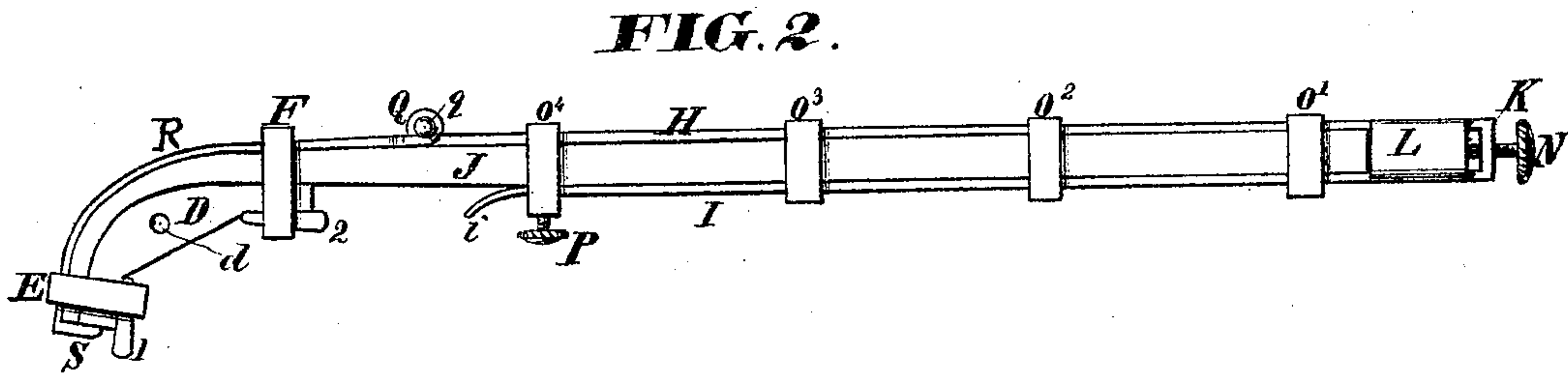
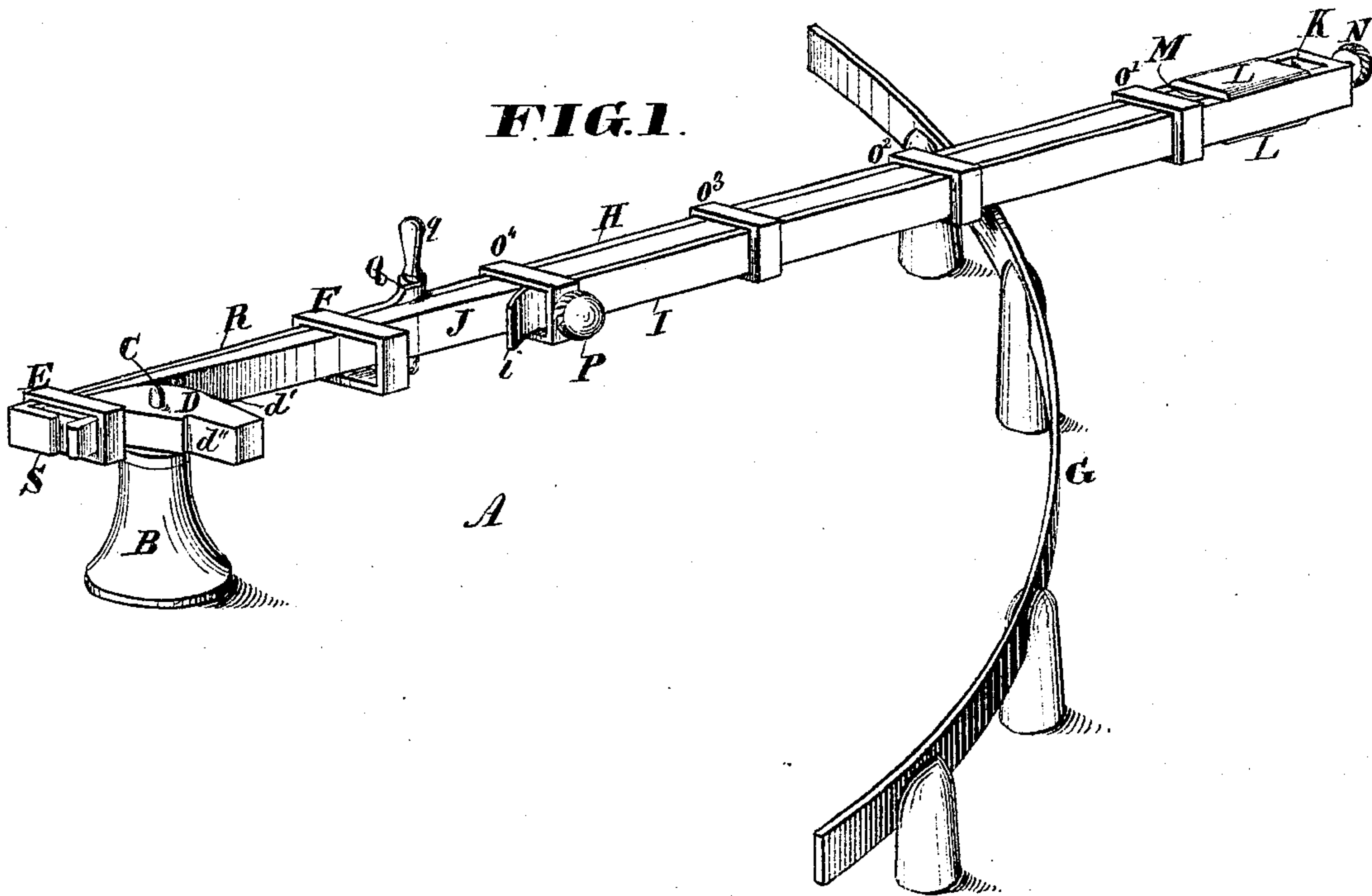


