

June 20, 1933.

F. G. REID

1,914,528

CUTTING FORK

Filed Dec. 31, 1929

2 Sheets-Sheet 1

Fig. 1.

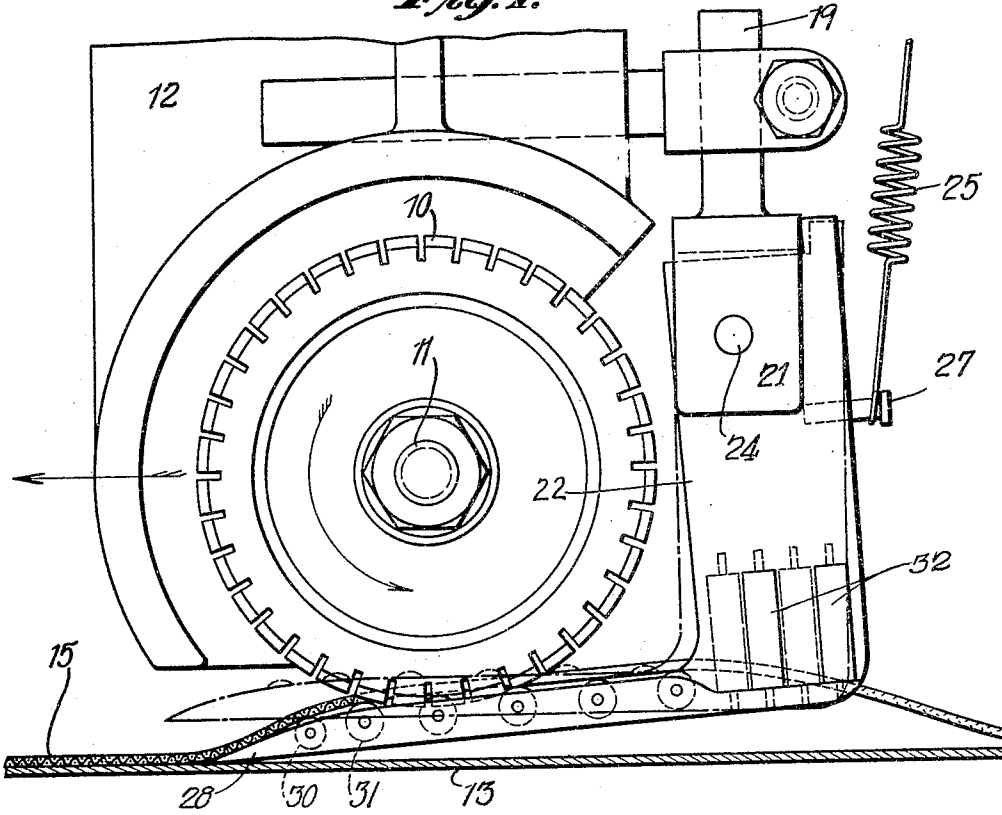
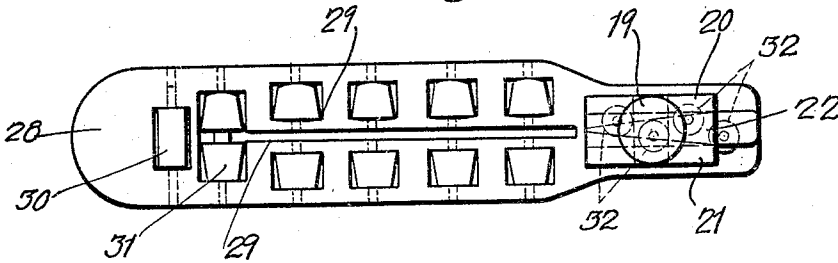


Fig. 2.



Inventor

FREDERICK GORDON REID.

By His Attorneys

Usina Rauber

June 20, 1933.

