseous propellant or medium.

Another object is the provision of a means and method of restricting or controlling the flow of air induced by a high velocity fiber-attenuating blast to reduce turbulence in the fiber-forming zone.

A further object of the invention is the provision of an apparatus and method for attenuating streams of glass or other mineral material to fibers by the application of gaseous blasts to the streams of the fiber-forming material wherein the induced air flow set up or established by the blasts is restricted and a liquid binder is distributed on the newly formed fibers in a confined zone in a manner whereby a minimum of turbulence is existent in the fiber-forming zone with a consequent increase in thermal efficiency manifested by increased production of finer fibers and the fibers are collected in laminar-like orientation to form a mat of uniform thickness having high-strength characteristics and optimum thermal properties.

Another object of the invention is the provision of a control means or apparatus for regulating the extent and character of flow of a blast-induced air stream into a fiber-forming chamber wherein a zone of minor turbulence is established adjacent the entrance of the blasts into the chamber whereby the glass streams are effectively engaged by the blasts to draw out or attenuate the streams to fine fibers.

Still another object of the invention resides in configuring or shaping a fiber-forming spout or chamber of fiber-forming apparatus to foster improved, streamline flow of the gases of the blasts and the fibers with a minimum of turbulence in the fiber-forming and collecting zones.

Further objects and advantages are within the scope of this invention such as relate to the arrangement, operation and function of the related elements of the structure, to various details of construction and to combinations of parts, elements per se, and to economies of manufacture and numerous other features as will be apparent from a consideration of the specification and drawing of a form of the invention, which may be preferred, in which:

Figure 1 is an elevational view, partly in section, illustrating a form of apparatus for carrying out the method of the invention;

Figure 2 is a vertical elevational view taken substantially on the line 2—2 of Figure 1;

Figure 3 is a detailed, side elevational view illustrating one form of control means for the induced air entering the fiber-forming zone;

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Figure 4 is an end elevational view, partly in section, of the construction shown in Figure 3;

Figure 5 is an elevational view, partly in section, similar to Figure 3 illustrating another form of control for regulating induced air entering the fiber-forming zone;

Figure 6 is a view similar to Figure 5 illustrating another form of control for the induced air entering the fiber-forming zone;

Figure 7 is a view similar to Figure 6 showing a modified form of induced air control means;

Figure 8 is a transverse sectional view illustrating a modified form of spout construction defining the fiber-forming zone, and

Figure 9 is a perspective view illustrating the induced air control means shown in Figure 3.

The method and apparatus of the invention are illustrated as particularly adapted for attenuating glass to fibers, but it is to be understood that the principles of the invention may be embodied in other forms of apparatus wherein high velocity blasts are utilized.

With particular reference to Figures 1 and 2, the glass melting and refining tank or furnace 10, supported upon a frame 11, is provided with a forehearth 12 within which a head of molten glass is maintained from glass batch reduced to molten condition in the tank or furnace 10. The lower wall or floor of the forehearth 12 is equipped with two rows of feeders 14, each of the feeders being provided with a plurality of orifices through which is discharged a plurality of small streams 15 of glass. Disposed adjacent and beneath each of the feeders is a blower construction 16, illustrated in further detail in Figures 3 and 4, for directing blasts of superheated steam or compressed air downwardly in the general direction of flow of the glass streams 15 and into engagement therewith for attenuating the glass streams to fibers of varying lengths.

Vertically disposed spouts or chambers 20 individual to the blowers 16 are formed with open upper ends which are disposed directly beneath and spaced from the blowers to facilitate the entrance of air into the upper ends of the spouts, the air flow into the spouts being induced by the high velocity of the gases of the blasts. As shown in detail in Figures 3 and 4, the upper ends of the spouts are formed with marginal flanges 22 curved to provide flared entrances or mouths for the spouts. The spouts are flared or tapered outwardly in a downward direction as illustrated in Figures 1 and 2, providing a confined fiber-attenuating zone and accommodating the expansion of the gases of the blasts.

