

J. Klahr's Improved Apparatus for Bending Strips of Wood

PATENTED

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FIG. 1.

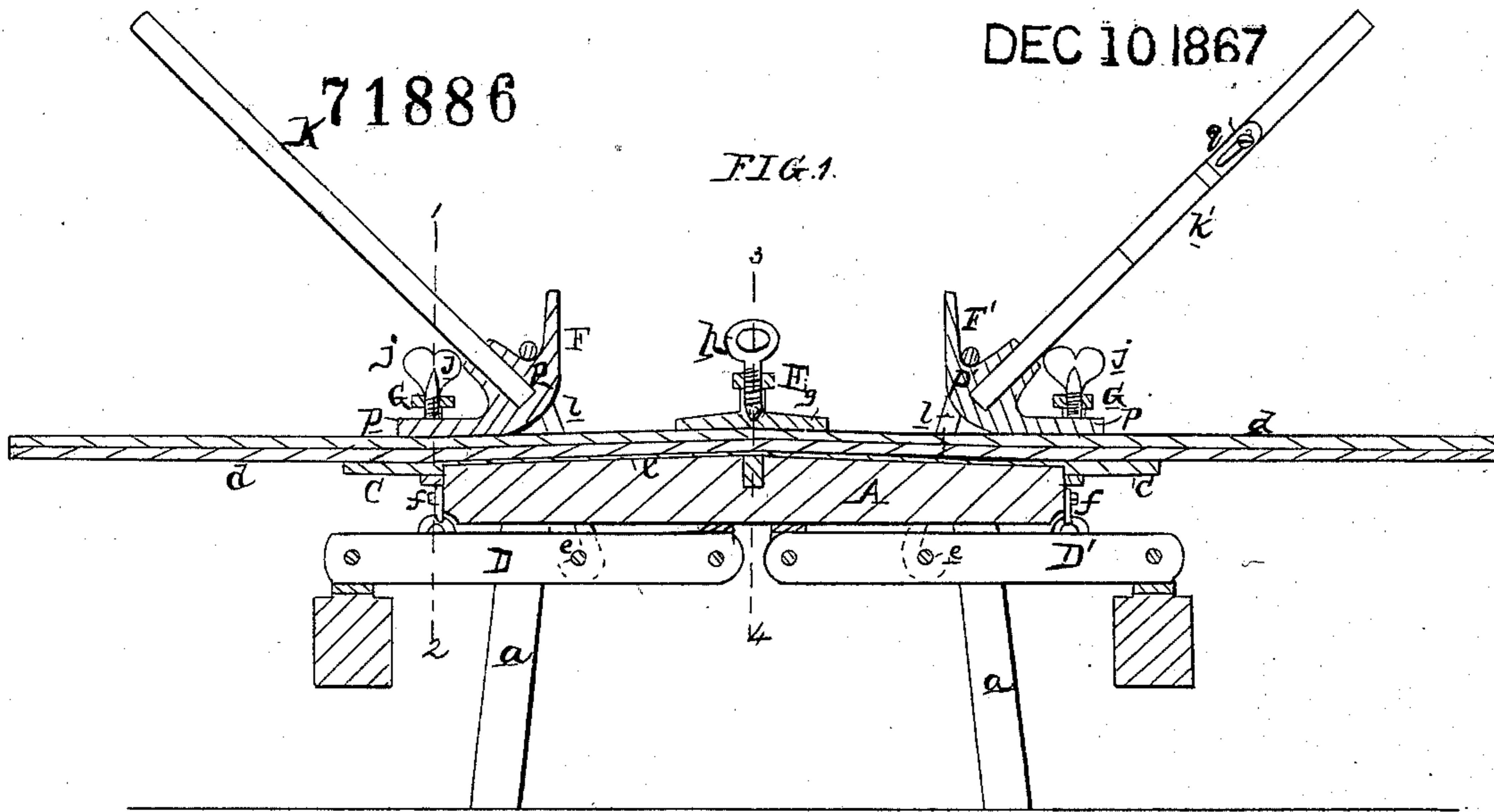


FIG. 2.

FIG. 4.

