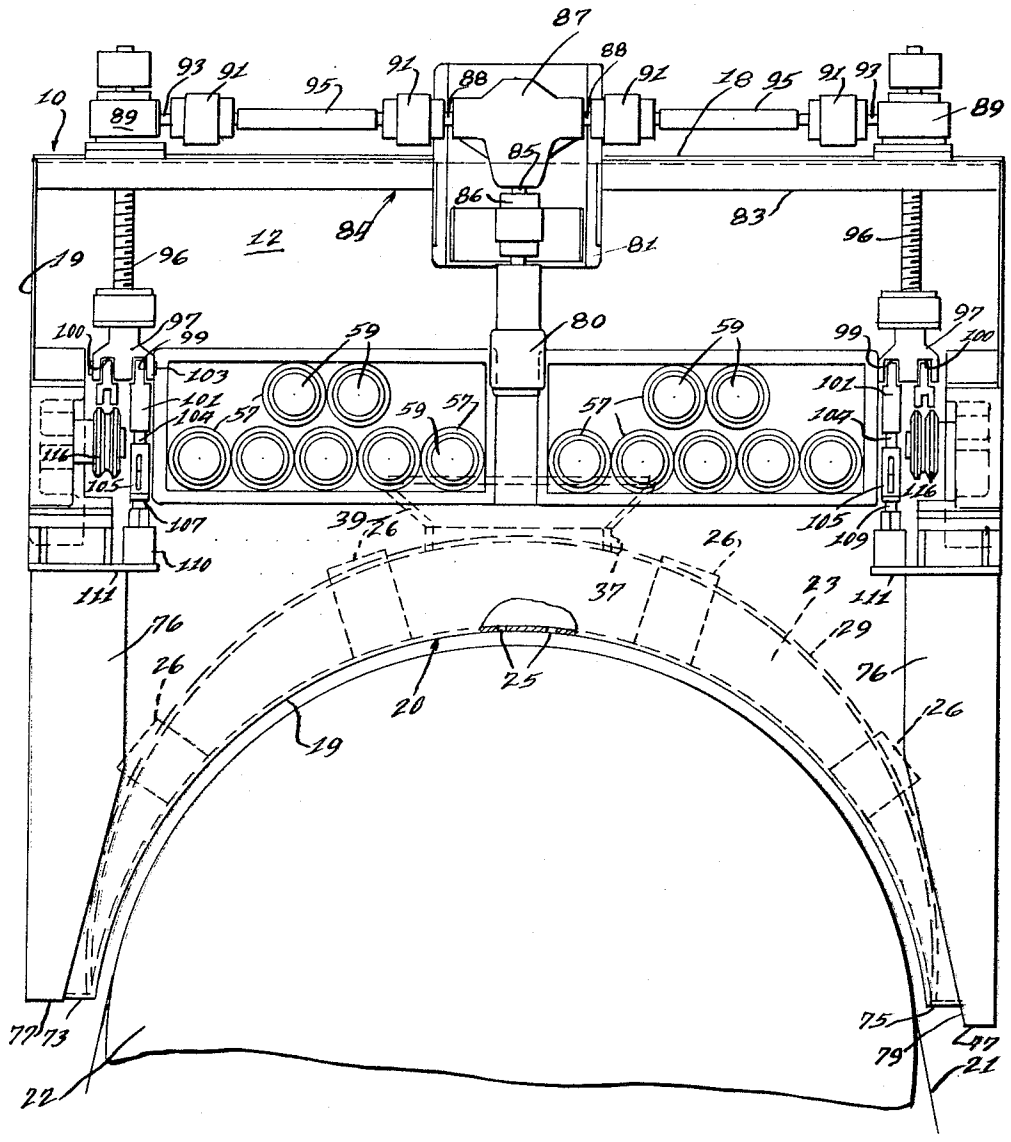
May 18, 1965 E. D. BEACHLER 3,183,607

DRYING HOOD WITH MOVABLE PLENUM CONSTRUCTION

Filed Nov. 9, 1961 6 Sheets-Sheet 1

Fig. 1



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DRYING HOOD WITH MOVABLE PLENUM CONSTRUCTION

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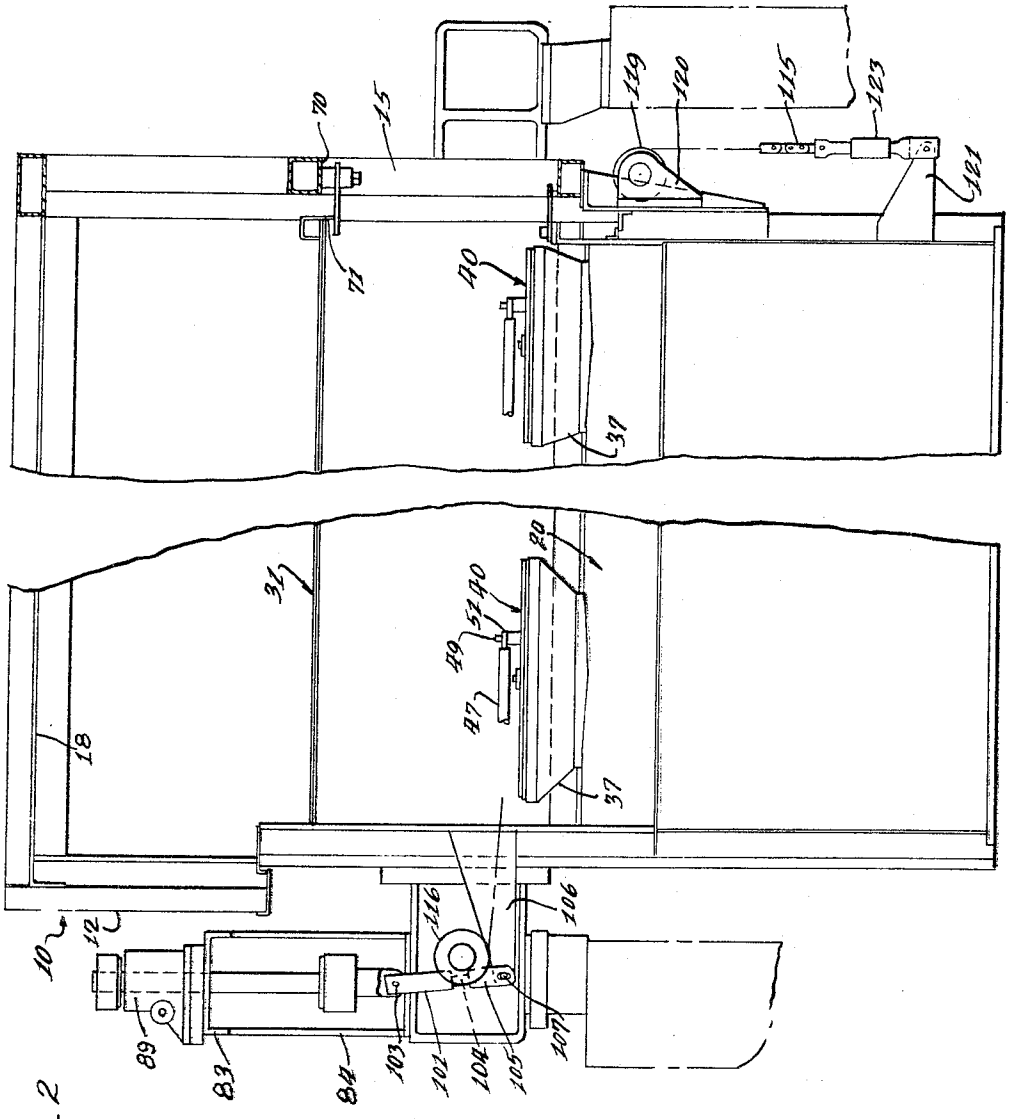