The lower ends of the spouts 20 communicate with an expansion hood or chamber 25, the end walls of which are flared outwardly and downwardly as illustrated in Figure 1. The hood construction 25 provides an accumulating chamber within which the groups of attenuated fibers from the several spouts 20 are brought together and collected upon the upper flight 27 of an endless belt conveyor 28 in the form of a mat or mass of fibers 30. The flight 27 of the conveyor is supported by suitable rolls 32, the conveyor being of foraminous character to facilitate flow of spent gases of the blasts and induced air into suction chambers 34 and 35.

Suction chamber 34 is connected by a suitable duct 38 with a suction blower 39, and suction chamber 35 is connected by means of a duct 40 with a second suction blower (not shown). The suction blower 39 is of greater capacity than the suction blower connected with the chamber 35 to set up a lower pressure in chamber 34 than that impressed in the chamber 35. This arrangement is advantageous in that fibers progressively accumulate on the flight 27 of the conveyor, as it moves in a righthand direction, to form a comparatively thick mass above the suction chamber 34 so that higher suction is established in chamber 34 in order to draw the spent gases of the blast through the thick mass or mat of fibers.

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The spouts 20 are preferably articulately supported so that each spout may be moved or swung to an out-of-use position when the feeder adjacent a spout requires cleaning or repair or is out of use. The arrangement for supporting the spouts is illustrated in Figures 1, 2 and 8. A spout-supporting frame includes horizontally arranged frame members 45 arranged at the upper end zone of the chamber 25, forming a rectangular configuration surrounding the upper end of the chamber 25. The members 45 support upwardly extending frame members 47 which are joined at their upper ends by cross members 48, the members 47 supporting diagonally disposed bars 49. Extending between the two rows of spouts is a horizontally extending frame member 50 shown in Figures 2 and 8.

The lower zones of the opposite sides of each of the spouts 20 are equipped with outwardly extending bars 52 threaded to receive bolts 54, the ends of the bolts resting upon the frame members 45 and 50. Each spout is adapted to be tilted with its upper end moved inwardly to a position at one side of the blower adjacent thereto to render the spout ineffective or out of use. When a spout is swung to its ineffective position, a cover plate 56, shown in Figures 2, 4, 8 and 9, is automatically moved into a position to close the mouth of the spout. This is essential in order to avoid an updraft through the spout from the hood or chamber 25.

As particularly shown in Figure 8, each cover plate 56 is carried on a pair of arms 57 pivotally supported upon pins 58 carried by the spouts and extending into elongated openings or slots 59 formed in the arms, the pins forming fulcrums for the arms 57. The swinging movement of arms 57 is controlled by a pair of rocker arms 60 fulcrumed on a horizontal shaft 62, the rocker arms being formed with longitudinal slots 64 which engage pins 65 carried by the arms 57.

Each of the spouts is normally held in its vertical or operative position by means of a latch or bar 70 pivotally supported or fulcrumed upon a pin 72, each arm 70 being formed with a projection 74 which engages in an opening in a lug 75 formed on the spout. When it is desired to move a spout to an ineffective position, the latch 70 is released and the spout swung inwardly, and the pin 65 traversing the slot 64 functions to swing the cover plate 56 over the open end or mouth of the spout thereby closing same.

The invention is inclusive of means and method of controlling or regulating the amount of induced air entering the spouts 20. It has been found that unrestricted or uncontrolled flow of induced air into the spouts sets up turbulence of a character which impairs the proper attenuation of the glass to fibers and directly affects the pattern of deposition or orientation of the fibers in a mass or mat formation.

One form of induced air control or regulating means is illustrated in Figures 3 and 4. As shown in these figures, each blower 16 is spaced from the adjacent feeder 14 as illustrated. Each blower 16 is formed with a chamber 78 which supplies steam or air under pressure for discharge through nozzles or outlets 80 shown in Figure 4. Steam or other gas for the blasts is conducted from a supply to the blower through a tube or duct 81.

