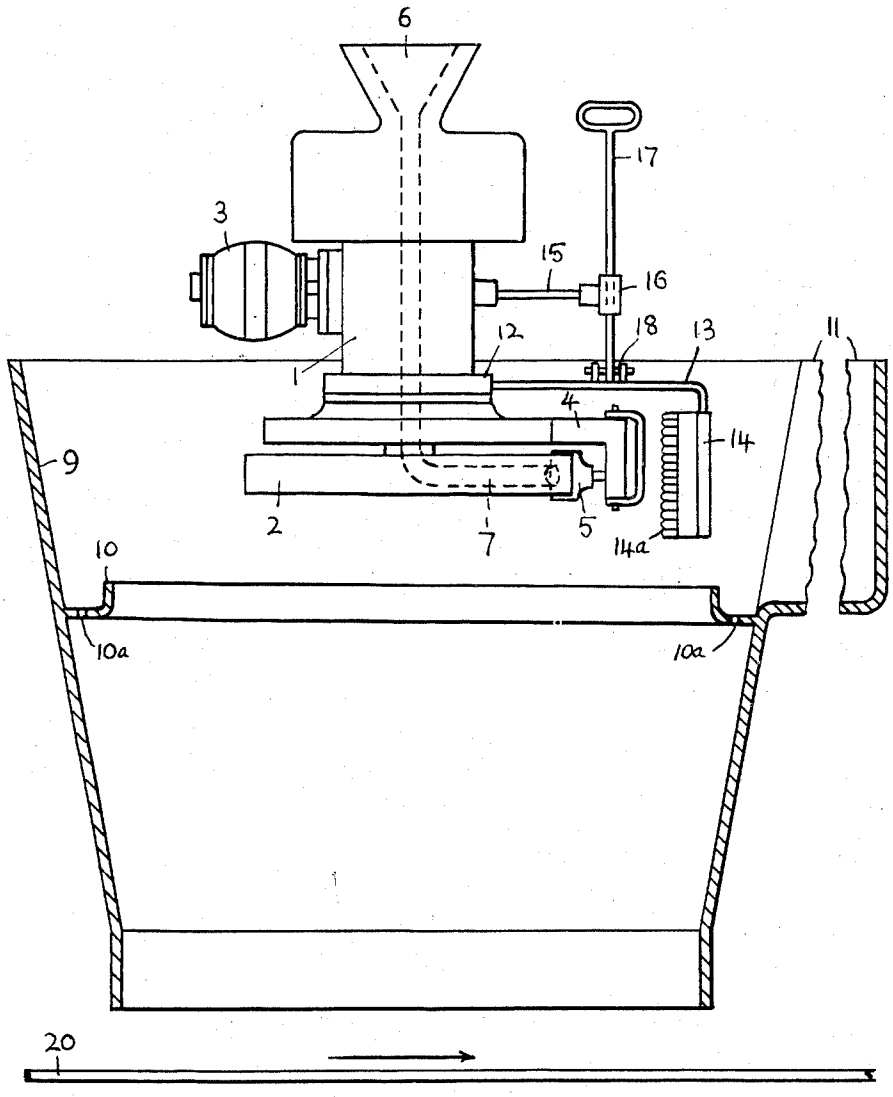
Dec. 30, 1952 H. L. JORDAN ET AL 2,623,585

MACHINE FOR CUTTING RAYON STAPLE

Filed Sept. 13, 1951 2 SHEETS—SHEET 1

FIG. 1.



