

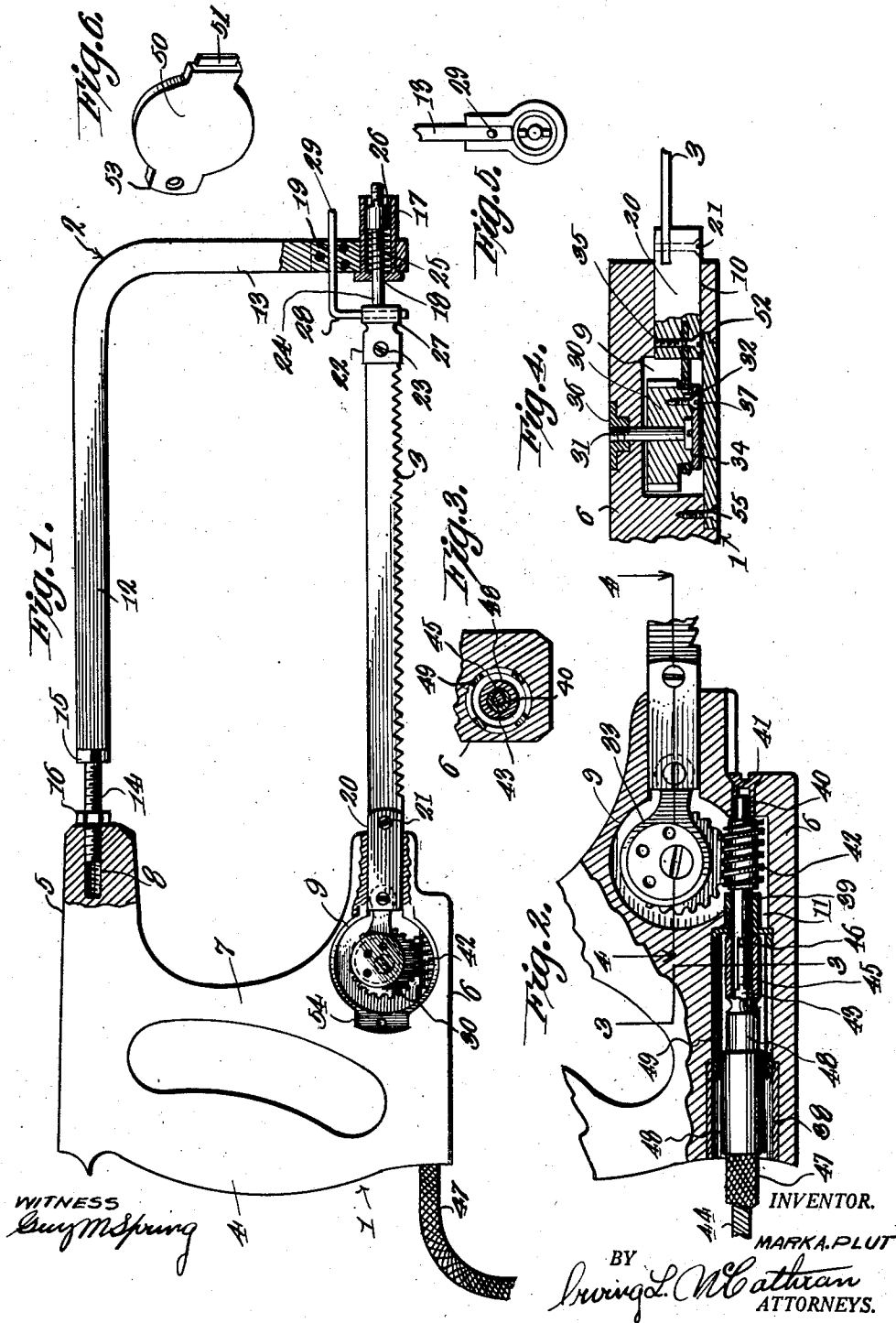
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HACK SAW WITH MOTOR RECIPROCATED BLADE

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UNITED STATES PATENT OFFICE

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HACK SAW WITH MOTOR-RECIPROCATED BLADE

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This invention relates to hack saws, and has for one of its objects to provide a saw of this character which shall be adapted to be used with the expenditure of comparatively little energy and which, while capable of general use, shall be especially adapted for use as a meat saw in butcher shops, hotels, restaurants and the like.

The invention has for a further object to provide a saw of the character stated which shall embody a reciprocally mounted blade and means for reciprocating the blade and adapted to be operated by an electric or other motor.

The invention has for a further object to provide a saw of the character stated wherein the means for reciprocally mounting the blade and the means for reciprocating the blade shall be of simple and inexpensive construction.

With the foregoing and other objects in view, the nature of which will appear as the description proceeds, the invention consists in the construction, combination and arrangement of parts hereinafter fully described and claimed, and illustrated in the accompanying drawing, wherein:

Figure 1 is a view partly in side elevation and partly in vertical section of a hack saw constructed in accordance with my invention;

Figure 2 is a sectional view taken on a plane extending vertically and longitudinally through the lower portion of the handle and through the blade reciprocating means of the hack saw;

Figure 3 is a sectional view taken on the vertical planes indicated by the line 3—3 of Figure 2;

Figure 4 is a sectional view taken on the horizontal plane indicated by the line 4—4 of Figure 2;

Figure 5 is an elevational view of the lower portion of the front end of the hack saw.

Figure 6 is a perspective view of the cover for the handle recess in which the blade reciprocating means are mounted.

Referring in detail to the drawing, 1 designates the handle, 2 the frame and 3 the blade of the saw.

