

E. DATH.
CLEANING DEVICE FOR ROVING.
APPLICATION FILED SEPT. 3, 1912.

1,059,714.

Patented Apr. 22, 1913.

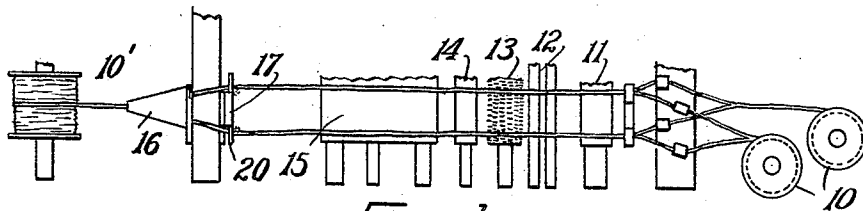


FIG. 1

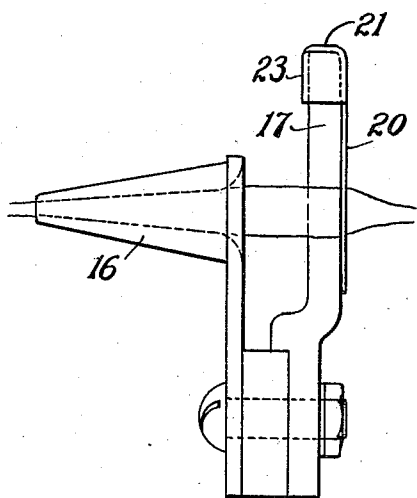


FIG. 2

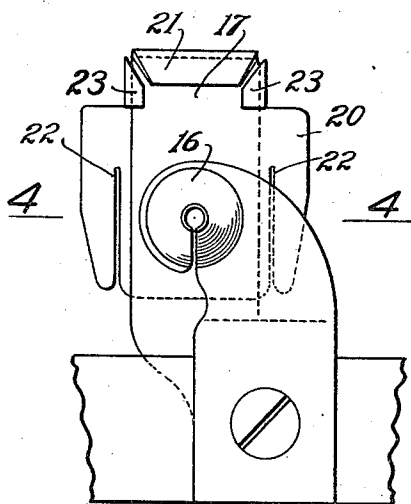


FIG. 3

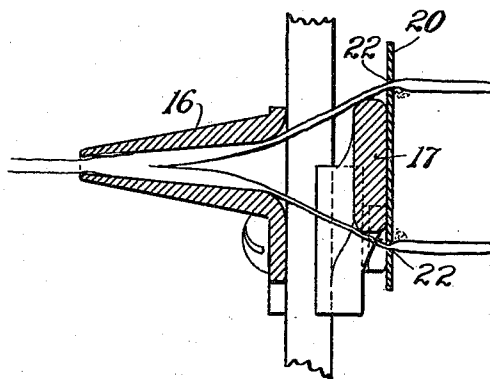


FIG. 4

WITNESSES

A. T. Palmer

Anne B. Lindsey

INVENTOR

EMMANUEL DATH

BY

Mitchell, Chadwick & Kent

ATTYS.

UNITED STATES PATENT OFFICE.

EMMANUEL DATH, OF NEWTON, MASSACHUSETTS.

CLEANING DEVICE FOR ROVING.

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To all whom it may concern:

Be it known that I, EMMANUEL DATH, a citizen of the Kingdom of Belgium, residing at Newton, in the county of Middlesex and State of Massachusetts, have invented new and useful Improvements in Cleaning Devices for Roving, of which the following is a specification.

This invention relates to an improved cleaning device for use in the manufacture of textile yarns. More particularly it is illustrated as it may be applied to the French drawing process, for the purpose of cleaning the roving by eliminating specks, dirt, etc. In such machinery as at present constructed it is a frequent occurrence that small tufts of wool that have been left on the machine from some prior run, or are stirred up by brushing, or that come floating through air from some other machine, alight upon some of the stock that is passing through the machine and become incorporated therewith. When this happens a bunch is produced in the yarn, and if the foreign matter happens to be of different color a speck or discoloration results in the finished yarn which degrades the quality of the goods. The presence of such specks is a constant cause of complaint by purchasers of yarn, and leads to the return of the yarn to the manufacturer who has to rework it, or sell it for lower quality or make some price adjustment. No means for preventing the occurrence of such specks is known, so far as I am aware, except the invention herein described. This invention accomplishes the desired result by removing such bits of wool or other foreign matter approximately as soon as they occur, thus preventing them from becoming incorporated in the yarn. In addition to this feature it is a purpose of the invention to make the appliance commercially practicable by so providing that its use does not interfere with the present system of handling the roving in the machine. In particular it is desirable that it should not impose any appreciable drag upon the roving, and yet should act upon all parts of the roving, and not interfere with the splicing and prompt replacement of any ends that may be broken, and not destroy the independence which each end now has of all the other ends in the same drawing frame. These objects and other advantages incidental to the invention are

attained by the appliance illustrated in the accompanying drawings, in which—

Figure 1 is a diagram indicating the course of roving while passing through a drawing frame in the manufacture of yarn on the French system, with a device embodying the invention applied thereto; Fig. 2 is a side elevation of the appliance in position; Fig. 3 is a front elevation of the same; and Fig. 4 is a plan of the same in section on the line 4—4 of Fig. 3.