FIG. 2

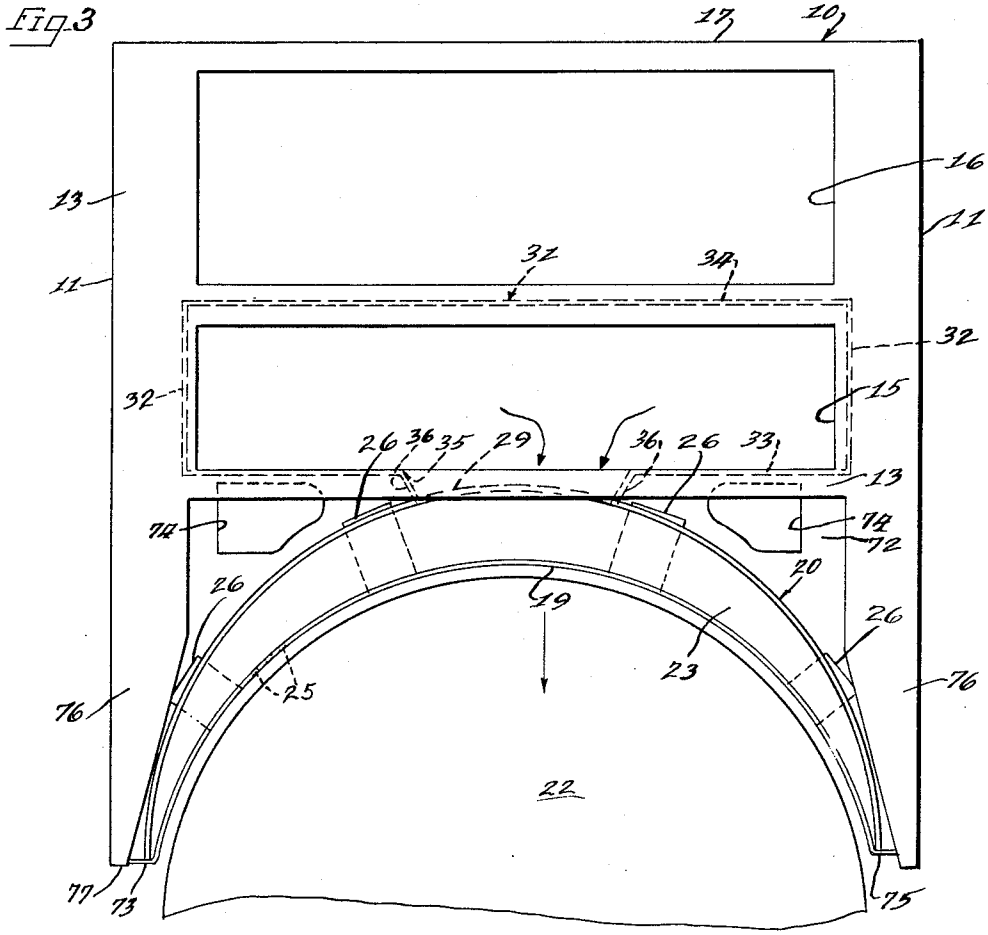
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DRYING HOOD WITH MOVABLE PLENUM CONSTRUCTION

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Fig. 3



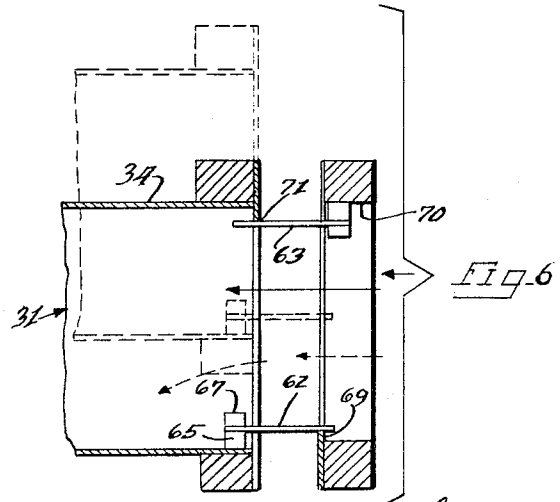
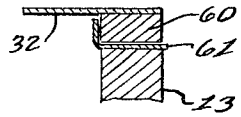


