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DUST AND FLUFF EXHAUSTING DEVICE ON WINDERS

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Fig. 1

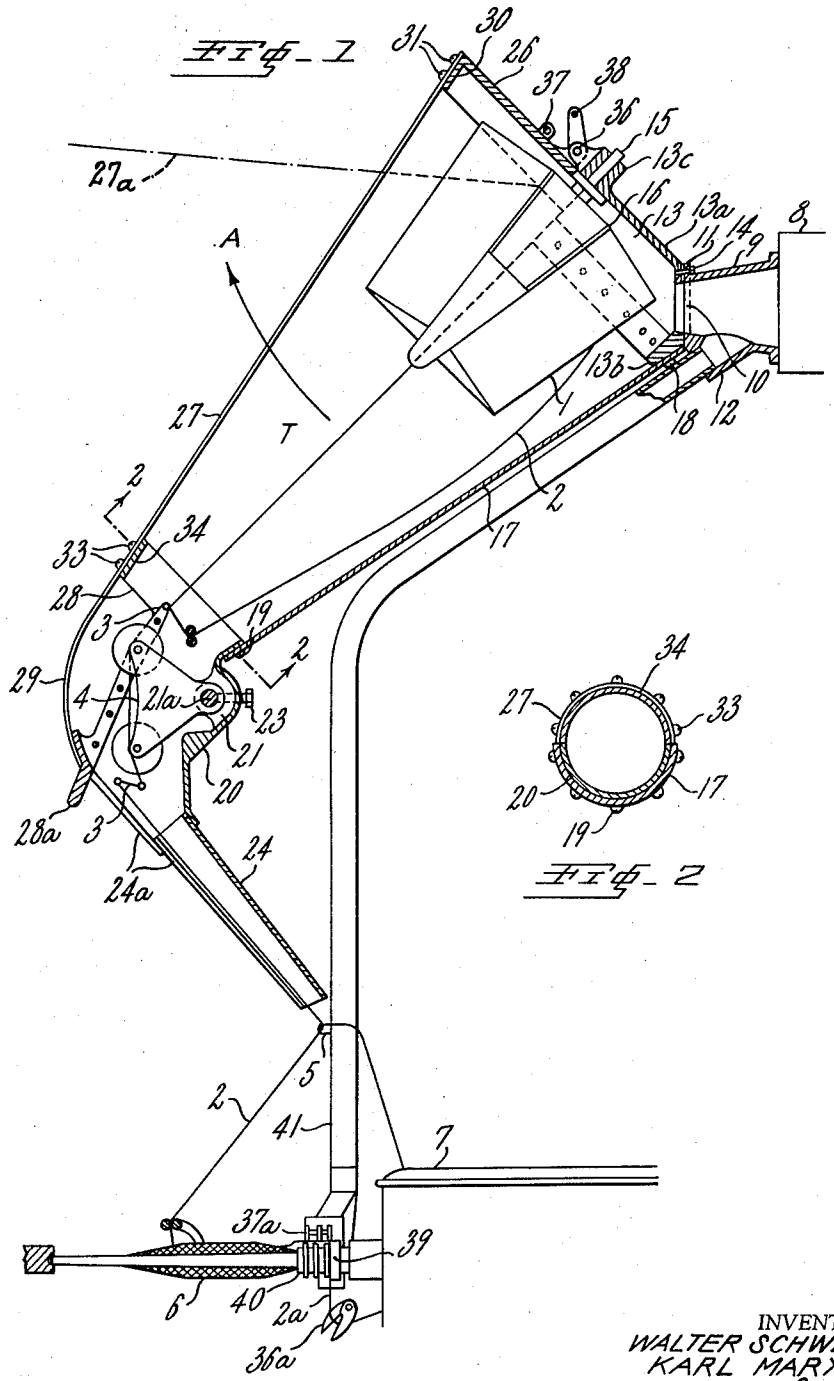

Fig. 2

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DUST AND FLUFF EXHAUSTING DEVICE ON WINDERS

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The present invention relates to a dust and fluff exhaust to be associated with a winder or like devices, designed to remove the fluff which often causes dirtiness of factory working rooms and machines and also settles down on the yarn, thereby contributing to faults in weaving operations. At the same time the exhaust device is to remove thread ends produced between the grip point on the bobbin driver and the beginning of the lap, which ends are released upon cutting during bobbin changes.