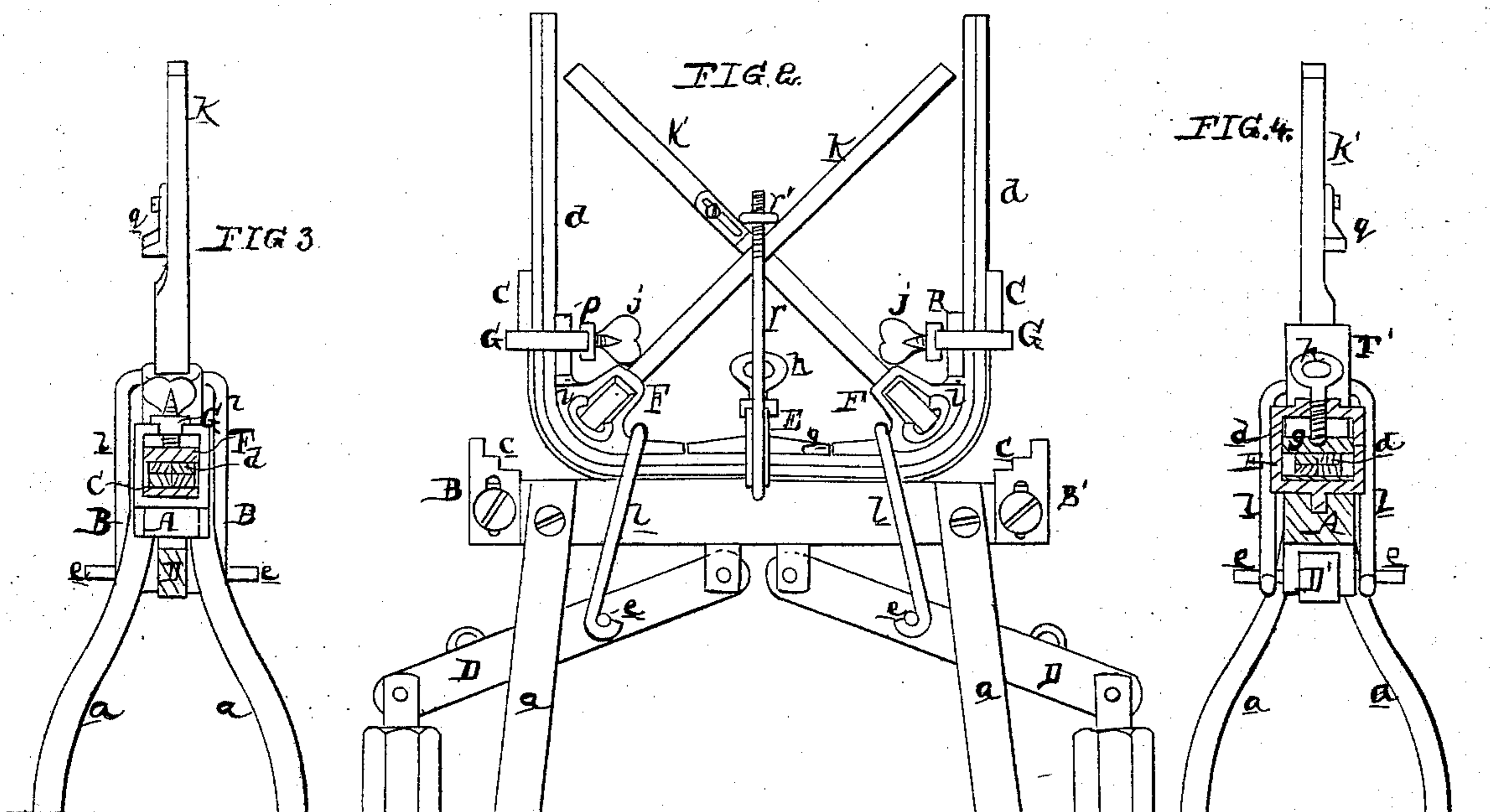
