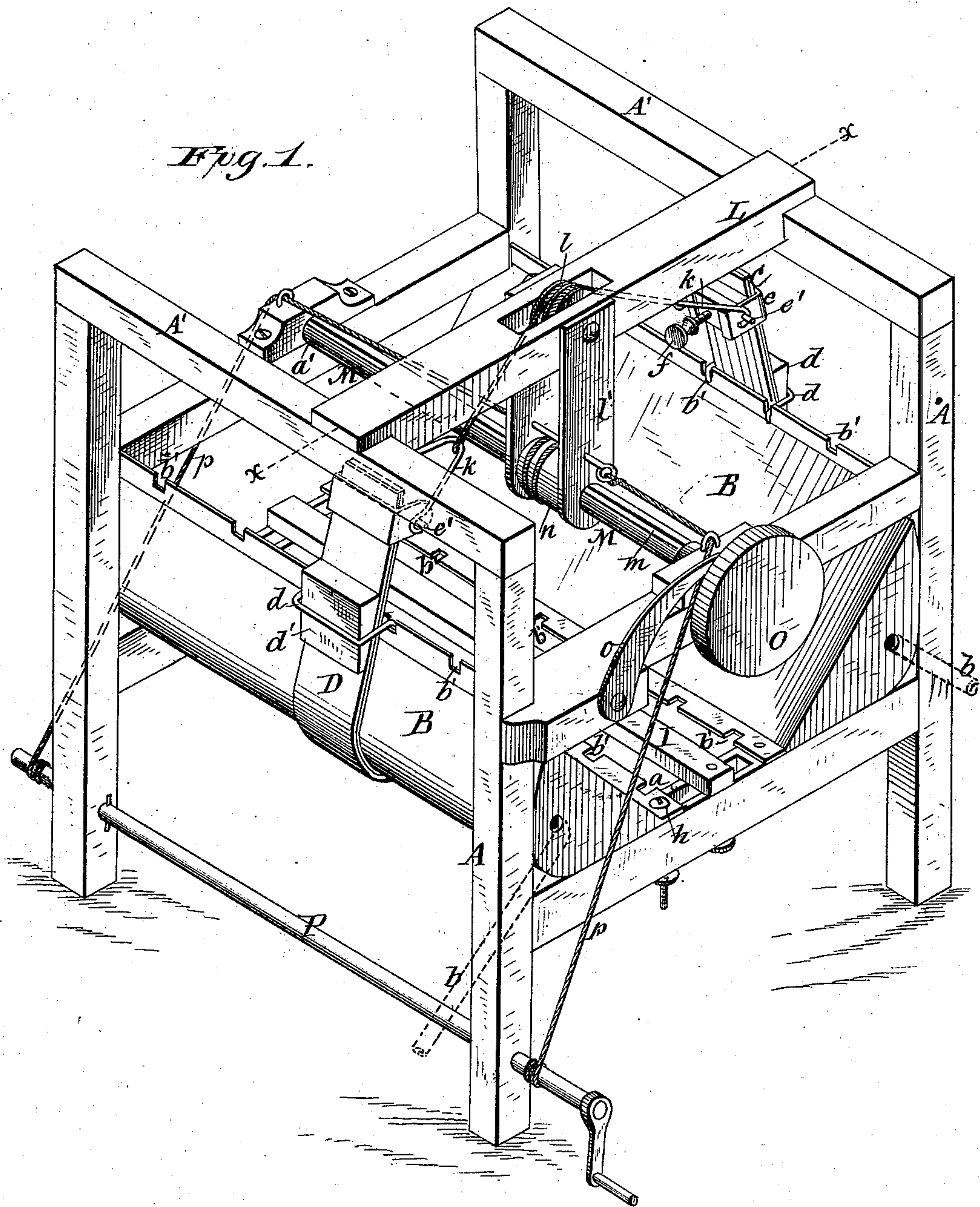


C. WRIGHT.
Machine for Bending Wooden Bows, &c.
No. 224,757. Patented Feb. 17, 1880.



WITNESSES
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Robert Lynch.

