Sept. 7, 1926. 1,599,371

H. H. PAYZANT

AIR DISTRIBUTING SYSTEM

Filed Sept. 5, 1925 2 Sheets-Sheet 1

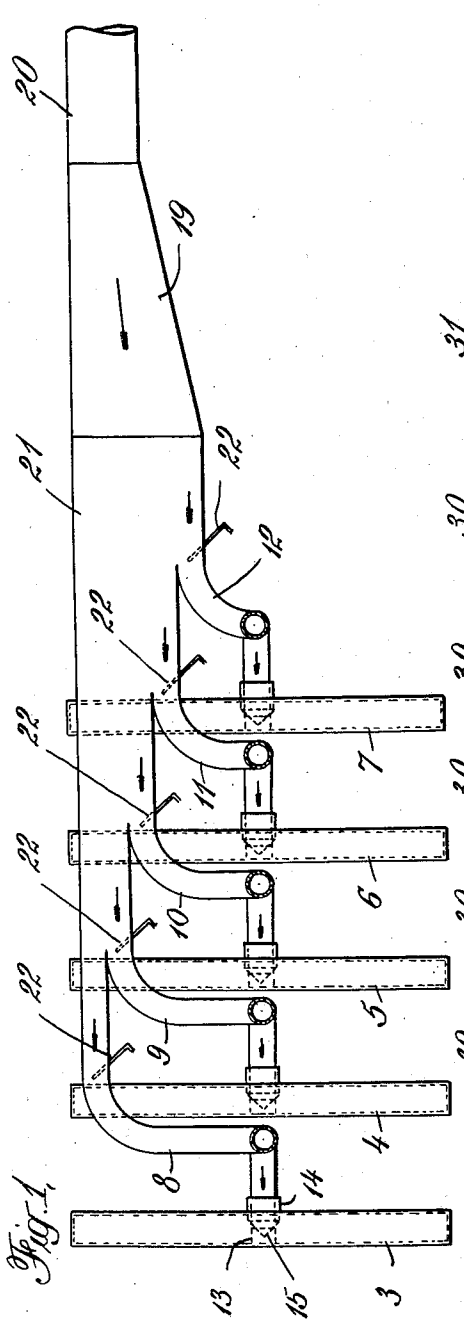


Fig. 1.

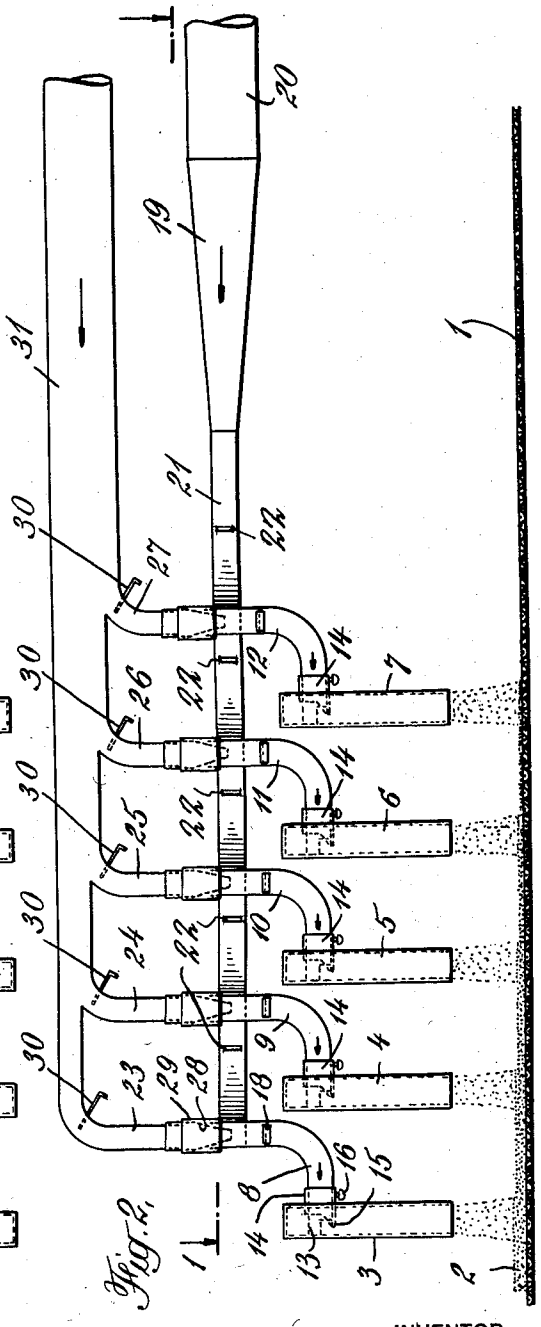


Fig. 2.