F. G. REID

1,914,528

CUTTING FORK

Filed Dec. 31, 1929

2 Sheets-Sheet 2

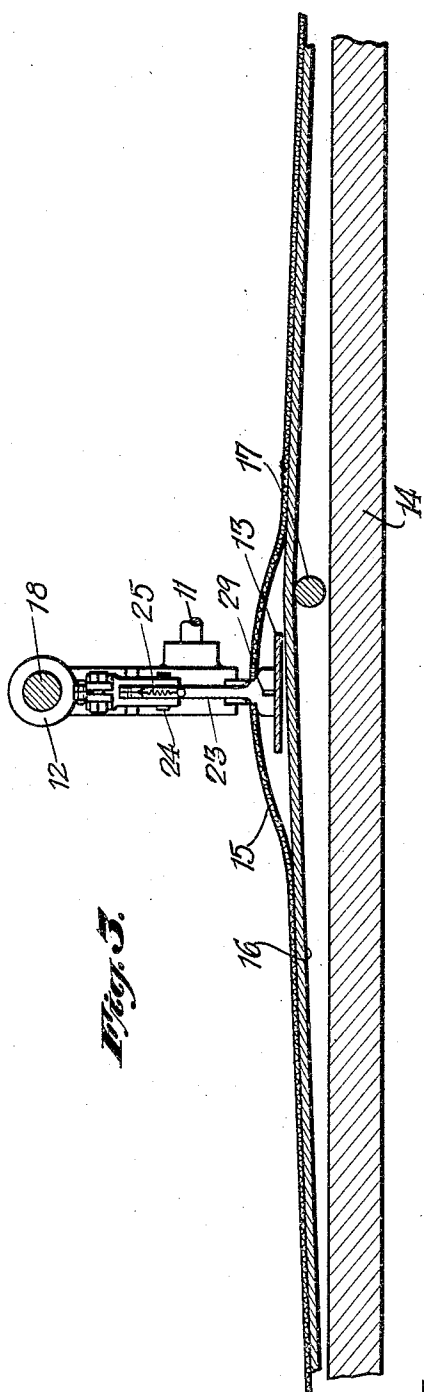


Fig. 3.

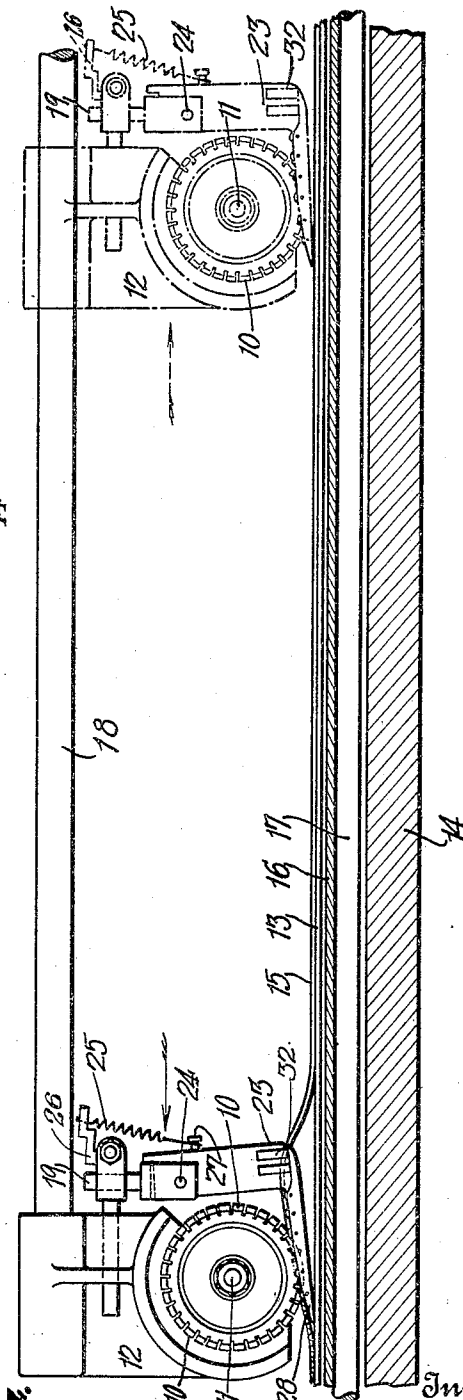


Fig. 4.

Inventor
FREDERICK GORDON REID.
By His Attorneys
Usina & Rauher

UNITED STATES PATENT OFFICE

FREDERICK GORDON REID, OF BUFFALO, NEW YORK, ASSIGNOR TO DUNLOP TIRE & RUBBER CORPORATION, OF BUFFALO, NEW YORK, A CORPORATION OF NEW YORK

CUTTING FORK

Application filed December 31, 1929. Serial No. 417,643.

This invention relates to apparatus for cutting a sheet of cloth or fabric on the bias or transversely of its length, and more particularly to the cutting fork and arrangement of fork and cutting knife for such machine.