Fig. 6

Fig. 7



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DRYING HOOD WITH MOVABLE PLENUM CONSTRUCTION

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Fig. 4

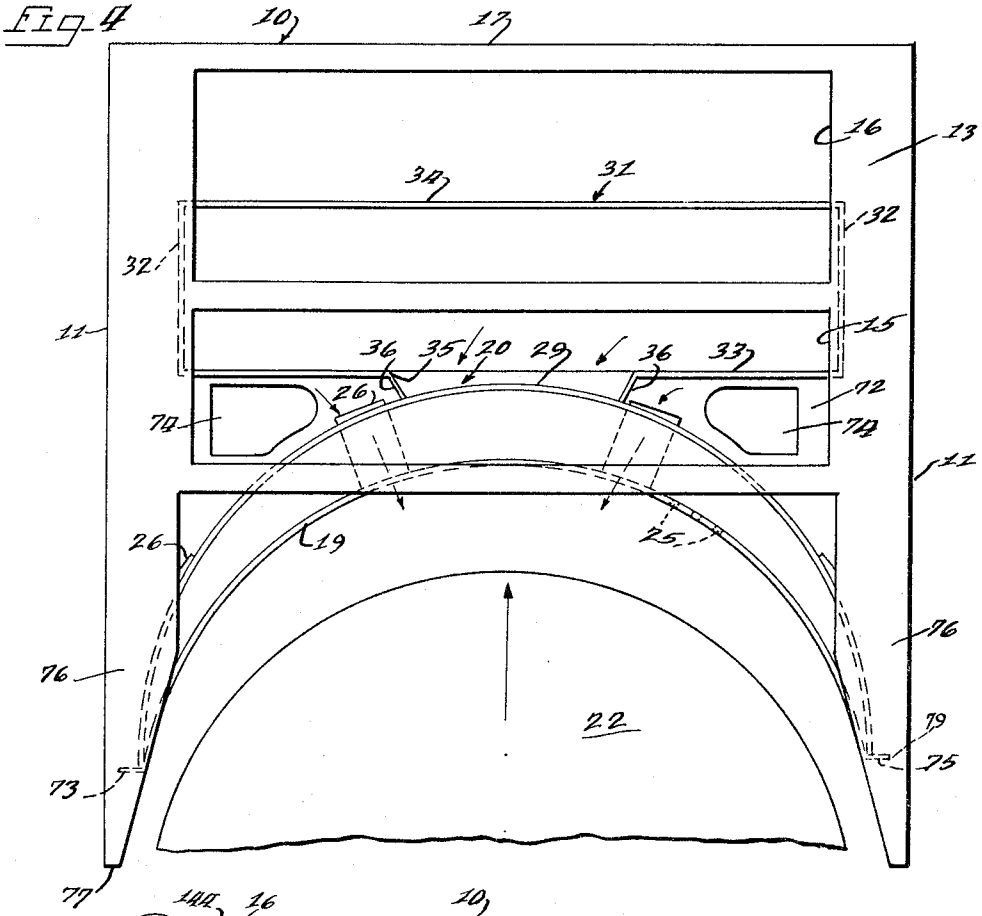
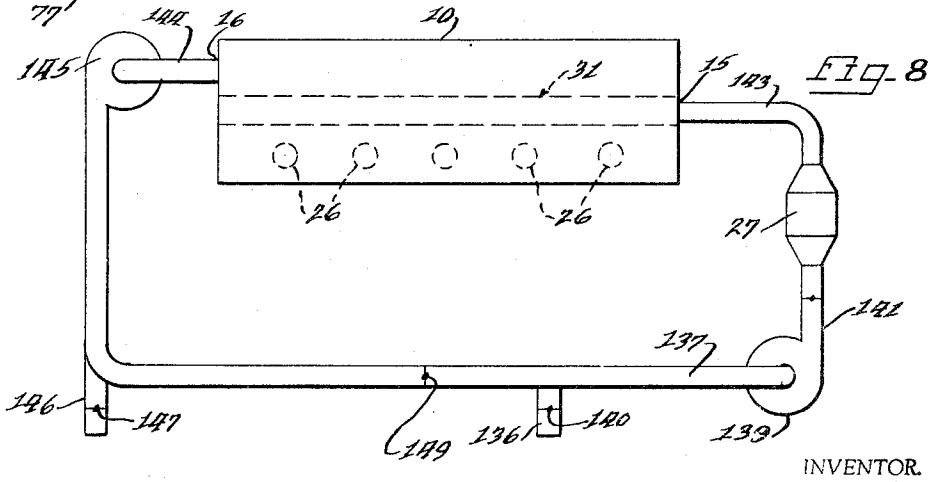


Fig. 8



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DRYING HOOD WITH MOVABLE PLENUM CONSTRUCTION

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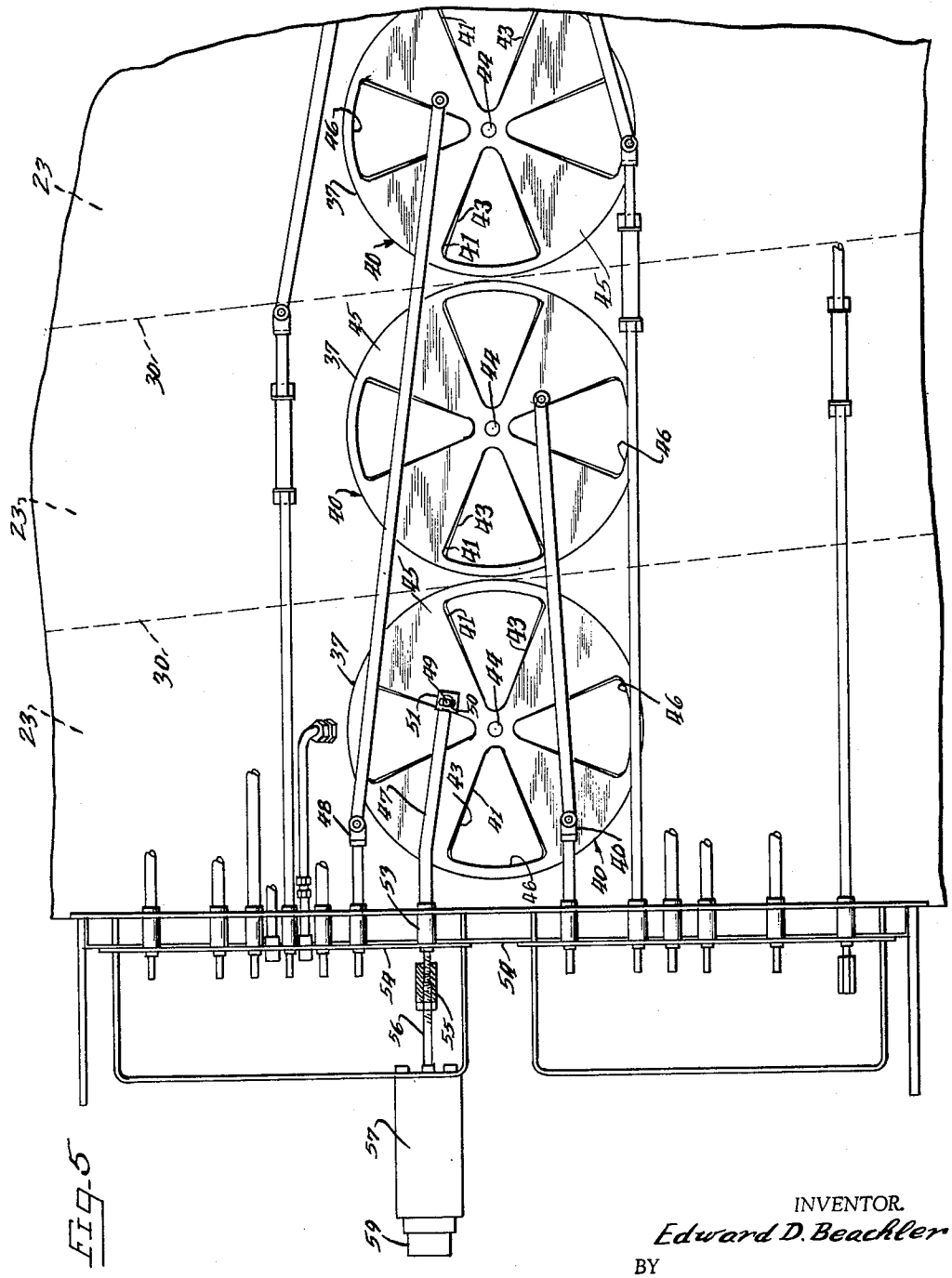