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Fig. 3,

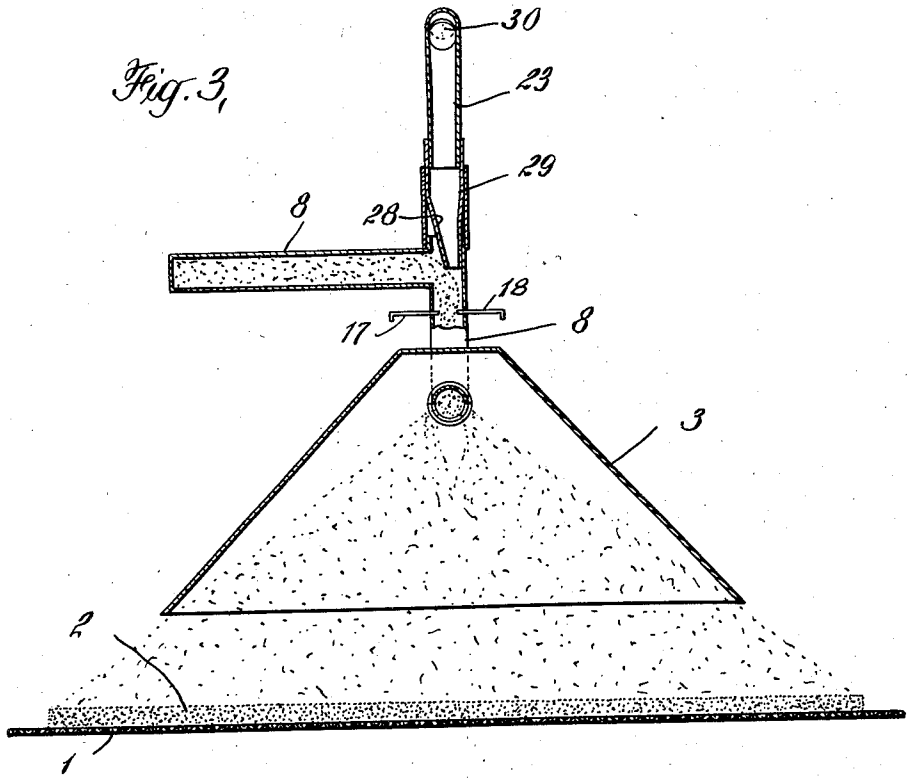


Fig. 5,

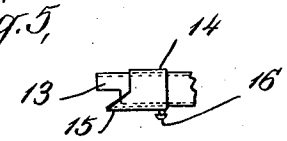


Fig. 6,

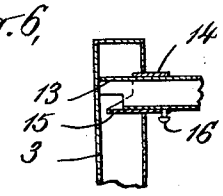


Fig. 7,

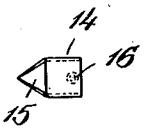
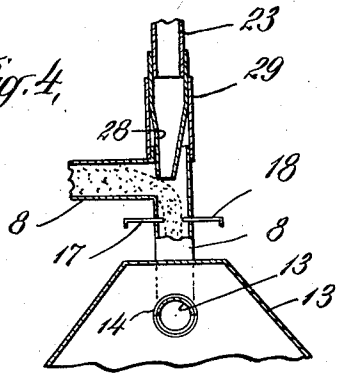


Fig. 4,



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UNITED STATES PATENT OFFICE.

HENRY HARRIS PAYZANT, OF EVERETT, WASHINGTON, ASSIGNOR TO WOOD CONVERSION COMPANY, OF CLOQUET, MINNESOTA, A CORPORATION OF DELAWARE.

AIR-DISTRIBUTING SYSTEM.

Application filed September 5, 1925. Serial No. 54,831.

This invention relates to an improved air distributing system adapted to be used in the manufacture of resilient masses or bodies of fibrous material in the form of sheets, layers or batting, and especially adapted to be used in the manufacture of the product known as wood cotton.