The steam or compressed air blasts are discharged into an elongated slot 82 formed centrally of the blower and through which the streams 15 of glass are delivered from the feeder 14. The blasts engage the glass streams below the blower; and as the blasts move in the general direction of flow of the streams, the streams are drawn or attenuated to fibers in the fiber-forming zone provided by each of the spouts 20 and forming hood 25. A stream of induced air normally flows into the spout in the space between the lower surface of the adjacent blower and the marginal portion 22 of the spout, the air entering from the horizontal directions between the blower and the spout.

The arrangement shown in Figures 3 and 4 illustrates one form of means for restricting or controlling the flow of induced air into a spout. Disposed adjacent the ends of the blower 16 are members, abutments or plates 84. The member 84 adjacent one end of the blower 16 is articulately joined to a supporting means or bracket 87 by a hinge pin or pintle 88. The bracket or plate 87 is secured to an end portion of the blower by means of screws 89. This member 84 normally depends from the bracket 87 and engages the marginal flange 22 of a spout in a manner illustrated in Figure 3.

The second member 84 at the opposite end of the blower is pivotally supported from a supporting means or bracket 90 by means of a hinge or pivot pin 91. The plate or bracket 90 is secured to a lower face of an end zone of the blower 16 by means of screws 92. The second member 84, in the position shown in full lines in Figure 3, normally engages the marginal flange 22 of the opposite end zone of the spout 20. The members 84, in the positions shown in full lines, form baffles, obstructions or walls preventing flow of induced air into the spout 20 from the zones adjacent the ends of the blower 16. In this form of construction the induced air flows into the spout 20 through the spaces or open zones 94 at the sides of a spout 20 and blower 16. The amount of induced air entering the spout or fiber-forming zone is substantially reduced through the control afforded by the members 84, and the blasts and induced air moving through the spout are confined therein and turbulence reduced in the fiber-forming zone of the spout. The end zones 96 of the members 84 are flared outwardly so that when the spout 20 is moved to an ineffective or out-of-use position, the flared portions 96 are engaged by the cover plate 56, and the members 84 are swung outwardly about their pivotal supports to the positions shown in broken lines in Figure 3 to facilitate movement of the spout 20 into registration with the cover 56. The relative positions of the members 84, spout 20 and cover 56 are illustrated in Figure 9, the spout being aligned with a feeder and blower in a position to receive the blasts and glass streams.

By reducing and regulating the amount of air flowing into the spout 20 induced by the blast velocity, turbulence in the fiber-forming zones in the spouts 20 and the upper portion of the hood 25 is substantially reduced. This construction provides for an improved, streamline flow of the gases and induced air or secondary blasts through the spouts. This operating condition tends to increase the attenuating range of the primary or steam blasts and produces longer and finer fibers.

The reduction in the amount of atmospheric air entering the spouts results in fiber attenuation at higher temperatures in the spouts. While this increase in temperature is beneficial for the attenuation operation in forming longer and finer fibers, the high temperature in the upper zone of the forming hood 25 tends to set or cure binder delivered into the upper zone of the hood 25.

In the conventional practice of spraying a binder into the upper or central portion of the forming hood, it has been found that only about 10% of the binder adheres to the fibers entrained in the blast or in flight within the hood, 90% of the binder being deposited upon the fibers during or after their collection upon a collecting surface. Furthermore, in the conventional method of introducing the binder into the forming hood by means of steam or air nozzles atomizing the binder and spraying the same into the chamber, the binder-conveying jets or streams of steam or air aggravate or increase turbulence in the forming hood, tumbling the fibers and impairing a desirable orientation or deposition pattern of the fibers on the collecting surface.

