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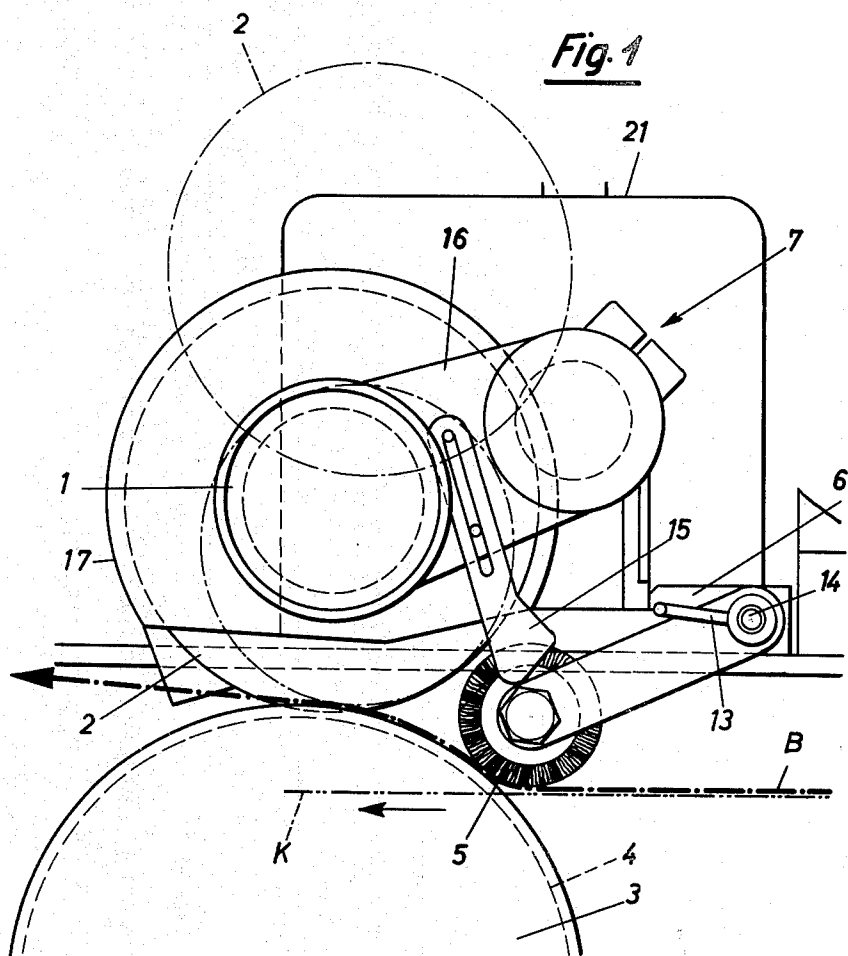
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3,224,313

