FIGURE 4 is a cross section taken on the line 4—4 of FIGURE 1 and illustrates the feed belt drive pulley and the inlet funnel to the dispersing chamber.

Referring now to the drawings and particularly FIGURES 1 and 2 thereof, the apparatus as illustrated includes a frame 11 having an extension 12 which supports a dispersing chamber 13. The dispersing chamber 13 is provided with a cover 14 having an outlet connection 15. Web guide plates 16 and 17 spaced apart by 18 are mounted in opposed relation at the junction of chamber 13 and cover 14. The guide plates 16 and 17 define an opening 19 through which a moving web 20 is threaded. The moving web 20 is drawn from a supply roll (not shown) and is supported by the guide rolls 21 and 22 from where it is drawn to a machine for further processing. It will be noted that the width of web 20 is such that it covers substantially the entire cross section at the juncture of the dispersing chamber 13 and the cover member 14.

Mounted in the lower portion of the dispersing chamber 13 is a disperser fan blade 23 which is continuously rotated by the motor 24 suspended beneath the chamber 13. The constant rotation of the fan blade 23 maintains an atmosphere of suspended particles within the dispersing chamber 13 for the purpose that will become apparent as the description proceeds.

Means for continuously supplying a web treating material to the dispersing chamber are also provided. For purposes of illustration herein, the treating material will be described as being in the form of a finely divided powder. It will be understood that liquid treating material or suspensions in liquids can be supplied to the dispersing chamber in the form of a finely divided mist or vapor suspended in the atmosphere within the dispersing chamber.

An inlet tube 25 held by the support 26 projects through a side wall of the chamber 13 and terminates in an opening 26B which is located over the fan blade 23. This opening provides the incoming powdery treating material directly over the fan blade so that it becomes dispersed in the atmosphere of the chamber 13 almost instantaneously after being introduced therein. The opening 26B is fixed and located so that the fan blade 23 cannot blow the atmosphere in the chamber 13 out the inlet tube 25B. The inner face of the inlet tube 27 is provided at the inlet to the tube 25 so that the powdery treating material can be introduced with relative ease by a device, for example, as illustrated in FIGURE 1.

Mechanism for supplying powdery treating material into the funnel 27 at a substantially constant rate will now be described. This includes an open supply hopper 28 suspended from the hopper support members 29 and 30 as illustrated in FIGURE 3. The hopper 28 is adjustable by means of the studs 31 and 32, which are movable upwardly and/or downwardly in the brackets 33 and 34 as will be understood by those skilled in the art.

An endless feed belt 35 is mounted beneath the opening 26 in the hopper 28 and is driven by the pulley 37 (FIGURE 4). The other end of the feed belt 35 is supported by the idle pulley 38. The pulleys 37 and 38 are supported for rotation in the members 39 and 40. The pulley 37 is driven at substantially constant speed by the motor 41 through the chain drives 42 and 43 as will be understood by those skilled in the art. A solenoid 44 is attached to the hopper 28 for the purpose of creating vibrations which prevent the powdery treating material from bridging or lumping and for otherwise encouraging uniform flow.

A recirculating system is provided for constantly moving the atmosphere of suspended particles within the chamber 13. The recirculating system includes a blower
having its inlet connected to the conduit 46 which is attached to the connection 15. The outlet of the blower 45 is returned to the chamber 13 by the conduit 47 entering at 48 in FIGURE 1. The motor 49 is used to constantly drive the blower 45.

In operation, the supply hopper 28 is filled with a powdery treating substance which is uniformly deposited through the opening 36 and carried away by the feed belt 35. As the feed belt 35 rides around the pulley 37, the powdery treating material is deposited in the funnel 27. The distance separating the opening 36 from the belt 35 as well as the constant speed movement of the belt 35 makes the flow of powdery treating material substantially constant. The rate of flow can be adjusted by changing the belt speed and/or by changing the height of the hopper opening 36 over the belt 35 and/or by changing the size of the opening 36.

The treating material deposited in the funnel 27 flows through the tube 25 and enters the chamber 13 where it falls toward the rotating disperser blade 23. The disperser blade 23 maintains a contact atmosphere of suspended particles of treating material within the chamber 13. The concentration of particles in the atmosphere depends upon the rate at which treating material is supplied to the chamber, the rate at which it is recirculated by the blower 45 as well as the speed of the web 20 moving between the web guide plates 16 and 17.

It will be evident that the recirculating blower 45 constantly withdraws the atmosphere of suspended particles from the chamber 13, through the web 20 and the resulting atmosphere passes through conduit 46 and returns through the conduit 47. As a result, the atmosphere of suspended particles is drawn transversely through the moving web 20 which because of its porous nature will retain some of the particles as it is moved through the chamber. The effect of this method of operation is to deposit a uniform pattern of the treating material on the moving web.

While particular embodiments of the invention have been illustrated and described it will be obvious to those skilled in the art that various changes and modifications can be made without departing from the spirit and scope of the invention and it is intended to cover in the appended claims all such changes and modifications that are within the scope of this invention.

What is claimed as new is:

1. Apparatus for treating a moving web of porous material comprising the combination of an enclosed dispersing chamber, a rotating dispersing blade within and at the bottom of said chamber, an open inlet duct including a funnel for feeding treating material into said chamber, said inlet duct including a portion of relatively small cross sectional area extending into said chamber and terminating over the central portion of said dispersing blade so that the incoming treating material enters directly over said blade thereby creating an atmosphere of suspended particles within said chamber, opposed web guide and seal means each extending across the width of the chamber and incorporated in an upper part of a chamber wall at one end of said chamber for guiding a continuously moving web of porous material through said chamber, and offtake means located at the top of the chamber whereby said atmosphere is drawn through the porous material to thereby leave thereon a uniform pattern of treating material.

2. Apparatus as claimed in claim 1 including means for continuously recirculating the atmosphere drawn through the porous material from said offtake means and reintroducing said atmosphere in said chamber below said moving web of porous material.

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