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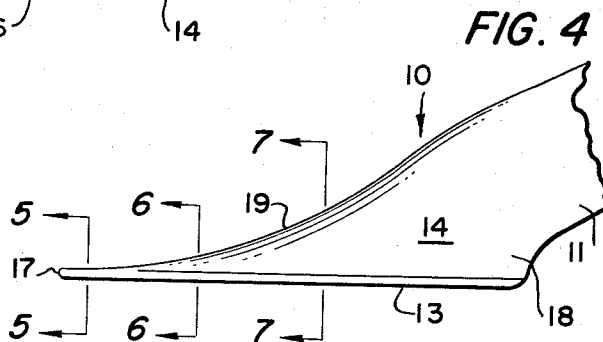
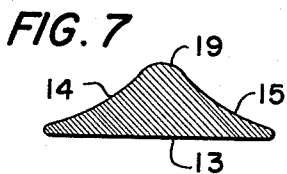
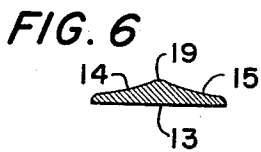
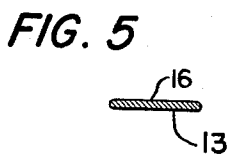
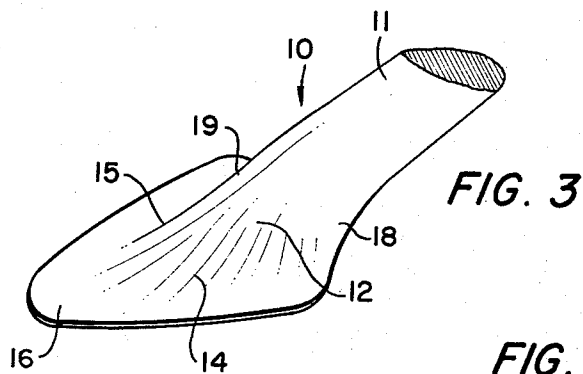
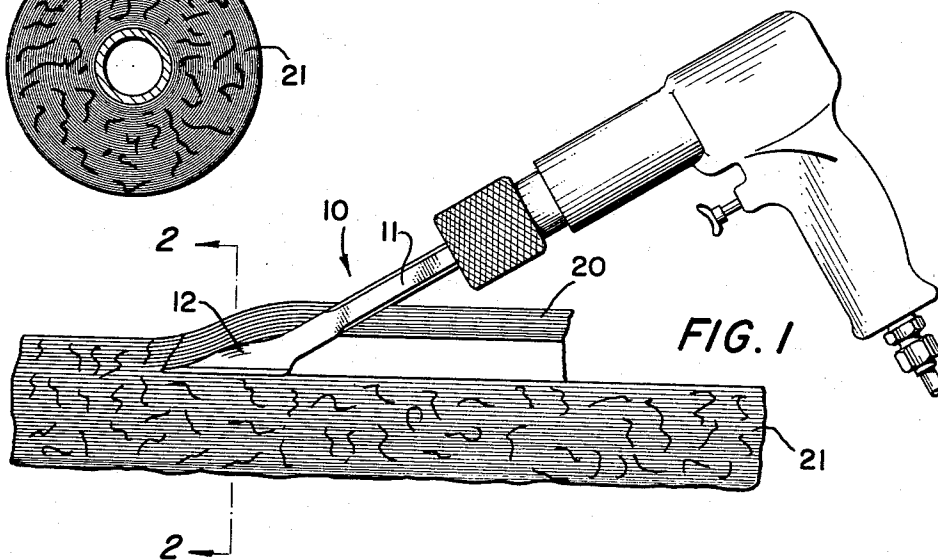
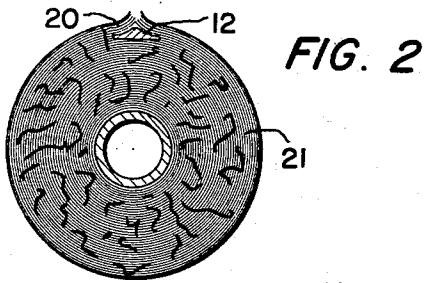
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3,279,060

