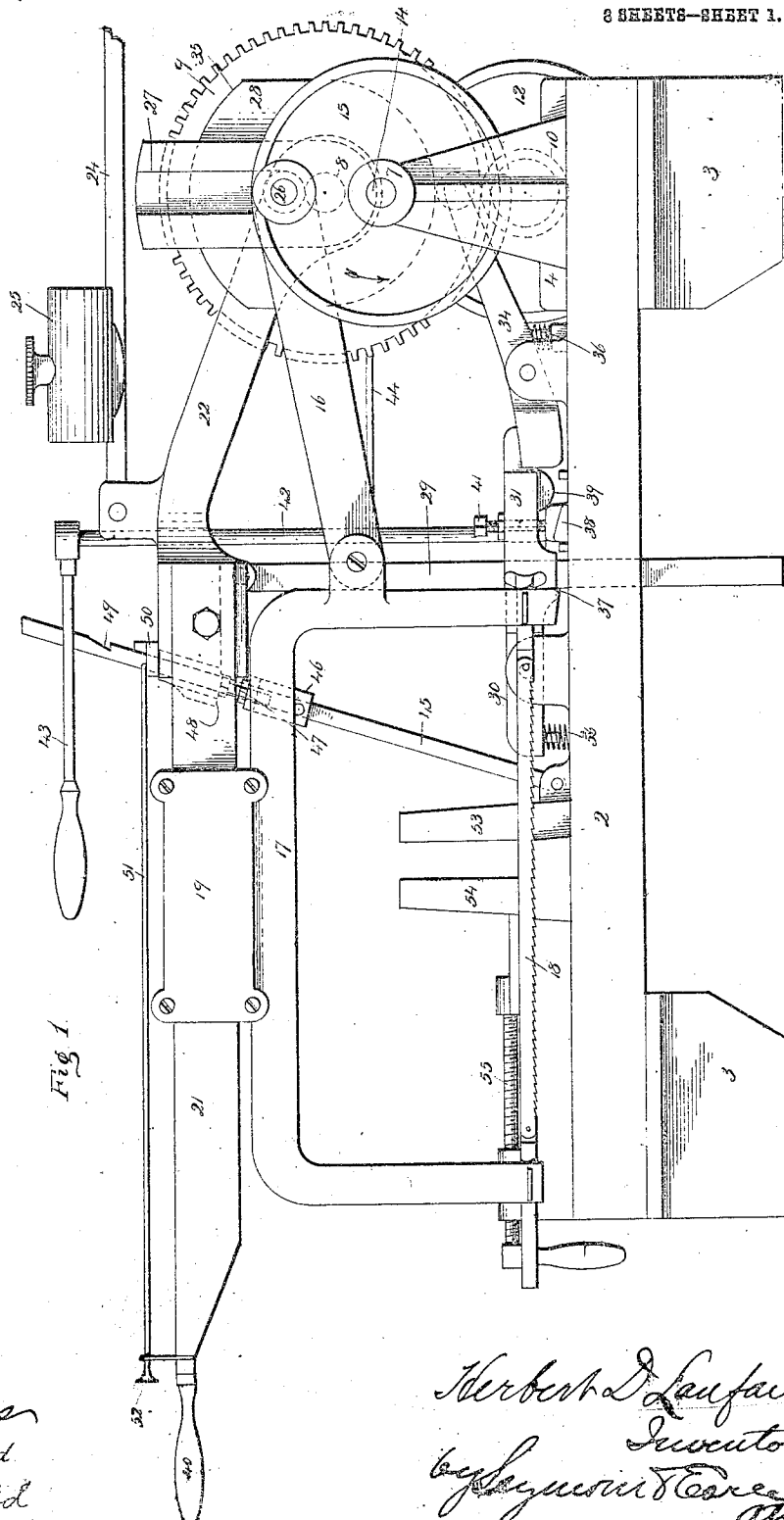


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HACKSAW MACHINE.
APPLICATION FILED OCT. 28, 1908.

985,665.

Patented Oct. 5, 1909.

2 SHEETS—SHEET 1.



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HACKSAW MACHINE.

APPLICATION FILED OCT. 20, 1908.

Patented Oct. 5, 1909.

3 SHEETS—SHEET 2.

935,665.