In the present arrangement, the nozzles or applicators 98, shown in Figures 1 and 2, for delivering binder onto the fibers are disposed in the lower zone of the forming hood 25, a slight distance above the maximum depth of

accumulation of the fibers on the flight 27 of the conveyor. The applicators are preferably supported in the opposing side walls of the forming hood or chamber 25 and are spaced lengthwise of the conveyor as illustrated in Figure 1. By positioning the applicators in the manner shown in Figure 1, the binder is continuously delivered onto the fibers during collection or deposition of the fibers on the collecting surface. The binder, which may be phenol formaldehyde, urea formaldehyde or other suitable resin or compositions of resins in solution or in liquid medium, is derived from a supply under pressure. The liquid binder, being under pressure, is sprayed or introduced into the forming hood 25 from the applicators or nozzles 98 solely by the pressure on the liquid, this method avoiding the use of a gaseous medium for delivering the resin or binder in the hood. The applicators or nozzles 98 are of the atomizing type and are shaped to break up the binder solution into minute particles which are dispersed and distributed in and throughout the fibers on the conveyor 27.

Through the reduction in the amount of induced air entering the fiber-forming zones and the elimination of gaseous jets or streams for introducing the binder onto the fibers, the fibers remain substantially in their pattern of attenuation in the blasts as they move through the hood 25 toward the collecting zone. The fibers entrained in the blast are in generally parallel relation, and when this orientation is not impaired by turbulence, the fibers are deposited out of the blast in somewhat the same orientation and tend to accumulate in laminar-like groups or layers of fibers in the collected mass, providing a mat having improved strength, acoustic and insulating characteristics or properties as compared with mats formed by a similar method utilizing uncontrolled, induced air streams. The suction impressed in the chambers 34 and 35 carries away the spent gases of the blasts and the induced air and also aids in dispersing or distributing the binder through the fibers as they are collected in the mass or mat formation.

Figure 5 illustrates another form of means for regulating and controlling the flow of air into the spout 20 induced by the high velocity of the blast. In this form of construction, air flow control members or plates 100 of uniplanar shape are disposed lengthwise of the blower 16 and in the direction of the longest dimensions of the opening or mouth of the spout 20. Each of the members 100 is supported adjacent its ends by brackets or members 102, the members 100 being pivotally or hingedly depending from brackets 102 by means of pins 104.

The brackets 102 may be secured to the blower construction 16 by means of screws or bolts 105. The brackets are disposed adjacent the end zones of the feeder 116 to provide a space between the lower surface 107 of the blower 16 and the upper edges 108 of the control members 100, providing an open space at each side of the spout through which a restricted yet constant flow of air may enter the mouth of the spout 20. In this form of control arrangement, the members 100 may engage the marginal flanges 22 on the spout so as to restrict the flow of induced air to the spaces between the lower surface 107 of the blower construction and the upper edges 108 of the members 100.

If it is desired to increase or augment the amount of induced air entering the spout 20, the members 100 may be swung to open position about the axes of the pins 104. Means may be provided for holding or retaining the control members 100 in various open positions. As illustrated in Figure 5, an end zone of each of the control members 100 may be formed with an ear or projection 110 provided with an opening to receive a transversely extending end portion 111 of a rod 112.

The rods extend through openings in brackets or blocks 115, one of which is shown in Figure 5, carried by the frame members 47. A screw 117 is threaded into a bore in each of the blocks 115 which intersects the opening

receiving the rod 112, the screw 117 serving to hold the rod 112 and hence the air flow control member 100 connected thereto in an adjusted position. The adjusting means for each of the members 100 is disposed beyond the side wall of the spout 20 so as to facilitate movement of the spout beneath the closure or cover 56 shown in Figure 9 when the spout is moved to an out-of-use or ineffective position.

It will be apparent that by adjusting the relative open position of the air flow control members 100, an amount of air in addition to that entering the space between the surface 107 of the blower 16 and the edges 108 of the members 100 is permitted to flow into the spout. The members 100 are held in adjusted position by drawing up the rod-retaining screws 117.

