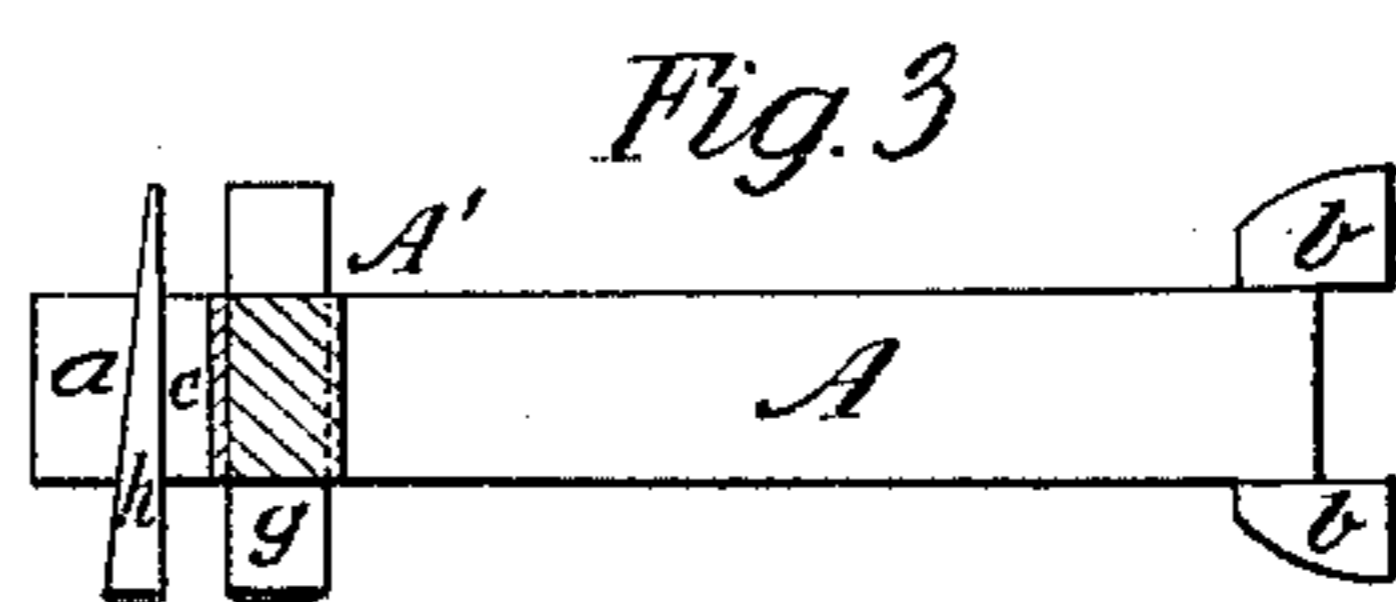