The handle 1 comprises a grip 4, arms 5 and

6 extending forwardly from the upper and lower ends of the grip, and a guard 7 arranged forwardly of the grip and extending from one of the arms to the other. The arm 5 is provided with a recess 8 which has its wall screw threaded and which extends through the front end of the arm 5. The arm 6 is provided with a cylindrical recess 9 which opens out through one side of the arm. This arm is provided with a passage 10 which extends from the front side of the recess 9 to and through the front end of the arm 6, and with a passage 11 which extends from the lower edge of the recess 9 to and through the rear end of the arm.

The frame 2 comprises an upper arm 12 and a front arm 13. A screw threaded stud 14 is formed integrally with the rear end of the frame 12 and is threadably engaged in the recess 8 of the handle arm 5. The rear end of the frame arm 12 is provided with a polygonal portion 15 to permit the use of a wrench in turning the stud 14 into and out of the recess 8. A jam nut 16 engages with the stud 14 and contacts with the front end of the handle arm 5 so as to hold the handle 1 and frame 2 against accidental relative turning movement about the axis of the stud. The lower end of the frame arm 13 is provided with a sleeve 17 which is arranged with its axis in alignment with the axis of the passage 10. The front end of the sleeve 17 is fully open, and the rear end thereof is provided with a small opening 18. The frame arm 13 is provided above the sleeve 17 with an opening 19.

The blade 3 is secured to a rear carrier 20 by a screw 21 and to a front carrier 22 by a screw 23. The carrier 20 is slidably mounted within the passage 10. The carrier 22 is fixed to a rod 24 slidably associated with the sleeve 17 and passing through the opening 18 therein. The rod 24 is yieldingly connected to the sleeve 17 by a coil spring 25 which is mounted upon the rod between the closed end of the sleeve and a nut 26 engaged with the rod and arranged within the sleeve. A screw threaded barrel 27 is formed between the carrier 22 and its rod 24, and engaged with the barrel is the arm 28 of a guide 29 slidable in the open-

ing 19 functioning to hold the carrier against turning movement about the axis of its rod 24.

A worm gear 30 is journaled in the recess 9 upon an arbor 31, and is provided with an integrally formed eccentric 32. A strap 33 which is maintained in engagement with the eccentric 32 by a plate 34, is pivotally connected to the rear blade carrier 20 by a screw 35. The arbor 31 is in the form of a machine screw, and is threadedly engaged with a nut 36 anchored in the handle arm 6 and has its head embedded in the gear 30. The plate 34 extends across the head of the arbor 31, and is secured in place by screws 37.

A bushing 38 is secured within the rear end of the passage 11 of the handle arm 6, and intermediate the ends of the passage 11 there is provided a reduced bearing 39. The bushing 38 and the bearing 39 are fixedly connected by the bars 49. A shaft 40 is journaled in the bearing 39 and in a bearing 41 secured within the front end of the arm 6. A worm 42 is fixed to the shaft 40 and meshes with the gear 30. The worm 42 is arranged between the bearings 39 and 41, and cooperates with the bearing 39 to limit rearward endwise movement of the shaft 40. The rear end of the shaft 40 extends into the bushing 38 and is recessed for the reception of the coupling pin 43 of a flexible shaft 44. The coupling pin 43 is provided with a key 45 which engages a slot 46 formed in the shaft 40, the key establishing a driving connection between the shaft 44 and shaft 40. The shaft 44 is arranged within a flexible housing 47 which is provided with a coupling sleeve 48 which is arranged within the bushing 38 and removably secured therein.

The open side of the recess 9 is closed by a plate 50 which is arranged within the recess. The plate 50 is provided with a lug 51 which engages in a recess 52 formed in the handle arm 6 and with a lug 53 which is secured in the recess 54 by a screw 55.

In practice the flexible shaft 44 is driven by an electric or other motor, not shown. The shaft 44 turns the worm 22, and the worm turns the gear 30. The blade 3 is slidably supported, and is eccentrically connected to the gear 30, with the result that it is reciprocated. The blade 3 is held under proper tension by the spring 25. The tension of the spring 25 may be varied by adjusting the nut 26 forwardly or rearwardly on the rod 24. The rod 24 and guide 29 establish a sliding connection between the blade and the frame 2 and also serve to prevent any flexing of the front end of the blade. The reciprocation of the blade 3 enables the saw to be used at the expenditure of comparatively little energy on the part of the user, and permits metals, meats or the like to be easily and quickly cut. The stud 14 and nut 16 connect the handle 1 and frame 2 in a manner to permit them to

be adjusted relatively to accommodate saw blades of different size.

While I have described the principle of the invention, together with the structure which I now consider to be the best embodiment thereof, I wish it understood that the structure shown is merely illustrative, and that such changes may be made when desired as are within the scope of the invention as claimed.

What I claim is:

In a device of the class described, a handle, a frame, a blade, means reciprocally mounting said blade upon said handle and frame, a recess in said handle, a gear rotatably mounted in said recess, means associated with said gear and said first-mentioned means for reciprocating said blade as the gear is rotated, an elongated passage formed in said handle and communicating with said recess, a bushing mounted in the rear end of said passage, a bearing mounted in the central portion of said passage, bars connecting said bushing and bearing, a second bearing fixed in the front of said passage, a shaft rotatably mounted in said bearings, a worm fixed on said shaft between said bearings and engaging said gear, a revolving driving means mounted in said bushing and being connected to one end of said shaft, as and for the purposes set forth.

In testimony whereof I affix my signature.
MARK A. PLUT.