2 Sheets--Sheet 1.

T. S. GREENMAN & C. A. FENNER.

Improvement in Scroll Saws.

No. 123,561. Patented Feb. 13, 1872.

Fig. 1.

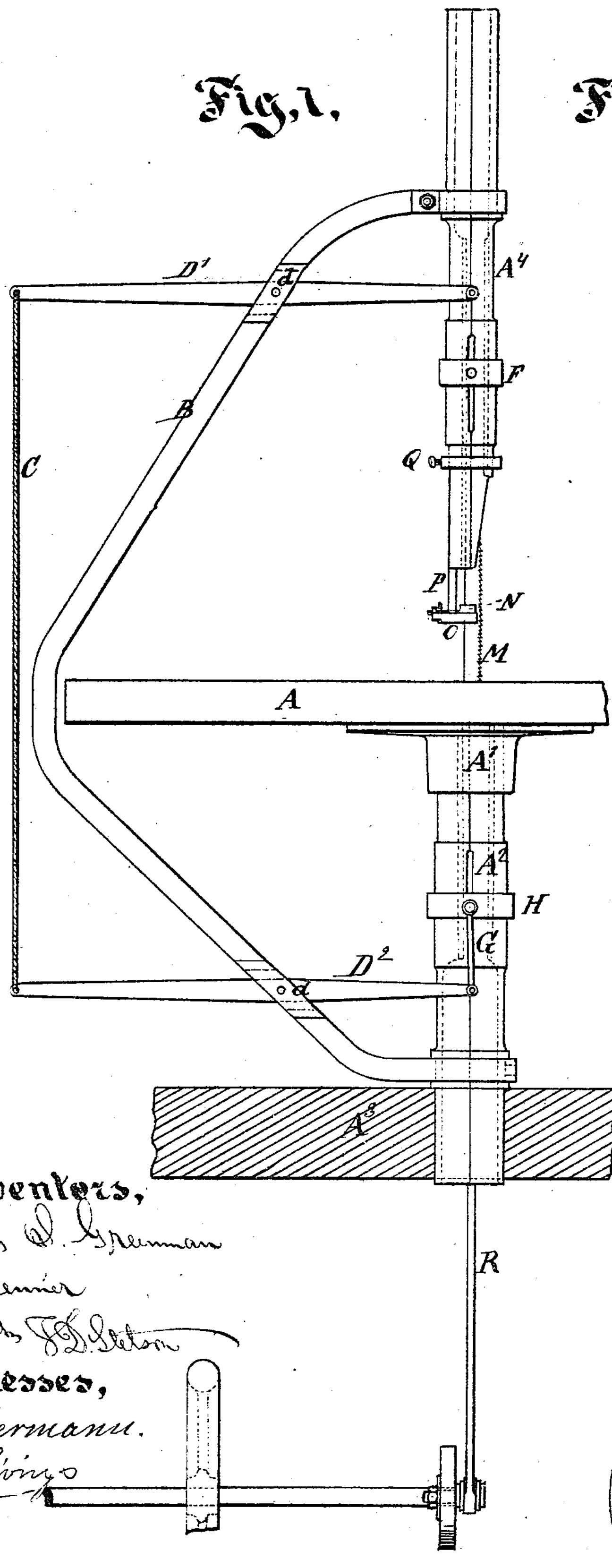
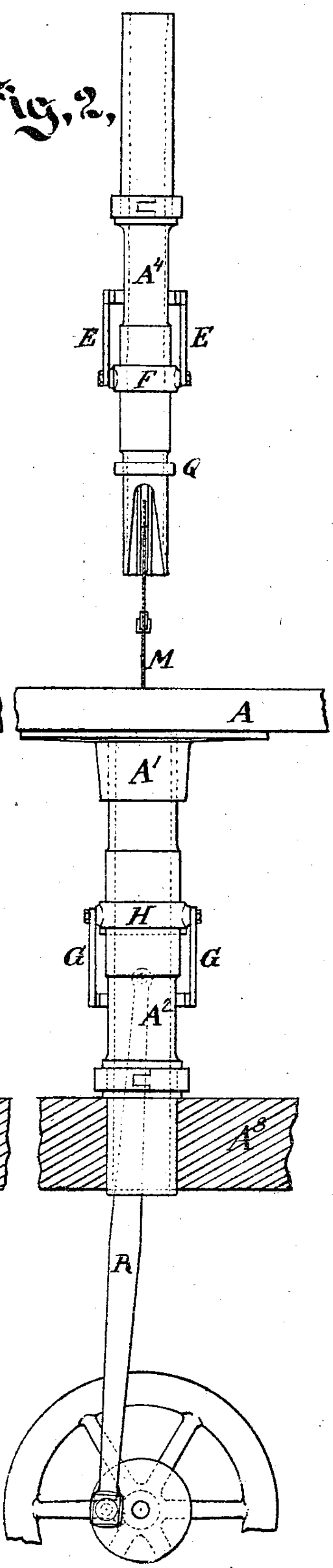