DEVICE FOR TRIMMING WEBS OF CLOTH OR THE LIKE

Filed May 28, 1964

4 Sheets-Sheet 1



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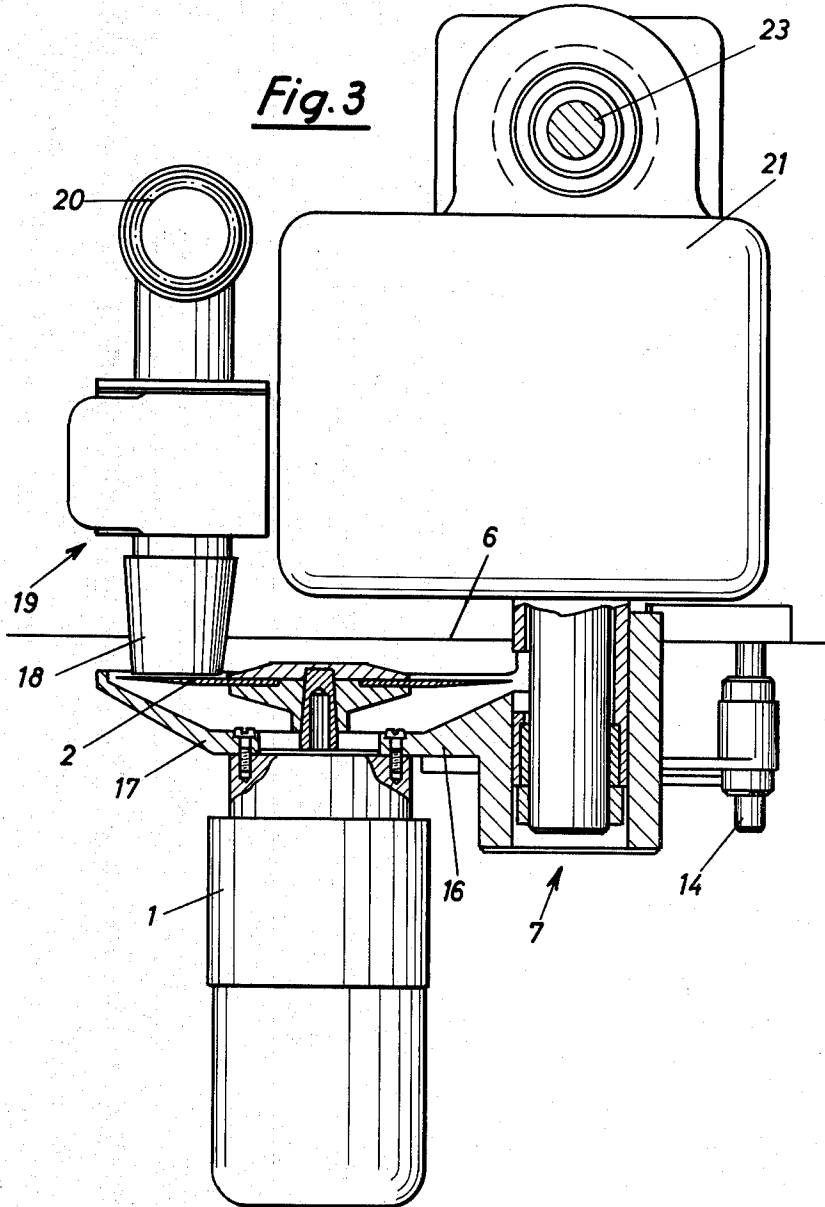
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DEVICE FOR TRIMMING WEBS OF CLOTH OR THE LIKE

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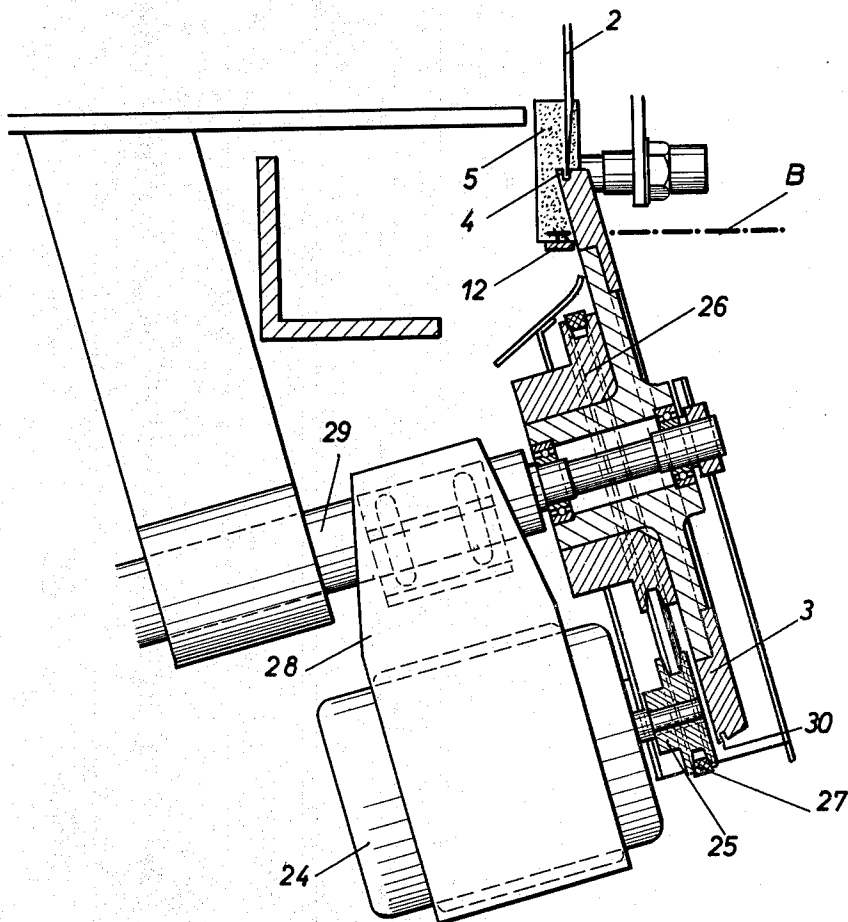
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Fig. 4



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DEVICE FOR TRIMMING WEBS OF CLOTH OR THE LIKE

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13 Claims. (Cl. 83—422)

The invention relates to a device which may be arranged at the exit of machines for the treatment of webs of cloth or the like for cutting off the selvages or edges of the webs which have been pierced by the needles on the stretching or conveying chains on which the webs are conveyed.