In known devices of this kind the exhaust device impairs accessibility to machine parts when setting up new bobbins and for inserting a new thread into the thread brake, which latter should always be very easily accessible. The present invention has therefore as one of its objects to provide means conducive to an efficacious construction of an exhaust device which will not impair ready servicing and operation of the machine and does not obstruct vital machine parts. The invention consists in that the wind off bobbin of a winding unit on a serial winder and the thread passing from this bobbin to the take-up bobbin are enclosed by a funnel-shaped casing connected to a suction line, which casing houses the thread brake, in such a manner that at least that portion of the said funnel-shaped casing accommodating the thread brake and the wind off bobbin comprises two enclosure sections which can be swivelled on a pivotal axis and opened one with respect to the other so that the wind off bobbin and the thread brake become easily accessible.

An embodiment of the present invention is illustrated in the attached drawing, in which:

Fig. 1 depicts an exhaust device embodying the invention, shown in longitudinal section and with machine parts associated therewith.

Fig. 2 shows a cross section taken along line I—I of Fig. 1.

From the cross-wound or wind off bobbin **1** of a winding unit the thread **2** moves along a path defined by the thread guide **3**, the thread brake **4** and via the stop lever **5** to the take-up bobbin **6** of the winder **7**. This path is enclosed in the funnel-shaped air canal T to be described below. Above the winder **7** is arranged an air suction line **8** having screwed thereon a connector **9** above each winding unit. This connector **9** has a suction opening **10**, a flange **11** and a tube adapter **12**. Attached to the flange **11** by means of screws **14** is a body piece **13**, which consists of a semi-circular plate **13***a* and a semi-circular conical ring **13***b*. The plate **13***a* is further provided with an eye **13***c* holding the pivot or stub shaft **15** of cone **16** on which the bobbin **1** is set. The semi-circular funnel-shaped enclosure section or housing **17** is attached to ring **13***b* by means of screws **18**. On the lower end of section **17** is attached a casing **20** by means of screws **19**, which casing is provided with support or carrying means in the form of an eye **21** through which extends bolt **21***a*

on which is attached the thread brake **4** by means of screw **23**. Fixed to the housing **20** and extending at an angle to the air channel T is thread guiding means in the form of a funnel-shaped pipe or member **24** which may be made integral with the housing **20**. The funnel pipe **24** assumes therefore an inclined position due to the formation of the housing **20** and serves the purpose of guiding the thread.

The upper half section of the air channel T is defined by the semi-circular base **26**, the transparent semi-circular jacket or enclosure section **27**, which is complementary to enclosure section **17**, the holder member **28** and the transparent cap extension **29**. A ring **30** is cast or welded on the semi-circular base **26** and the transparent semi-circular jacket **27** is attached to the said ring by means of the screws **31**. This jacket **27** may be formed of a transparent synthetic material, such as an acrylic acid derivative. The lower end of this jacket **27** is attached to the semi-circular ring **34** of the casing **20** by means of screws **33**. The casing **20** is provided with the transparent cap **29** in order to perceive therethrough the thread brake **4**. The holder body **28** is further equipped with a handle **28***a*. The upper air channel half (constituted by jacket **27**) thus formed is hinged on the base **13***a* of the lower portion by means of a pivot or bolt **36**, so that it can be swivelled or swung out in the direction of arrow A. In order to maintain the upper half of the enclosure **27** in the position indicated by dot-dash lines, the base **26** is provided with a locking bolt **37** engaging the eye **38** which, in turn, is connected with the plate **13***a*. The casing **20** and the pipe **24** are slotted at **24***a* for the insertion of a thread **2**. When a bobbin **1** is changed, the upper air channel enclosure half **27** is gripped by means of the handle **28***a* and lifted into the position indicated by dot-dash lines at **27***a*, the locking bolt **37** engaging the eye **38**. Now the empty bobbin can be replaced by a new one of which the thread **2** is passed through the thread brake **4** and the guide slot **24***a* over the stop lever **5** to the winding bobbin **6**. The upper air channel enclosure half **27** is then lowered on the stationary enclosure half section **17** into practically air-tight relation so that the thread path is entirely enclosed in the suction air stream moving in opposite direction to said thread **2**.

The separate suction line **41** opening into the connecting piece **9** is designed to remove the thread length **2***a* between the cutter **36***a* and the knife **37***a*, which is released when the bobbin is changed, and held between the driver **39** and the bobbin head **40** during the winding operation. The separate exhaust pipe portion **41** joined to fitting or connection **9** is provided to avoid sucking the thread end through the funnel where it might be caught by the thread brake.

Various changes and modifications may be made without departing from the spirit and scope of the present invention and it is intended that such obvious changes and modifications be embraced by the annexed claims.