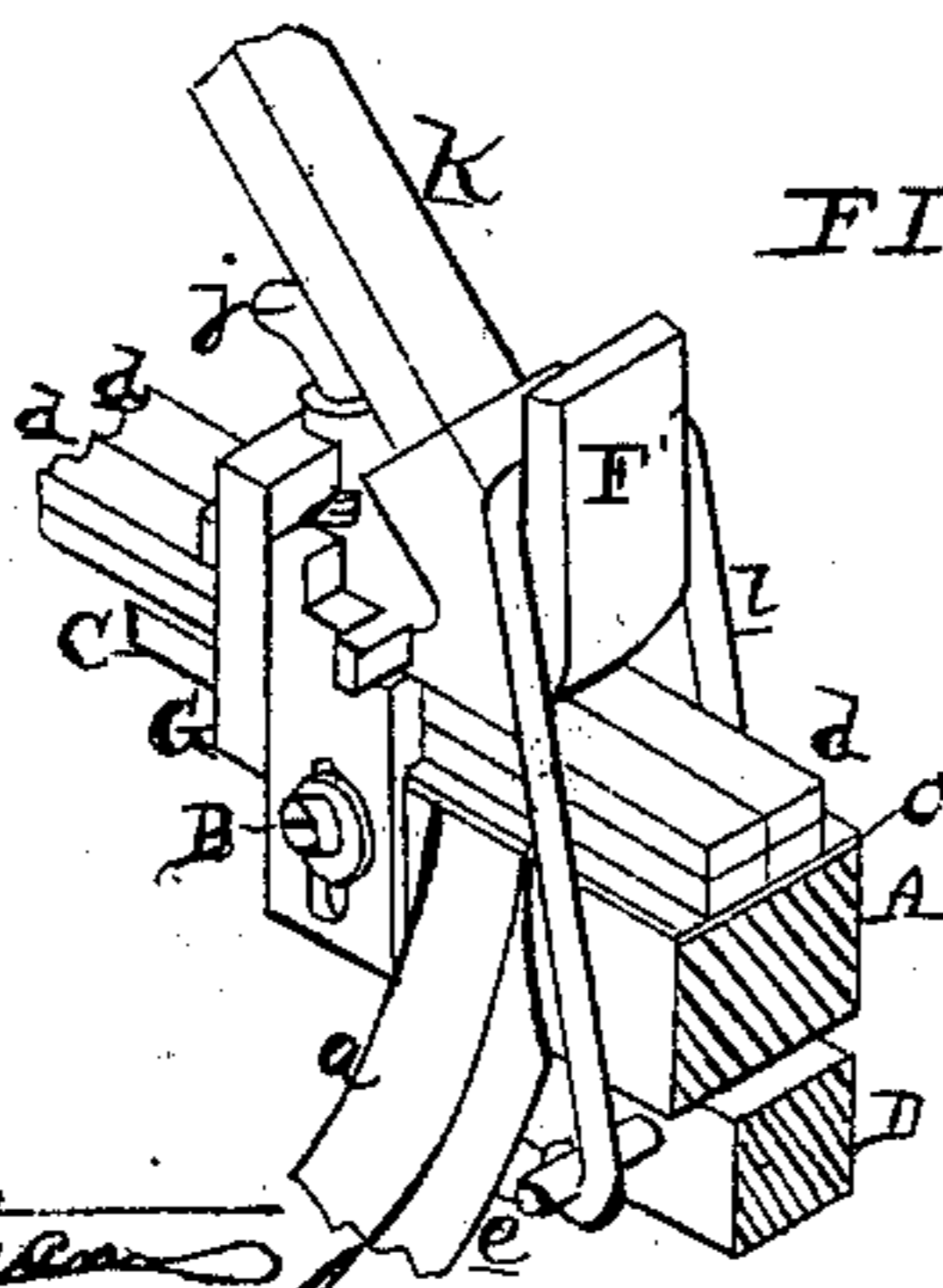