Such a device consists of cutting means and means for removing the web from the needles of the stretching or conveying chains.

For the faultless operation of such devices it is essential that the web is removed from the needles absolutely reliably and perfectly, even in cases where the web of cloth or the like firmly clings to the needles as is, for example, the case with fabrics of polyamide fibers which have undergone heat treatment. For maintaining uniform widths of the webs it is also important that the trimming operation should be carried out immediately after the webs are removed from the needles when the webs are still to some extent stretched in width.

It is the object of the present invention to meet the aforementioned requirements while keeping the amount of apparatus required as small as possible. To achieve this object it is intended to use a cutting device which in a manner known per se consists of a rotating circular knife and a disc cooperating therewith and being provided with a peripheral annular groove for engagement of the circular knife. For spreading the web in width the cooperating disc may be provided on its circumference with radially projecting fine needles.

According to the invention it is proposed to arrange the disc cooperating with the circular knife in such a manner on the trimming device that it projects from below beyond the plane of the web provided by the stretching chains and cooperates with a brush disc arranged in the region of the line of intersection of the mentioned plane of the web with said cooperating disc, the brush disc being pressed against the web and the cooperating disc from above.

This novel design of the trimming device ensures a satisfactory and completely reliable removal of the webs from the needles while the lateral tension of the webs is maintained and the edges of the webs pierced by the needles are cut off immediately after the webs have been removed from the needles.

According to an advantageous feature of the invention the disc cooperating with the circular knife may be arranged obliquely to the plane of the web so as to extend outwardly from the center of the web toward the edge thereof. This arrangement permits cutting directly adjacent the holes pierced by the needles in the web so that the amount of wasted cloth or the like is kept as small as possible and the surface of engagement of the web on the disc cooperating with the circular knife is located substantially in the direction of the needle bars of the chains, which is important for maintaining uniform width of the webs and ensuring smooth removal of the latter from the needles.

An adjustable slip drive, for example an eddy-current motor with magnetic slip, may also be provided for driving the disc cooperating with the circular knife. This drive affords the advantage that the cooperating disc will

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always run with an adjustable pull and will also be capable of receiving large supplies of fabric.

An embodiment of the invention will now be described by way of example and with reference to the accompanying drawings, in which:

FIG. 1 is a side elevational view of a device according to the invention;

FIG. 2 is a front elevational view of the same, partly in section;

FIG. 3 is a top plan view of the device, and

FIG. 4 is an elevational view, partly in section, of a modified embodiment.

FIG. 1 shows a device for trimming webs of cloth or the like, which comprises a circular knife 2 driven by an electric motor 1, a cooperating idler disc 3 having a peripheral annular groove 4 for engagement of the circular knife 2, and a brush disc 5 mounted for pivotal movement on a frame 6. As shown more particularly in FIG. 4, the idler disc 3 may be provided on its circumference with radially projecting fine needles 30 of about 0.06 to 0.12 in. in length to prevent the edge of the web B from slipping off the disc.

As will be apparent from FIG. 3, the circular knife 2 is surrounded by a protective housing 17 and mounted on the frame 6 for pivotal movement together with the driving motor 1. This mounting indicated by the reference numeral 7 is such that the circular knife 2 can also be adjusted to a position transversely of the feed direction of the web B.

As shown in FIG. 2, the idler disc 3 is likewise provided with a protective cap 22 and mounted on a journal 8 secured in a holder 9 adjustable in height by means of a screw spindle 23 (FIG. 3) rotatable by a handwheel 10. These securing and mounting members formed by the journal 8 and the holder 9 are together so arranged that the disc 3 can rotate obliquely of the vertical plane. The web B is conveyed to the trimming device by means of a stretching or conveying chain K provided with needle bars 12 fitted with needles 11 engaging in the web B. The upper portion of the disc 3 is guided at a certain height and in inclined position over the needle bars 12. This inclined position ensures that the knife 2 can be moved directly up to the plane of movement of the needles 11 in the imaginary perpendicular line. The peripheral annular groove 4 in the disc 3 is likewise obliquely arranged to correspond with the inclined position of the disc 3 so that the knife 2 rotatable in the vertical plane is located parallel to the side walls of the groove 4. Similarly, the circumference of the disc 3 has a somewhat conical configuration so that the peripheral surface thereof extends parallel to the web B.