Figure 6 illustrates another form of means for restricting or controlling the flow of blast-induced air into the spout 20. In this form, brackets 120 are secured to the side walls or surfaces of the blower 16 by means of bolts or screws 122. Secured to the brackets 120 are bars or baffle walls 124 which extend full length of the blower 16 in the relative positions illustrated in Figure 6. The members or bars 124 are secured to the brackets 120 by means of screws 126 extending through vertically elongated slots 127 formed in the brackets 120 into threaded openings in members 124. By manipulating the screws 126, the bars or control members 124 may be elevated or lowered relative to the blower 16 and the mouth of the spout 20. The bars or members 124 in the position shown in Figure 6 restrict the air flow into the spout 20 through the longitudinal spaces or openings 129 and 130 existent above and below the air control members or bars 124.

It is desirable to provide for some turbulence of the induced air immediately beneath the blower 16 at the zone of engagement of the steam blasts from the blower 16 with the glass streams 15. This is essential in order that the blasts properly engage the streams and exert pulling or attenuating forces in many downward directions. Below this zone of turbulence it is desirable that the gases of the blasts and the secondary blasts of induced air move smoothly and without appreciable turbulence in order to attain efficient attenuation. The character of the air streams moving through the spaces 129 and 130 to secure a desired turbulence adjacent the blower may be varied by adjusting the relative vertical positions of the bars 124 to obtain optimum operating conditions in the arrangement shown in Figure 6.

Figure 7 is a view similar to Figure 6, illustrating a modified form of control for the induced air streams. In this form the feeder 16 supports brackets 135 which form a mounting means for air flow control members, bars or walls 137. The bars 137 are supported from the brackets 135 by means of screws 138 extending through elongated slots 139 in the brackets 135 and into threaded openings in the abutments 137. As shown in Figure 7, the flow of air induced by the blasts from the blower 16 enters the mouth of the spout 20 through spaces or openings 140 and 141 above and below the bars and control members 137. The control members 137 provide impediments which restrict the flow of air into the spout 20. The relative dimensions of the spaces 140 and 141 may be regulated by moving the bars 137 in a vertical direction, this movement being permitted by reason of the vertically elongated slots 139 in the brackets 135. It should be noted that the control members or abutments 137 are formed with arcuate or curved surface areas 143 of a contour tending to promote a degree of turbulence beneath and adjacent the feeder 16 in order to provide for satisfactory attenuating engagement of the blasts with the glass streams 15.

Figure 8 shows an arrangement similar to Figure 2 with a fiber-forming chamber or spout construction of a combined converging-diverging shape or configuration embodying the general principles of a Venturi in opera-

tion. The spout 150 is shaped with converging wall portions 152 which form a zone of maximum restriction at 153, the walls being divergent from zone 153 downwardly as shown at 154. Through this configuration of spout construction, the gases of the blasts and the secondary blasts of induced air move through the converging zone 152 and the restricted zone 153 at an increasing velocity, these zones tending to minimize the formation of turbulence or eddy currents in the spout so that a more streamlined flow of the gases and the fibers being attenuated by the velocity of the gases is attained in the spout with a minimum of disturbance to the fiber orientation in the blasts. This method of control increases the effective attenuating range of the blasts and restricts the air flow through the spout.

The air flow control members 84 illustrated in detail in Figures 3 and 4 are shown in Figure 8 in combination with the streamlined spout configuration. It is to be understood, however, that the other forms of air flow control means illustrated herein may be embodied in combination with the spout constructions shown in Figures 1, 2 and 8. It is to be understood that the air flow control members 84 at the ends of the blower shown in Figures 3 and 4 may be used in combination or conjunction with any of the several forms of air flow control members arranged lengthwise of the blower as shown in Figures 5 through 7. The method and means of applying the liquid binders through the applicators 98 shown in Figures 1 and 2 may be incorporated with the hood construction 25 shown in Figure 8.

