United States Patent [19]

Trutzschler

[11] **3,809,440**

[45] **May 7, 1974**

[54] **SHAFT FOR DEPOSITING FIBRE FLOCK**

[75] Inventor: **Hermann Trutzschler,** Rheydt, Germany

[73] Assignee: **Firma Trutzschler & Co.,** Rheydt-Odenkirchen, Duvenstr., Germany

[22] Filed: **Oct. 25, 1972**

[21] Appl. No.: **300,622**

[30] **Foreign Application Priority Data**

Oct. 28, 1971 Germany 2153665

[52] **U.S. Cl.** **302/59,** 19/105

[51] **Int. Cl.** **B65g 53/40**

[58] **Field of Search** 19/105; 302/28, 59

[56] **References Cited**

UNITED STATES PATENTS

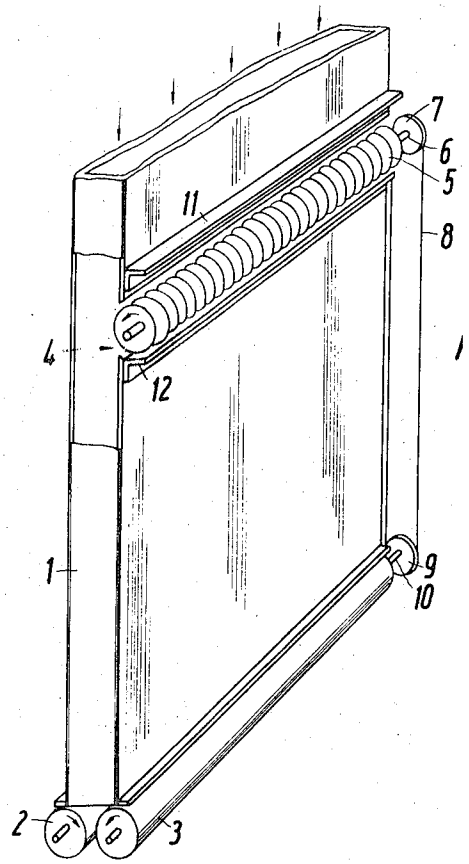
604,426	5/1898	Seifert	302/28 X
3,414,330	12/1968	Trutzschler	302/28
3,163,472	12/1964	Zeismer	302/59
2,929,112	3/1960	Massey et al.	302/59 X
3,400,518	9/1968	Staheli	55/428

Primary Examiner—Evon C. Blunk
Assistant Examiner—W. Scott Carson
Attorney, Agent, or Firm—Burgess, Dinklage & Sprung

[57] **ABSTRACT**

A shaft for depositing fibre flock in reptures for conveying flocks pneumatically to such shafts. The opening to enable the air conveying the flock into the shaft to pass out of the shaft consists of a horizontal opening extending over at least the greatest part of the width of a wall of said shaft. In this opening a roller is disposed which has a plurality of parallel annular surfaces lying in substantially vertical planes, the intervals between these surfaces being smaller than the size of the flock which is to be conveyed.