FIG-5

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DRYING HOOD WITH MOVABLE PLENUM CONSTRUCTION

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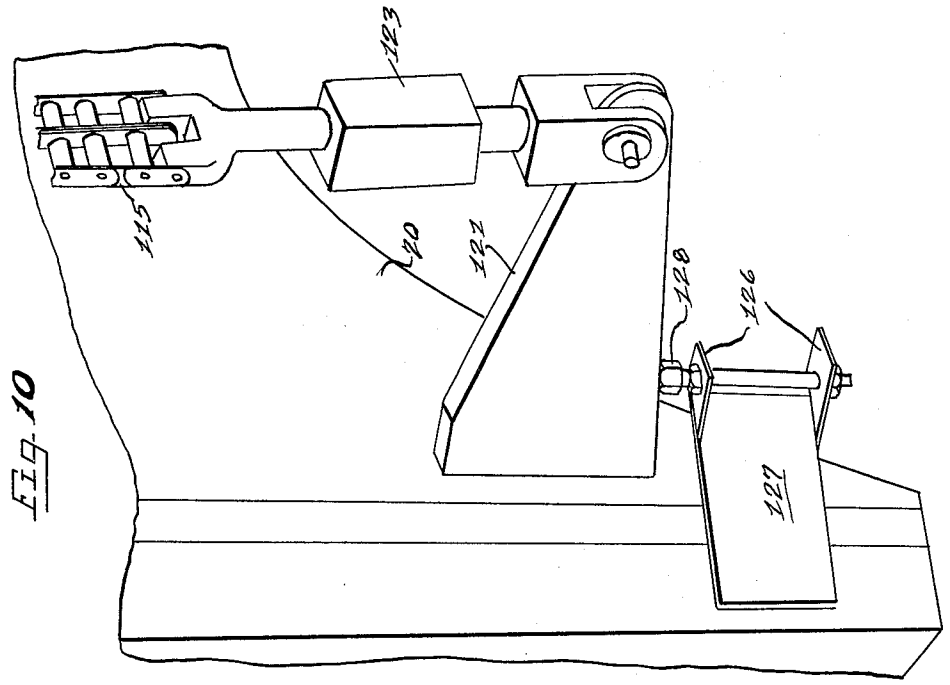


Fig. 10

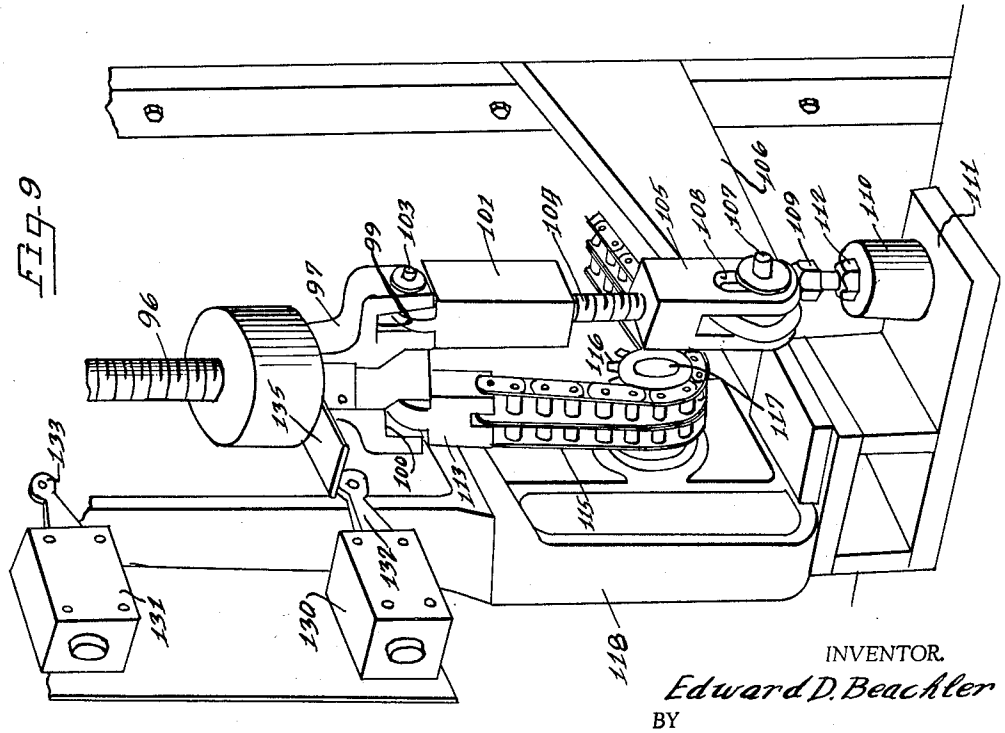


Fig. 9

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United States Patent Office 3,183,607 Patented May 18, 1965

3,183,607

DRYING HOOD WITH MOVABLE PLENUM CONSTRUCTION

Edward D. Beachler, Beloit, Wis., assignor to Beloit Iron Works, Beloit, Wis., a corporation of Wisconsin

Filed Nov. 9, 1961, Ser. No. 151,330
6 Claims. (Cl. 34—122)

This invention relates to improvements in driers particularly adapted for drying traveling fibrous webs in the making of paper.

A principal object of the invention is to provide an improved form of drier used in the making of paper arranged with a view toward utmost efficiency in drying and simplicity and compactness in construction.

Another object of the invention is to provide a simplified form of drier for drying a fibrous web passing along a rotatable drying cylinder in which the compactness of the drier is attained by providing a stationary air circulation shell extending along the plenum chamber of the drier and by mounting the plenum chamber for retractible movement within the shell to afford access to the drying cylinder and wet traveling thereabout.