INVENTOR
Charles Wright.
by L. Deane.
ATTORNEY

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Fig. 2.

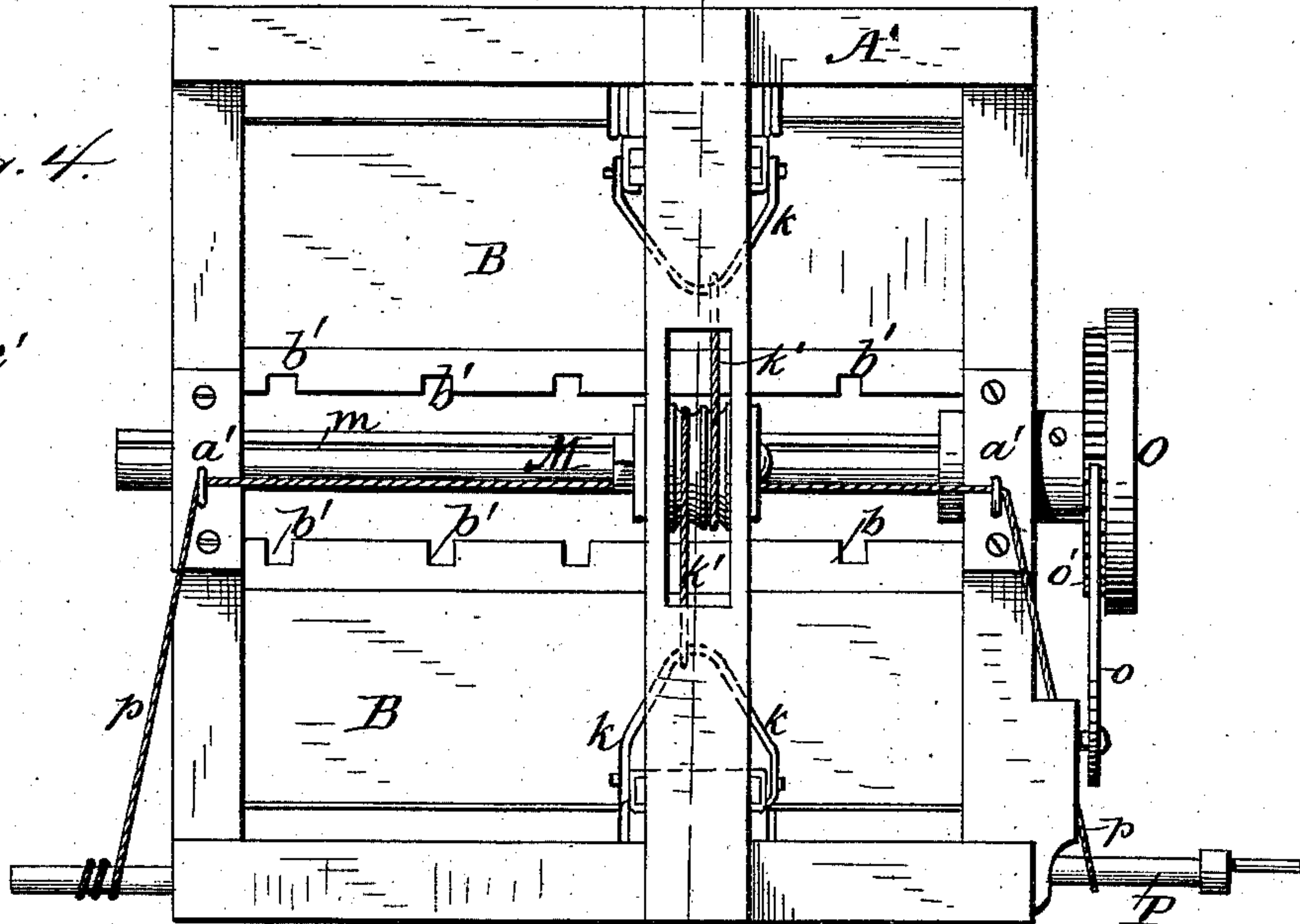


Fig. 3.