11 Claims, 5 Drawing Figures



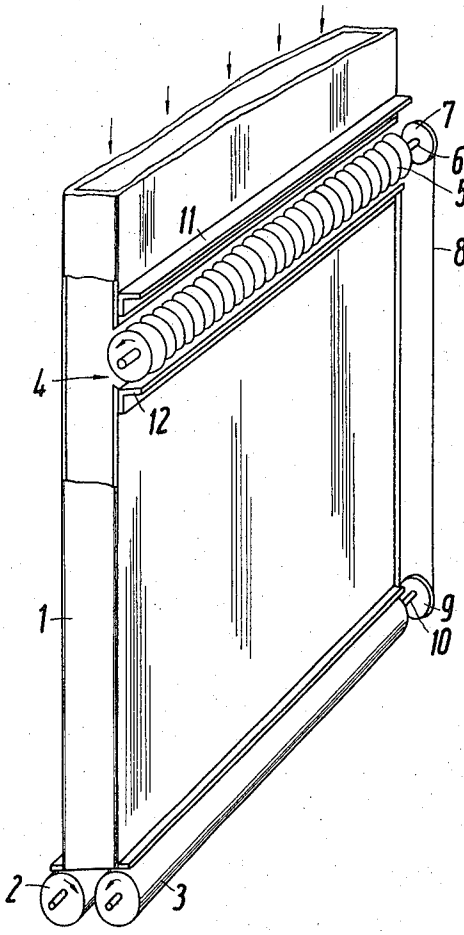


Fig.1

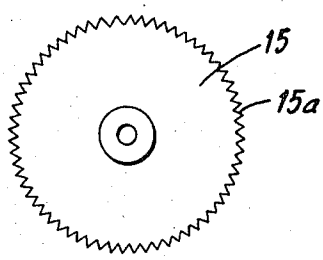


Fig.5

Fig.2

Fig.3

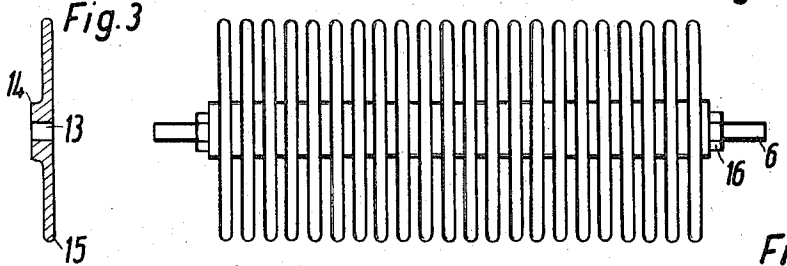
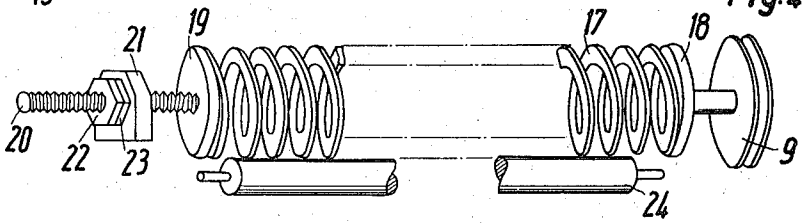


Fig.4



SHAFT FOR DEPOSITING FIBRE FLOCK

The invention relates to a shaft for depositing fibre flock conveyed to it pneumatically, said shaft having apertures in its wall to enable the delivery air to pass out.

In order to prevent these apertures from becoming blocked up by the flock after a time, it is known to design the apertures as slits which extend as far as the bottom end of the shaft, that is to say they are open at their ends which lie in the direction of blast of the delivery air. With this arrangement the slits are prevented from becoming blocked up by fibrous flock, in that the flock, which may become somewhat inserted into the slits, is conducted by the delivery air to the end of the slit and from there it is driven out of the slits.

The object of the invention is to provide the flock from causing blocking in a shaft which is fed pneumatically with fibrous flock and which has air outlet apertures which do not reach to the end of the shaft.

This object is solved according to the invention in that the shaft has, above its lower end, a horizontal opening extending over its whole width and in that this opening is occupied by a roller which has a plurality of parallel, essentially vertical annular surfaces, the horizontal distances between these being smaller than the size of the flock which is to be conveyed. The roller may consist of a horizontal axle and a plurality of equal, circular discs placed on this axle, each disc having a hub the height of which determines the interval between the discs. The roller can also consist of a helically coiled flat wire. The axis of the roller lies conveniently a little outside the outer side of the wall of the shaft and the height of the opening of the shaft wall is correspondingly somewhat smaller than the diameter of the roller. The roller is preferably rotatable about its axis, it can be provided with drive means such that the part of the circumference of the roller which projects into the shaft is moved from the top downwards.

The advantage of an arrangement of this kind is that it can be arranged at any height above the lower end of the shaft.

The shaft according to this invention may especially be used for feeding cards.

The drawing shows an embodiment of the invention.

FIG. 1, shows in perspective an arrangement as described in the invention,

FIG. 2 shows on an enlarged scale a side view of the roller shown in FIG. 1,

FIG. 3, shows an individual part of this roller,

FIG. 4, shows in side view another embodiment of the invention.

FIG. 5 shows a substantially parallel surface having teeth 15*a*.

In the arrangement shown in FIGS. 1 to 3 a pair of extraction rollers 2, 3 are disposed on the lower end of a shaft 1 of rectangular cross-section, said rollers being rotated in the direction of the arrows shown, and thus shaft 1, by means of the air which flows in the direction of the arrow P, in the form of a cotton wool like strip. Above the bottom end of the shaft 1 the one shaft wall has a rectangular opening 4 which extends over its whole width, and a roller 5 made up of a plurality of circular discs 15, projects with a segment of the the circular discs 15 into this opening in such a way that the opening 4 is almost completely occupied by said roller.

A pulley 7 is mounted on the axle 6 of the roller 5, said pulley being connected by means of a small belt 8 to a corresponding pulley 9 which is mounted on the axle roller 3. The roller is thus turned in the direction of the arrow indicated therein. Angle bars 11 and 12 are arranged on the wall of the shaft, above and below the roller, the horizontal side pieces of said angle bars almost touching the roller 5. The distance of the roller 5 from the lower end of the shaft 1 is here about four times the diameter of the roller 5. The diameter of the discs 15 can for example be 50 to 100 mm, the level of the opening 4 can then be 5 to 10 mm smaller. The discs 15 have teeth 15*a*.