Still another object of the invention is to improve upon the driers heretofore in use in the making of paper by so arranging the drier as to effect blow down of the plenum and exhaust chambers of the drier, to remove debris and particles of paper therefrom, in a simpler manner than formerly.

Still another object of the invention is to provide an improved form of drier for drying traveling fibrous webs in the making of paper and the like having a plenum chamber directing heated air on the traveling web, in which the plenum chamber is retractibly movable into the air circulating hood of the drier to afford access to the drying cylinder and fibrous web trained thereover, and in which the operation of raising the plenum chamber within its hood effects the blowing down of the plenum and exhaust passageways of the drier, to remove paper and other debris therefrom.

Still another object of the invention is to provide a more compact and efficient form of drier for drying traveling webs of paper, so arranged as to eliminate the flexible joints heretofore necessary in the air supply and exhaust connections to the drier, by sealing the plenum chamber to the drier hood and mounting the plenum chamber within the hood in such a manner as to accommodate retraction of the plenum chamber within the hood, to afford access to the drying cylinder and fibrous web trained thereabout.

Still another object of the invention is to provide a drier for drying fibrous webs traveling about a drying cylinder, in which the plenum chamber for the drier is guided for vertical movement along its air circulating hood and in which an improved form of elevating mechanism is provided for raising and lowering the plenum chamber with respect to its air circulating hood.

Another and important object of the invention is to reduce the strains on the web due to blowing as it leaves the drier, by drawing in air along the discharge side of the drier.

These and other objects of the invention will appear from time to time as the following specification proceeds and with reference to the accompanying drawings wherein:

FIGURE 1 is a front end view of a drier constructed in accordance with the invention with certain parts broken away;

FIGURE 2 is a fragmentary side elevational view of the drier shown in FIGURE 1 with certain parts broken away;

FIGURE 3 is a diagrammatic rear end view of the drier shown in FIGURES 1 and 2, showing the plenum chamber in an operative drying position with certain parts of the head broken away;

FIGURE 4 is a diagrammatic rear end view of the drier, similar to FIGURE 3, but showing the plenum chamber in a raised position;

FIGURE 5 is a fragmentary top plan view of the drier with the air circulating duct broken away and shown in vertical section and illustrating the mechanism for operating the dampers controlling the passage of air into the plenum;

FIGURE 6 is an enlarged detail view showing the seal between the air supply duct for the plenum and the drier hood;

FIGURE 7 is an enlarged detail view illustrating the vertical seal between the air supply duct to the plenum and the hood;

FIGURE 8 is a diagrammatic view, diagrammatically illustrating the circulation of air through the dryer;

FIGURE 9 is an enlarged detail perspective view illustrating the operative connection at the front end of the plenum for raising the plenum within the hood; and

FIGURE 10 is a perspective view illustrating the details of the connection to the rear end of the plenum for raising the plenum within the hood.

In FIGURES 1, 2, 3 and 4 of the drawings, I have a dryer hood 10 having side walls 11, a front end wall 12 and a rear end wall 13 having an air supply inlet 15 leading thereinto and an exhaust outlet 16 leading therefrom. The top portion of the hood is closed by a top wall 17.

The top wall, side walls and end walls of the hood 10 may be made from a suitable insulating material carried in a metal frame structure 18.

The hood 10 also has a semi-cylindrical vertical movable bottom wall in the form of an impingement plate 19 of a plenum 20, conforming generally to the form of a fibrous web 21 as it passes about a rotating drying cylinder 22.

The impingement 19 forms the bottom plate of a series of plenum chamber 23, arranged in side by side relation with respect to each other for the full length of the hood 10 and drying cylinder 22, and has a series of air impingement orifices or nozzles 25 leading therethrough for impinging heated air onto the web traveling about the drying cylinder 20. The impingement plate 19 also has a plurality of exhaust passageways 26 leading therethrough and communicating with the inside of the hood 10 for withdrawing spent moist air from the web traveling about the drying cylinder 22, for exhaust through the exhaust passageway 16 or for recirculation through a heater 27 (FIGURE 8) through the impingement nozzles 25.

The individual plenum chambers 23 in the plenum 20 are generally cresent-shaped in vertical cross-section and are formed from the lower impingement plate 19 and an upper generally semi-cylindrical plate 29 and a plurality of helically arranged baffles 30 spaced along said plate in the general direction of rotation of the drum in the space therebetween, and dividing the space between said plates into the plenum chambers 23, extending along the plenum in side by side relation with respect to each other.

An air supply duct 31 extends along the top of the plenum 20 for substantially the width of the hood 10 and is suitably guided for vertical movement along said hood. The air supply duct 31 has side walls 32, a bottom wall 33 and a top wall 34. The bottom wall 33 has a longitudinally extending slotted portion 35 having downwardly bent lip portions 36 extending angularly downwardly to the plate 29 and welded or otherwise secured thereto. The slotted portion 35 affords com-

munication with a plurality of air inlets 37 leading through the plate 29 into the individual plenum chambers 23. Each air inlet has an outwardly flared generally frusto-conical portion 39 converging toward the associated plenum chamber 23 and having an air valve or damper 40 in its inlet end.

The air valves or dampers 40 are of a well known form and each includes a stationary plate 41 mounted in the inlet end of the frusto-conical portion of the air inlet 37 and having a plurality of segmental air openings 43 leading therethrough. A vertical pivot pin 44 extends upwardly of the center of the stationary valve plate 43 and forms a pivotal mounting for a rotatable valve plate 45. The valve plate 45 has segmental openings 46 therein corresponding to the segmental openings 43 leading through the stationary plate 41. Each air valve or damper 41 is operated by an individual operating rod 47 (FIGURE 5). The mechanism for operating each of the valves is similar except the operating rods are longer as they operate the valves spaced rearwardly along the plenum 20, and in order to operate all of the valves from the front of the hood 10, universal couplings 48 are connected to the ends of certain of the valve operating rods.

As shown in FIGURE 5, the valve rod 47 for operating the forwardmost valve plate 45 extends above the plate 45 and is pivotally connected thereto on a pivot pin 49, extending in a slot 50 in a connector 51, at the front end of the rod. The rod 47 is shown as being slidably guided in a sleeve 53 extending through a bracket 54, extending across the front of the air supply duct 31 and as being suitably sealed to said sleeve. A connector 55 threaded on the outer end of the rod 47 is provided to connect said rod to a plunger 56, slidably extending within an air cylinder 57. The air cylinder 57 may have a diaphragm or piston (not shown) therein, connected to the plunger 56 and biased by a spring (not shown) into the position shown in FIGURE 5, to move the dampers or valves 40 into their wide open position shown. Upon the depression of an actuator or pushbutton 59, air will be admitted to the cylinder 57 to move the valve plate 45 toward a closed position. The amount of air entering the cylinder 57 may be governed to govern the position of the valve plate 45 with respect to the stationary plate 41. Air in the air cylinder 47 may thus open the valves 40 as selected and may also hold said valves in fully open or partially open positions in a conventional manner, which is no part of the present invention so need not herein be shown or described further.

