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HACK SAW

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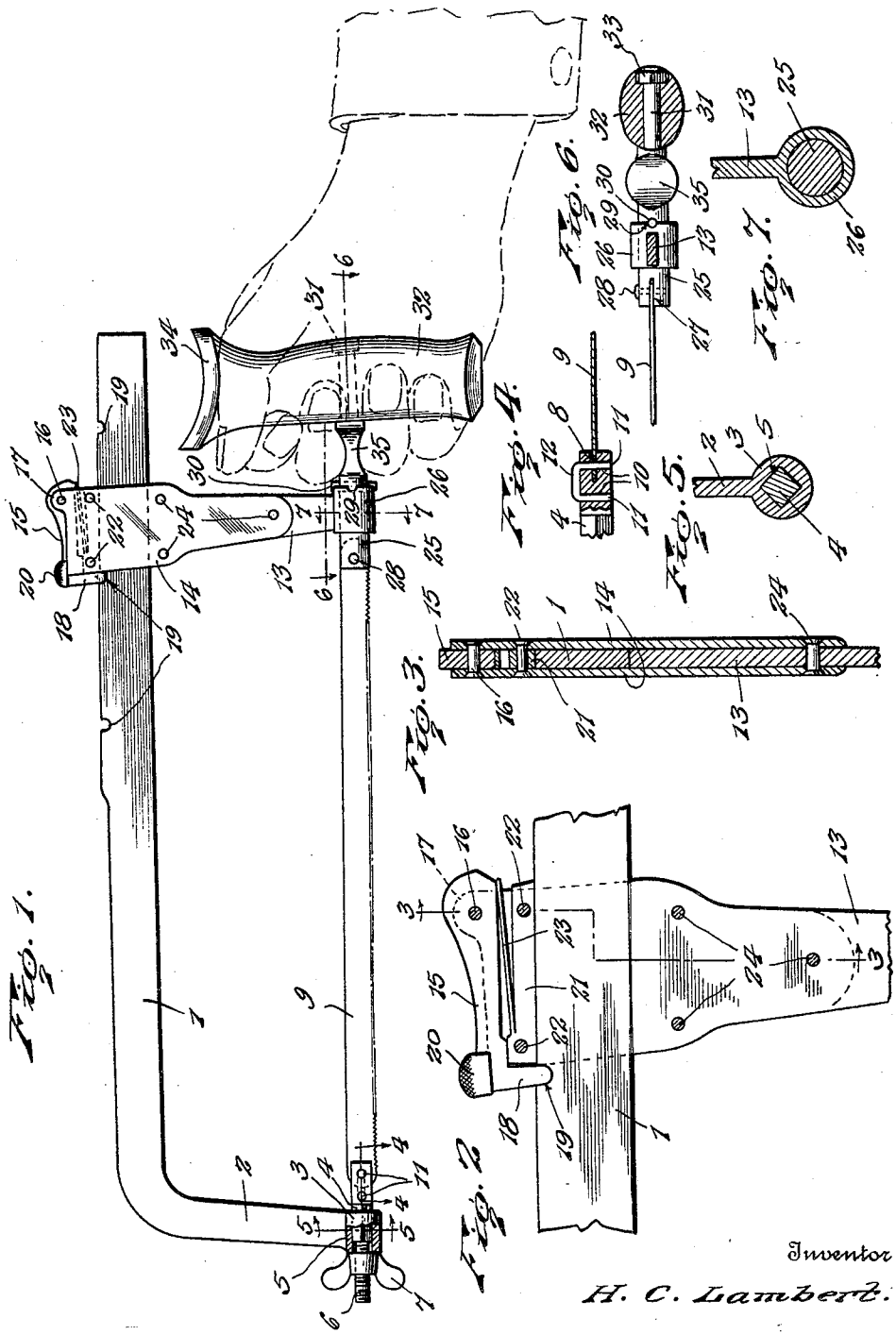


Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

Fig. 7.

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HACK SAW

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This invention relates to a hack saw and one object of the invention is to provide a hack saw having an improved frame construction whereby blades of different lengths may be accommodated and to also provide the saw with an improved type of hand grip which may be firmly grasped in one hand and thereby allow the saw to be easily held when in use.

Another object of the invention is to provide the frame of the saw with an improved arm serving as a mounting for a blade engaging element, the arm being so constructed that it may be slid longitudinally upon the main bar of the frame according to the length of blade to be accommodated and very firmly held in a set position.