The distance between the discs 15 is such that when the conducting air passes out through the intermediate spaces between the discs 15 the flock is prevented by these discs from leaving the duct. Any flock which does however settle in the intermediate spaces is moved upwards by the rotation of the roller 5 to a point where the escaping air is at its most intense so that it can be blown out by this air. In order to loosen such flock, brushes or the like can be arranged just in front of this point in such a way that they project into the intermediate spaces between the discs 15.

The roller can be composed of a number of equal discs 15 which can be of metal or plastics, this is shown in FIG. 2 and 3. Each of these discs has a bore 13 with which it can be threaded on to the shaft 6, a hub 14 which is for instance 2.5 mm. in height, and a flange with a diameter of for example 70 mm and a thickness of 3 mm. A number of such discs, corresponding to the length of the opening 4, are arranged on the axle 6 and are pulled towards each other by means of nuts 16 and are secured on the axle. The periphery of the discs 15 can be toothed. Toothing such as this helps the conveying action which is exerted by the disc on the flock present in the shaft.

In order to form a higher air outlet gap, two or more of these rollers can be arranged over each other, engaging in one another to a greater or lesser extent.

According to the embodiment shown in FIG. 4, the roller which projects with a portion of its circumference into the opening 4 of the shaft wall consists of a flat wire coil 17 of a flat wire which is coiled with a constant pitch in such a way that the flock is prevented from entering. At one end the wire coil 17 is secured to a disc 18 which is connected to a rope pulley 9. At its other end the wire coil 17 is secured to a disc 19 which carries a screw 20 in its axis. The screw 20 is housed in a bearing 21 which is connected to the wall of the shaft, against which bearing a pair of nuts 22 and 23 which are mounted on the screw 20 are supported. When the wire coil 17 is rotated by means of the rope pulley 9 and its axle, the screw 20 and the nuts 22 and 23 which are pulled firmly towards each other on said screw, also rotate about this axle. If the nut 22 is released it is possible to alter, by turning the nut 23, the distance between the disc 19 and the bearing 21, and thus the size of the distance between the coils of the wire coil 17. In order to prevent the wire coil from sagging in an unwanted manner s support roller 24 which is mounted on the wall of the duct its provided, said roller extending over the main part of the length of the opening 4.

It can be sufficient to make the wire coil 17 from round wire.

I claim:

1. A filling device having walls defining a shaft having a rectangular cross section, said walls being sheet metal walls, said device being for depositing fiber flock pneumatically conveyed to it by compressed air, said device comprising a wad forming means positioned at the lower end of said shaft for withdrawing deposited flock, said device having an opening running horizontally across a vertical wall above the lower end thereof to enable said air to pass out, said opening extending over at least a major part of the width of said wall, a roller disposed in said opening having a plurality of parallel discs lying in substantially vertical planes, the intervals between said surfaces being smaller than the size of the flock which is to be conveyed, means for rotating said roller, said roller positioned to substantially fill said housing, the axis of the roller being positioned outside of the outer side of said wall and the height of opening in the wall of the shaft being correspondingly smaller than the diameter of the roller.

2. A filling device according to claim 1 wherein the parallel surfaces are formed by circular discs.

3. A filling device according to claim 2 wherein the thickness of the discs is smaller than the intermediate space between the discs.

4. A filling device according to claim 2 wherein the discs are provided with teeth.

5. A filling device according to claim 1 wherein the axis of the roller is positioned outside the outer side of the wall and the height of the opening in the wall of the shaft is correspondingly smaller than the diameter of the roller.

6. A filling device according to claim 1 wherein the roller is rotatable about its axis by a driving means.

7. A filling device according to claim 1 wherein the opening is in the side of a wall, which opening is in facing relationship with said parallel surfaces.

8. A filling device according to claim 1 wherein the shaft has a substantially continuous cross section throughout the length thereof.

9. A filling device having walls defining a shaft of rectangular cross section, said walls being sheet metal walls, said device being for depositing fibre flock pneumatically conveyed to it by compressed air, said device comprising a wad forming means positioned at the lower end of the shaft for withdrawing fibre flock, said device having an opening running horizontally across a vertical wall above the lower end to enable air to pass out, said opening extending over at least a major part of the width of said wall, a roller disposed in said opening having a helically coiled wire, the intervals between the coils of the wire being smaller than the size of the flock which is to be conveyed, means for rotating said roller, said roller positioned to substantially fill said opening, the axis of the roller being positioned outside the outer side of said wall and the height of opening in the wall of the shaft being correspondingly smaller than the diameter of the roller.

10. A filling device according to claim 9 wherein the wire is a flat wire, the thickness of which is smaller than the difference between the windings of the helically coiled wire.

11. A filling device according to claim 9, wherein the helically coiled wire is adjustable to vary the distance between the windings of said helically coiled wire.

* * * * *