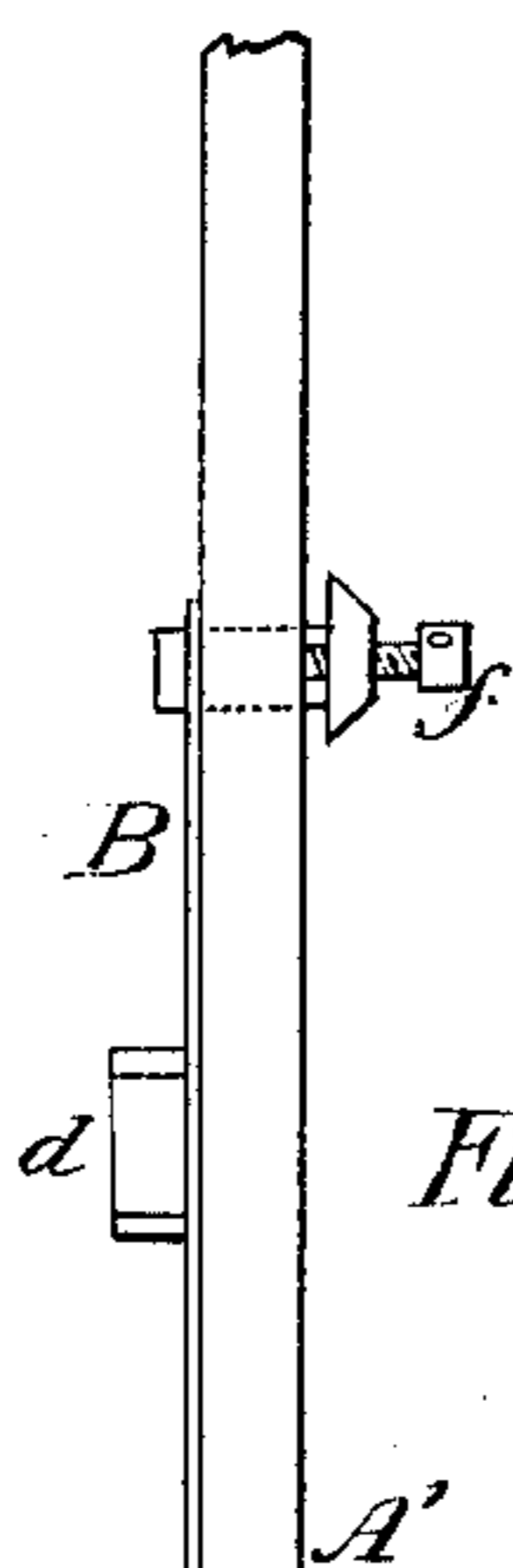
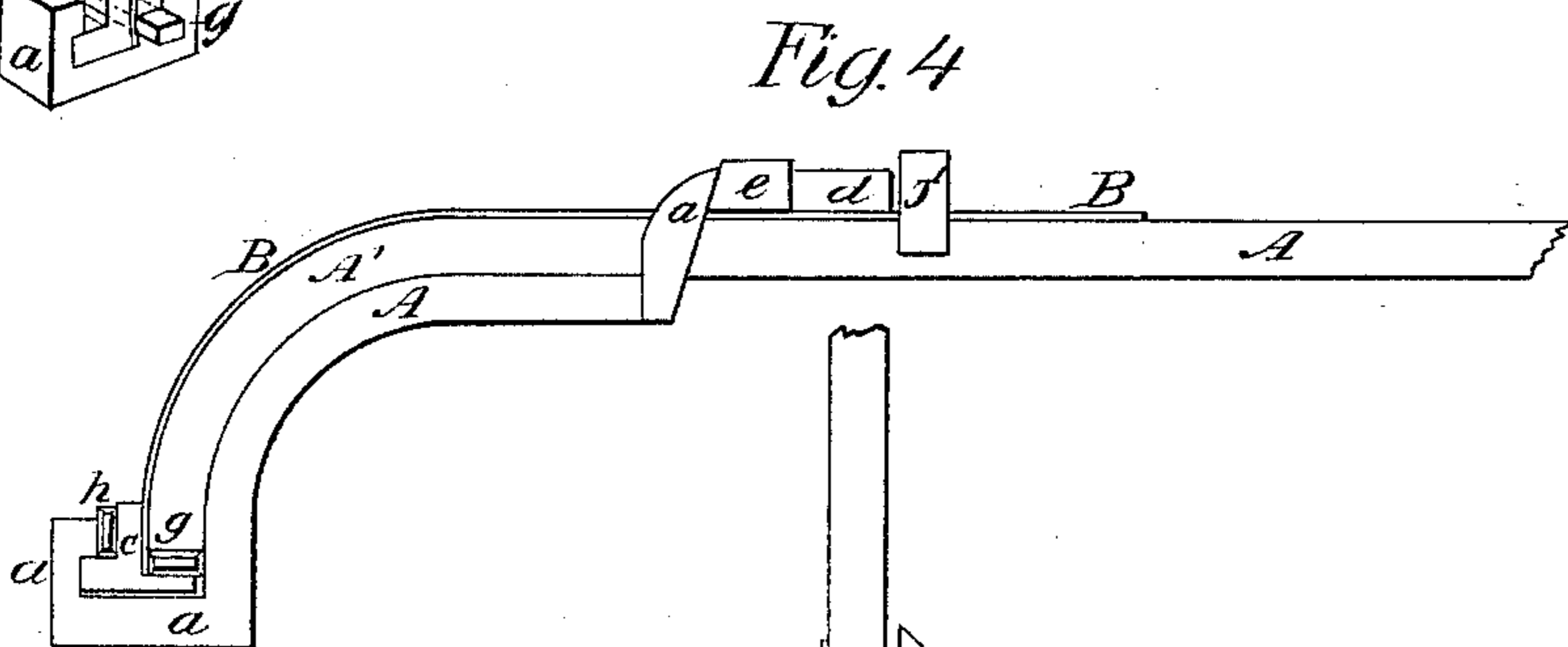
