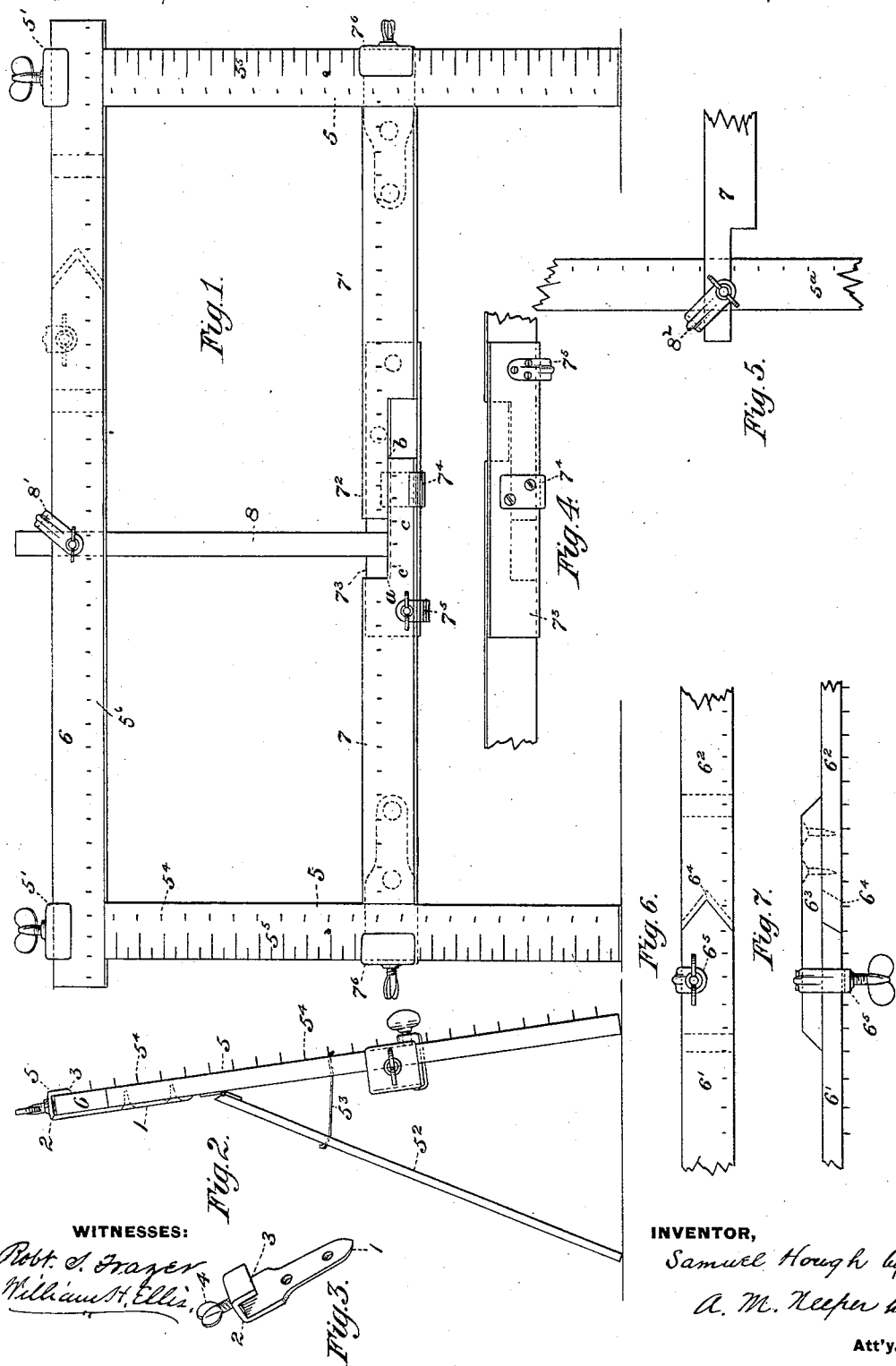


(No Model.)

S. HOUGH.
FRAME FOR STRETCHING FABRICS.

No. 454,134.

Patented June 16, 1891.



UNITED STATES PATENT OFFICE.

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SPECIFICATION forming part of Letters Patent No. 454,134, dated June 16, 1891.

Application filed April 12, 1888. Serial No. 270,483. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL HOUGH, a citizen of the United States, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Frame for Stretching Fabrics, of which the following is a specification.

My invention relates to improvements in frames for stretching fabrics; and the objects of my improvements are, first, to provide a frame that can be operated without the use of detached clamps; second, in which the stretching-pins are all in the same plane; third, that can be operated in a space no larger than that included in the largest rectangle that can be formed by its four bars; fourth, that can be used in an upright position, and, fifth, that can be adjusted to the different-sized fabrics that are to be stretched upon it.

