Jan. 24, 1939. G. B. McCALLUM 2,144,768

CLEANING DEVICE FOR WINDING MACHINES AND THE LIKE

Filed July 29, 1938

Fig. 1.

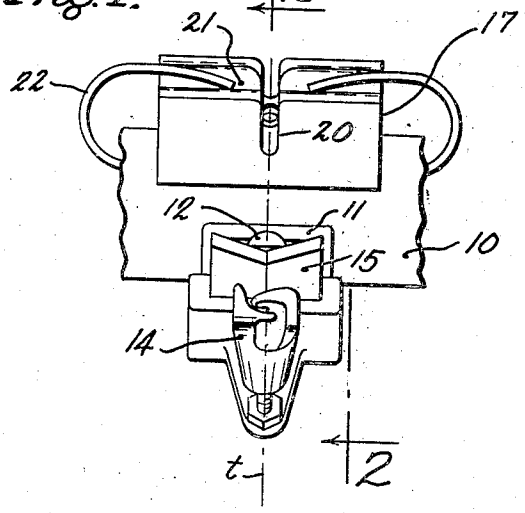


Fig. 4.

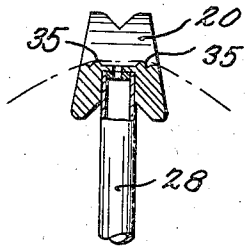


Fig. 2.

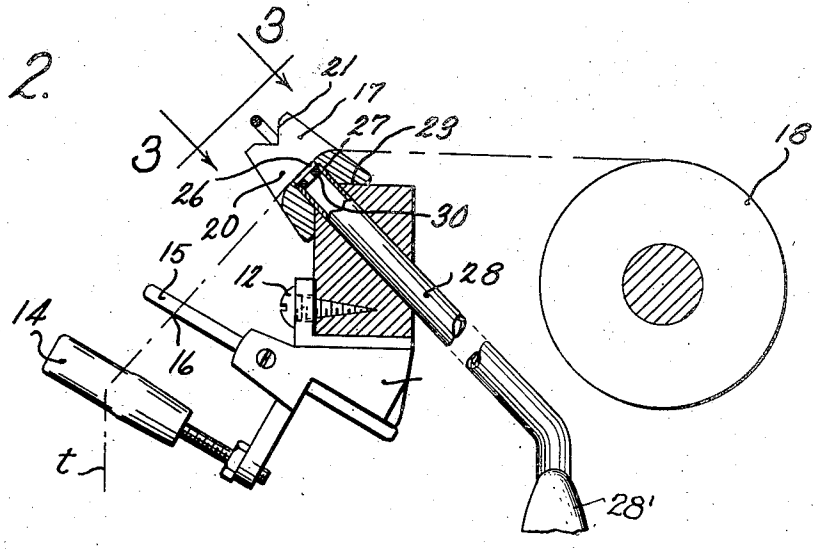
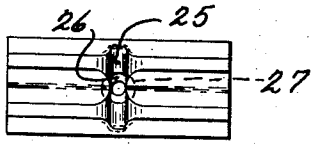


Fig. 3.



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CLEANING DEVICE FOR WINDING MACHINES AND THE LIKE

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Application July 29, 1938, Serial No. 221,906

8 Claims. (Cl. 28—68)

My invention relates to a device for cleaning threads such for example as the silk threads used in the manufacture of hosiery.

The present invention is in the nature of an improvement on the cleaning device disclosed and claimed in my prior copending application Serial No. 213,648, filed June 14, 1938, and its general object is to increase the efficiency of the cleaner shown in said application.

Other and further objects residing in the details of the structure and arrangement of the parts will be made apparent in the following specification and claims.

In the accompanying drawing which illustrates one embodiment of the invention,

Fig. 1 is a front elevational view of a device constructed according to my invention,

Fig. 2 is a sectional view substantially on line 2—2 of Fig. 1,

Fig. 3 is a detail view of the arresting member looking in the direction of the arrows in Fig. 2, and

Fig. 4 is a sectional view showing an alternative form of arresting member.

Referring to the drawing, 10 designates a suitable frame member of the spooling machine to which the cleaning devices may be conveniently attached. A bracket 11 is secured as by screw 12 to member 10. Bracket 11 supports a conventional porcelain thread guide 14 by which the thread is guided to a slotted cleaning plate 15 of any conventional type. Slotted member 15, which may be made up of one or more pieces, serves to collect the lint and dust from the thread, this material collecting at the point 16. From the plate 15 the thread passes over a guide 17, preferably of porcelain, which is of a form to act as an arresting or restraining member for the lint, and thence to the spool diagrammatically shown at 18. As shown, the member 17 is provided with a thread receiving notch or channel generally indicated at 20, the adjacent top surfaces being grooved as at 21 to receive the ends of a spring clip 22 by which the member is held to frame member 10. The bottom of member 17 is formed with a rectangular groove as at 23 to engage and seat on a corner of frame member 10. Spring clip 22 is secured in any suitable manner, not shown, to the frame member 10.

