

[54] **DEVICE FOR SEVERING YARNS IN YARN  
CLEANERS**

[75] Inventor: **Peter Brassel**, Uster, Switzerland  
[73] Assignee: **Zellweger, Ltd.**, Uster, Switzerland  
[22] Filed: **Nov. 24, 1972**  
[21] Appl. No.: **309,481**

1,823,501 9/1931 Messinger ..... 83/658 X  
3,292,477 12/1966 Raftery ..... 83/658 X

*Primary Examiner*—Andrew R. Juhasz  
*Assistant Examiner*—Leon Gilden  
*Attorney, Agent, or Firm*—Craig & Antonelli

[30] **Foreign Application Priority Data**

Nov. 26, 1971 Switzerland ..... 17221/71

[52] **U.S. Cl.** ..... **83/658, 83/679**  
[51] **Int. Cl.** ..... **B26d 7/20**  
[58] **Field of Search** ..... **83/658, 659, 679**

[56] **References Cited**

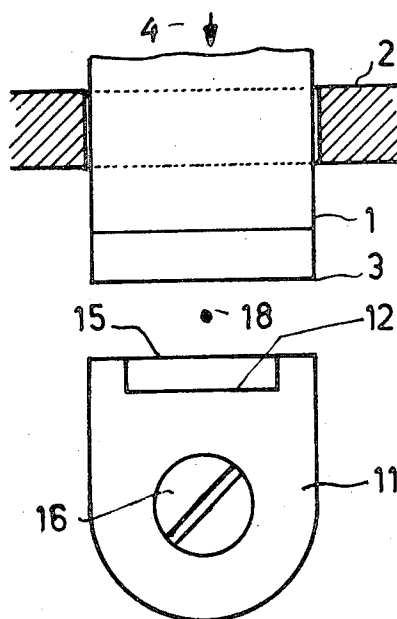
**UNITED STATES PATENTS**

416,602 12/1889 Hamilton ..... 83/658

[57] **ABSTRACT**

A device for severing yarns in yarn cleaners includes a movable knife and an anvil forming a striking support for the knife, the striking surface of the anvil facing the knife edge being harder in the peripheral zones thereof than in the central zone contacted by the knife during the cutting operation so that the knife will retain its sharp edge for a long period of use.

**4 Claims, 4 Drawing Figures**



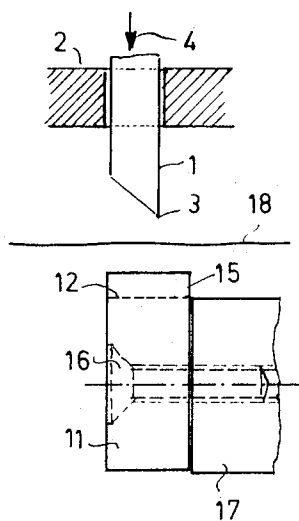


Fig. 1

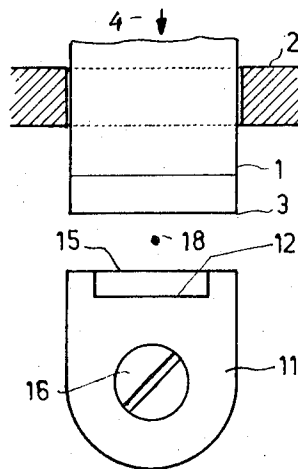


Fig. 2

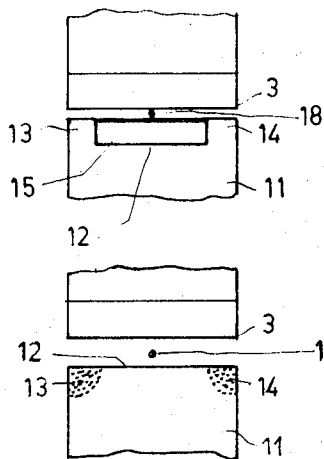


Fig. 3

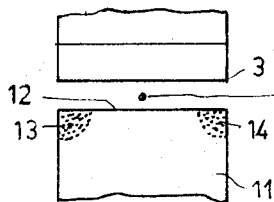


Fig. 4

## DEVICE FOR SEVERING YARNS IN YARN CLEANERS

This invention is related to a device for severing yarns in yarn cleaners, which contains a knife and an anvil as a striking support.

Yarn severing devices for yarn cleaners of known performance are operated electromagnetically, whereby they are designed to be operated either in the form of scissors or in the form of a chisel. The latter performance is preferred because of its more simple construction. For achieving a sufficiently long duration of operation with a continuous cutting capacity, i.e., to reduce the wear of the edge and of the anvil, there has been suggested to support the anvil in a resilient bearing for diminishing the striking power between the knife edge and the anvil. This performance, however, has not resulted in a substantial increase in the duration of use of the device.