Referring to the accompanying drawings and particularly to the diagram of one of the drawing frames, shown in Fig. 1, it will be understood that in French drawing the roving led from each of two or more bobbins at the back of the frame is divided into strands, that each of these strands unites with a similar strand from another bobbin, and the compound strands thus made go through the drawing rolls of the machine separately and are then united into a single end as they issue from the machine. This is indicated in Fig. 1 sufficiently to show the relation of the present invention to the process as a whole, the back roller being marked 11, the intermediary roller 12, the porcupine 13, the front roller 14 and the aprons 15, over which the two strands pass to the front bobbin 10' on which the finished product of the machine is wound, the two strands being there united into one. This union is ordinarily effected by passing the strands through a conical guide 16 to the larger end of which, they are delivered by an upright guide or separator 17. The cone brings them gradually together and discharges them at its small end united into a single end which is wound immediately upon the adjacent bobbin. The device of the invention is applied to this mechanism at the guides, just before the two strands come together, and acts upon both sides of each strand.

In the form of the device illustrated in the drawings it consists of a plate 20 of brass, iron or other suitable material having a supporting hook or hood 21 adapted to engage over the top of the upright guide 17. The plate stands as a barrier across the place where the two strands of roving pass on each side of the guide, and is provided with narrow vertical slots 22, one for each strand of the roving. I have found that about $\frac{1}{32}$ of an inch is suitable width for the slot for ordinary wool or merino roving, on a finish-

ing frame, and that the width should be a little greater on one of the preliminary drawing frames, or reducers; but it is obvious that this dimension will depend in part upon the variety and size of material that is being worked, the slot being narrow enough so that the strand is flattened as it passes through and scraped on both sides. The edges of this slot are preferably smooth, rectangular corners. Thus a normal strand of roving passes through the slot smoothly, without catching on its edges. At the same time the edge of the slot is so sharp, and the width of the slot is such, that if the strand carries a burden of foreign material that has adhered to it but is not properly a part of it, the added matter is either scraped off by the edge of the slot, or else the strand is broken. The first mentioned event is what usually happens. If, however, the foreign matter causes the roving to break on reaching the clearing device, this also is a desirable result because it enables the operative to discover and eliminate the bunch, and it is evident that if this bunch were not thus removed it would make a bunch in the finished yarn, which would be a defective product. When such a break occurs the operative simply lifts the clearing device up from its supporting guide 17, splices the broken end, and puts the device back again. This interferes in no way with the neighboring end on either side of it. The clearing device is made from a plate of metal cut, as by a die, to the desired shape and with its upper portion bent to form hooks 23 which may surround and hang upon the upright guide 17. While the construction described is preferred the invention is not limited to that but may obviously be made in various equivalent ways. The use of a plate facilitates the hook arrangement mentioned, and at the same time permits the edges of the slot to be relatively sharp as well as smooth, so that the slightest speck of matter that is foreign to the drawn surface of the strand is engaged thereby, and, once engaged, is held without tendency to be drawn in until it falls off or is removed by the operative. It is not drawn in because the passing fibers of the strand are so much compressed together that they pass by in a rather solid stream without admitting it among them.

The process of clearing depends upon an entanglement or concatenation of fibers, or the lack of it. In the normal strand composed of long staple wool, each fiber, including those on the surface of the strand, is engaged with its neighboring fibers at a large number of points and to a degree interwoven with them. Such a fiber goes through the slot without being stopped because it is so firmly held throughout its length; and any superficial fiber in the regular roving that may catch on the edges of

the slot is promptly drawn past the edge and through the slot by the firm engagement of other portions of that fiber with the other fibers passing through in the middle of the strand. However, when a floating tuft of wool has fallen upon the strand, it goes through the machine on the surface of the strand, and its fibers do not attain more than a superficial engagement therewith, which is not enough to hold it against the scraping action of the abrupt corners of the slot. It will always be true, moreover, that the entanglement of this matter with the rest of the strand is light and easily broken, because the device of the invention is to be applied on each of the preliminary drawing frames just before the roving leaves it. If this were not so the foreign matter might pass into the conical guide and be pinched and embedded in the midst of the roving between the two strands that compose the single end. But as the clearing device is applied to each and every strand that has been exposed for any length of time, and is applied just before the strand is united with another, the embedding of such matter is effectually prevented.

The entrance end of the slot is preferably enlarged to form a throat for easy threading of the strand into it. As the strand of roving is reduced to the narrow thickness of about 1/32 of an inch in passing through the slot no foreign matter resting upon its top can pass through without engaging one side or the other. Thus it is sufficient that the strand is scraped on both sides, without specifically providing means to scrape its top and bottom also. This enables the use of a slot which extends above and below the position normally occupied by the top of the strand; and this in turn enables the same appliance to be used for roving of different run, the roving occupying more or less of the height of the slot according to its greater or less size. The roving of greater size simply flattens out into a strand of greater height.

I claim:

1. The combination of a drawing frame comprising means for dividing roving into strands, drawing it in divided condition and then uniting the strands into one end, with a clearing device adapted to be supported on the frame and to scrape both sides of each strand immediately before its said union.

2. The combination of a drawing frame comprising means for dividing roving into strands, drawing it in divided condition, an upright guide for holding the strands separate and an immediately following conical guide for uniting them, with an upright plate hanging on the upright guide and having slots extending vertically beside the edges of the upright guide, said slots being narrower than the normal width of roving

and having abrupt edges scraping both sides of each strand passing through them.

3. The combination of a drawing frame comprising means for dividing roving into strands, drawing it in divided condition, and provided with a conical guide uniting the strands into one end, with a guide at the entrance of said conical guide having narrow open-ended slots extending transversely of

the course of the roving and having edges adapted to scrape both sides of each strand passing through them.

Signed by me at Boston, Mass., this 31st day of August, 1912.

EMMANUEL DATH.

Witnesses:

JOSEPH T. BRENNAN,
ANNA B. LINDSAY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."