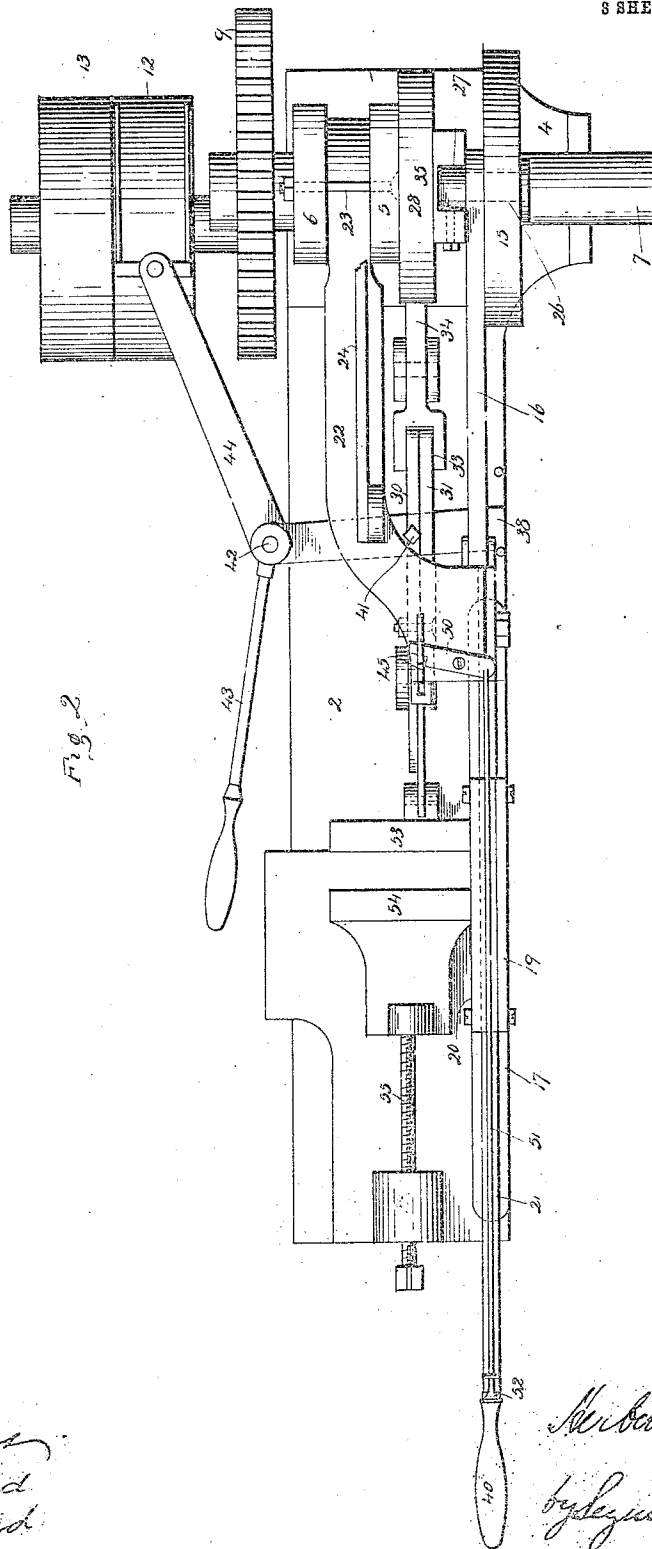


Fig. 2

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HACKSAW MACHINE.
APPLICATION FILED OCT. 26, 1908.

935,665.

Patented Oct. 5, 1909.