Fig. 2.



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2 Sheets--Sheet 2.

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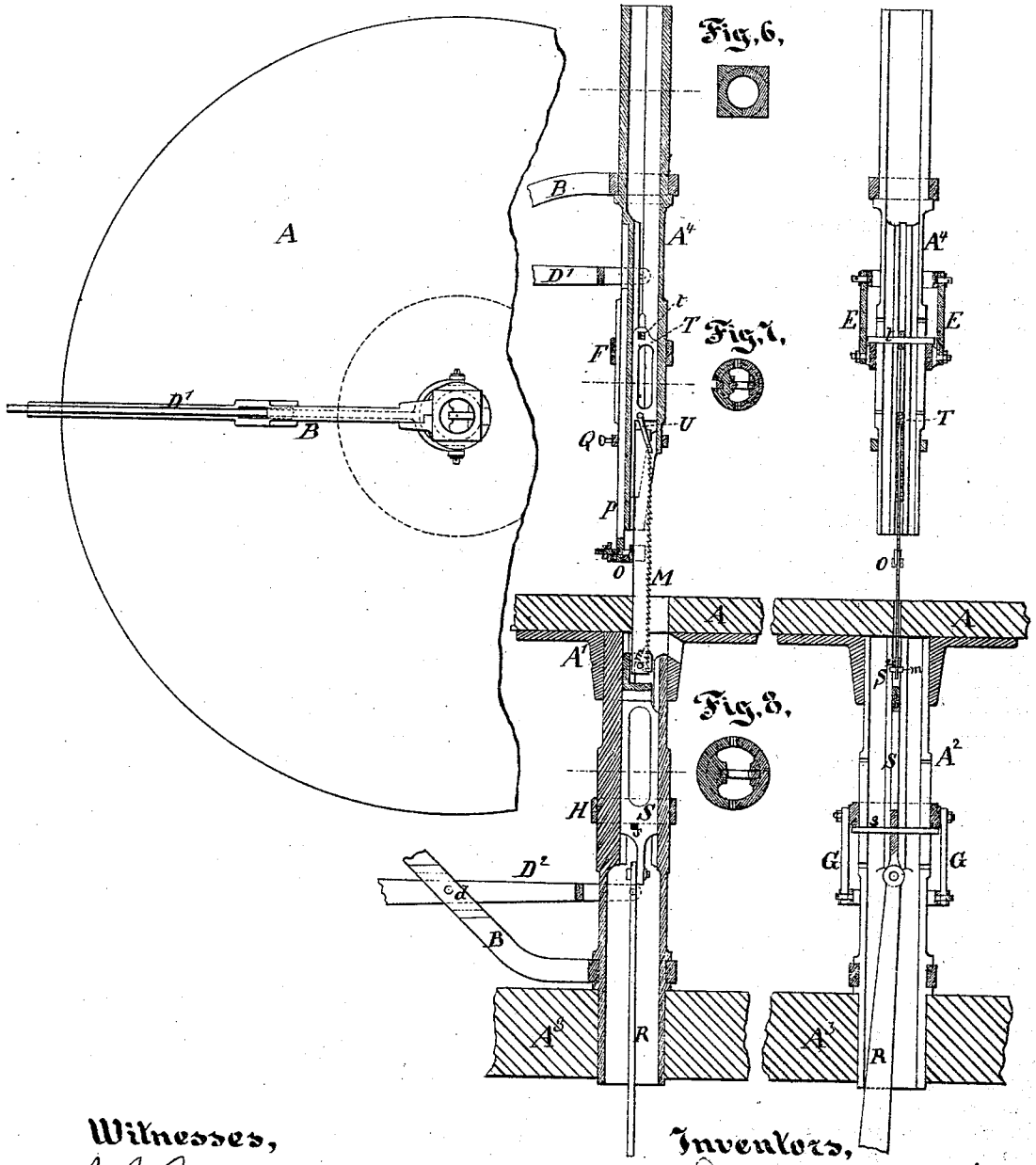
Fig, 3, Fig, 4, Fig, 5,