A further type of yarn severing device for yarn cleaners uses a knife and a cylindrical, rotatable pivoted anvil. The knife strikes the anvil along one of its generatrices. Due to the rotatable bearing of the anvil, its entire circumference is presented as a striking support and the probability is decreased accordingly that the knife edge always strikes the same generatrix and that a recess and a reduced cutting capacity is produced.

The present invention is directed to a device for severing yarns in yarn cleaners containing a knife and an anvil as a striking support and is characterized in that the striking surface of the anvil facing the knife edge is composed in its transversal direction of materials with different degrees of hardness.

The use of selected materials with different degrees of hardness is especially advantageous if the zone of the anvil, through which the yarn passes and in which the yarn consequently will be severed, consists of a softer material than the knife edge, while the zones of the anvil where no cuts occur are built with a material having a hardness which is comparable with the hardness of the knife edge.

The manufacture of the anvil with zones of different surface hardness can be effected in different ways. One of these consists, for example, in fitting and locking an insertion plate with the required hardness in the anvil. Another possibility consists in manufacturing the anvil completely with softer material and the zones which are not in the region of the passing yarn are hardened by means of methods known per se.

These and other objects, features, and advantages of the present invention will become more apparent from the following detailed description when taken in conjunction with the accompanying drawings, wherein:

FIG. 1 is a schematic diagram of a severing device in side elevation;

FIG. 2 is a front elevation of the device of FIG. 1;

FIG. 3 is a detailed view of a portion of the device of FIG. 2; and

FIG. 4 is a detailed view of a modification of the device shown in FIG. 2.

As seen in FIGS. 1 and 2, the severing device consists of a knife 1, which is journaled and longitudinally displaceable in a guide block 2, provided at the free end thereof in a knife edge 3 which is advantageously hardened. An arrow 4 schematically represents any suitable device for moving the knife 1 suddenly in a downward direction and effecting a subsequent return to its start-

ing position. The yarn to be severed is indicated by reference numeral 18.

An anvil 11 is disposed with its cutting surface opposite to the knife edge 3. As principally indicated, the anvil 11 is locked on a support 17 by means of a screw 16.

According to the invention, the cutting surface of the anvil 11 is divided into zones having different hardnesses, i.e., in two marginal zones each having a great hardness and a central zone having a relatively reduced hardness. The central zone, however, has such a width of cutting surface over which the yarn runs that under all conditions the yarn is in the range between the knife edge 3 with great hardness and the cutting surface with reduced hardness. In the lengthwise direction i.e., vertically with regard to the knife edge 3 no division into zones of different hardness is provided.

According to FIGS. 1 and 2, a recess is machined in the anvil 11, which is replaced by a prismatic body 15 having a reduced hardness with respect to the material which constitutes the knife edge 3. The surface which is opposite to the knife edge 3 is evenly ground.

The cutting device works in such a manner that when a knife edge 3 in good condition strikes the cutting surface along its entire length, the yarn 18 will be severed properly. If the cutting device has been in use for some time, i.e., if it has made a number of cuts (for instance, 1 million), a first area of wear will be apparent at the knife edge 3, especially in its marginal zones, where it strikes the anvil within its zones 13 and 14 exhibiting greater comparable hardness. Accordingly, the section of knife edge 3 which is opposite to the softer central zone and where the yarn passes will not wear out, but impresses in the anvil only a feeble groove. By means of the marginal zones 13 and 14, which have a relatively great hardness, the ability of the knife edge 3 to strike an inadmissible deep groove into the anvil 11 is eliminated.

At the place of the insertion of a softer prismatic body into the recess of the anvil 11 manufactured according to this invention, this anvil also can be produced completely with a material having a hardness which corresponds to the hardness required for the central zone 15. The marginal zones 13 and 14 are exposed to a method for local hardening, restricted to limited surface areas (FIG. 4). Such methods are sufficiently known in metal working techniques. By this procedure, like the example described in connection with FIG. 3, an anvil 11 results which provides marginal zones 13 and 14 having a great hardness and a central zone 12 with a relatively reduced hardness.

I claim:

1. Device for severing yarns in yarn cleaners, comprising a knife, and a striking support in the form of an anvil positioned in line with said knife, the striking surface of the anvil facing the knife edge being composed in the direction of said knife edge of zones formed by materials with different degrees of hardness.

2. Device for severing yarns as defined in claim 1 wherein a central zone of said striking surface of the anvil contains an inserted prism of relatively softer material than the material of which the knife edge and the remaining zones of the anvil are manufactured.

3. Device for severing yarns as defined in claim 2 wherein the marginal zones of the striking surface of the anvil on either side of said central zones consist of

3

material with substantially equal hardness as the knife edge.

4. Device for severing yarns as defined in claim 3 wherein said striking surface is formed of a homogene-

4

ous material, the zones with different hardness in the transverse direction being attained by means of partial hardening of the surfaces forming said marginal zones.

\* \* \* \* \*

5

10

15

20

25

30

35

40

45

50

55

60

65