CHISEL BITS

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2 Sheets-Sheet 1



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CHISEL BITS

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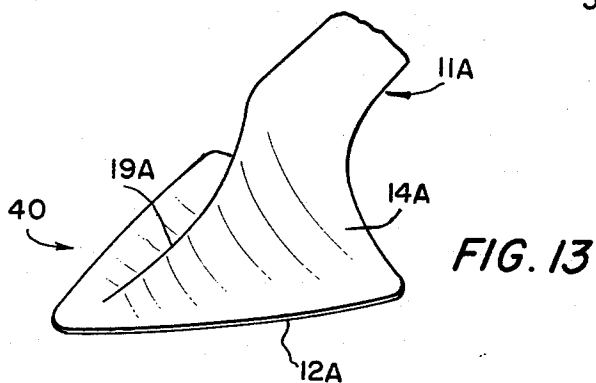
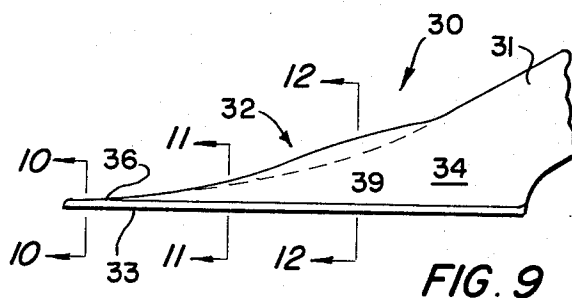
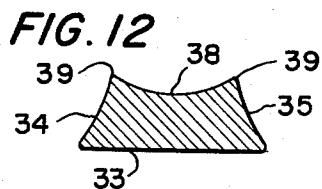
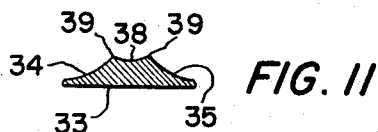
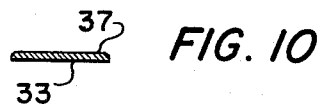
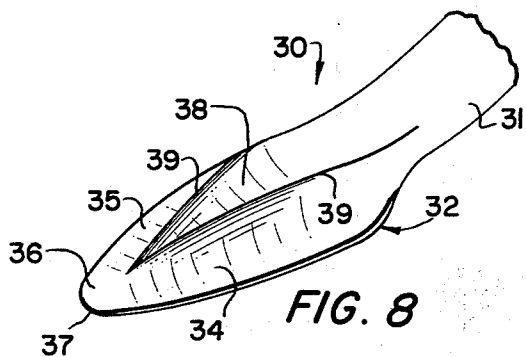
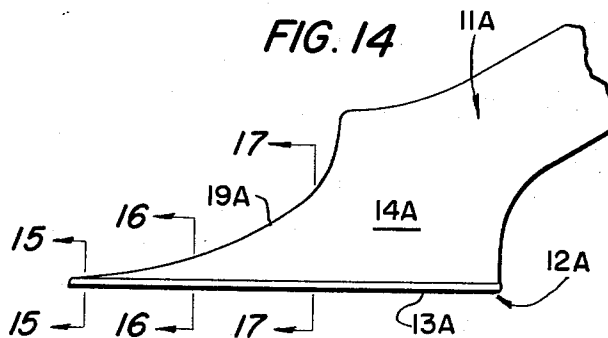
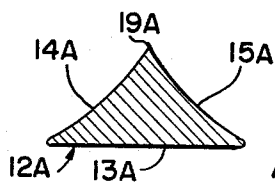
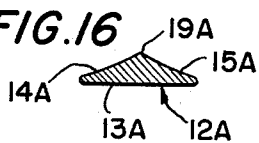


FIG. 15



FIG. 16



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CHISEL BITS

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8 Claims. (Cl. 30—168)

This invention relates to work-engaging implements and more specifically to chisel bits having particular utility in the severing of layers of paper from cull rolls of paper preparatory to repulping of the paper.

An object of this invention is to provide an improved chisel bit for effecting the severance of the layers of a paper roll or the like.

Another object of the present invention is to provide a chisel bit for effecting the severance of paper from cull rolls by creating tensile stresses and combinations of tensile stress, hoop stress, and shear stress in the material.

