

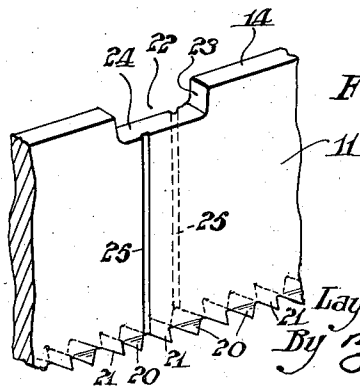
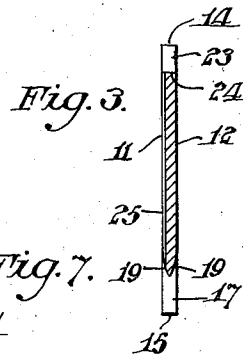
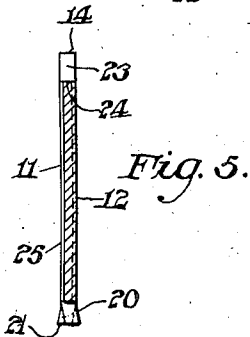
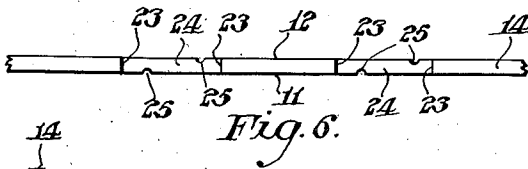
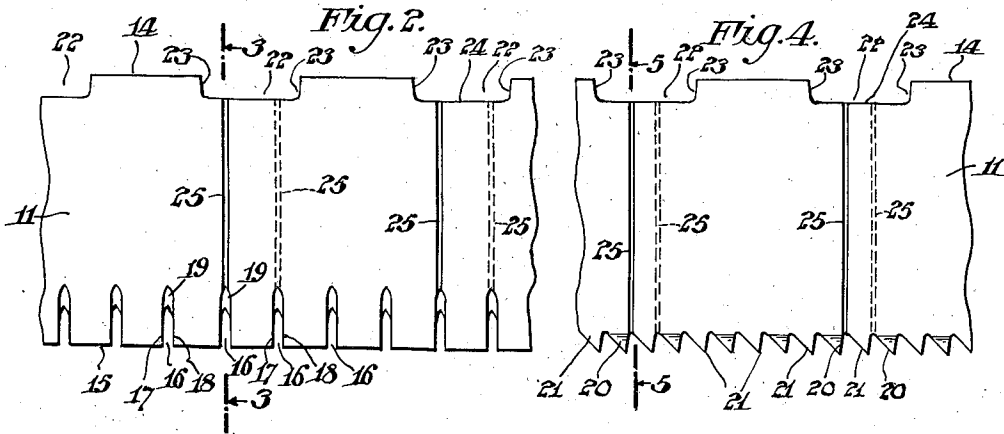
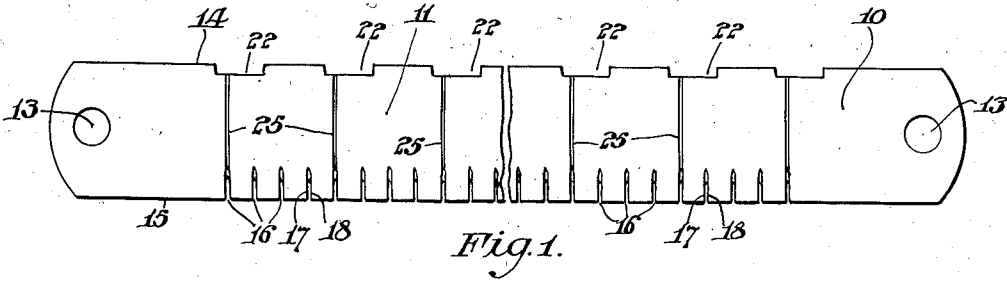
March 28, 1939.

L. R. FETTEROLF

2,152,183

POWER HACKSAW BLADE

Filed June 18, 1937



Inventor:
Layton R. Fetterolf,
By *3. T. Wobensmith* 2nd
Attorney.

UNITED STATES PATENT OFFICE

2,152,183

POWER HACKSAW BLADE

Layton R. Fetterolf, Langhorne, Pa.

Application June 18, 1937, Serial No. 148,831

11 Claims. (Cl. 29—106)

This invention relates to power hacksaw blades and more particularly to an improved form of blade intended for rigorous conditions of operation.

With the hacksaw blades at present in use on power driven machines, the blades very frequently overheat and the blades are also very frequently damaged by the chips of metal removed by the saw teeth of the blade. Difficulties have heretofore been encountered in providing adequate lubrication for the blade and the metal being sawed and for maintaining the blade below the temperature at which overheating occurs.

It is an object of the present invention to provide a power operated hacksaw blade which will overcome the difficulties heretofore encountered.

It is also an object of the present invention to provide an improved construction of saw blade for power operated hacksaws so that the sides of the blade and the cutting edge will be capable of adequate lubrication.

It is a further object of the present invention to provide a hacksaw blade for power operated machines which will be readily adaptable to power sawing machines now in use.