In prior fiber-forming apparatus in which blast-induced air streams are uncontrolled, a positive pressure is usually existent in the spouts and forming hood which causes turbulence. This condition results in a whirling action or motion of the fibers in their flight toward the collecting surface and impairs the pattern of deposition of the fibers on the collecting surface. Through the utilization of the method of control of the invention for the induced air flow and the elimination of steam and air jets for introducing binder or fiber-coating material onto the fibers in the hood, a reduced pressure is obtained in the spouts and hood; and by substantial restriction of induced air flow, a negative or subatmospheric pressure may be impressed in the spouts and hood. The reduction of pressure reduces turbulence and whirling motion of the fibers and facilitates collection of the fibers in a desired laminar-like orientation.

The mass or mat of collected fibers 30 is conveyed away from the hood 25 by the upper flight 27 of the conveyor moving in a righthand direction as viewed in Figure 1. The collected fibers may be compressed to a mat of desired thickness and the mat passed through a curing oven (not shown) in which heat is applied to set up or cure the binder.

It is apparent that, within the scope of the invention, modifications and different arrangements may be made other than is herein disclosed, and the present disclosure is illustrative merely, the invention comprehending all variations thereof.

We claim:

1. Apparatus of the character disclosed, in combination, a walled fiber-forming chamber having an open end of substantially rectangular cross-section, means for flowing streams of heat-softened mineral material into the open end of the chamber, a blower disposed adjacent the open end of the chamber arranged to project high velocity gaseous blasts into the chamber to engage and attenuate the streams to fibers, said blower being spaced from the open end of the chamber to admit air flow induced by the blasts into the chamber, a pair of generally rectangularly shaped baffles for reducing flow of induced air into the spout, said baffles being disposed respectively adjacent opposed rectilinear edge regions of the chamber walls at the open end and arranged to partially impede the induced air flow.

2. Apparatus of the character disclosed, in combination, a walled fiber-forming chamber having an open end of substantially rectangular cross-section, means for flowing streams of heat-softened mineral material into the open end of the chamber, a blower disposed adjacent the open end of the chamber arranged to project high velocity gaseous blasts into the chamber to engage and attenuate the streams to fibers, said blower being spaced from the open end of the chamber to admit air flow induced by the blasts into the chamber, a pair of elongated baffle members, each of said baffle members being disposed in substantial parallelism with the rectilinear edge region of opposed walls of the chamber defining the open end thereof and adapted to partially impede the induced air flow adjacent the said opposed walls.

3. Apparatus of the character disclosed, in combination, a walled fiber-forming chamber having an open end of substantially rectangular cross-section, means for flowing streams of heat-softened mineral material into the open end of the chamber, a blower disposed adjacent the open end of the chamber arranged to project high velocity gaseous blasts into the chamber to engage and attenuate the streams to fibers, said blower being spaced from the open end of the chamber to admit air flow induced by the blasts into the chamber, a pair of elongated baffle members, said baffle members being disposed respectively adjacent opposed wall regions of the chamber at the open end, each of said baffle members being individually adjustable for regulating the amount of induced air admitted into the chamber.

4. Apparatus of the character disclosed, in combination, an elongated walled fiber-forming chamber having an open end of substantially rectangular cross-section,

the walls of the chamber adjacent the open end being convergent inwardly to provide a region of reduced cross-sectional area spaced from the open end, the walls of the chamber extending beyond the region of reduced cross-sectional area being flared outwardly, means for flowing streams of heat-softened mineral material into the open end of the chamber, a blower disposed adjacent the open end of the chamber arranged to project high velocity gaseous blasts into the chamber to engage and attenuate the streams to fibers, said blower being spaced from the open end of the chamber to admit air flow induced by the blasts into the chamber, a pair of baffles for reducing flow of induced air into the spout, said baffles being disposed respectively adjacent opposed rectilinear edge regions of the chamber walls at the open end and arranged to partially impede the induced air flow.

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