3 SHEETS—SHEET 3.

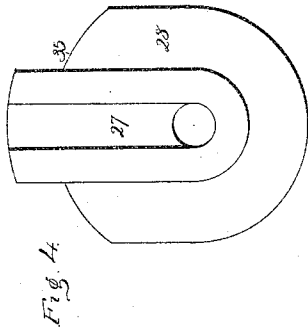


Fig. 5

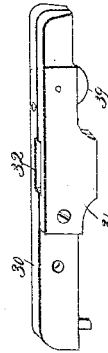


Fig. 6

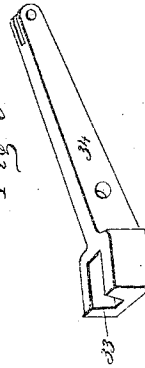
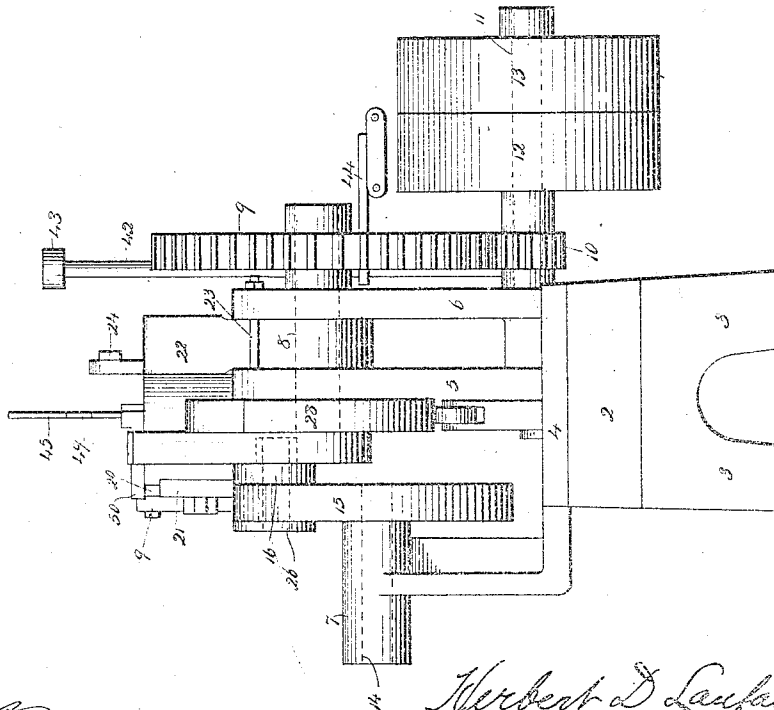


Fig. 3



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UNITED STATES PATENT OFFICE.

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HACKSAW-MACHINE.

935,665.

Specification of Letters Patent.

Patented Oct. 5, 1909.

Application filed October 26, 1903. Serial No. 459,613.

To all whom it may concern:

Be it known that I, HERBERT D. LANFAIR, a citizen of the United States, residing at New Haven, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Hacksaw-Machines; and I do hereby declare the following, when taken in connection with the accompanying drawings and the numerals of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1 a side view of a hack saw machine constructed in accordance with my invention. Fig. 2 a top or plan view of the same. Fig. 3 an end view. Fig. 4 a plan view of the cam, detached. Fig. 5 a perspective view of the lifting lever with its clamping plate. Fig. 6 a perspective view of the cam lever detached.

This invention relates to an improvement in hack saw machines, that is, a machine which will operate a hack saw particularly for use in sawing heavy bars or rods. In the use of such machines it is desirable that the saw shall be lifted from the work on the return stroke of the saw, that is, the stroke following the cutting stroke. It is also desirable in such machines that the return stroke be made much more rapidly than the cutting stroke, and also that while it is desirable that the machine shall be as light as possible and run smoothly, it is also essential that the saw frame be held comparatively rigid.

The object of this invention is to accomplish these results, and the invention consists in the construction hereinafter described and particularly recited in the claims.

In carrying out my invention I employ a bed or frame 2 supported by usual legs 3. Mounted at one end of the bed is a block 4 having two upright wall-like bearings 5 and 6, and a tubular bearing 7. In the walls 5 and 6 is a shaft 8 carrying a large gear wheel 9 which meshes with a pinion 10 on the driving shaft 11 which is driven by the usual belt pulley 12, a loose pulley 13 being also mounted on the shaft 11. In the tubular bearing 7 is a shaft 14 which is arranged in a plane parallel with but below the shaft 8, and this shaft carries a disk 15. Coupled to the disk 15 near the edge thereof is a pitman 16 which is pivotally connected to the

saw frame 17 which is of usual construction and which carries the hack saw blade 18.

