March 14, 1939. J. H. MARSH 2,150,387

APPARATUS FOR THE CLEARING AND CLEANING OF YARNS

Filed Jan. 9, 1936 2 Sheets-Sheet 1

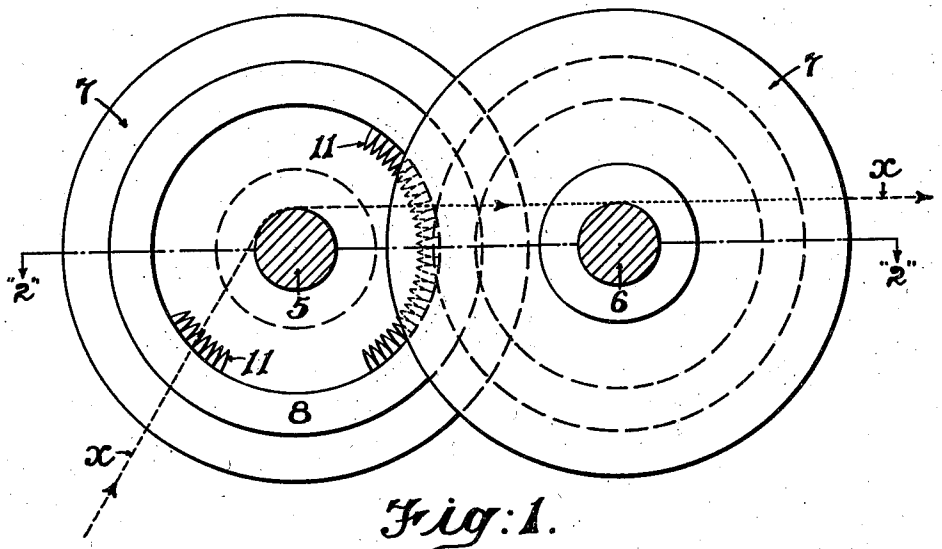


Fig: 1.

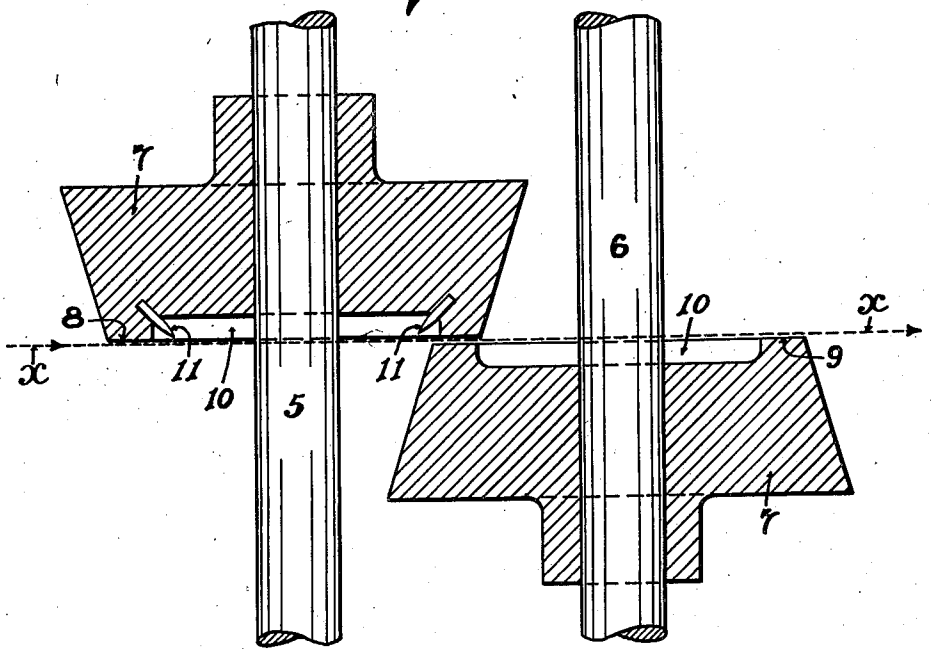


Fig: 2.

Inventor:-
John Henry Marsh.
By His Attorney:-
J. V. Connell

March 14, 1939. J. H. MARSH 2,150,387

APPARATUS FOR THE CLEARING AND CLEANING OF YARNS

Filed Jan. 9, 1936 2 Sheets-Sheet 2

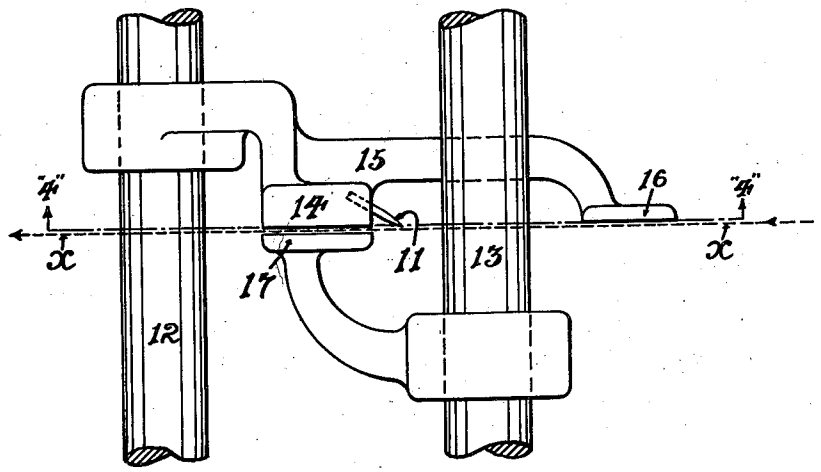


Fig: 3.