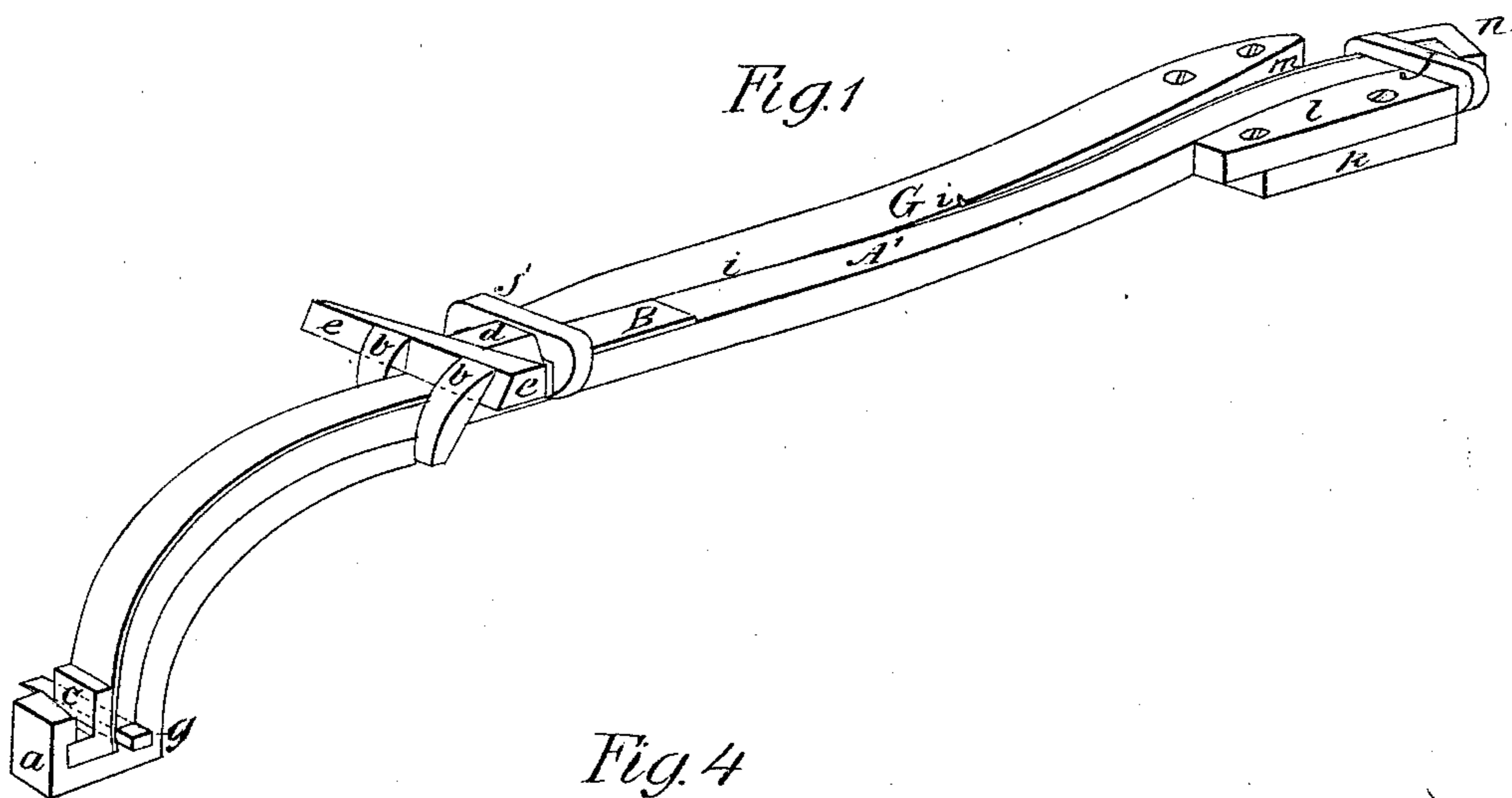