The dampers or valves 40 may thus be individually moved to fully or partially open positions, or may be entirely closed to determine the amount of air admitted to each individual plenum chamber, and thereby govern the distribution of air across the web, and control the moisture profile of the web, as more fully shown and described in a prior application Serial No. 152,836 filed November 16, 1961 by Edgar J. Justus and Lawrence A. Moore and entitled "Dryer Hood Construction".

The rear end portion of the air duct 31 is open and is slidably sealed to the side walls 11 of said hood. As shown in FIGURES 1, 2, 6 and 7, the side walls 32 of the air duct 31 have rails 60 extending vertically along the rear end portions thereof. The rails 60 have slidably engagement with resilient metallic seals 61, extending vertically along the rear end wall 13 of the hood 10, along the outer margins of the air supply and air return ducts or openings 15 and 16 respectively. The seals 61 are shown as extending inwardly along the inner sides of the rails 60, and as having slidable engagement therewith to form an airtight metal seal between the inlet or supply opening 15 and the side walls of the air supply duct 31.

The bottom wall 33 and top wall 34 of the air supply duct 31 are sealed to the inlet opening 15 by resilient metal sealing strips 62 and 63 respectively. The sealing strip 62 extends along a rib 65 extending along the outer edge of the bottom wall 33 and is maintained in engagement with said rib by a metal strip 67 extending along the top of the sealing strip and bolted or otherwise secured thereto. The metal sealing strip 62 extends over and has abutting sealing engagement with a sealing lip 69 extending upwardly within the inlet 15. The sealing strip 62 is placed under tension by engagement with the lip 69, when the plenum is in operative drying relation with respect to the drying cylinder 22.

The sealing strip 63 is like the sealing strip 62, but is mounted on the hood 10 and extends horizontally inwardly along an upper marginal wall 70 of the inlet 15 within said hood and engages a lip 71 extending downwardly of the upper wall 34 of the air supply duct 31.

Thus, when the plenum 20 is in operative association with the drying cylinder 22, as shown in FIGURE 3, a seal will be provided between the air inlet 15 and the air supply duct 31. As, however, the plenum is elevated to the position shown in FIGURE 4, the air supply duct 31 will register partially with the inlet 15 and partially with the exhaust opening 16, with the result that air will be forced into the supply duct 31 and will also be forced into the hood 10 through openings 74 in a plate 72, extending across the rear end portion of the plate 29 and upwardly therefrom to the air supply duct 31. This will force air through the exhaust passageways 26 and scavenge said exhaust passageways of scraps of paper or other debris that may be drawn thereinto. It will also force air downwardly along the inner sides of the outer side walls 11 of the hood 10 and downwardly along the outer sides of the plenum 20.

The impingement plate 19 is shown in FIGURES 1, 3 and 4 as having outwardly extending opposite lower end flanged portions or legs 73 and 75 extending for the length thereof inside of plate portions 76 of the frame structure 18 of the hood 10, and as being slidably guided for movement along said plate portions. The flanged portion 73 rests upon a horizontal leg 77 extending between the plate portions 76 for the length of the hood. The flanged portion 75 is spaced above an opposite horizontal leg 77 of the frame structure 18, to provide a gap or slot 79 extending along the retreating or discharge side of the drying cylinder 22, accommodating the drawing of air within the hood 10 along the flange 75 to reduce the pressure of air on the fibrous web, as it leaves the drying cylinder, and to thereby avoid the tendency of tearing said web by the blowing of air thereon.

Referring now in particular to FIGURES 1, 2, 9 and 10 and the mechanism for raising the plenum 10 out of operative association with the drying cylinder 22, to accommodate the threading of a web over said cylinder or the removal of a broken web from said cylinder, a fluid operated motor 80 depends from and is mounted on a mounting bracket 81 mounted at the center of a transversely extending beam 83 of a supporting frame structure 84, for the hood 10. The motor 80 drives an aligned shaft 85 through a coupling 86. The shaft 85 is journalled in and extends within a mitre gear box 87 and drives aligned transverse shafts 88 journalled in and projecting from opposite ends of said mitre gear box. The mitre gearing (not shown) within the mitre gear box 87, for driving the shafts 88 from the shaft 85 may be of a conventional form and is no part of the present invention so need not herein be shown or described further. The shafts 88 drive lifting jacks 89 mounted on the beam 83 adjacent opposite ends thereof, through spaced couplings 91, one of which is driven from the shaft 88 and the other of which drives a shaft 93 for driving the lifting jacks 89, and a coupling shaft 95 connecting the couplings 91 together.

The lifting jacks 89 may be well known forms of screw jacks and each has a depending threaded shaft 96 having a coupling member 97 on its lower end, and depending therefrom. The coupling member 97 is shown as being in

the form of a double yoke having two side by side downwardly opening slotted portions 99 and 100. A link member 101 extends into one slotted portion and is pivotally connected to the coupling member 99 as by a pivot pin 103. The link member 101 is shown as being a turnbuckle type of link including a threaded shaft 104 and a yoke 105 threaded on said threaded shaft and depending therefrom. The yoke 105 extends along a bracket 106 projecting outwardly from the plenum 20, and is pivotally connected thereto by a pin 107, extending through vertically extending slotted portions 108 in said yoke and through the bracket 106. Stops 109 are provided to limit movement of the plenum 20 toward the drying cylinder 22. The stops 109 are shown as being in the form of machine screws threaded within bosses 110 projecting upwardly of support plates 111 projecting outwardly of the plate 76, adjacent the upper end portions thereof. Lock nuts 112 are provided to hold the stops 109 in position. The slotted portion 100 of the connector or double yoke 97 has a chain connector 113 pivotally connected thereto on the pivot pin 103. The chain connector 113 is shown as having two chains 115 pivotally connected thereto and depending therefrom. The chains 115 extend around idler sprockets 116, mounted on a shaft 117 projecting inwardly of a support bracket 118 for the hood 10 and secured to and forming a part of the frame structure 18 therefor. The chains 115 are trained along the hood 10 along the outer sides of the side walls thereof over idler sprockets 119 and downwardly of said idler sprockets. The idler sprockets 119 are mounted on brackets 120 extending rearwardly of the frame structure 18 for the hood 10, and secured thereto. The lower ends of the chains 115 are connected to brackets 121, secured to and projecting rearwardly of the plenum 20, through connectors 123 in the general form of turnbuckles. Stops 125 in the form of bolts extending through spaced ears 126, are provided to limit downward movement of the plenum with respect to the drying cylinder 22. The ears 126 extend rearwardly of plates 127, secured to the frame structure 18 for the hood 10 and projecting inwardly of the side walls 111 thereof. Lock nuts threaded on the stops or bolts 125 are provided to retain said stops in position. The stops 125 may be adjusted with the stops 109, to maintain the plenum 20 and impingement plate 19 thereof, parallel to the surface of the drying cylinder 22, and to position said impingement plate in the proper spaced relation with respect to the surface of said drying cylinder.