In the accompanying drawings, Figure 1 shows a perspective view of the frame; Fig. 2, an edge view of Fig. 1; Fig. 3, a perspective view of the head; Fig. 4, a rear view of the joint in the lower bar; Fig. 5, a view of joint made when a section of the lower bar is used with the side bar; Fig. 6, a modification of the construction of upper bar, showing the joint; Fig. 7, an edge view of Fig. 6.

I will first describe the head shown in Fig. 3, by means of which I am enabled to carry the objects of my improvements into effect. The head is made of metal, preferably a casting L-shaped, with a lip or lug 3 on the short arm 2, which extends in a direction parallel to long arm 1. A hole is drilled or cast in the center of arm 2, which is threaded and in which a thumb-screw 4 is inserted. The long arm 1 extends a considerable distance past the edge of lip 3, and is pierced with holes for the insertion of screws or nails with which to fasten the head to the bar.

In Fig. 1, 5 5 are the side bars of the frames, which are made of wood or other suitable material. To one end of each a head 5' 5' is attached, which are of the construction shown in Fig. 3, and herein described. The heads 5' 5' are so attached to the bars 5 5 that sufficient space is left between their ends and the arms 2 of the heads to allow the upper bar 6 to move freely therein. Bars 5 5 are made of such thickness that when attached

to heads 5' 5' their front surface is just flush with the inside surface of lip 3 of the head. Bars 5 5 are also provided each with a leg 5³, made of any suitable material, which are hinged thereto at any convenient point near their top ends for the purpose of supporting the frame in an approximately upright position. Bars 5 5 and their legs 5³ 5³ are attached to one another by cords 5³, or in other suitable manner, to determine the angle which they shall maintain toward one another. A row of pins 5⁴ is at the inner edge inserted in bars 5 5 for the purpose of conveniently attaching to the frame any fabric that may be stretched upon it. Upon each bar 5 5, at its outer edge, is placed a scale 5⁵, dividing them into equal spaces. Upper bar 6 is made of wood or other suitable material, and of such a width as to move freely in the space between the arms 2 of the heads and the ends of the side bars 5 5, and of such thickness that when placed in said space its front surface will be flush with the front surfaces of side bars 5 5. A row of pins 5⁶ is placed in upper bar 6 near its inner edge at a distance therefrom equal to the distance of the row of pins from the inner edge of side bar 5.

A modification of the upper bar 6 is shown in Figs. 6 and 7, whose use will be described hereinafter. It is constructed as follows: Bar 6 is divided into two sections 6' and 6², which are dovetailed, as shown at 6⁴. To section 6² a bar of wood or other suitable material 6³ is fastened, which is of such length as to extend a considerable distance on both sides of joint 6⁴. To 6³ a clamp 6⁵, of the usual construction, having an end piece and two jaws, one of which is provided with a thumb-screw, is fixed. The clamp 6⁵ is attached to 6³ in such position that when sections 6' 6² of 6 are placed together at their dovetailed ends the thumb-screw of the clamp will be forced against 6' when screwed in. By these means a rigid joint is made in upper bar 6, which at times it is desirable to use shorter than its full length, or as a single piece. The lower bar is made up of two sections 7 and 7', each of which is of the same width and thickness as side bars 5 5, and, like them, are provided with heads 7⁶ 7⁶, of construction shown in Fig. 3, and hereinbefore described. At their free ends sections 7 7' are cut away and mortised,

so as to form the adjustable joint shown at 7², a rear view of which is shown in Fig. 4. It is constructed as follows: To section 7' a bar of wood or other suitable material 7³, of equal width with 7', is fixed, to which is attached an L-shaped guide 7⁴, the lip of which extends above and holds section 7 in close contact to 7³, enough play being allowed to let 7 slide over 7³. Clamp 7⁵ is also attached to 7', and is of the same construction as clamp 6⁵ in Fig. 7, and the thumb-screw of which when screwed in will be forced against section 7. From the point *a* to the point *b* on section 7 there is placed a row of pins *c c c*, so as to provide pins to fasten any fabric put in the frame when the adjustable joint is opened to its fullest extent. When the adjustable joint is closed, there will be a double row of pins along a portion of its length, one only of which need be used. Another row of pins is placed along the entire length of the lower bar at the same distance from its edge and in the same manner as placed in upper and side bars. Thus by means of the construction of the adjustable joint the surfaces of the different sections of 7 and 7' of the lower bar are always in the same plane.

A brace 8, which is made of wood or other suitable material, is used when by reason of the strain on the frame the upper and lower bars are sprung. It is set with its end on the lower bar, or if the joint be sufficiently open in the recess between 7 and 7' and carried up behind the upper bar 6, to which it is fastened by clamp 8'. Clamp 8' is the only detached clamp used in connection with the frame herein described; but it will be noticed that it is not used in the frame proper, but only upon what be called an "attachment."