As best shown in Figs. 2 and 3, the floor 25 of the notch 20 is provided with an interruption which preferably is in the form of an elongated opening or recess 26 connecting with a circular opening 27 extending the rest of the way through the member 17. The end of a suction nozzle 28 is fitted tightly in the opening 27 and sealed therein with silicate of soda or other suitable material. Nozzle 28 comprises a length of circular pipe and the nozzle end thereof is preferably restricted as at 30 to a diameter substantially equal to the transverse width of elongated opening 26. Nozzle 28 is connected to any suitable source of suction, conventionally indicated at 28'.

In operation the thread, indicated at *t* passes across the opening 26 and over the orifice 30 of the suction nozzle, being spaced therefrom by a distance equal to the depth of the opening 26.

Accumulation of dust, lint and the like, travelling with the thread first encounter the uninterrupted floor of notch 20 and as described in my previous application above referred to is slowed down and in part loosened from the thread before passing to the opening 26. The accumulation as it passes to opening 26 and the influence of the suction nozzle is subjected to substantially all of the disintegrating forces described in my previous application. The vacuum, however, acts more efficiently on the accumulations since the suction acts directly at right angles to the thread. Moreover, the spacing of the orifice 30 of the nozzle from the thread may be nicely fixed by the depth of the opening 26. In addition the forward end of the elongated opening 26, that is the end in the direction of thread travel, acts as a second and abrupt barrier to the advance of the disintegrating accumulation and increases the assurance that all the particles of dust and lint will be freed from the thread and drawn in by the suction nozzle. Furthermore it is possible that the portion of the thread bridging the opening 26 lengthwise may be drawn toward the suction nozzle and a vibratory action set up which aids in freeing the particles of the accumulation from the thread. In any event the structural arrangement above described has proved much more efficient under various conditions than where the nozzle is placed at the exit of a smooth uninterrupted channel floor. The efficiency of the present construction is such that under favorable conditions the slotted plate 15 may be eliminated, the action on the thread at the opening 26 of the vacuum nozzle in combination with the abrupt forward edge of the opening being such as to progressively clean lint and dust from the thread.

It will be understood that various changes in detail may be made within the scope of my invention and the appended claims. For example, while I have shown the opening 26 in the form

of an ellipse, other shapes of opening may be employed and the orifice of nozzle **28** may coincide with the opening **26**, although I find a restricted opening such as shown at **30** to be preferable.

In Fig. 4 I have shown an alternative manner of interrupting the surface of the floor **25** of the notch **20**. As shown in the latter figure the floor **25** is provided with spaced transverse ridges **35** which serve to raise the thread from the intermediate portion of the floor and suction nozzle **28** open to the notch intermediate the ridges **35**.

I claim:

1. A thread cleaning device which comprises a thread guiding member provided with a notch through which the thread passes, a suction nozzle set in the floor of the guide in the path of thread travel, and a source of suction connected to said nozzle.

2. A thread cleaning device which comprises a thread guiding member provided with a notch through which the thread passes, means formed on the floor of the notch interrupting the contact of the thread with the floor of the notch, a suction nozzle opening into the notch and acting on the thread at the point where its contact with the notch is interrupted and a source of suction connected to said nozzle.

3. A thread cleaning device which comprises a thread guiding member provided with a notch through which the thread passes, the floor of the notch being formed with an opening across which the thread travels, a suction pipe connected to said opening, and a source of suction connected to said pipe.

4. A thread cleaning device which comprises a thread guiding member provided with a notch through which the thread passes, a suction nozzle countersunk in the floor of the notch in the path of thread travel, and a source of suction connected to said nozzle.

5. A thread cleaning device which comprises a thread guiding member provided with a notch through which the thread passes, the floor of the notch being formed with an elongated recess extending in the direction of the notch and over which the thread travels, a suction nozzle opening to the bottom of the recess, and a source of suction connected to said nozzle.

6. A thread cleaning device which comprises a thread guiding member provided with a notch through which the thread passes, the floor of the notch being formed with an elongated recess extending in the direction of the notch and over which the thread travels, said recess having abrupt edges, a suction nozzle opening to the bottom of the recess and a source of suction connected to said nozzle.

7. A thread cleaning device which comprises a thread guiding member provided with a notch through which the thread passes, the floor of the notch being formed with an elongated recess extending in the direction of the notch and over which the thread travels, said recess having abrupt edges, a suction nozzle opening to the bottom of the recess midway between the ends of the recess, and a source of suction connected to said nozzle.

8. A thread cleaning device which comprises a thread guiding member provided with a notch through which the thread passes, a suction nozzle formed in the member and having an opening continuous with the floor of the notch and in the path of thread travel, and a source of suction connected to said nozzle.

GEORGE B. McCALLUM.