In the machines heretofore used for this purpose the cloth or fabric to be cut has been drawn on a supporting belt lengthwise over a supporting table and over a ribbon that remains stationary and extends transversely of the table and of the length of the fabric in a direction in which the fabric is to be cut. The cutting knife passes from one side of the table to the other above the transversely positioned ribbon. The supporting belt and fabric are sloped upwardly towards the edge from which the cutting knife starts, this slope being in the neighborhood of about one quarter of an inch from one edge of the fabric to the other. As the cutting knife approaches the edge from which the cut is started, a fork is inserted under the fabric in a manner such as to bring the surface of the fabric into contact with a rotating circular knife.

The fork and the cutting knife pass transversely of the cutting table at a fixed height starting at the level of the higher edge of the cloth and thus being about one quarter of an inch above the normal level of the lower edge upon completing the cutting action. As the cutting knife and fork pass transversely of the table the fork lifts the fabric above the ribbon to bring it into engagement with the rotating cutting knife.

The above described prior art apparatus has the disadvantage, however, that the cloth is picked up by the fork at a level at least one quarter of an inch higher than that of the far edge of the table and consequently if the fabric, for any reason, is not continuous the fork will not pick up the fabric once it has been dropped at a distance from the "near" or starting edge of the table. In such cases, therefore, a complete cut is not made. Another disadvantage of cutting apparatus heretofore made is that the lifting fork is rigidly supported on a transverse bolt or pin and, in withdrawing the knife and fork across the fabric preparatory to starting a

new cut, it sometimes happens that the fabric wrinkles, catching the fork and rotating it about its supporting pin until the periphery of the rotary cutter is exposed below the fork, thereby creating danger of cutting and spoiling the fabric in this withdrawing step. Moreover, such forks are not suitable for cutting heavy fabric which causes a large amount of friction as the fabric is lifted.

The objects of my present invention are to avoid the disadvantages pointed out above and to provide a cutting mechanism in which the point of the fork will always remain in contact with the fabric supporting ribbon and in which the fork will, therefore, pick up the material being cut at any point in the width of the fabric even though the latter may have been cut through due to removal of samples, or for other reasons, and in which the fabric is not continuous throughout its width.

Another object of the invention is to provide a cutter that may be withdrawn across the fabric after a cutting stroke without wrinkling the fabric.

Still further objects of the invention are to provide cutter forks that operate without difficulty on thick, heavy or sticky fabrics.

With these and other objects in view which will be perceived from the following description, my invention comprises the cutting mechanism and fork described and set forth in the following specification and claims.

The various features of the invention are illustrated in the accompanying drawings, in which—

Fig. 1 is a vertical elevation of a cutting knife and supporting fork embodying a preferred form of the invention.

Fig. 2 is a plan view of the fork.

Fig. 3 is a longitudinal vertical sectional view of a portion of a supporting table at the line at which the transverse cut is made, and

Fig. 4 is a diagrammatic sectional view taken on the line at which the transverse cut is made.

Referring to the accompanying drawings, a cutting wheel 10 is supported on a rotating

shaft 11 carried in a carriage 12 at such a level that the lower edge of the wheel is but a slight distance, for example, about $\frac{3}{16}$ to $\frac{3}{8}$ of an inch, above a fabric supporting ribbon 13 that extends transversely across a cutting table 14. The fabric 15 that is to be severed transversely is drawn in the usual manner lengthwise of the table 14 by means of a belt 16 which passes over a transverse rod 17 at the rear of the ribbon 13. The carriage 12 and the wheel 10 are carried by any suitable motor mechanism transversely across the table 14 on a guide bar 18 that maintains constant the height of the cutting wheel 10 above the ribbon 13 and table 14. The cutting wheel 10 is rapidly rotated by means of a suitable motor such as heretofore used and which is not illustrated in the drawings. Also mounted on the carriage 12 slightly at the rear of the cutter 11 is a downwardly depending supporting rod 19 the lower end of which is bifurcated to provide a pair of flat spaced supporting and guiding plates 20 and 21. Between the plates 20 and 21 of the rod 19 there is mounted a flat vertical part 22 of a cutting fork 23 pivotally mounted on the plates 20 and 21 by means of a transverse pin 24 so that the fork may tilt slightly about the supporting pin 24 to the position indicated in broken and full lines in Fig. 1.