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UNITED STATES PATENT OFFICE.

THOMAS S. GREENMAN, OF MYSTIC BRIDGE, AND CHARLES A. FENNER, OF MYSTIC RIVER, CONNECTICUT, ASSIGNORS TO THEMSELVES, GEORGE GREENMAN, AND CLARK GREENMAN.

IMPROVEMENT IN SCROLL-SAWS.

Specification forming part of Letters Patent No. 123,561, dated February 13, 1872.

To all whom it may concern:

Be it known that we, THOMAS S. GREENMAN, of Mystic Bridge, and CHARLES FENNER, of Mystic River, in the county of New London, and State of Connecticut, have invented certain new and useful Improvements in Jig-Sawing Machines; and we do hereby declare the following is a full and exact description thereof.

The machine takes in an ordinary narrow saw, commonly known as a jig-saw, and operates it by reciprocating. The invention relates to the provisions for straining and to the framing which supports, guides, and imparts motion to the saw. The power is received through a pitman from a cranked shaft, which latter may be operated by the foot, or by a belt on a pulley, or by any other suitable means of giving a constant and rapid rotation.

The following is a description of what we consider the best means of carrying out the invention.

The accompanying drawing forms a part of this specification. Figure 1 is a side elevation. Fig. 2 is an elevation of the central parts taken at right angles to the view in Fig. 1. Fig. 3 is a plan view. Fig. 4 is a central vertical section. Fig. 5 is an outline section at right angles to the section in Fig. 4. Figs. 6, 7, and 8 are horizontal sections through the tubes and their connections which stand in the center of the machine, each section being on a corresponding line drawn through Fig. 4, on a level therewith, as will be readily understood.

Similar letters of reference indicate like parts in all the figures.

The drawing represents the novel parts with so much of the ordinary parts as is necessary to indicate their relations thereto. A is a table on which the work is placed. It may be made of hard wood, and is of a circular form. It is supported at the centre on a casting, A^1, which is firmly fixed on a tube, A^2, which is supported below in a frame-work, A^3, having legs, or other means of substantial support not represented. A^4 is another fixed tube supported from overhead by any firm fastening not represented, and held in a vertical position in a line directly over the tube A^2. B is a piece of iron, steel, or other suitable material, of the form represented. At its lower end it embraces the tube A^2. At its upper end it embraces the tube A^4, being adapted to open at each end to be removed from the tubes and fitted on again at pleasure. The tubes are formed with collars, which support the frame B, and allow it to revolve or swing around freely, while it is prevented from moving vertically. In the use of the saw this framing is turned in various positions at pleasure, it being of such size as to clear the edge of the circular table A. The swinging around of the framing B and its attachments have no effect on the position or working of the saw. D^1 D^2 are light levers pivoted to the horizontal swinging frame B at the points *d d*. C is a cord, or other suitable straining means connecting the outer ends of the levers D^1 D^2. The inner end of each lever D^1 D^2 is forked and stands loosely, embracing the work at the center of the framing. E E are light links reaching down from the forked arms at the inner end of the upper lever D^1, and connecting with ring F. G G are corresponding light links extending up from the forked arms of the lower lever D^2, and connecting to a ring, H. M is the saw. It plays through a hole in the center of the table A. N is a guide, which embraces the saw, and is held in a clamping piece or foot, O, which is supported by a rod, P, adjustable in a groove in the screw-clip Q, which is supported on the upper fixed tube A^4, as is represented. By slacking the screw in the clip Q, the rod P and its attachments may be raised and lowered to allow for different thicknesses of plank or other stuff. R is the pitman driven by a crank below, as represented. It connects to the lower end of a piece, S, which plays vertically within the lower tube A^2 without a capacity for being turned around. A cross-piece, *s*, firmly fixed in this piece S extends out through slots in the sides of the tube A^2, and fits under the ring H, as is clearly shown in Figs. 4 and 5. T is a corresponding piece playing vertically within the upper tube A^4 without liberty to turn. A cross-piece, *t*, fixed in this piece T extends out through a slot in each side of the tube, and presses on the upper side of the ring F, as plainly shown in Figs. 4 and 5. The lower end of the saw M is connected to