Another object of the invention is to provide the arm with an improved type of latch which may be easily moved out of latching engagement with the main bar of the saw frame and allow the arm to be easily slid along the bar, but at the same time so construct the latch that when the arm has been moved to a desired position it will be very firmly secured and prevented from slipping out of a set position.

Another object of the invention is to so form the rear portion of the blade engaging element carried by the adjustable arm that when a hand grip carried thereby is grasped, the portion of the blade engaging element between the hand grip and arm may be disposed between a person's fingers and easily held.

The invention is illustrated in the acompanying drawing wherein:

Figure 1 is a side elevation of the improved hack saw,

Figure 2 is an enlarged view illustrating the manner in which the latch carried by the adjustable arm is constructed and the manner in which it secures the adjustable arm in a set position upon the main bar of the frame.

Figure 3 is a sectional view taken along the line 3—3 of Figure 2,

Figure 4 is a fragmentary sectional view taken along the line 4—4 of Figure 1 and illustrating the manner in which the forward end of a blade is releasably secured to the front blade engaging element.

Figure 5 is a sectional view taken through the front blade engaging element and its mounting along the line 5—5 of Figure 1.

Figure 6 is a sectional view taken longitudinally of the saw along the line 6—6 of Figure 1, and

Figure 7 is a sectional view taken transversely through the rear blade engaging element along the line 7—7 of Figure 1.

The frame of this improved hack saw has a main bar 1 which extends longitudinally of the saw and at its forward end is provided with an arm 2 formed integral with the bar. At its free end the arm 2 carries a sleeve 3 extending longitudinally of the saw and slidably receiving a blade holder 4. The bore 5 of the sleeve 3 is rectangular in cross section as shown in Figure 5 so that when the blade holder which conforms to the contour of the bore 5 is inserted therein, said bore will prevent the blade holder from turning in the sleeve. The outer end portion of the blade holder is reduced and threaded to form a threaded stem 6 upon which is engaged a winged nut 7 and the inner end portion of the blade holder is slotted longitudinally as shown at 8 to receive one end of a blade 9. This inner end portion of the blade holder is also formed with transversely extended openings 10 to receive the arms 11 of a U-shaped fastener 12. By this arrangement the forward end of a blade may be securely held in engagement with the inner end portion of the blade holder 4, but if a blade in use should break, the clip or fastener 12 may be easily withdrawn in order to release the broken blade and permit a new one to be applied.

The rear arm 13 of the frame is formed separate therefrom and is provided with plates or forks 14 which bear against opposite side faces of the bar 1 and project beyond the outer edge face thereof. A latch 15 formed of strong metal extends between the projecting end portions of the forks longitudinally of the bar and has its rear end pivotally mounted by a pin 16 which extends through the rear end portion of the latch and has its ends engaged through openings in

ears 17 formed upon the forks. At its forward end the latch is extended towards the bar to form a bill 18 adapted to engage in a selected one of the notches 19 formed in the outer edge face of the bar and a head having roughened side faces is provided at the forward end of the latch in order that the latch may be easily grasped and swung away from the bar to release the rear arm and permit the same to be slid longitudinally upon the bar.

A spacer 21 formed of spring steel or other resilient metal extends between the latch and the outer edge face of the bar and this spacer is firmly secured by rivets 22. Therefore the spacer will be retained in its proper position and while the rear arm may be slid longitudinally upon the bar it will be prevented from having rocking movement thereon.

By referring to Figure 2 it will be seen that the spacer is slit longitudinally from its rear end thereby forming a spring 23 which bears against the rear end or heel of the latch and yieldably retains the latch in the operative position. After the forward end of the latch has been moved outwardly to move the bill out of one of the notches 19 it may be released and the spring will press against the heel of the latch and hold the bill in close contacting engagement with the outer edge face of the bar 1. Therefore when the rear arm is slid longitudinally upon the bar, the bill will enter the next notch or recess 19 and the rear arm will be secured in an adjusted position. By holding the latch in its extended or inoperative position while moving the rear arm longitudinally upon the bar, this rear arm may be slid along the bar as far as desired without interference by the latch. While only three notches have been shown in the outer edge face of the bar and spaced quite a distance from each other, it will be understood that as many of these notches may be provided as desired. By this arrangement, the saw may accommodate blades of various lengths.