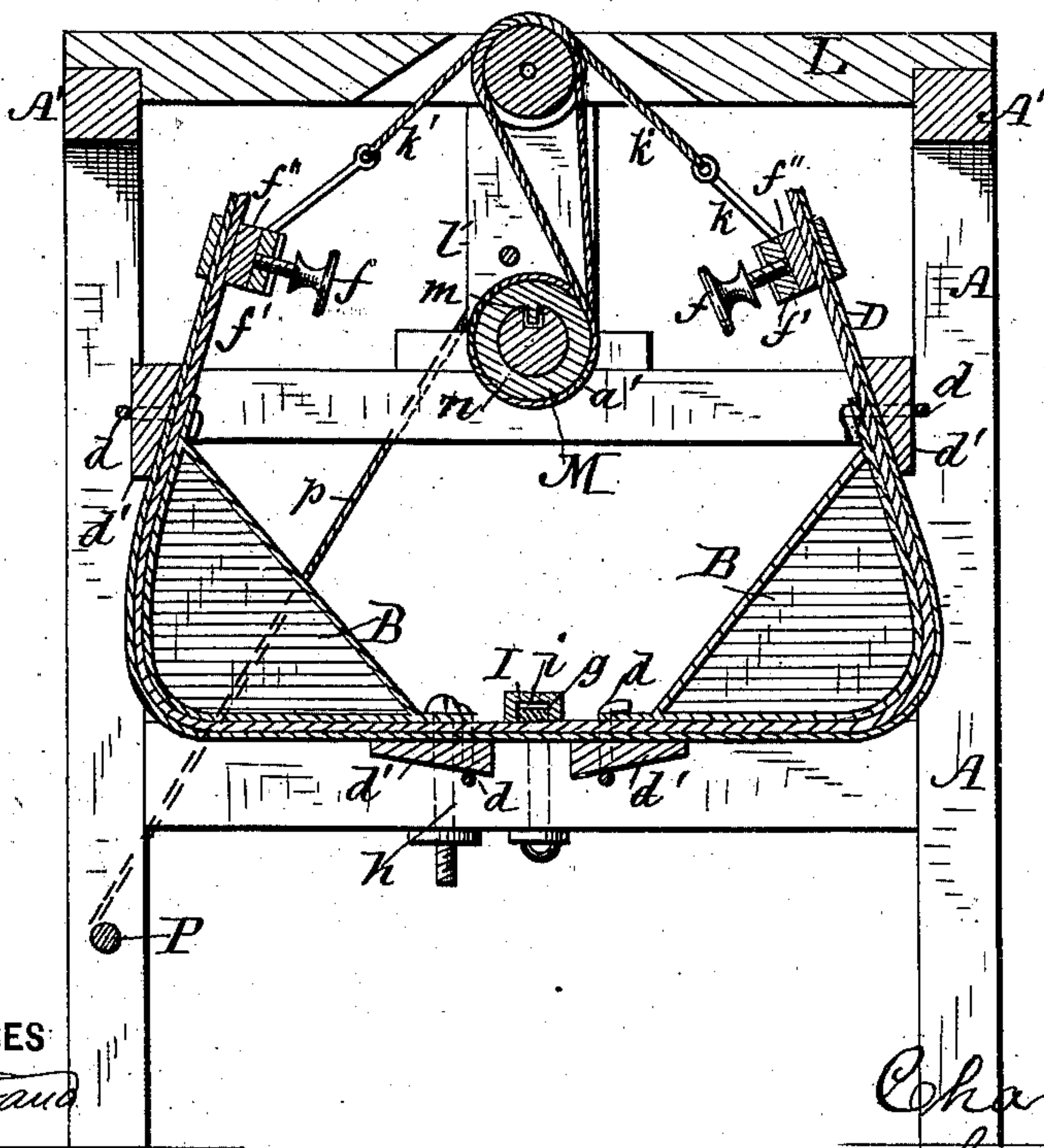
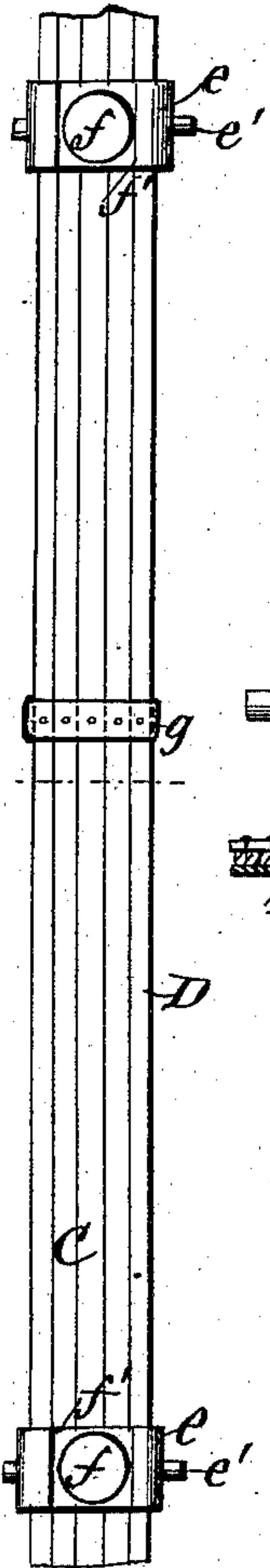


