June 10, 1930. J. O. BAILEY 1,763,122

SPRAY CONVEYER

Filed March 8, 1929

FIG. 1.

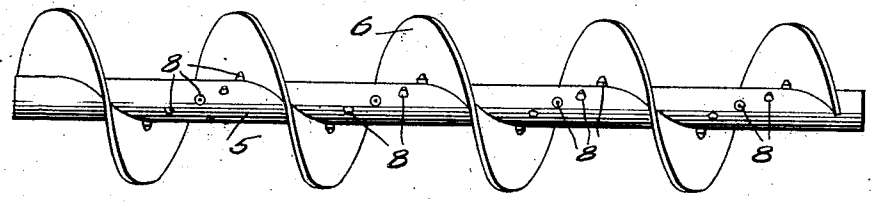


FIG. 2.

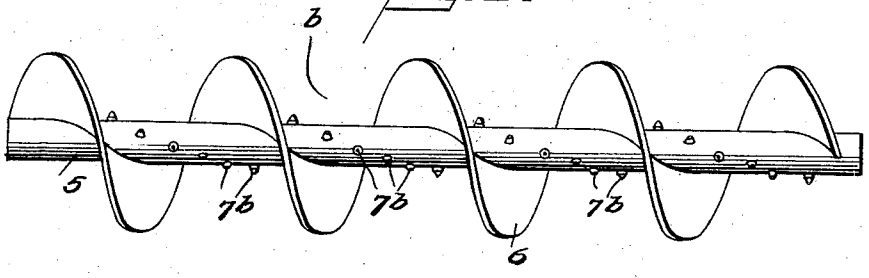
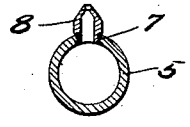


FIG. 3.



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UNITED STATES PATENT OFFICE

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SPRAY CONVEYER

Application filed March 8, 1929. Serial No. 345,539.

Generically this invention relates to conveyers, but it is more especially directed to the spiral continuous flight type having means for effecting thorough treatment of the product being conveyed with vapors or liquids on the one hand and cooling or drying such product in transit on the other, as the particular necessities may require.

A principal object of this invention is the provision of a continuous flight spiral conveyer having a hollow shaft formed with a plurality of perforations spirally extending throughout the length of the shaft to effect ready application of vapors, liquids or air to the product while in process of being conveyed.

Another important object of this invention is the provision of a conveyer having a hollow shaft formed with a spiral line of liquid or air jets communicating with the interior of the shaft and extending above the exterior surface thereof through the medium of which the product may be additionally agitated and simultaneously treated with water or other liquids, steam or other vapors, or hot or cold air, as the particular exigencies of the occasion may require.

A still further object of this invention is the provision of a plurality of spaced air or water jets extending above the surface of the shaft in a spiral line opposite to the direction of the spiral conveyer blade, so as to effect additional agitation and complete vaporization or aerozation of the product during its course of conveyance.

With these and other objects in view, which will become apparent as the description proceeds, the invention resides in the construction, combination and arrangement of parts, hereinafter more fully described and claimed, and illustrated in the accompanying drawings, in which like characters of reference indicate like parts throughout the several figures, of which:

Fig. 1 is a view in elevation of a section of my improved spray conveyer showing the spiral line of air vapor or liquid jets extending in a spiral direction opposite that of the conveyer blade;

Fig. 2 is a modified form of the device illustrated in Fig. 1, showing the line of jets extending in the same spiral direction as the conveyer blade and in parallelism therewith.

Figure 3 is a transverse section through the shaft and a nozzle.

The type of conveyers adapted for moistening or drying the product being conveyed have proven unsatisfactory and deficient, in that, in such devices with which I am familiar many of the perforations in the shaft frequently become clogged by certain moist materials, thereby reducing the effectiveness of the treatment, and in other instances, the product owing to insufficient agitation intermediate the conveyer blade sections prevents thorough treatment of the product; and it was to overcome such deficiencies, and to provide a spray conveyer having a line of spiral liquid vapor or air jets extending above the surface of the shaft intermediate the conveyor blade in a spiral line spiralling the shaft in a direction opposite to that of the conveyer blade, thereby effecting a loosening of the product adjacent the inlet openings preventing clogging of said openings and not only effecting a further agitation of the product, but effecting a thorough saturation thereof by the liquid vapor or air in its course of application thereto, that I designed the spray conveyer forming the subject matter of this invention.

In the illustrated embodiment characterizing this invention there is shown a hollow shaft 5 having a continuous flight spiral conveyer blade 6 suitably mounted thereon, and a continuous line of spaced perforations 7 of a corresponding length with that of the conveyer blade and extending in a spiral line in a direction opposite to that of the blade 6. In each perforation is adapted to be threadedly or otherwise suitably mounted a hollow jet 8 communicating with the interior of the shaft and extending at right angles to the shaft and above the surface thereof, constituting auxiliary agitating means, as well as mediums for the interjection of water or other liquids, steam or other vapors and hot or cold air to the material being conveyed, depending upon the particular requirements and as and for purposes hereinafter more fully appearing.

In some instances depending upon the nature of the product being conveyed and the treatment to which it is being subjected, it is sometimes found advantageous to have the spiral line *b* of jets 7^b extending in the same direction as the conveyer blade 6 an equal distance therefrom throughout the length of the shaft, such modified form being clearly illustrated in Fig. 3 of the drawing; and while I have preferably shown the line of jets 7 as extending in a spiral line, the direction of such line depending upon the particular requirements, it is to be understood that I am not limiting myself to such particular arrangement and that the number and arrangement of jets may be varied without departing from the spirit of my invention.

From the above description it would seem to be clear that the line of projecting jets during operation of the conveyer effects a further agitation and a loosening of the product adjacent such jets thereby effecting a more thorough and even distribution throughout the mass of the elements with which it is being treated than has heretofore been possible.

From the above it is apparent that I have designed a spray conveyer adapted to expeditiously and efficiently treat the product being conveyed with water, steam, liquids or air depending upon the particular requirements, one constructed of few parts, simple in design, manufacturable at a reasonable cost and efficient for the purposes intended.

Although in practice I have found that the form of my invention illustrated in the accompanying drawing and referred to in the above description as the preferred embodiment, is the most efficient and practical; yet realizing the conditions will necessarily vary, I desire to emphasize that various minor changes in details of construction, proportion and arrangement of parts, may be resorted to within the scope of the appended claim without departing from or sacrificing any of the principles of this invention.

Having thus described my invention, what I desire protected by Letters Patent is as set forth in the following claim:

A conveyer comprising a shaft hollow throughout its length, a series of hollow jet members arranged in a spiral line about said shaft, communicating with the interior thereof and constituting lug elements, a helicoid conveyer blade mounted on said shaft in a spiral direction opposite to that of said lug elements, whereby continuous treatment of said material through said shaft and jet members and agitation and mixing thereof during its travel throughout the length of the conveyer and across its path of travel is effected.

JOSEPH OSWELL BAILEY.