In FIGURE 9 I have shown two vertically spaced limit switches 130 and 131 determining the limit of raising and lowering movement of the plenum 20 within the hood 10. The limit switches 130 and 131 have switch arms 132 and 133 respectively, engaged by a trip arm 135 extending outwardly of the conector 97. The control from the limit switches 130 and 131 to the motor 80 may be a conventional control and is not part of the present invention so need not herein be shown or described further.

Referring now to FIGURE 8, diagrammatically illustrating the air circulating circuit for circulating heated air under pressure through the plenum, and impinging heated air on the web 21 as it travels about the drying cylinder 22, an air intake duct 136 outside of the hood 10 is diagrammatically shown as having communication with a duct 137 connected with the intake of an air circulation fan 139. The air intake duct 136 is diagrammatically shown as having dampers 140 therein, controlling the flow of air to the fan 139 and the moisture content of the air circulated through the plenum 20, where it is desired to recirculate a greater portion of air through the plenum. The fan 139 has connection with the heating element 27 through a duct 141 for forcing the air therethrough and into the air intake opening 15 in the hood 10 and the air supply duct 31 extending along the top of the plenum 20, through a duct 143. The air is then circulated through the air valves 40 shown in FIGURE 5, in accordance with the positions of said valves with respect to open and closed positions and into the individual plenum chambers 23. From thence the air is forced through the impingement nozzles 25 onto the fibrous web, traveling about the drying cylinder 22. An exhaust duct 144 is connected with the exhaust outlet 16 in the hood 10, and withdraws the spent air through the exhaust passageways 26. An air circulating fan 145 is provided in said exhaust duct. The fan 145 also draws spent air through the scavenging slot 79 (FIGURE 1), to reduce the strains in the web 21 as it leaves the drying cylinder 20, caused by the blowing of hot air on the web through the impingement nozzles 25 extending along the web at the discharge end of the hood 10.

The air circulating fan 145 discharges air through an exhaust duct 146 connected to the atmosphere through an exhaust damper 147. With the exhaust damper 147 closed and the circulation damper opened, air may be recirculated through the plenum chambers 23 to the surface of the web traveling about the drying cylinder 22 through the exhaust passageways 26 and out the exhaust outlet 16 and the hood 10 back to the fan 139. Fresh air may be admitted through the dampers 140 to reduce the moisture content of the recirculating air, where the moisture content builds up as it is withdrawn from the moist web.

With the air circlulating duct 136 wide open and the exhaust duct 146 wide open and the circulation damper 149 closed, fresh air may be drawn from the atmosphere and heated and discharged directly to the atmosphere.

The plenum chamber and hood 10 may also be pressurized by closing the circulation damper 149 and the exhaust damper 147 and opening the fresh air damper wide open.

In the event the web should break during the drying operation and it is desired to prevent pieces of broken web or other debris from being drawn into the hood 10 and clogging the exhaust passageways 26, it is simply necessary to raise the plenum 20 to the position shown in FIGURE 4. The intake end of the air supply duct 31 will then overlap both the air supply passageway 15 and exhaust passageway 16. The fan 139 will then force air into the supply duct 31 and plenum chambers 23 and will also force air into the hood 10 through the openings 74 in the wall 72 and force air under pressure through the exhaust passageways 26 and downwardly along opposite sides of the plenum along the side walls 11 of the hood 10, and scavenge the exhaust passageways 26 as well as the plenum chamber 23, and thereby prevent the clogging of the exhaust passageways 26 as well as the plenum chambers.

It may be seen from the foregoing that by providing a stationary air circulating hood and a movable plenum and air intake duct movable vertically within the hood, that the drier may operate in places of low head room, and that by providing the fans, dampers and air circulating ducts on the outside of the hood and providing a stationary inlet into the hood and sliding seals between the hood and intake duct, that upon raising the plenum and intake duct within the hood the seal will be broken from the inlet into the hood and intake duct and air supplied through the inlet is divided between the intake duct and the interior of the hood and exhaust passageways 26, pressurizing both the exhaust passageways, and air impingement nozzles to scavenge the exhaust passageways of broken pieces of paper by the simple operation of raising the plenum and intake duct within the hood.

It may still further be seen that with the the drier of the present invention, the stresses on the web due to blowing are reduced, and the mechanism for lifting the plenum within the hood and retaining it in position may be far lighter and lower capacity than if the entire plenum and hood were to be raised and lowered, and that the necessity of providing flexible joints in the air circulating ducts has been eliminated.

While I have herein shown and described one form in which my invention may be embodied, it may be under-

stood that various modifications and variations in the invention may be attained without departing from the spirit and scope of the novel concepts thereof.

I claim as my invention:

1. In a drier for drying traveling fibrous webs in the making of paper and in combination with

a drying cylinder having a web trained thereabout,

a hood extending along and partially about said drying cylinder and spaced thereabove,

a plenum within said hood having closed ends with a top wall and an arcuate bottom wall generally conforming to said drying cylinder,

air impingement orifices in the bottom wall of said plenum,

exhaust passageways extending through said bottom wall and said top wall of the plenum and communicating with the interior of said hood,

an air inlet in said hood through which air is passed into said hood,

an air outlet leading from said hood,

an air supply duct means adapted to be adjustably positioned in registration with said air inlet for affording communication between said air inlet, said air supply duct means and said plenum, said air supply duct means being fixed to said plenum for movement therewith,

means for sealing said air supply duct means to said air inlet,

means for raising said plenum and air supply duct means relative to said hood to afford access to the drying cylinder and web trained thereabout, said sealing means between said air inlet and said air supply duct means moving out of sealing engagement with said air inlet to said hood upon the raising of said plenum relative to said hood and the movement of said air supply duct means partially out of registry with said air inlet to effect the direction of air into said hood out through said exhaust passageways and to scavenge said exhaust passageways from debris lodging therein.