In the manufacture of wood cotton, it is the usual practice to separate wood fibers into a flocculent mass by shredding, and deposit the separated fibers onto a belt or screen conveyor so that they arrange themselves into a loose, resilient, heterogeneous mass. The fibers may be treated with an adhesive either before they come in contact with the conveyor or immediately thereafter.

The principal object of my invention is to provide an improved means for depositing loose materials, such as wood fibers, upon a traveling surface. To be more specific, my invention relates to means for building up a composite layer of loose material on a conveyor or traveling surface, perhaps the most important feature of my invention being the provision of means for altering the character of several streams of material being deposited upon the conveyor. My invention makes it possible to vary the character of the composite layer of material throughout a wide range, this being accomplished by regulating devices capable of very fine adjustment.

In general, my invention comprises a plurality of distributing hoods and means for blowing loose material, such as wood fibers, into the hoods. The hoods are arranged so as to deposit the loose material on a traveling screen and means are provided within the hoods for regulating the distribution of the material passing through the hoods. Fluid pressure means is provided for regulating the velocity and quantity of material supplied to the hood. My invention includes means whereby two or more materials capable of being conveyed by air under pressure can be intimately mixed together and deposited upon a conveyor.

The various objects and advantages of my invention will be apparent upon considering the following detailed description which is to be taken in conjunction with the accompanying drawings in which

Figure 1 is a horizontal section of one embodiment of my improved distributing system, taken on line 1—1 of Figure 2.

Figure 2 is an elevation of the distributing system shown in Figure 1.

Figure 3 is a vertical section view of one of the distributing hoods shown in Figures 1 and 2.

Figure 4 is a vertical section view of the parts associated with the distributing hoods shown in Figure 3.

Figure 5 is an elevation of the regulating device employed within each distributing hood.

Figure 6 is a vertical section view of the device shown in Figure 5, and

Figure 7 is a plan view of one of the parts shown in Figures 5 and 6.

In Figures 1 and 3, I have illustrated a conveyor 1, which may be of the ordinary type commonly used in the manufacture of wood cotton or similar products. A composite layer of material 2 is deposited on this conveyor by a plurality of distributing hoods 3, 4, 5, 6 and 7. Each of these hoods deposits a thin layer of material on the conveyor and these layers, superimposed on each other, form the composite layer 2 shown at the left in Figure 2. The distributing hoods may be of any desired form but I have found the particular form shown in the drawings to be quite satisfactory. This type of hood is substantially fan-shaped as best shown in Figure 3. The loose material is blown into the apex of the fan-shaped hood, and the material is distributed by the hood onto the conveyor 1. A plurality of pipes 8, 9, 10, 11 and 12, supply the loose material to the distributing hoods 3, 4, 5, 6 and 7 respectively. The projecting end 13 of the pipe 8 supports the hood 3. The opening in the end of the pipe faces downward into the hood and the size of this opening is controlled by a regulating device 14 in the form of a sleeve having a curved lip 15, projecting out into the path of the material being discharged from the opening in the end of the pipe. A set-screw 16 is provided for the purpose of fixing the

sleeve 14 in an adjusted position. By moving the sleeve further into the hood 3, the character of the stream of material being deposited by the hood is altered so as to deposit more material near the edges of the conveyor 1 than in the middle. It will be appreciated that any desired distribution of the material can be effected by simply moving the regulating device 14 back and forth along the pipe 8. Each of the hoods 4, 5, 6 and 7 is provided with a regulating device 14 similar in all its details to that described in connection with hood 3. These details are clearly shown in Figures 5 to 7, inclusive.

In addition to the regulating devices 14 just described, the pipes 8, 9, 10, 11 and 12 are preferably provided with slide valves 17 and 18 (see Figure 4). By adjusting these valves, the stream of material passing through the pipes can be partially cut off or deflected to one side or the other as may be desired. These valves can be pushed into the pipes for the purpose of restricting the flow of material or withdrawn so as to permit free passage of the material. By adjusting the valves 17 and 18 with respect to each other, the direction of the stream of material can be controlled at will.