**A. J. FRASER.**  
**Machines for Bending Shafts.**

No. 141,552.

Patented August 5, 1873.



WITNESSES:

*Gas. L. Swin*  
*Walter Allen*

INVENTOR:

*Allen J. Fraser*  
 By *Knights Bros* Attorneys.

# UNITED STATES PATENT OFFICE.

ALLEN J. FRASER, OF TOLEDO, OHIO.

## IMPROVEMENT IN MACHINES FOR BENDING SHAFTS.

Specification forming part of Letters Patent No. 141,552, dated August 5, 1873; application filed January 14, 1873.

*To all whom it may concern:*

Be it known that I, ALLEN J. FRASER, of Toledo, in the county of Lucas, Ohio, have invented a new and useful Improvement in Machine for Bending Shafts, of which the following is a specification:

My invention relates to a compact and effective apparatus for the bending and setting of carriage shafts or thills, plow-handles, and other articles of like character, the devices which act directly upon the wood in the process of bending being in my improvement removable from the stationary portions, and serving as a clamp to hold the article to its bent shape until fully set.

My device comprises two metallic straps, whose width slightly exceeds that of the shaft or handle to be bent, which straps are joined at their ends by a short piece or elbow at right angles to both, and whose length slightly exceeds the thickness of the said shaft or handle at its heel or butt end; a hinged extension of the longer of these straps, which terminates in a shoulder; a convex block; a number of metallic loops, set-screws, and wedges.

Figure 1 is a perspective view, showing a carriage-shaft in position within the straps, and in position upon the bed at the commencement of the bending operation. Fig. 2 is a side view of the same shaft after having been bent, clamped, and removed from the bed.

The bed A is fixed permanently to the floor of the shop or other fixed object, and has a stationary protuberance, B, and a stud, C, which engage with a quarter-circle block, D, having an orifice, *d*, to receive the stud C, and whose convex surface *d'* corresponds with the desired bend of the shaft-point, and whose rear surface is indented, *d''*, to receive and retain clamps or loops E F, as will be presently explained. G represents a trestle, upon which the butt-end of the shaft and its inclosing-straps rest in the process of bending. H is the back-strap and I the belly-strap, preferably of wrought-iron, of somewhat greater width than that of the shaft J to be bent, and separated from each other, at a distance slightly in excess of the shaft's thickness at its butt-end, by a portion, K, which joins the ends of the said straps at right angles thereto. The straps are likewise connected firmly together near this end by plates L, which serve as a box to inclose a follower, M, capable of being

advanced by means of a screw, N, which I call the upsetting-screw. The strap H has also attached to it a number of clamps or loops, O<sup>1</sup> O<sup>2</sup> O<sup>3</sup> O<sup>4</sup>, which inclose the strap I, and of which the clamp O<sup>4</sup> is traversed by a retaining-screw, P. Beyond the clamp O<sup>4</sup> the strap I is turned outward or away from the stuff, as at *i*. Hinged at Q, to the extremity of the strap H, is an extension strap, R, which terminates with a rectangular lip, S. The pintle *q* of the hinge Q is removable at will. 1 2 are wedges employed to tighten the clamps.

A stick of timber, J, dressed to the proper form and dimensions, is clamped within the straps as shown in Fig. 1, and the upsetting-screw N advanced until the two ends of the stick to be bent press tightly against the follower M and the lip S, respectively. The clamped stick is then placed with the block D upon the bed A, the indentation *d''* of said block hugging the protuberance B, and its orifice *d* receiving the stud C, and with the butt-end of the said clamped stick resting on the trestle G. The butt-end of the clamped stick or shaft is then moved around in direction of arrow, the screw N being at the same time carefully relaxed until the point of the shaft is closely enwrapped around the block D, which having been accomplished, the remaining clamp-loop F is secured. The shaft, being now bent and secured to its desired shape, may be removed from the bed and laid aside in the clamped condition for setting.

The hinge Q being separable, the strap H I may be used with other extensions, or the extensions R S may be used with other straps.

It will be seen that the strapped shaft or stick becomes itself the lever by which the bending operation is effected.

I claim as new and of my invention—

The described arrangement of double strap H I K, extension R S, separable hinge Q *q*, upsetting device L M N, convex block D *d d' d''*, and suitable clamp-loops with screws or wedges, the whole constituting a combined bending and setting apparatus, as set forth.

ALLEN J. FRASER.

Witnesses:

T. J. McDONNELL,  
JOHN J. BARKER.