Fig. 5 shows a joint made between one of the side bars and one of the sections of the lower bar. 5^a is the side bar, and 7 one of the sections of the lower bar, the narrow end of which passes between the pins of 5^a, the side bar 5^a and 7 overlapping one another and are fastened together by clamp 8².

To use my invention the sections of the lower bar are joined together with the joint at 7² closed, the thumb-screw of 7⁵ being forced against section 7, the two sections then forming one bar. The side bars 5 5 are then inserted in the heads 7⁶ 7⁶, and the ends of the lower bar are rigidly fastened thereto by screwing in the thumb-screws in heads 7⁶ 7⁶. The upper bar is then placed in the heads 5' 5' of the side bars, and the thumb-screws of the same, being screwed in the upper bar, are fastened to the side bars and a rectangular frame is formed, in which the sides of the bars from which the pins project are always in the same plane, the different bars forming the same never being situate behind or in front of one another in any degree whatever by reason of its use, thus presenting a flat and regular surface on which the goods may be stretched. In putting the bars together they should be so placed as to have their pins on

the inner edge of the frame. The frame is then to be placed in an upright position on the side bars, use being made of the legs attached to them to maintain it in that position. If when the frame is set up the fabric be of too great length to be stretched upon it, the joint in the lower bar may be opened by loosening the thumb-screw of the clamp 7⁵, when the lower bar can, on loosening one of the thumb-screws of one or both of the heads 5' 5' of the side bars, be adjusted to the length of the fabric to be used, when the joint is again fastened by its clamp 7⁵, and the side bar or bars be fixed in their places by screwing in the thumb-screws of their heads. When the joint in the lower bar is opened, the pins *c c c* in the double row must be used to fasten the fabric to the frame for the distance opened by the extension of the joint. If the fabric be too wide or too narrow, the lower bar may be adjusted to accommodate the frame to the width desired by loosening the thumb-screws in its heads and sliding it up or down the side bars with reference to the scales thereon, the upper or lower edge of the heads of the lower bar being adjusted to points in the scales equidistant from the ends of the two side bars.

When the fabric is too short to use the full length of the frame to advantage, the modification of the upper bar (shown in Fig. 6) can be used. The thumb-screw 6 being unscrewed, the bar is divided into two sections, one of which is placed in the heads of the side bars. When the sections of the upper bar are used, the lower bar is also divided into sections at its joint, one of which sections is fastened to a side bar by its head, the narrow end at its mortised extremity passing between the pins of the other side bar. (See Fig. 5.) By dividing the bars in the manner above described much less space is required to use the frame, said space never exceeding the space included in the largest rectangle that can be formed by the bars making up the frame.

What I claim as my invention is—

1. In a frame for stretching fabrics, a bar composed of two sections, each having the L-shaped head herein described and being mortised at one end to form a joint, the one section having two rows of pins, one row extending from the head of said section to the mortise, the second row extending from the mortise to the end of said section, the other section having a single row of pins extending its whole length and being provided with a back piece, to which are attached a clamp and a guide, as and for the purposes described.

2. A frame for stretching fabrics, having two side bars, each provided with the L-shaped head herein described and a row of pins, an upper bar having a row of pins, and a lower bar having two sections, each provided at one end with the L-shaped head herein described and being mortised at their other ends to form a joint, the one section having two rows of pins, the other but one, and having a back

piece fitted with a clamp and guide, as and for the purposes described.

3. A frame for stretching fabrics, each having a row of pins and a scale on one side and a leg on the other, in combination with the L-shaped head herein described, an upper bar having a row of pins, and a lower bar made up of two sections, both headed and mortised to form a joint, the one having two rows of pins, the other but one, and the means of making and holding said joint, as and for the purposes described.

4. A frame for stretching fabrics, having two side bars headed, as herein described, an upper bar consisting of two sections, each provided with a row of pins, both dovetailed to form a joint, one of said sections having at its dovetailed end means for making and holding said joint, and a lower bar having two

sections, both headed and mortised to form a joint, the one having two rows of pins and the other but one, and the means of making and holding said joint, as and for the purposes described.

5. In a frame for stretching fabrics, a bar having two sections dovetailed to make a joint, both of said sections having a row of pins equidistant from one edge, and one of said sections having a back piece fitted with a clamp attached to and extending past its dovetailed end, as and for the purposes described.

In testimony whereof I have hereunto set my hand this 11th day of April, A. D. 1888.
SAMUEL HOUGH.

Witnesses:

WILLIAM BEAL,
J. H. BEAL.