J. W. Dann,

Bending Wood,

No 57,294,

Patented Aug. 21, 1866.



Witnesses

*R. Campbell,
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Inventor

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Mason Fenwick Lawrence

UNITED STATES PATENT OFFICE.

JESSE W. DANN, OF COLUMBUS, OHIO.

IMPROVEMENT IN BENDING CARRIAGE-THILLS.

Specification forming part of Letters Patent No. 57,294, dated August 21, 1866.

To all whom it may concern:

Be it known that I, JESSE W. DANN, of Columbus, in the county of Franklin and State of Ohio, have invented an Improvement in the Mode of Bending Buggy Shafts or Thills; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a perspective view, showing the bending and holding device of a shaft. Fig. 2 is a view showing the position of the shaft before it is bent. Fig. 3 is a top view of Fig. 2. Fig. 4 is a side view, showing the heel end of a shaft bent on its former and confined thereon.

Similar letters of reference indicate corresponding parts in the several figures.

The object of my invention is, first, to make the strap very tight before commencing to bend, which is done by means of a wedge, *g*, driven in between the heel end of the shaft and the step *c* after the strap B is securely confined to the shaft by means of a powerful clamp, which may be made as shown in Fig. 2, or in any other suitable manner that will prevent the strap B from slipping during the operation of bending; secondly, to prevent the shaft from drawing or slipping up out of its place while bending it by means of the back and lower projection of the step *c*, together with its groove in the former A; thirdly, to hug all the different sizes of shafts tightly against the former A by means of a wedge, *h*, driven in between the overhanging projection on the former A and the step *c*; fourthly, to prevent the strap B from slipping back after the bending process is completed, and at the same time to hold the shaft down in its place on the former A by means of the two ears *b b*, the block *d*, and the wedge *e*.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

In the accompanying drawings, A represents a metal form, which is adapted for giving the proper curve to the heel end of the shaft. On one end of this form a stirrup, *a*, is formed, and on the opposite end two projecting ears,

b b, are formed, which are beveled or lean forward, as shown in Figs. 2 and 4.

B represents a flexible metal strap, and C is a T-shaped block of cast-iron, which is secured permanently on one end of the strap B and adapted to fit in the groove in the stirrup on the lower end of the form A, as shown in Figs. 2 and 4; and block *d* is also secured permanently to the strap B, so as to come on top of the strap and back of the ears *b b*, so that the key-wedge *e* can be driven between the block *d* and the ears *b b* after the bending is completed.

G, Fig. 1, represents a wood bar, having its edge *i* curved to the shape desired for the belly of the shaft. To one end of this bar a cross-piece, *k*, is secured, and upon this cross-piece a block, *l*, is secured, having its inside edge the shape desired for the point of the shaft, leaving a space between the bar G and block *l* sufficiently wide to receive the shaft. A flexible metal strap, *m*, is also used in bending the point of the shaft. This strap is secured permanently about midway to the curved edge *i* of the bar G, as shown in Fig. 1, the other end having a strong hook attached to go against the end of the shaft.

I have described the construction of the forms, and will now describe their operation in bending a shaft. The form A should be secured to the floor before commencing to bend. The block *c* is inserted beneath the overhanging portion of the stirrup *a*, after which a shaft, A', Fig. 2, is inserted between the strap B and the form A, the end of the shaft A' resting on the step *c*. The strap B is then securely confined to the shaft A' with the clamp *f*, or its equivalent, after which the wedge *g* is driven in between the end of the shaft A' and the step *c* until the strap B is very tight. Another wedge, *h*, is driven in between the overhanging end of the stirrup and the step *c*. When the shaft is thus thoroughly confined it is bent down on the form A, and the wedge *e* is driven in between the block *d* and the ears *b b*. The clamp *f* is then removed. The shaft thus bent, together with the form A, is then removed from the floor and the point of the shaft A' thrust in between the block *l* and strap *m*. The pointed end of the

shaft must be up against the hook *n*. The butt-end of the shaft is now bent around the curved edge *i i* and secured to the bar *G* by means of the clamp *J*, after which the joint end is bent around and secured to the block *l* in the same manner.

The operation of bending is now completed, and the shaft, together with all its clamps, is put away and another shaft bent in the same manner.

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

1. In the process of bending shafts for vehicles, the wedge *g*, for the purpose specified.

2. The wedge *h*, for the purpose specified.

3. The back or outer projection on the step *c*, for the purpose specified.

4. The ears *b b* and the beveled wedge *e*, together with the block *d*, for the purposes specified.

5. Broadly, the means, as herein set forth, for tightening and holding the strap upon the shaft during the operation of bending, substantially as specified.

JESSE W. DANN.

Witnesses:

L. J. CRITCHFIELD,
ROBERT CUTLER.