the piece S, and the upper end of the saw is connected to the piece T. The vertical motion of the pitman R is communicated directly to the piece S, saw M, and piece T, while the saw is strained by the tension of the cord or equivalent connection C, exerted through the levers D^1 D^2, the strain being communicated to the saw through the medium of the links E and ring F at the top and the links G and ring H at the bottom. The lower end of the saw is secured by providing it with a cross-piece or rivet projecting a little on each side and matching this pin into little hooks provided in the upper end of the lower piece or cross-head S, as shown by S^2. The rivet or cross-pin in the base of the saw is marked *m*. We provide a hole in the fixed frame-work to admit the fingers in putting the lower end of the saw and its pin *m* into the hooks S^2, as shown in Figs. 4 and 5. The upper end of the saw is held to the upper cross-head T by means of a link, U, which stands in an inclined position and draws a little backward, so as to keep a firm hold in whichever tooth or notch in the saw it may be fitted. In tightening the saw the front ends of the levers are forcibly drawn together by any convenient means, and the link U is fitted into the notch in the saw which it will reach. We usually set the upper pivot for this link U so far back as to allow the saw to pass up above it. This allows the saw to be of much greater length than would otherwise be possible. We esteem it an advantage for obvious reasons, and would prescribe such arrangement as the preferable construction. The drawing may be considered as thus corrected by the description so as to have the saw extend up in front of the pivot which holds the link U, and also in front of the cross-piece *t*. We attach great importance to the capacity of the frame B, and the straining means carried thereon, to swing around in every position, and can use such a frame with the mounting of the several parts, as here shown, with other straining devices than the levers D^1 D^2. We can, for example, employ straps and pulleys in place of the levers and cord.

By reason of our swinging-frame B and its connections, as specified, we can use much shorter and lighter levers, D^1 D^2, or their connections, than would otherwise be practicable, and can run the saw and its attached parts at a much higher speed. The shortness of the levers involves no evils because of their capacity for being swung around in all positions out of the way of the work; and we can saw large brackets or any long work with success, because the frame B and its attachments will accomplish all that is desired by its capacity for swinging. A pattern which shall require great size in all directions would be beyond its powers, but there are in practice few such pieces treated. We can do any work which can be got out of a board thirty inches wide, and can do this with a frame, B, and its connection, which in its entire sweep does not describe a circle of more than thirty-six inches diameter. Ours is the most compact jig-saw machine known to us, always, of course, excepting muleys. Our machine may be enlarged to any size desired.

We claim as our invention—

1. The revolving frame B, supported on the fixed tubes A^2 A^4, and supporting the devices for straining the saw, so that the frame B and its connections can swivel freely around in any position without affecting the vertical motion or the strain on the saw, as specified.

2. The rings F and H, connections E and G, and saw M, in combination with the straining levers D^1 D^2, and cord C, carried on the revolving frame B, and operating relatively to the saw M and its impelling means, as and for the purposes specified.

In testimony whereof we have hereunto set our names in presence of two subscribing witnesses.

THOS. S. GREENMAN.
CHAS. A. FENNER.

Witnesses:
C. C. LIVINGS,
A. HOERMANN.