The overall arrangement of the cutting means including the circular knife 2 and the cooperating idler disc 3 is such that the disc 3 is mounted below the web B and projects upwardly beyond the plane of the web with a considerable portion of its periphery, as seen especially in FIGS. 1, 2 and 4. As shown in FIG. 1, the aforementioned brush disc 5 is located in the region of the line of intersection of the plane of the web B with the disc 3 and is pressed against the web B by a spring 13 arranged on a stationary journal 14 forming a bearing for the pivotal movement of the brush disc 5, so that the web B will be deflected onto the disc 3 under the action of the brush disc 5. The circular knife 2 is secured to the mounting 7 by means of a supporting arm 16 on which an abutment 15 is adjustably mounted for limiting the movement of the brush disc 5 away from the web B.

As will be seen by reference to FIG. 3, suction means of known construction are provided for removing the edges cut off from the web B and include a suction nozzle 18 and a support 19 therefor, which are arranged directly

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adjacent the position of cutting of the circular knife 2. The edges which have been cut off are then fed through a tube 20 to a collecting vessel not shown.

The mode of operation of the described device for trimming webs of cloth or the like is as follows:

The web B delivered by the stretching and conveying chains K fitted with needles is lifted out of the needles of the chains by means of the disc 3, the brush disc 5 serving as counter support for the web B. Immediately thereafter the edges of the web which have been pierced by the needles on the chains K are cut off by the circular disc 2 while the web B rests on the periphery of the disc 3. Since the position of engagement of the web B with the disc 3 extends substantially in the direction of the needle bars 12 on the chains K, the web B passes in a perfect and satisfactory manner from the chains K to the disc 3.

In the present embodiment the disc 3 is an idler disc, but it may also be equipped, if desired, with a drive. Such a drive is shown, for example, in FIG. 4 where the drive includes an electric motor 24, pulleys 25 and 26 and a V belt 27. An eddy-current or slip clutch known per se with infinite speed regulation is included in the electric motor 24 to automatically regulate the supply of the fabric. The electric motor 24 is mounted on a stationary axle 29 by means of a support 28.

The width of the web B is automatically adjusted by a control device of known construction mounted in a housing 21 (FIGS. 1-3) for shifting the circular knife 2 together with its cooperating idler disc in the mounting 7 in accordance with the impulses transmitted by a sensing device.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiment is therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein.

I claim:

1. A device for trimming webs of cloth or the like, comprising a circular knife and a first disc cooperating therewith for cutting the web and provided with a peripheral annular groove, said first disc being mounted below the plane of the web provided by stretching and conveying chains serving for supplying said web, so as to project by a considerable amount upwardly beyond this plane and cooperate with a brush disc of known construction

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arranged in the region of the line of intersection between the plane of the web and said first disc, said brush disc being pressed from above against said web and said first disc.

2. A device as claimed in claim 1, wherein said first disc is an idler disc.

3. A device as claimed in claim 1, wherein said first disc is adapted to be driven.

4. A device as claimed in claim 1, wherein said first disc is arranged obliquely to the plane of the web so as to extend outwardly from the center of the web toward the edge thereof.

5. A device as claimed in claim 1, wherein the surface of engagement of the web with the periphery of said first disc at the level of the position of cutting is located substantially in the plane of movement of needle bars provided on the stretching and conveying chains.

6. A device as claimed in claim 1, wherein the circular knife is pivotally mounted by means of a supporting arm and the brush disc is likewise pivotally mounted and its pivotal movement is limited by an adjustable abutment on said supporting arm.

7. A device as claimed in claim 1, wherein a holder adjustable in height and arranged obliquely to the perpendicular line is provided for mounting said first disc thereon.

8. A device as claimed in claim 1, wherein the first disc has its periphery so conically formed that its upper peripheral surface extends parallel to the web.

9. A device as claimed in claim 1, wherein the peripheral annular groove in the first disc is obliquely arranged so as to extend vertically in its upper position.

10. A device as claimed in claim 1, wherein the periphery of the first disc is provided with radially projecting fine needles.

11. A device as claimed in claim 1, wherein an eddy-current motor of known construction is provided for driving said first disc and includes a clutch with infinite speed regulation to automatically regulate the supply of fabric.

12. A device as claimed in claim 11, wherein said clutch is a slip clutch.

13. A device as claimed in claim 11, wherein said clutch is an eddy-current clutch.

No references cited.

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