At the top of the saw frame are two clip plates 19 and 20 which surround and slide upon a guide bar 21, this guide bar 21 being formed as an extension of the arm 22 which is mounted on the shaft 8 between the walls 5 and 6. The upper ends of the walls 5 and 6 are connected together by a bolt 23 so that they may be drawn together and against the arm 22 so as to provide for the take-up of wear. The arm 22 is also provided with a lever rod 24 on which is a counter-balancing weight 25. A stud 26 by which the pitman 16 is connected to the disk 15 extends into a groove 27 formed on a cam 28 which is mounted on the shaft 8. It will thus be seen that as the shafts 8 and 14 are arranged in different planes, and as the stud 26 rides in the groove 27, that when the cam is turned it will, during a part of the stroke, turn the disk 15 slowly, and this takes place as the stud 26 approaches the center of the cam; but as the cam 28 turns the stud 26 moves outward in the cam 27, and hence the diameter of the circle described by it increases, and hence the disk 15 is moved with greater rapidity and so that at one point in the revolution of the cam the disk 15 is moved twice as fast as at the other extreme movement. In order to lift the saw from the work on the return stroke, I hinge a rod 29 to the rear end of the guide bar 21, this rod passing down through the bed. Pivoted to the bed is a lever 30, and secured to the lever is a clamping plate 31, the adjacent faces of the lever and plate being notched to form a clearance 32 for the rod 29 which passes between them. The outer ends of the lever and clamping plate are beveled to enter a beveled notch 33 formed in the end of a lever 34 which is pivoted to the bed and which extends into the path of the cam edge 35 of the cam 28, and so that as the cam is turned this lever will be depressed, forcing its notched end 33 into contact with the ends of the lever 30 and plate 31 so as to clamp them together and onto the rod 29 and lift the rod 29 so as to raise the saw frame. The outer end of this lever is held against the cam 29 by a spiral spring 36. The clamping of the lever and plate on the rod 29 takes place during the return stroke, the cam being so timed to depress the lever 34 when the cutting stroke is completed. When the cutting is completed

and the saw blade has reached the limit of its downward movement, a corner 37 strikes a transversely arranged arm 38 which extends beneath the lever 30 and engages with a cam 39 projecting downward from the lever 30 and so as to lift the lever 30 and the plate 31 out of the notch 33 in the lever 34 so as to release the lever and plate from the rod 29 to allow the saw frame to be lifted by the handle 40.

To adjust the extent of lifting movement of the saw after each cutting stroke, an adjusting screw 41 is mounted in the lever 30 so as to rest upon the transversely arranged arm 38 against which it is pressed by a spiral spring 56. The transversely arranged arm 38 is pivoted to a vertically arranged shaft 42 which is adapted to be turned by a handle lever 43. Connected with the vertical shaft 42 and operated thereby is a belt shifter 44 which is adapted to be moved to shift the belt from the pulley 12 to the pulley 13, or vice versa; and this shifting takes place automatically by the turning of the transversely arranged lever 38 by the saw frame 17 as before described, at the same time the lever is lifted to be disengaged from the rod 29.

To limit the downward movement of the saw frame I pivot a rod 45 to the bed and provide it with a lug 46 in which is mounted an adjusting screw 47 in the path of a shoulder 48 on the arm 22 through which the rod 45 passes. Near the upper end of the rod 45 is a notch 49 which engages with the edge of the opening in the arm 22 through which the rod passes and so that when the guide bar 21 is raised for the insertion of new work, the arm will engage with the notch 49 and hold the saw frame in its raised position. In order to release the arm 22 from the notch 49 I mount a

latch 50 on the top of the arm 22 and connect the latch by a rod 51 with a button 52 adjacent to the handle 40, and so that by pushing on the rod 51 the latch 50 will push the rod 45 out of engagement with the arm 22 so as to allow the guide bar and saw frame to drop. Mounted on the bed is the usual fixed jaw 53 and movable jaw 54 operated through a screw 55 and between which jaws the work to be cut is clamped.

I claim:—

1. In a hack saw machine, the combination with a frame, bearings at one end thereof, a shaft mounted in said bearings, a cam on said shaft, an arm mounted on the cam shaft and supporting a guide bar, a saw frame, means for moving said saw frame, a vertically arranged bar pivoted to said arm, a lever mounted on said bed, a clamping plate connected with said lever, and means operated by said cam for clamping said plate and lever to the said rod.

2. In a hack saw machine, the combination with a frame, bearings at one end thereof, a shaft mounted in said bearings, a cam on said shaft, an arm mounted on the said shaft and supporting a guide bar, a saw frame, means for moving the frame with relation to said guide bar, a vertically arranged bar pivoted to said arm, a lever mounted on said bed, a clamping plate connected with said lever, a cam lever moved by said cam and adapted to clamp the plate and lever to the said rod.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

HERBERT D. LANFAIR.

Witnesses:

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CLARA L. WEED.