The fork 23 is resiliently tilted to the position shown in full lines by means of a spring 25 tensioned between a bracket 26 on the carriage 12 and a pin 27 at the rear of the fork. When the fork 18 is tilted to the position shown in full lines as in Fig. 1, the front or toe part 28 of the fork is tilted downwardly so that it will slip under the fabric 15 and raise the fabric upwardly against the rotating cutter wheel 10. If the fabric 15 should be cut or discontinuous, the toe 28 will lift the fabric as it reaches a new edge and raise it into position to be cut by the cutter 10, thus making a complete cut across the fabric. When the cutter is withdrawn across the fabric to the rear or starting edge in order to begin a new cut, the fork is lifted to the position shown in dotted lines in Fig. 1, tilting about the pin 24 against the action of the spring 25 and thus slides over the fabric. The tension of the spring 25 may be made sufficiently light to avoid any wrinkling of the fabric as the fork is drawn reversely across the cutting table.

The lower or toe portion may be made of any suitable shape or type. A closed type of toe is shown by way of example in Fig. 2, with a slot 29 into which the cutting wheel 10 projects. The toe portion or upper and vertical surfaces of the fork may be provided with suitable friction reducing means, such as a roller 30 in advance of the cutting wheel 10 and with side rollers 31 at opposite sides of the slot 29 to reduce the friction

when passing under fabrics of a sticky nature or that offer considerable frictional resistance to the forward movement of the fork. Vertical rollers 32 are also provided to reduce the friction of the edges of the fabric passing the vertical part 22.

Through the above invention a cutting mechanism is provided which will, under all conditions, make a complete cut throughout the entire width of the fabric. It also provides a cutting device in which all danger of wrinkling and cutting of the cloth on the return movement is avoided, and which can be adapted to cutting a wide variety of types and grades of cloth.

What I claim is:

1. A cutting device which comprises a rotary cutting blade, a carriage for said blade, a vertical support at the rear of said cutting blade, said support having a bifurcated lower end, a fabric guiding and lifting fork having an upwardly projecting portion projecting between the bifurcated lower end of said support, pivotal means for supporting said fork on said support, and spring tension means to maintain the forward end of said fork downwardly inclined from the horizontal.

2. A fabric lifting and supporting mechanism for cutting machines which comprises a vertical support, a fork having a vertical member pivotally mounted on said support and a lower forwardly projecting member, and spring tension means for tilting said fork on said support to maintain the end of said lower member depressed from the horizontal.

3. A fabric lifting mechanism for cutting devices which comprises a supporting means, a fork having an upwardly projecting member pivotally mounted on said support and a forwardly projecting member, and a spring between said support and the vertical part of said fork to maintain the free end of said lower part of said fork depressed downwardly from the horizontal.

4. A fabric cutting apparatus which comprises a rotary cutting blade, a carriage for said cutting blade, a cutting table, means for guiding said cutting blade transversely of said table and at a fixed height thereabove, a fabric lifting fork carried with said knife and projecting forwardly at the lower edge thereof, spring tension means to maintain the forward end of said fork downwardly from the horizontal and a transverse ribbon on said table below the path of, and at a fixed height to said fork.

5. A device for lifting fabric into contact with a cutting blade which comprises a support, a fork pivoted to said support and having a portion extending forwardly in a substantially horizontal position and having a slot to receive the cutting blade and anti-friction rollers on the upper surface of said portion and on opposite sides of said slot and

a number of rollers on vertical axes on opposite sides of the center line of said slot and to the rear thereof.

6. A device of the type described which
5 comprises a supporting means, a fork pivoted on a horizontal axis on said supporting means and having a vertical portion and a portion extending horizontally forwardly therefrom, spring tension means to tilt said fork on said
10 horizontal axis to incline the forwardly projecting portion thereof downwardly from the horizontal, rollers on the upper surface of said forwardly projecting portion and rollers mounted on vertical axes on the vertical portion
15 of said fork.

7. A cutting device which comprises a rotary cutting blade, a carriage for said blade having a fork support at the rear of said blade, a fork pivoted on a horizontal pivot on
20 said support, and spring tension means to tilt the forward end of said fork downwardly below the lower edge of said cutting disc to pick up fabric during a cutting stroke and to permit the fork to be raised and ride over the
25 fabric during the return stroke.

In witness whereof, I have hereunto signed my name.

FREDERICK GORDON REID.

30

35

40

45

50

55

60

65