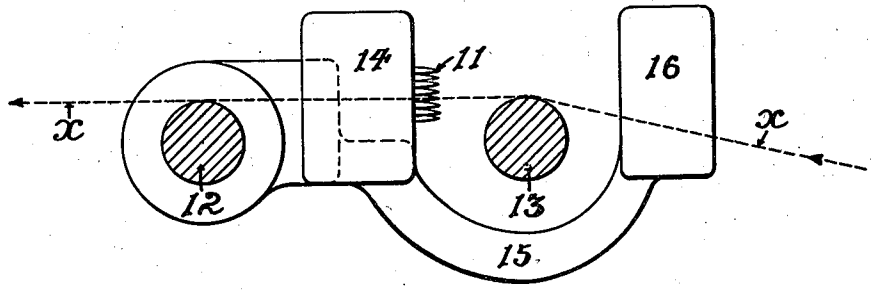


Fig: 4.

Inventor:-
John Henry Marsh.
By His Attorney:-
J. W. Connell

Patented Mar. 14, 1939

2,150,387

UNITED STATES PATENT OFFICE

2,150,387

APPARATUS FOR THE CLEARING AND CLEANING OF YARNS

John Henry Marsh, Salford, England

Application January 9, 1936, Serial No. 58,246
In Great Britain January 19, 1935

4 Claims. (Cl. 28—64)

The invention relates to improvements in the clearing and cleaning of textile yarns to free them of neps, slubs and other impurities.

In the specification accompanying Letters Patent of the United States No. 1,469,423 granted to me I have described and claimed apparatus for the purpose, with special means for ensuring that pairs of clearer knives may be most accurately adjusted to the minutest degree and retain that adjustment. The apparatus answers its purpose excellently, but if the setting of the knives for the treatment of any given thickness of yarn is so close that the usual knots found in yarns, where in a previous operation broken ends have been pieced up, are cleared as well as the impurities, there is involved the necessity of simply substituting another knot for one cleared and broken, with consequent waste of time and decrease of production. On the other hand, if clearers are set to clear the yarns and at the same time pass the knots, which is quite practical as the knots are close and hard, the slubs in the yarn, and which slubs are of a soft and fibrous and expanded nature, will be compressed between the clearer devices and pass also, which in no circumstances should be permitted, owing to the effect of uncleared slubs in the subsequent woven fabric or in subsequent dyeing of the yarn.

The disability pointed out is of course inherent in all clearing devices having plain clearing edges.

I have now devised a very simple and efficient means for clearing yarns, whilst adjusting the clearer to allow the hard knots to pass but arresting and clearing the slubs amongst the other impurities, and this improvement consists in providing, adjacent to the path of the yarn being cleared, points which, without making contact with the yarn or with the knots, are in the wider path of the softer and more expanded slubs.

The improvement, for a full understanding of the same it will now be described by way of example as applied to rotating clearers and to fixed clearers. Reference will be had to the drawings annexed, wherein:

Figure 1 is a side elevation of a pair of rotated clearer knives;

Figure 2 is a sectional plan taken on line 2—2 of Figure 1;

Figure 3 is a plan of a clearer element having stationary clearing faces; and

Figure 4 is a sectional view taken on line 4—4 of Figure 3.

Referring first to Figures 1 and 2, the mounting of the clearer knives on shafts 5 and 6, and the means for adjustment of the knives, need not be described as these are fully described in the prior patent specification. The rotated clearer knives 7 engage the yarn x and clear the same of irregularities by their adjacent rotating faces 8 and 9. Within the recess 10 of one of the clearer knives 7 is fitted a plurality of metal pins 11 and the angle of setting of these pins to the path of the yarn is preferably that shown.

In operation, the yarn x is passing through the clearer knife pair in the direction of the arrow, Figure 2; the clearers 7 have been adjusted according to the nature and count of the yarn and with due consideration of the average size of the knots therein, to allow these to pass freely without in any way impairing the yarn-clearing effect. A slub in the yarn, arriving at the shaft 5 over which the yarn passes on its way to the clearers, will be laterally flattened, due to its fibrous and expansible nature, and as a result its lateral projection from the length of yarn is enhanced. It therefore follows a wider path than that of the yarn and of any knots therein, with the result that the said slub is caught by the points of pins 11 and cleared. In addition to its projection laterally of the yarn and the flattening effect of shaft 5, the commencement of compression of the slub—which is usually long—between the clearer faces serves to force it further into the wider path and make contact with the pins 11.