Fig. 4.



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CHARLES WRIGHT, OF FINDLAY, OHIO, ASSIGNOR OF ONE-HALF OF HIS
RIGHT TO YEATMAN BICKHAM, OF SAME PLACE.

MACHINE FOR BENDING WOODEN BOWS, &c.

SPECIFICATION forming part of Letters Patent No. 224,757, dated February 17, 1880.

Application filed January 6, 1880.

To all whom it may concern:

Be it known that I, CHARLES WRIGHT, of Findlay, in the county of Hancock and State of Ohio, have invented certain new and useful
5 Improvements in Machines or Apparatus for Bending Wooden Bows, &c.; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which
10 it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Figure 1 is a perspective view of the device
15 or machine. Fig. 2 is a top-plan view of the same. Fig. 3 is a vertical section from side to side on line *xx*, Fig. 1. Fig. 4 is a detail, showing the bows placed in the metallic band and ready for adjustment on the bending-forms.

20 The present invention relates to improvements in that class of devices which are used for bending wood; and the novelty consists in the peculiar construction and combination of the parts composing the present apparatus or
25 machine, whereby the wooden bows used in making tops for buggies, wagons, or any carriages can be easily and effectually and quickly bent into the desired form, all as will now be more in detail set out and explained.

30 In the accompanying drawings, A denotes any usual or ordinary frame-work suitably arranged and adapted to hold the hollow metallic forms B B, upon and about which the wooden bows C can be applied and bent.
35 These forms B extend from end to end of the frame, and each is, in cross-section, of a triangular shape, but so rounded on the outer part that it will give a suitable and desired shape to a bow. These forms are hollow and
40 can be heated in any desired way.

I have now shown in the drawings a flexible steam-pipe connection at *b* in one end of the forms; but I do not intend to limit myself to any such precise way of heating the forms,
45 since this can be done by gas, furnace, or other heat. At suitable places on each of these forms are notches or serrations *b'*, now shown as made along the flanges on the upper and
50 serrations are intended to be so wide apart as

to accommodate between them the flexible band or frame D, carrying the wooden bows C, or the pieces of wood that are to be bent, and said notches *b'* are designed for engaging the bent ends of the clamp-strap *d* when it is
55 placed about the band or frame D to hold the same to the forms B. When these straps are thus fixed they can be keyed tight and close upon the frame to secure it, as aforesaid, on the form B. 60

One or both of the forms B may be made adjustable in the frame A, and I have now shown how this can be done by means of a headed bolt, *h*, which passes down through the lower flange of one of the forms and through
65 the slot *a* in the frame, the same provision being made at both ends, and thus, by means of nuts on the lower ends of said bolts, the form can be fixed in any desired position. Thus the two forms can be set close to each other
70 or at any required distance apart.