Having now particularly described and ascertained the nature of the invention and in what manner the same is to be performed, we declare that what we claim is:

1. A device for removing dust, fluff and like matter in winders and like machines having a wind off bobbin from which a thread runs to a take up bobbin; comprising an enclosure provided with two complementary sections, one of said sections being provided with a stationary wall, the other section being provided with a transparent wall arranged for movement relative to said one section to thereby obtain access to the interior of said enclosure, the stationary wall of said one section

being provided with first means for supporting said wind off bobbin, with second means within said enclosure for mounting a thread brake mechanism, with third means establishing connection between said enclosure and air line suction means and positioned to thereby direct a suction air stream from the interior of said enclosure therewithout, and means for guiding said thread running from said wind off bobbin via said brake mechanism when disposed on said second means within said enclosure to said take up bobbin and in counter-direction to said suction stream.

2. A device according to claim 1, including pivot means interconnecting said one section with said other section, whereby the latter may be swung relative to said one section and to said first, second and third means.

3. A device according to claim 1, wherein said stationary wall of said one section includes an extension plate, said first means and said third means forming respective parts of said extension plate, whereby said wind off bobbin may be rotatably supported within said enclosure and wherein said third means is constructed to receive a tube connector joined to said air line suction means.

4. A device according to claim 1, said third means being provided with a ring member, and a tube connector joined to said ring member and for removal therefrom, said tube connector having one opening communicating with the interior of said enclosure and having another opening for the connection with a pipe line leading to said take up bobbin.

5. A device according to claim 1, said first means being located at one end of said enclosure, said second means being disposed at the opposite end of said enclosure, said thread guiding means being positioned adjacent said second means.

6. A device according to claim 1, wherein said enclosure is conically shaped, whereby said stationary wall and said transparent wall of said sections converge from said first means toward said second means, said thread guiding means including a funnel-shaped element projecting from adjacent said second means of said enclosure and forming an angle with the latter, said funnel-shaped element being directed toward said take up bobbin and being provided with an elongated slot for further guiding said thread when received from said brake mechanism.

7. A device according to claim 1, said third means being provided with a tube connector having at least two openings, one opening being in direct communication with the interior of said enclosure, and a pipe line in communication with the other opening and located exteriorly of said enclosure and terminating adjacent said take up bobbin, whereby thread ends cut off at said take up bobbin may be exhausted through said pipe line into said air line suction means.

8. A device according to claim 1, wherein said transparent wall of said other section is provided with a handle, and pivot means located at an end of the enclosure positioned opposite said handle and swingably connecting said other section with said one section, said handle extending exteriorly of said enclosure and being positioned adjacent said second means and said thread guiding means.

9. A device for removing dust, fluff, waste thread and like foreign matter from a winder and like machine having a wind off bobbin from which a thread runs to a take up bobbin; comprising a conically shaped enclosure provided with two complementary sections, one of said sections being provided with a stationary wall, the other section being provided with a transparent wall, pivot means arranged for facilitating swinging movement of said other section relative to said one section to thereby obtain access to the interior of said enclosure, said stationary wall of said one section being provided at one end with a support for rotatably securing thereon said wind off bobbin, carrying means on said stationary wall at an opposite end thereof, a thread brake mechanism mounted on said carrying means, tubular adapter means including air suction means connected to said one section adjacent said support for establishing communication between the interior of said enclosure and said air suction means and continuously directing a suction air stream from within said enclosure through said connector means therewithout, means for guiding said thread when same runs from said wind off bobbin to said brake mechanism within said enclosure and thence to said take up bobbin and in counter-direction to said air suction stream, and slotted tubular means for guiding said thread from said enclosure for discharge onto said take up bobbin.

10. A device according to claim 9, the walls of said conically shaped enclosure converging from said support toward said carrying means for said brake mechanism, said slotted tubular means being also conically shaped and extending in angular relation to and from said enclosure toward said take up bobbin, and means further connecting said take up bobbin with said connector means exteriorly of said enclosure, to exhaust thread waste from said take up bobbin.

11. A device according to claim 9, including handle means connected to said transparent wall and facilitating said swinging movement of said other section about said pivot means.

12. A device according to claim 9, including respective means on said transparent wall and on said stationary wall to secure the former in position when swung about said pivot means for access to said enclosure.

13. A device according to claim 12, said carrying means for mounting said brake mechanism including means extending exteriorly of said enclosure to adjust said brake mechanism therein.

14. A device according to claim 9, said guiding means being operatively connected with said brake mechanism and adjustable with the latter about said carrying means.

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