2. A drier particularly adapted to dry traveling fibrous webs in the making of paper comprising

a drying cylinder adapted to have a web trained thereabout,

a stationary hood extending along and partially about said drying cylinder and spaced thereabove,

a plenum within said hood having closed ends with a top wall and an arcuate bottom wall generally conforming to said drying cylinder and guided for vertical movement along said hood,

air impingement orifices in said bottom wall of said plenum,

exhaust passageways extending through said bottom wall and said top wall and communicating with the interior of said hood,

an air inlet into said hood through which air is passed into said hood,

an air outlet leading from said hood,

an air supply duct extending along and connected with said plenum for vertical movement therewith and adapted to be adjustably positioned in registration with said air inlet for affording communication between said air inlet and said plenum,

movable sealing means sealing said air supply duct to said air inlet when said plenum is in operative association with said drying cylinder, said sealing means directing air under pressure into said supply duct and plenum and through said impingement orifices when said impingement orifices and bottom wall are in operative association with said drying cylinder, said sealing means moving out of sealing engagement with said air inlet to said hood upon the raising of said plenum relative to said hood to afford access to said cylinder and the web traveling thereabout and the movement of said sealing means out of sealing engagement with said air inlet into said hood with the moving of said air supply duct partially out of registry with said air inlet into said hood and effecting the direction of air from said air inlet into said hood and out through said exhaust passageways to scavenge said exhaust passageways from debris lodging therein.

3. A device for drying traveling webs in the making of paper and the like comprising in combination:

a rotatable drying cylinder adapted to have a fibrous web trained thereabout,

a plenum having closed ends, a top wall and an arcuate bottom wall portion conforming to the form of said drying cylinder and having a plurality of air impingement orifices leading through said bottom wall portion to said drying cylinder, exhaust passageways extending through said plenum and having communication with said drying cylinder for withdrawing spent air from the web,

means holding said plenum in operative association with said drying cylinder and for withdrawing said plenum from said drying cylinder to afford access to said cylinder,

an air supply duct having communication with the interior of said plenum and mounted for movement therewith,

a hood enclosing said plenum and air supply duct and having an air inlet leading thereinto,

means sealing said air inlet to said air supply duct to effect the supply of air to said plenum for impingement onto the traveling web through said impingement orifices,

an outlet leading from said hood,

said sealing means having releasable engagement with said air supply duct and breaking the seal from said inlet to said air supply duct upon raising said plenum out of operative association with said drying cylinder and effecting the short circuiting of a part of the air to supply air under pressure into said hood and out through said exhaust passageways toward the drying cylinder, to scavenge said exhaust passageways by air under pressure.

4. A device for drying traveling webs in the making of paper and the like comprising in combination:

a rotatable drying cylinder adapted to have a fibrous web trained thereabout,

a plenum having closed ends, a top wall and an arcuate bottom wall portion conforming to the form of said drying cylinder and having a plurality of air impingement orifices leading therethrough,

exhaust passages extending through said arcuate bottom wall portion and plenum for withdrawing spent air from the web,

an air supply duct extending along the top wall of said plenum and having communication with said plenum through said top wall,

means for holding said plenum in operative association with said cylinder and for moving said plenum and air supply duct away from said cylinder to afford access thereto,

a hood enclosing said plenum and air supply duct and having an inlet leading thereinto in communication with said air supply duct when said plenum is in operative association with said drying cylinder and having a vertically spaced outlet in operative association with said exhaust passageways extending through said plenum for withdrawing spent air from the drying cylinder,

sealing means between said air supply duct and said air inlet into said hood including side sliding seals and top and bottom seals,

said seals sealing said inlet to said air supply duct when said plenum is in operative association with said drying cylinder,

and means for raising said plenum and supply duct vertically within said hood, and

moving said top and bottom seals out of sealing engagement with said air inlet

whereby part of the air passing into said hood through said air inlet will pass out said exhaust passageways toward said cylinder and scavenge said exhaust passageways from debris.

5. A device for drying traveling webs in the making of paper and the like comprising in combination,

a rotatable drying cylinder adapted to have a fibrous web trained thereabout,

a plenum having closed ends with a top wall and an arcuate bottom wall portion conforming to the form of said drying cylinder and having a plurality of air impingement orifices leading through said arcuate bottom wall portion,

exhaust passageways extending through said arcuate bottom wall portion and plenum for withdrawing spent air from the web,

an air supply duct extending along and mounted on said top wall of said plenum for supplying air under pressure to said plenum through said top wall,

means for holding said plenum in operative association with said drying cylinder and for retractibly moving said plenum and air supply duct to afford access to said cylinder,

a hood extending along the outer sides of said plenum and air supply duct and across the ends and over the top of said plenum and air supply duct,

an inlet into said hood adapted for communication with said air supply duct to supply air thereto, an exhaust outlet from said hood,

means for withdrawing air through said exhaust passageways into said hood and through said exhaust outlet,

and a slot extending between the outgoing side of said bottom wall portion and said hood and in communication with the interior of said hood and said exhaust outlet for withdrawing air from the web as it leaves said plenum, to relieve the web from blowing stresses.

6. A device for drying traveling webs in the making of paper and the like comprising in combination:

a rotatable drying cylinder adapted to have a fibrous web trained thereabout,

a plenum having closed ends with a top wall and an arcuate bottom wall portion conforming to the form of said drying cylinder and having a plurality of air impingement orifices leading through said arcuate bottom wall portion,

exhaust passageways leading through said arcuate bottom wall portion and plenum and having communication with the interior of said hood for withdrawing spent air from the web,

an air supply duct extending along the top wall of said plenum and having communication with said plenum through said top wall and closed at one end and open at its opposite end,

means for holding said plenum in operative association with said cylinder and for retractibly moving said plenum and air supply duct with respect to said cylinder to afford access to said cylinder,

a hood extending along the outer sides of said plenum and across the ends and over the top thereof,

an air inlet into said hood having communication with said open end of said air supply duct,

an exhaust outlet from said hood having communication with said exhaust passageways leading through said plenum and communicating with the interior of said hood,

slidable side seals sealing opposite sides of said open end of said air supply duct with said inlet,

and releasable top and bottom seals sealing said inlet to the top and bottom of said open end of said air supply duct and movable out of sealing engagement with said air inlet into said hood upon raising of said plenum and air supply duct along said hood,

whereby part of the air under pressure supplied through said air inlet is directed to said hood and out through said exhaust passageways towards the drying cylinder, to scavenge said exhaust passageways from torn paper which may be lodged therein.

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