The bow-pieces or wood C having been laid on the flexible metal band or frame D, the clamp-straps *e* are placed one at each end, and by means of set-screws *f*, passing through plate
75 *f'*, which is put inside the bent ends of *e*, and the plate *f''*, between the bow-pieces and the end of the set-screw, the bows can be held firmly in place on the said band or frame. Centrally on the band a strip, *g*, having nails driven
80 through, or any holding device, may be used to retain the bows or wood in place. In this condition the bows or wood are ready to be adjusted, as above described, upon the forms B. The projecting part of the nails, set-screws,
85 or other means used in retaining the strip *g* will enter the groove *i* of the strip I, which runs lengthwise of the frame A, and is adjustable in slots *a* by means of a set-screw.

The hooks *k* are placed on the ears *e'* of the
90 straps *e*, and power being applied in any suitable way to the wheel O on the end of the shaft M, the bands or chains *k'*, to which the hooks *k* are attached, are drawn over pulley *l*, placed centrally in beam L, by the shaft M.
95 This shaft is mounted in suitable bearings *a'* in the frame A, and carries, as it turns, the ring *n*, to which the other ends of the bands or chains *k'* are attached. This rotating motion is given to *n* by means of an internal projec- 100

tion which fits into the slot *m*, extending the length of the shaft. In this way the ends of the band or frame *D*, with the bows or wood, are safely and firmly drawn tight and close upon the sides and body of the forms, and here they can be secured as rigidly as desired by means of the clamp-straps *d* and wedges *d'*, in connection with the notches or serrations *b'*, as above described.

The movements of the wheel *O* can be stayed at any point by means of pawl *o*, which is adapted for engaging on the ratchet *o'* on the side of *O*.

The beam *L* rests on its outer ends on beams or rods *A'* of the frame *A*, so as to be movable back and forth thereon. Its middle part is connected with the shaft *M* by straps or links *l'*, fixed at one end to *L*, the other end passing about or around *M*, so as to steady the beam, but at the same time allow the shaft to revolve freely.

The aforesaid movement of the beam *L* is obtained by means of chain or rope *p*, attached at one end to it, while the other is connected to the shaft *P*, conveniently placed at any desired point on the frame. The chain or rope will pass over suitable pulleys to insure easy action. There are two of these chains or ropes *p*, one at the forward and the other at the rear part of *L*, and attached at any convenient point to it or link *l'*. These ropes are so fixed on shaft *P* as to draw in opposite directions. Thus, while the forward one winds about *P*, drawing beam *L* forward, the rear one is unwinding, and so vice versa.

While I have shown the bending-forms arranged horizontally, I do not confine myself to any such arrangement; nor do I confine myself to the precise outline of the forms now shown, for I may place them vertically or at an incline, or invert them. Thus in many ways, for convenience in use, I can change the mere adaptation and arrangement of the parts without in any essential degree modifying the spirit or scope of my invention.

This device or machine affords one of the easiest, safest, and speediest means for bending wooden bows, or other like articles, and by the use of it the wood is never damaged, and the form given is made firm and permanent.

The device is very simple in structure, can be very strongly and cheaply made, and can be run or used by any one at all conversant with this line of business with the utmost facility.

In this application no broad claim is made for the means of drawing the wood, &c., upon the bending-form, nor for moving this mechanism back and forth on the frame, since these features are shown and claimed in another application made and filed of even date with these presents.

Having thus described my invention, what I consider new, and desire to secure by Letters Patent, is—

1. The bending-forms *B*, having flanged edges, serrated or notched at *b'*, in combination with the clamp-strap *d*, as described, bending-band *D*, and wedge *d'*, substantially as and for the purposes set forth.

2. In a wood-bending machine, the combination of frame *A* with the bending-forms *B*, adapted to be adjusted in relation to each other by means of slots *a* and set-screws passing through the flanged edges of *B*, substantially as described.

3. In a wood-bending machine, as described, the combination of frame *A*, having a grooved central beam, *I*, with flexible band *D*, having central strip, *g*, and bending-forms *B*, substantially as and for the purposes set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 1st day of December, 1879.

CHARLES WRIGHT.

Witnesses:

J. W. GRAHAM,
J. J. BRADNER.