It is a further object of the present invention to provide a hacksaw blade for power operated machines which will be simple in construction and which will have a prolonged useful life.

It is a further object of the present invention to provide a hacksaw blade for power operated machines which is particularly adapted for the cutting of metal tubing.

Other objects of the invention will appear from the annexed specification and claims.

The nature and characteristic features of the invention will be more readily understood from the following description, taken in connection with the accompanying drawing forming part hereof, in which:

Figure 1 is a side elevational view of one form of hacksaw blade embodying the main features of the present invention;

Fig. 2 is a fragmentary side elevational view of a portion of the blade illustrated in Fig. 1, on an enlarged scale, and showing certain of the details of construction;

Fig. 3 is a vertical sectional view taken approximately on the line 3—3 of Fig. 2;

Fig. 4 is a fragmentary side elevational view of a portion of a blade on an enlarged scale and showing a different form of cutting teeth;

Fig. 5 is a vertical sectional view taken approximately on the line 5—5 of Fig. 4;

Fig. 6 is a fragmentary top plan view of the blades illustrated in Figs. 2 and 4; and

Fig. 7 is a fragmentary view in perspective of the saw blade illustrated in Fig. 4 on an enlarged scale and showing certain of the details of the saw blade.

It will, of course be understood that the description and drawing herein contained are illustrative merely, and that various modifications and changes may be made in the structure disclosed without departing from the spirit of the invention.

Referring more particularly to the drawing, the blade of the present invention is shown generally at 10, has flat parallel side faces 11, 12 and may be provided at the ends thereof with suitable apertures 13 of the customary type for securing the blade in the frame (not shown) of the power operated sawing mechanism. The blade 10 also has edge portions 14 and 15 which are disposed generally parallel and which will be hereinafter more fully referred to.

In the blade 10 as shown in Figs. 1, 2 and 3 there is illustrated a type of teeth or cutting edge portion at 15 which is particularly suitable for cutting metal tubing and the like, the teeth being formed by cutting slots 16 with parallel sides 17, 18, the upper ends or root portions of the slots 16 being tapered outwardly to the side faces 11 and 12 of the blade 10 on each side, as at 19. The slots 16 are preferably of a width between the parallel sides 17 and 18 which is less than the thickness of the metal tubing to be cut and the portions of the edge 15 between the slots 16 are preferably of greater longitudinal extent than the width of the respective slots 16. There are thus provided a plurality of cutting edges along the lower edge of the blade 10, at the intersection of the sides 17 and 18 with the edge portion 15, and along the side faces at the intersection of the sides 17 and 18 with the side faces 11 and 12 of the blade 10 for effecting a friction cutting of the metal wall of the tubing or similar material, and operable in either direction.

In the form of saw blade as illustrated in Figs. 4, 5 and 7, the blade 10 is provided at the lower edge thereof with a plurality of teeth in the customary manner, with half of the teeth set in one direction, as at 20, beyond the side face 11 and the other half set in the other direction, as at 21, beyond the other side face 12. The particular shape of the teeth at 20 and 21 may take any preferred form and may be of any suitable size and number per inch in accordance with

the metal to be cut and the available speeds of the power operated sawing mechanism.

The blade 10 has the upper edge portion 14 with portions cut away as at 22 for purposes hereinafter more fully referred to. The cutaway portions 22 are preferably bounded at the front and the rear thereof by end wall portions 23, and bottom wall portions 24 connected to the end wall portions 23. The respective edges between the wall portions 23 and 24, the top edge 14 and the side faces 11 and 12 of the body of the saw 10 are preferably rectangular. The cutaway portions 22 are not intended to be restricted to the precise form or shape shown since other configurations will be satisfactory. It will also be understood that the cutaway portions 22 may be spaced along the face and upper portions as desired.

Spaced grooves 25 are provided preferably on each of the flat side faces of the blade 10 and these grooves 25 preferably extend from the bottom wall 24 of the cutaway portions 22 at the upper edge 14 downwardly across the side faces of the blade 10.

In the embodiment of the invention as illustrated in Figs. 1, 2 and 3, the grooves 25 preferably terminate at the root portions of the teeth and in the embodiment of the invention illustrated in Figs. 4, 5 and 7, the grooves 25 are connected to the roots of the teeth 20 and 21 and also extend to the base of a tooth which is set in a direction away from the grooves 25. The grooves 25 are preferably disposed on the flat faces 11 and 12 of the saw 10 so that a pair of grooves 25 extends downwardly from each cutaway portion 22 and so that the groove 25 of the pair which is located on one face of the blade 10 extends to the teeth from one end of the cutaway portion 22 and the groove 25 on the other face extends to the teeth from the opposite end of each cutaway portion 22.

It is common practice in the manufacture of hacksaw blades to provide the teeth of a harder material than the main body portion of the blade, this being effected either by welding teeth of harder material to the body portion of the blade or by heat treating the teeth and leaving the remaining body portion of the blade softer and unhardened.

It is preferable in constructing a saw blade in accordance with the present invention, that the entire blade, with the exception of the end portions, be hardened by suitable heat treatment. The edges of the cutaway portions 22 can then be used for smoothing the cut or, if turned upside down, for friction cutting of hollow material of greater thickness than the distances between the walls 23 of each cutaway portion 22.