The several pipes 8, 9, 10, 11 and 12, are adapted to supply loose material such as wood fibers to the hoods 3, 4, 5, 6 and 7. It will be understood that any number of hoods can be employed, a supply pipe being provided for each hood. These pipes may communicate with sources of material adapted to be blown into the several hoods. These sources may be separate and distinct so that materials of different kinds can be supplied to the different hoods or the several pipes may communicate with a single supply pipe so that the same kind of material is supplied to all of the distributing hoods. I have shown such a supply pipe at 19 in Figures 1 and 2. This supply pipe may be constructed in any desired form so as to supply material to the several pipes 8, 9, 10, etc. I have shown a short piece of round piping 20 communicating with a manifold 21 of substantially rectangular cross-section. This manifold has a plurality of outlets communicating with the pipes 8, 9, 10, 11 and 12. A valve 22 is provided in each outlet for regulating the flow of material therethrough. It will be understood that material such as wood fibers can be blown through the pipe 20 and manifold 21 by any suitable fluid pressure apparatus. Apparatus of this type is well known and, therefore, it is deemed unnecessary to illustrate any specific form of such apparatus in the drawings. By referring to Figures 3 and 4, it will be noted that the pipe 8 has a right angle bend therein near the point where it communicates with the hood 3. Pipe 23 communicates with the pipe 8 at this point as clearly shown in Figures 2, 3, and 4. Similar pipes 24, 25, 26 and 27 communicate with the pipes 9, 10, 11, and 12 respectively. These pipes 23, 24, etc., are shown connected to a manifold 31 through which material such as wood cotton can be blown if desired. This pipe may be used for introducing material into the stream of material passing through pipes 8, 9, etc., or it may be used for simply introducing jets of air into the pipes 8, 9, etc., where these pipes communicate with each other, as best shown in Figures 3 and 4. An adjustable nozzle 28 is provided in each of the pipes 23, 24, 25, 26 and 27. This nozzle is enclosed by a sleeve 29 slidable on the pipe 23. The axis of the nozzle is inclined at an angle to the sleeve and, therefore, by rotating the nozzle about the pipe on which it is mounted, the angle at which the jet issuing from the nozzle impinges upon the stream flowing through pipe 8 can be altered. With the nozzle in the position shown in Figure 3, the jet issuing from the nozzle serves to increase the velocity of the stream flowing through pipe 8. This serves to discharge the material into the hood 3 at a more rapid rate than would otherwise be the case. By rotating the nozzle 28 until it occupies the position shown in Figure 4, the flow of material through pipe 8 can be retarded materially. The jet in this position interferes with the normal flow of material through pipe 8. In this way, the quantity and velocity of the material supplied to any one of the hoods 3, 4, 5, 6 and 7 can be regulated. It will be understood that the nozzles 28 can be turned to any intermediate position between the extreme positions shown in Figures 3 and 4 to produce any desired effect upon the stream flowing through pipe 8. Furthermore, a valve 30 is provided in the inlet end of each of the pipes 23, 24, etc. for regulating the flow of material or air through these pipes.

My invention makes it possible to regulate the character of the composite layer of material deposited upon the conveyor 1, with extreme nicety. Each of the distributing hoods can be independently regulated so as to distribute the material issuing therefrom in any desired manner. Furthermore, the velocity and quantity of material supplied to any one distributing hood can be regulated by adjustable means which affects only this one distributor. The main supply pipe 20 can be used for supplying a plurality of streams of material to the several distributing hoods, the amount and velocity of the material in each stream being independently regulated. The auxiliary supply pipe 31 can be used for the purpose of injecting a stream of material or air into each stream of material supplied by

the main supply pipe 20, and these auxiliary streams can also be independently regulated to control the quantity, velocity and direction of the material in the several pipes.

It is to be understood that my invention can be used for various purposes and that the details illustrated and described can be modified or, in some instances, eliminated without sacrificing all of the advantages of my invention. The invention is not limited to the particular embodiment illustrated and described but includes such modifications thereof as fall within the scope of the appended claims.

I claim:—

1. A system of the type described, comprising a plurality of distributing hoods, means for blowing material into the hoods, a conveyor arranged to receive material from the hoods, and means for regulating the distribution in each hood independently of the others.

2. A system of the type described, comprising a distributing hood, means for blowing material into the hood, and independent fluid pressure means for regulating the velocity of the material blown into the hood.

3. A system of the type described, comprising a distributing hood, means for blowing material into the hood, means within the hood for regulating the distribution of the material within the hood, and independent fluid pressure means for regulating the velocity of the material blown into the hood.

4. A system of the type described, comprising a distributing hood, means for blowing material into the hood, and means for simultaneously supplying other material to the stream of material being blown into the hood, and regulating the velocity of the material supplied to the hood.