FIG. 5.



United States Patent Office.

JOSEPH KLAHR, OF BERNVILLE, ASSIGNOR TO HIMSELF, W. R. WEAND, C. H. ZINK, AND
JAMES J. WAGENHORST, OF PHILADELPHIA, PENNSYLVANIA.

Letters Patent No. 71,886, dated December 10, 1867.

IMPROVEMENT IN MACHINES FOR BENDING WOOD.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, JOSEPH KLAHR, of Bernville, Berks county, Pennsylvania, have invented an Apparatus for Bending Strips of Wood; and I do hereby declare the following to be a full, clear, and exact description of the same.

My invention consists of certain devices, fully described hereafter, for bending strips of wood, and for retaining them in their bent position until they have permanently acquired the desired shape.

In order to enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and operation, reference being had to the accompanying drawing, which forms a part of this specification, and in which—

Figure 1 is a sectional elevation of my apparatus for bending strips of wood.

Figure 2, a side elevation.

Figure 3, a transverse vertical section, on the line 1-2, fig. 1.

Figure 4, the same, on the line 3 4, fig. 1; and

Figure 5 a sectional perspective view of a portion of the apparatus.

Similar letters refer to similar parts throughout the several views.

The frame of the apparatus consists of a bar, A, supported by legs *a*, the said bar being thicker at the centre than at the ends, and at each end and on opposite sides of the bar are two adjustable plates, B and B', secured by bolts or otherwise, and having on their upper edges shoulders *c*, for a purpose described hereafter. A strip, C, of thin flexible steel, rests upon the upper surface of the bar A, and is retained in its place by the plates B B', which enter recesses cut in the edge of the strip. To projections, on the under surface of the bar A, are hung weighted levers D D', from the opposite sides of each of which project pins *e*. The strips of wood *d* to be bent are placed upon the flexible plate C, and the latter, with the strips, is passed through a yoke or frame, E, which is let into a recess in the bar A, as shown in fig. 4, the strips and plate being clamped between the lower side of the frame, and a plate, *g*, upon the upper side of which bears a set-screw, *h*, turning in the upper side of the frame. An L-shaped former, F, rests upon the strips *d*, near to one end of the bar A, a projection, *i*, at each side of the former, bearing against one of the shoulders *c* of each of the plates B and B', and thus determining the position of the block. A yoke or clamp, G, passes around a projecting arm, *p*, of the former F, around the strips *d*, and around an enlargement on the end of the plate C, and the whole are firmly bound together by a set-screw, *j*, which turns in the yoke and bears on the former, as shown in figs. 1 and 3. The end of an arm, *k*, fits a socket in the former F, and the ends of a link, *l*, which passes around an arm, *p'*, of the former, are hooked to the pins *e* of the weighted lever D. At the opposite end of the apparatus is a similar former, F', also secured to the strips and plate C, is linked to the weighted lever D', and is provided with an arm, *k'*.

After the several parts have been thus secured together, the arms *k* and *k'* are simultaneously turned towards each other, thus bending the strips and plate C around the formers F and F', as shown in fig. 2, the weighted levers D and D', through the medium of the links *l*, holding down the arms *p p* of the formers, and maintaining the parts of the strips and plates between the two formers in close contact with the bar A. When the strips are bent, the arms *k* and *k'* cross each other, as shown in fig. 2, and are prevented from springing back, either by means of adjustable catches *q*, secured to each arm, or by a nut, *r'*, on a rod, *u*, connected to the yoke E, as shown in fig. 2. The links *l* are now unhooked from the levers D and D', and are detached from the formers, after which each lever may be raised and attached to the bar A by means of a hook, *f*, which enters a staple on the lever. The formers F and F', yoke E, plate C, and the bent strips, may then be removed from the frame of the apparatus, the parts retaining the position they occupied while on the frame. The strips are retained in contact with the formers until they have permanently acquired the shape to which they have been bent. The outer ends of the strips are then connected together by cross-pieces in the usual manner, after which the set-screws *j j* and *h* are loosened, and the several parts are removed from the bent strips, and are returned to the frame of the apparatus, to be used in bending another set of strips, as before described. By raising or lowering the adjustable plates B B' so as to bring different shoulders *c* in a position to be struck by the projections *i*, the position of the formers F and F' may be so regulated that frames of any desired width may be formed.

In making frames for wagon-covers, &c., of thin strips of wood, it has been customary to bend the latter around a form, in doing which, owing to the unequal strain exerted upon the strips, nearly half of the strips are broken. In my apparatus the strips are supported when the bending begins by the flexible plate C, which presses the strips against the formers F and F', so that they cannot be bent so abruptly as to be broken. I have found by actual experiment that when strips of well-conditioned wood are submitted to the above operation, very few, if any, are broken, and that frames of any desired size, and of a regular, even shape, can be made at about half the usual expense.

Although I have alluded to four strips of wood as being operated on at one time, it should be understood that any number of strips that can be conveniently packed together within the apparatus may be bent simultaneously.

I claim as my invention, and desire to secure by Letters Patent—

1. The formers F F', with their arms *p p'*, levers *k k'*, and catches *q*, or their equivalents, in combination with the clamps G, the whole being constructed and operating substantially as and for the purpose described.
2. The combination of the above, the weighted levers D D', and the links L.
3. The adjustable plates B B', with their shoulders *c*, operating in combination with the formers and their projections *q*, substantially as and for the purpose described.

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

JOSEPH KLAHR.

Witnesses:

H. W. P. L. SCHELLHAMMER,
SAMUEL M. KLEE.