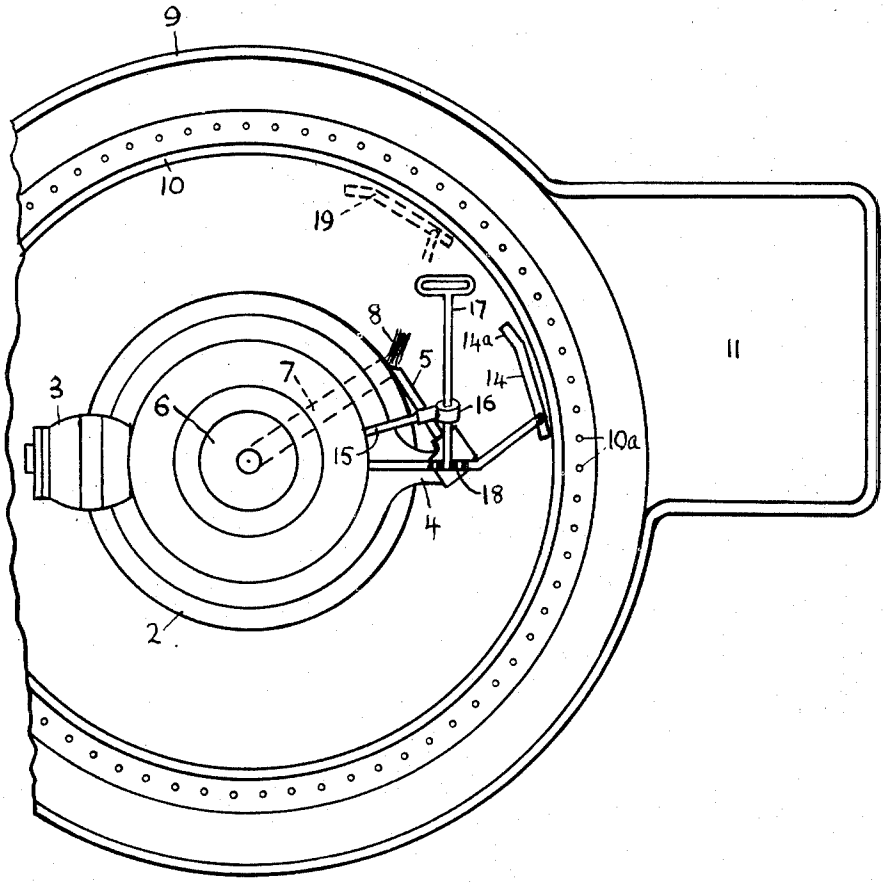
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FIG. 2.



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Patented Dec. 30, 1952

2,623,585

UNITED STATES PATENT OFFICE

2,623,585

MACHINE FOR CUTTING RAYON STAPLE

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Application September 13, 1951, Serial No. 246,474
In Great Britain October 4, 1950

3 Claims. (Cl. 164—38)

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This invention relates to machines for cutting rayon staple, that is for cutting a tow or other bundle of filaments into staple lengths.

The invention relates in particular to a machine which comprises a cutter and a rotating disc with a radial duct along which the tow is fed by centrifugal force so that its projecting end is brought against and severed by the cutter. Such a machine is described in United States patent specification No. 1,723,998. Normally the cutter bears against the periphery of the rotating disc and rayon staple of a predetermined length is obtained by correlating the speed of rotation of the disc to the speed of delivery of the tow. In some cases two cutters are provided on diametrically opposed sides of the disc so that there are two cuts for each rotation of the disc.

Such machines give a product with uniform staple length, but small quantities of fibres of under and over length may be produced; for example the cutter may not make a clean cut of the whole bundle particularly when the cutter is losing its first sharpness and some of the fibres will then only be severed on their second presentation to the cutter and will be over length in consequence.

It has been proposed in United States patent specifications Nos. 2,424,555 and 2,447,976 to provide detecting fingers spaced away from the periphery of the disc and knocked by any over-length filaments to set into operation various alarm devices and also a shutter in the outlet chute to prevent the over-length rayon staple cut after a fault has been detected passing forward.

Some fibres of non-standard length may also result if the tension on the tow is not even, for example when starting up. The re-setting of one "end" which is pressed by the operative into the tow so that part of it becomes folded is a still further source of fibres of non-standard length.

It is found in practice that a very small quantity, even a fraction of 1 per cent, of fibres of non-standard length, particularly when such fibres are over length, interferes with the processing and spinning of the rayon staple on the customary cotton and worsted machinery.

It is the object of the present invention to produce rayon staple free from filaments of non-standard length.

According to the present invention a machine for cutting rayon staple comprising a cutter and a rotating disc with a radial passage along which

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tow is fed by centrifugal force so that its projecting end is brought against and severed by the cutter has a receptacle for receiving and retaining fibres thrown from the disc, together with a deflector plate which when desired can be brought into such a position in relation to the cutter that it will deflect towards an outlet rayon staple of the desired length.