The mode of operation of the saw blade of the present invention will now be pointed out.

In the power operated hacksaw machines customarily employed at the present time, and with which the saw blade of the present invention is intended to be used, the frame (not shown) in which the blade 10 is mounted is reciprocated with respect to the work (not shown) which is held in any desired manner.

In connection with the cutting stroke of the blade, provision is made for feeding the blade downwardly in accordance with the setting of the mechanism for the particular metal or work to be sawed. Upon the conclusion of the cutting stroke, the blade is automatically lifted to clear the bottom of the saw cut and the frame and

the blade carried thereby are moved quickly on the return stroke.

During the cutting, it is customary to supply from above the blade and into the saw cut, a suitable cutting or lubricating fluid for the purpose of facilitating the cutting of the metal by the saw and for carrying off a portion of the heat generated, during the sawing, in the saw blade and in the work.

With the blades heretofore available, it has not been possible to insure that the side faces of the blade will be contacted by the fluid and consequently, even though fluid is supplied, the blades still overheat.

In the saw blade construction of the present invention, the cutaway portions 22 provide pockets in which quantities of lubricant are collected and are held for delivery down the grooves 25 to the cutting edge portions 15 so that the teeth and the side face portions 11 and 12 are continuously provided, during the cutting, with an adequate quantity of fluid which lubricates the side face portions 11 and 12 of the saw blade 10 and carries off a portion of the heat released in the sawing. Upon the withdrawal of the saw teeth from the bottom of the saw cut, the grooves 25 and the lubrication afforded thereby facilitate the upward movement of the chips cut from the metal by the saw teeth. The upper edge portion 14 and the cutaway portions 22 thereof assist in the removal from the path of the blade 10 of the chips cut by the teeth. At the same time, the sharp or rectangular edges between the walls of the cutaway portions have a smoothing action and remove any chips which tend to adhere to the sides of the cut in the work.

I claim:

1. A hacksaw blade having a cutting edge portion, portions along the opposite edge portion for collecting and retaining a quantity of fluid, and means on the side faces of the blade for delivering fluid from the collecting and retaining portions to said cutting edge portion.

2. A hacksaw blade having teeth on one edge thereof, and having cutaway portions on the opposite edge thereof, and grooves on the side faces of the blade extending from said cutaway portions to said teeth.

3. A hacksaw blade having edge portions, one of said edge portions being provided with teeth set in opposed directions and the other of said edge portions being provided with surfaces spaced to provide fluid collecting spaces between certain of said surfaces, and fluid delivery grooves extending between said spaces and said teeth.

4. A hacksaw blade having side face portions and edge portions, one of said edge portions being provided with teeth set in opposed directions, the other of said edge portions being provided with surfaces angularly disposed with respect to and spaced along said edge portion, and said side face portions being provided with a plurality of spaced grooves extending between said edge portions.

5. A hacksaw blade having edge portions and flat side faces, one of said edge portions being provided with teeth extending alternately beyond said faces, the other of said edge portions having cutaway portions therealong, grooves on each of said faces extending from said cutaway portions to the roots of certain of said teeth.

6. A hacksaw blade having edge portions and flat side faces, one of said edge portions being provided with teeth extending outward alternately in opposed directions beyond said faces,

the other of said edge portions having cutaway portions therealong, one of said side faces having a plurality of spaced grooves extending from said cutaway portions to root portions of teeth disposed in the opposite direction from said side face in which the grooves are provided.

7. A hacksaw blade having edge portions and flat side faces, one of said edge portions being provided with teeth extending outward alternately in opposed directions beyond said faces, the other of said edge portions having cutaway portions therealong, one of said side faces having a plurality of spaced grooves extending from said cutaway portions to roots of teeth disposed in the opposite direction from said side face in which said grooves are provided, said other side face also having a plurality of spaced grooves extending from said cutaway portions to the roots of teeth disposed away from said other side face.

8. A hacksaw blade having flat side faces and edge portions, one of said edge portions being provided with spaced slots extending from one side face to the other side face and said slots being bounded on two sides thereof by generally parallel walls, said walls being perpendicularly disposed with respect to said side faces and said edge portion.

9. A hacksaw blade having flat side faces and edge portions, one of said edge portions being provided with spaced slots bounded on two sides thereof by generally parallel walls, said walls being perpendicularly disposed with respect to said side faces and said edge portion and the root portion of said slots tapering outwardly to said side faces.

10. A hacksaw blade having flat side faces and edge portions, one of said edge portions being provided with spaced slots bounded on two sides thereof by generally parallel walls, said blade having cutaway portions in the other edge thereof and grooves on said side faces extending from said cutaway portions to said first mentioned edge portion.

11. A hacksaw blade having flat side faces and edge portions, one of said edge portions being provided with spaced slot bounded on two sides thereof by generally parallel walls and having root portions, said blade having cutaway portions in the other edge portion thereof and grooves on said side faces extending from said cutaway portions to said root portions.

LAYTON R. FETTEROLF.