A further object of the present invention is to provide a chisel bit capable of being forced between the layers of a cull roll parallel to the axis of the roll to sever and force the material away from the main body of the roll.

Accordingly, the present invention contemplates a novel chisel bit comprising a shank portion and a head end portion which has a substantially flat triangular undersurface and tapered upper side surfaces, the dimensions of the tapered upper side surfaces gradually increasing both in a vertical direction and in a horizontal direction from the tip end of said head toward the shank portion. The triangle has its apex at the tip and its base at the heel of the head. The base of the triangle has side edges which extend from its apex to its base. The side surfaces are inclined upwardly and rearwardly from the tip to the juncture of the shank and head and upwardly and inwardly toward the juncture.

In one embodiment of the invention the head of the chisel bit functions to sever the material by applying tensile stress to the material, and it is particularly suitable for use in breaking up cull rolls of relatively weak, low-stretch type paper.

In another embodiment the chisel bit head has two opposed ribs or edges formed by the tapered upper side walls and a slightly concave top surface, the chisel bit having particular utility for breaking up cull rolls of relatively strong, high-stretch, heavy grades of paper.

A further embodiment provides a chisel bit having a head which is provided with a cutting edge formed between the apex of the two tapered upper side walls so that severance of the paper material is achieved by a combination of tensile and shear stresses. This chisel bit is particularly suitable for breaking up exceptionally high-stretch paper, such as crepe paper and extensible paper.

The invention will be more fully understood from the following detailed description thereof when considered in connection with the accompanying drawings wherein several embodiments of the invention are illustrated by way of example and in which:

FIG. 1 is a fragmentary view, partly in section, showing a manner in which the chisel bit according to this invention is employed to break up cull paper rolls;

FIG. 2 is a view, in cross section, taken along line 2—2 of FIG. 1 on a greatly reduced scale;

FIG. 3 is a perspective of a chisel bit according to one embodiment of this invention;

FIG. 4 is a side elevational view of the chisel bit shown in FIG. 3;

FIGS. 5, 6, and 7 are various sectional views taken along lines 5—5, 6—6, and 7—7 of FIG. 4;

FIG. 8 is a fragmentary perspective view of a chisel bit according to another embodiment of this invention;

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FIG. 9 is a side view, in elevation, of the chisel bit shown in FIG. 8;

FIGS. 10, 11, and 12 are cross-sectional views taken along lines 10—10, 11—11, and 12—12 of FIG. 9;

FIG. 13 is a perspective view of a chisel bit according to a third embodiment of this invention;

FIG. 14 is a side elevational view of the chisel bit shown in FIG. 13; and

FIGS. 15, 16, and 17 are cross-sectional views taken along lines 15—15, 16—16, and 17—17 of FIG. 14.

Now referring to the drawings and more particularly to FIGS. 3 and 4, a chisel bit 10 according to one embodiment of this invention is illustrated.

As best shown in FIGS. 3 and 4, chisel bit 10 comprises a shank portion 11 and an integral, enlarged foot or head portion 12. The head portion 12 has a major axis which extends at an angle to the longitudinal axis of shank portion 11. In other words, head portion 12 is disposed in canted relationship with shank portion 11.

The head portion 12 is formed so as to comprise a substantially flat or planar surface 13 (see FIGS. 4 to 7) of a somewhat triangular configuration (see FIG. 3). The head portion 12 has tapered side surfaces 14 and 15 and a merging upper, substantially flat surface 16 adjacent the toe or tip end 17 of head portion 12. The tapered side surfaces 14 and 15, as best shown in FIGS. 3, 6, and 7, gradually increase in dimension in a vertical direction and diverge from each other from the tip end 17 to the heel end 18 of the head portion. This construction provides a wedging action in a horizontal direction as well as in a vertical direction from the flat surface 16 along the inclined apex line 19 formed by the merging side surfaces 14 and 15.

Chisel bit 10 is utilized, as shown in FIGS. 1 and 2, to sever a layer 20 of a cull roll 21 by exerting a tensile stress in the material sufficient to cause the material to fracture and split as shown in FIG. 2. Chisel bit 10 is particularly effective when employed to sever paper of relatively weak and low-stretch characteristics.