While the forks have been shown formed by plates secured against the rear arm by rivets 24 it will be understood that they may be formed integral with the rear arm if so desired. In order to support the rear end of the blade 9 there has been provided a blade carrier 25 which is circular in cross section for a portion of its length as shown in Figure 7 and is received in a similarly shaped sleeve 26 formed at the free end of the arm 13. The inner end of this blade carrier is slit as shown at 27 to receive the rear end of the blade and adjacent its inner end the blade carrier is formed with a transversely extending opening to receive a pin 28 which passes through the blade. Sets of opposed notches 29 are formed at the rear end of the sleeve 26 to receive ends of a cross pin 30 carried by the blade carrier. By this arrangement the blade carrier 25 may be turned to an adjusting position in the sleeve 26 and the ends of the pin 30 engaged in a set of notches 29 to prevent the blade carrier from accidentally turning in the sleeve. It will thus be seen that by properly adjusting the blade carriers 4 and 25, the blade may be disposed either as shown in Figure 1 or turned to an adjusted position which will be more convenient when using the saw.

By referring to Figures 1 and 6, it will be seen that the blade carrier 25 is of such length that it projects rearwardly from the sleeve 26 quite a distance and has its rear end portion reduced to form a shank 31 upon which is fitted a hand hold or grip 32. The hand grip fits firmly upon the shank and when the nut 33 is applied and tightened, it will be prevented from turning about the shank and moving out of its proper position. This hand grip is so shaped that it may be easily grasped in a person's hand and has its upper end portion enlarged as shown at 34 in order to prevent it from slipping through a person's hand. It should also be noted that the portion of the blade holder between the hand grip and the pin 30 is flattened as shown at 35, and has arcuate upper and lower surfaces which curve towards each other longitudinally of the blade holder. Therefore this portion of the blade holder may be engaged between a person's fingers when gripping the hand hold and the saw may be very easily held while it is in use.

When this saw is in use, the hand hold or grip 32 is grasped in one hand and by grasping the frame at the intersection of the bar and forward arm 2 with the other hand, the saw may be reciprocated and sufficient pressure applied to cause the teeth of the blade to cut through metal, but care should be exercised not to exert too much pressure as this might cause the blade to snap. In case a blade should snap it is merely necessary to loosen the nut 7 thereby releasing tension upon the blade and the fasteners 12 and 28 may then be easily withdrawn and a new blade set in place. After the ends of the blade have been fitted into the inner end portions of the blade holders the fasteners are replaced and the nut again tightened. In case a new blade is longer or shorter than the blade previously used and will not fit properly into place, the rear arm may be adjusted by grasping the latch by its head 20 and swinging it outwardly a sufficient distance to move the bill out of the notch or recess 19 in which it is located and then sliding the rear arm longitudinally upon the bar to such a position that ends of the new blade may be engaged with the blade holders. After the rear arm has been moved to its proper position, the latch will engage in another of the notches 19 where it will be held by the spring

23 and the rear arm will be firmly held in its adjusted position.

What is claimed is:

1. A saw comprising a frame having a main bar and front and rear arms, blade engaging elements carried by said arms, the rear arm having forks extending across opposite side faces of the main bar and projecting beyond the outer edge face thereof, the outer edge face of the bar being provided with seats, a latch between the extended portions of said forks extending longitudinally of said bar and pivotally mounted adjacent its rear end, the front end of said latch having a bill to engage in a selected seat and retain the rear arm in a set position, and a strip disposed between the extended portions of said forks longitudinally of said bar and firmly secured to the forks in engagement with the outer edge face of said bar, said strip being split from its rear end to form a spring engaging the rear end of said latch and yieldably holding the latch in an operative position.

2. A saw comprising a frame having a main bar and front and rear arms, blade engaging elements carried by said arms, the rear arm having forks extending across opposite side faces of the main bar and projecting beyond the outer edge face thereof, the outer edge face of the bar being provided with seats, a latch pivotally mounted between the extended portions of said forks and adapted to engage in a selected seat and retain the rear arm in a set position, a spacing member disposed between the extended portions of the forks and bearing against the outer edge face of the main bar, and a spring interposed between the spacing member and latch for yieldably holding the latch in an operative position.

In testimony whereof I affix my signature.

HENRY C. LAMBERT. [L. S.]