The angle of setting of the pins as shown is useful, inasmuch as if any accumulation of fluff or fly occurs on any of the pin points the said accumulation on sufficiently increasing will project into the path of the passing yarn, the latter thus serving to clear the pins and being itself ultimately cleared of the fluff or fly. In the particular arrangement shown, the yarn twice passes the pin points, once just before the actual clearing of the yarn takes place and previously at a point below the plane of the shaft 5.

In the example shown of two co-acting clearers, both of these may be fitted with the slub-clearing points. Experiment shows however that this is not necessary, and moreover the compression of a slub last referred to would be absent in connection with the second clearer, the yarn having passed the clearer faces.

In the explanatory example of stationary clearers as illustrated by Figures 3 and 4, two shafts, 12 and 13 are provided, and on the shaft 12 is fixed a clearer knife 14 of the form shown, having a curved arm 15 passing beneath shaft

13 and bearing a yarn guide or control 16. On the shaft 13 is fitted as shown the co-acting clearer knife 17. The shafts may bear any required number of clearer knives to form a corresponding number of co-acting pairs, one of them, shaft 13, being longitudinally adjustable, to vary the distance between the two co-acting clearer faces. The pins 11 are fitted as shown, and it will be seen that, the yarn passing in the direction indicated by the arrow, slubs thereon are flattened by contact with the upper face of shaft 13 and are treated at the clearing point, the pins 11 fulfilling their function in the manner previously described. The guide 16 serves as a limiting stop to eliminate all danger of the yarn being presented to the clearers in such a manner that the points of the pins would scrape such yarn. The shaft 12 may be so mounted that it may be oscillated around its longitudinal axis to a desired degree at required intervals, the advantage of clearing accumulated fluff and fly from the pins 11, rendered possible with the moving clearers of Figures 1 and 2, being thus obtained periodically, the yarn effecting such clearance by movement of the accumulation across the yarn path as in the first example.

The application of the invention to all forms of yarn clearers will be understood from the foregoing examples. Two clearer faces may for instance be fitted upon one shaft, and be adjustable thereon, one of them having the pins 11 appropriately fitted. In such a construction slubs may be flattened by passing over a fixed circular stud or the like.

The pins 11 may be of any metal or metal alloy which will answer the purpose, and they may be set at any desired pitch, preferably closely together as illustrated. They may be fitted in position in any manner; in the drawings they are shown as being separately fixed into holes drilled in a clearer member. They may be soldered into a ring which can then be screwed into the recess 10 of a clearer knife of Figures 1 and 2, or in a flat plate to be screwed into position on the clearer of Figures 3 and 4, being set at the desired angle to the surface of the ring, or plate, as the case may be. Again, the slub-catching points according to the improvement may when considered advisable or desirable be formed by serrating, with desired angle of the serrattions, a flat disc or ring of metal or metal alloy, which is then fitted in position.

I claim:

1. In apparatus for clearing and cleaning textile yarns having slubs as part of the impurities thereof, a pair of rotatable circular co-acting clearer knives having plain edges serving as normal clearing and cleaning means for a yarn passing between them in a defined path, one of the said knives being centrally recessed, and pointed members fitted in and around such recess, the points of such members being situated laterally of the normal path of the moving yarn and in the path of slubs which extend laterally from such yarn.

2. In apparatus for clearing and cleaning textile yarns having slubs as part of the impurities thereof, a pair of circular rotatable co-acting clearer knives having plain edges serving as normal clearing and cleaning means for a yarn passing between them in a defined path, one of the said knives being centrally recessed, pointed members fitted in and around such recess, the points of such members being situated laterally of the normal path of the moving yarn and in the path of slubs which extend laterally from such yarn, and a circular member over which the said yarn passes on its passage to the pointed members and thence to the clearing and cleaning knives for the purpose set forth.

3. In apparatus for clearing and cleaning textile yarns having slubs as part of the impurities thereof, a pair of rotatable circular co-acting clearer knives having plain edges serving as normal clearing and cleaning means for a yarn passing between them in a defined path, one of the said knives being centrally recessed, and pointed members fitted in and around such recess, the points of such members being situated laterally of and at an angle to the normal path of the moving yarn and in the path of slubs which extend laterally from such yarn.

4. In apparatus for clearing and cleaning textile yarns having slubs as part of the impurities thereof, a pair of circular rotatable co-acting clearer knives having plain edges serving as normal clearing and cleaning means for a yarn passing between them in a defined path, one of the said knives being centrally recessed, pointed members fitted in and around such recess, the points of such members being situated laterally of and at an angle to the normal path of the moving yarn and in the path of slubs which extend laterally from such yarn, and a circular member over which the said yarn passes on its passage to the pointed members and thence to the clearing and cleaning knives for the purpose set forth.

JOHN HENRY MARSH.