The chisel bit 30, according to another embodiment of the present invention and shown in FIGS. 8 to 12, comprises a shank portion 31 and an integral, enlarged foot or head portion 32 which has a longitudinal axis canted with respect to the longitudinal axis of shank portion 31.

The head portion 32 is provided with a substantially flat planar surface 33 (see FIGS. 9 to 12) of a somewhat triangular configuration. Contiguous with the flat surface 33 are two inclined side wall surfaces 34 and 35. Side wall surfaces 34 and 35 extend gradually in a vertical direction from merge with a relatively flat surface 36 of the toe or tip end portion 37 toward shank portion 31 of the chisel bit. In addition, side wall surfaces 34 and 35 diverge from each other at their point of convergence adjacent flat surface 36. As best shown in FIGS. 8, 11, and 12, side wall surfaces 34 and 35 are joined at their upper edges by a somewhat triangular-shaped, concave-recessed surface 38 so as to form diverging, upwardly inclined ribs 39 which function to grip and pull apart the material as the chisel bit is forced between the layer 20 and the remaining paper of cull roll 21 (FIGS. 1 and 2).

Chisel bit 30 has its greatest effectiveness for breaking up cull rolls of paper which has relatively high-stretch and heavy characteristics.

In FIGS. 13 to 17 is shown a still further embodiment of the chisel bit according to this invention. The embodiment shown in FIGS. 13 to 17 is similar to chisel bit 10 shown in FIGS. 3 to 7 except that the apex line formed at the juncture of the inclined wall surfaces is provided with a knife edge. In view of the foregoing, the parts of the embodiment shown in FIGS. 13 to 17 corresponding to like parts of chisel bit 10 will be designated by the same reference numeral with the suffix A added thereto.

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As shown in FIGS. 13 to 17, chisel bit 40 comprises a shank portion 11A and an integral, enlarged foot or head portion 12A. The apex line 19A formed by the juncture of said wall surfaces 14A and 15A is provided with a cutting or knife edge. The vertical dimensions of side wall surfaces 14A and 15A more rapidly increase than those in chisel bit 10 so that knife edge or apex line 19A has a greater inclination with respect to flat surface 13A. In fact, knife edge 19A becomes substantially vertical adjacent shank portion 11A.

Chisel bit 40 is particularly useful in breaking up paper material of extra high-stretch characteristic, such as crepe paper and extensible paper, since knife edge 19A will cut the material if the initial wedging action of head portion 12A fails to rupture the material.

It is believed readily apparent from the foregoing description that a novel chisel bit for effectively severing paper material by a combination of vertical and lateral wedging actions on the material has been provided.

Although several embodiments of the invention have been illustrated and described in detail, it is to be expressly understood that the invention is not limited thereto. Various changes can be made in the form or arrangement of parts without departing from the spirit and scope of the invention as the same will now be understood by those skilled in the art.

I claim:

1. A chisel bit comprising:

a shank;

a head disposed at one end of said shank;

said head having a tip portion at one end and a heel portion at the juncture of said shank and the head;

said head including a substantially flat base of generally triangular shape having its apex at the tip, its base at the heel and side edges extending from the apex

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to the triangular base, and a pair of upper side surfaces;

said pair of upper side surfaces being gradually inclined upwardly and rearwardly from said tip toward said juncture and upwardly and inwardly from said side edges toward said juncture to form two wedging surfaces for forcing severed material upwardly and outwardly from said bit.

2. The chisel bit of claim 1 wherein said head is canted with respect to the longitudinal axis of said shank.

3. The chisel bit of claim 2 wherein the side surfaces of said head slope towards each other.

4. The chisel bit of claim 1 wherein said side surfaces are inclined towards each other to form an inclined knife edge which becomes substantially vertical adjacent said shank.

5. The chisel bit of claim 2 wherein said side surfaces slope towards each other to form two spaced diverging edge portions.

6. The chisel bit of claim 5 wherein said spaced edge portions are connected by a concave top wall portion.

7. The chisel bit of claim 2 wherein said side surfaces slope towards each other to form a rounded apex line.

8. The chisel bit of claim 2 wherein said tip portion has a substantially flat upper surface.

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