Preferably the machine has a splash guard surrounding the disc with a gutter below the level of the disc for retaining fibres striking the splash guard and sliding down it. Bundles of fibres of standard length when severed will fly off along substantially the same path each time, whilst individual fibres, small bundles or bundles containing a proportion of over length fibres will follow a different path. Simple experiment therefore permits the determination of the best size and location for a deflector plate which can be brought into position in the path of the bundles of standard length. The deflector plate can be so placed that the bundles striking it are deflected downwards so that they pass the gutter and fall on to a conveyor belt.

As the amount to be rejected on first starting may be considerable the splash guard preferably has a special receptacle opposite to the cutter.

The forward edge of the deflector plate is preferably serrated to assist to retain any fibres caught on it.

One example of a machine in accordance with the present invention is shown in the accompanying drawings.

Figure 1 is an elevation partly in section, and Figure 2 is a plan.

The main body 1 carries at its lower end a rotating disc 2 driven through gearing by a motor 3. An arm 4 projecting from the main body 1 carries a cutter 5 which is biased by a weight (not shown) to bear against the periphery of the disc 2. The tow (not shown) passes down an inlet 6 to a radial duct 7 in the disc 2 and its projecting end 8 is severed by the cutter 5. This is in accordance with known practice.

A splash guard 9 carries a gutter 10 which retains fibres striking the splash guard 9. Suitable holes 10A are drilled in the gutter 10 for drainage purposes.

A collar 12 surrounding and rotatably mounted on the main body 1 carries an arm 13 from which is suspended a deflector plate 14 having a serrated forward edge 14A. A second arm 15 is fixed to the main body 1 and has a pivoted collar 16 loosely surrounding a handle 17 pivotally connected at its lower end 18 to the arm 13 so

that the deflector plate **14** can be moved. Stops (not shown) can be provided to limit the arc of movement.

On starting up, the deflector plate **14** is put in the position shown at **19** in Figure 2 when the greater part of the severed fibres will fly into a special receptacle **11**. As soon as the machine settles down to steady running the deflector plate **14** is mvoed to its operative position when the severed bundles will strike it and fall on to the conveyor belt **20**.

The receptacle **11**, the gutter **10** and the forward edge **14A** of the deflector plate **14** can be cleared by the operative from time to time without it being necessary to stop the machine.

If at any time during operation the operative observes irregularities he can move the deflector plate **14** back to position **19** so as to reject the severed bundles until the machine is again running steadily.

If desired the cutter **5**, deflector plate **14** and special receptacle **11** can be duplicated on the opposite side of the machine, a second arm from the collar **12** carrying the second deflector plate which will then be operated at the same time as the first plate by the same operating handle **17**.

Whereas the machine according to the invention is particularly applicable to the production of viscose rayon staple it is also applicable to cutting bundles of other filaments into discontinuous lengths.

One example of a machine according to the invention for cutting a tow delivered at a rate of 64 metres per minute has the following dimensions:

	Inches
Diameter of disc (2)	18
Distance of deflector plate (14) from the disc 2	7 to 7½
Length of deflector plate	5¾
Depth of plate	9⅛

To cut fibres to a staple length of $1\frac{7}{16}$ inches with this machine a suitable speed for the disc **2** is 746 revolutions per minute.

What we claim is:

1. A machine for cutting rayon staple comprising a rotating disc having an inlet communicating with a radial duct along which tow is fed, a fixed cutter bearing against the periphery of the disc for cutting the tow as it passes from the radial duct, an outlet below the disc for the discharge of cut fibres, and a receptacle adjacent to the cutter for receiving and retaining fibres thrown centrifugally from the disc, in combination with an adjustable deflector plate located between the cutter and the receptacle and adapted to shut off part of the said receptacle, whereby fibres striking the plate are directed to the said outlet and fibres not striking the plate are allowed to pass into the said receptacle.

2. A machine as claimed in claim 1 wherein the deflector plate is so mounted that it can be moved away from its position between the cutter and the receptacle to permit all the cut fibres to pass into the said receptacle.

3. A machine as claimed in claim 1 wherein the deflector plate has a serrated leading edge.

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