5. A system of the type described, comprising a distributing hood, means for blowing material into the hood, and fluid pressure means for simultaneously supplying other material to the stream of material being blown into the hood, and regulating the velocity of the material supplied to the hood.

6. A system of the type described, comprising a plurality of hoods, a main supply pipe, an auxiliary supply pipe, and a pipe for each hood communicating therewith and with the main and auxiliary supply pipes.

7. A system of the type described, comprising a plurality of hoods, a main supply pipe, an auxiliary supply pipe, a pipe for each hood communicating therewith and with the main and auxiliary supply pipes, and adjustable means for restricting each passage connecting the auxiliary supply pipe with the said pipe for each hood.

8. A system of the type described, comprising a plurality of hoods, a main supply pipe, an auxiliary supply pipe, a pipe for each hood communicating therewith and with the main and auxiliary supply pipes, whereby material can be blown into the hoods from both the main and the auxiliary supply pipes, and means associated with the pipe leading to each hood for deflecting the stream of material flowing therethrough.

9. A system of the type described, comprising a distributing hood, a main supply pipe, an auxiliary supply pipe, a pipe communicating with the hood and with the main and auxiliary supply pipes whereby material can be blown into the hood from both the main and auxiliary supply pipes, and a nozzle for directing a stream of material or air from the auxiliary pipe, against a stream of material being supplied by the main supply pipe.

10. A system of the type described, comprising a distributing hood, a main supply pipe, an auxiliary supply pipe, a pipe communicating with the hood and with the main and auxiliary supply pipes whereby material can be blown into the hood from both the main and auxiliary supply pipes, and a nozzle for directing a stream of material or air from the auxiliary pipe, against a stream of material being supplied by the main supply pipe, the said nozzle being adjustable and arranged so that it can be used to increase or decrease the velocity of the stream of material from the main supply pipe.

11. A system of the type described, comprising a distributing hood, a main supply pipe, an auxiliary supply pipe, a pipe communicating with the hood and with the main and the auxiliary supply pipes whereby material can be blown into the hood from both the main and the auxiliary supply pipes, a nozzle for directing a stream of material or air from the auxiliary pipe, against a stream of material being supplied by the main supply pipe, and means for restricting the stream flowing from the auxiliary pipe to the nozzle.

12. A system of the type described, comprising a distributing hood, a main supply pipe, an auxiliary supply pipe, a pipe communicating with the hood and with the main and the auxiliary supply pipes whereby material can be blown into the hood from both the main and the auxiliary supply pipes, a nozzle for directing a stream of material or air from the auxiliary pipe against a stream of material being supplied by the main supply pipe, means for restricting the stream flowing from the auxiliary pipe to the nozzle, and additional means for restricting the flow of the stream of material from the main supply pipe.

13. A system of the type described, comprising a distributing hood, a main supply pipe, an auxiliary supply pipe, a pipe communicating with the hood and with the main and auxiliary supply pipes whereby mate-

rial can be blown into the hood from both the main and the auxiliary supply pipes, a nozzle for directing a stream of material or air from the auxiliary pipe against a stream of material being supplied by the main supply pipe, and means for restricting the flow of the combined streams from the main and auxiliary supply pipes.

14. In a system of the type described, a pipe through which loose material can be blown, an adjustable nozzle within said pipe, and a second pipe communicating with the first pipe just in front of said nozzle, the said nozzle being rotatably mounted and having the mouth thereof located at one side of the axis of the pipe enclosing the same.

15. In a system of the type described, a pipe through which loose material can be blown, an adjustable nozzle within said pipe, and a second pipe communicating with the first pipe just in front of said nozzle, the said nozzle being rotatably mounted and having the axis thereof inclined at an angle to the axis of the pipe enclosing the nozzle.

16. In a system of the type described, a pipe through which loose material can be blown, and a pair of adjustable slides arranged near the outlet end of said pipe and adapted to be moved toward each other in the pipe to restrict and direct the flow of material therethrough and to maintain the directed material stream in axial alignment with the pipe.

17. In a system of the type described, the combination of a distributing hood, a pipe communicating therewith through which material can be blown, and a regulating device comprising a sleeve movable along said pipe and having a curved lip adapted to project into said hood and deflect the stream of material blown into the hood.

In testimony whereof I affix my signature.

HENRY HARRIS PAYZANT.