

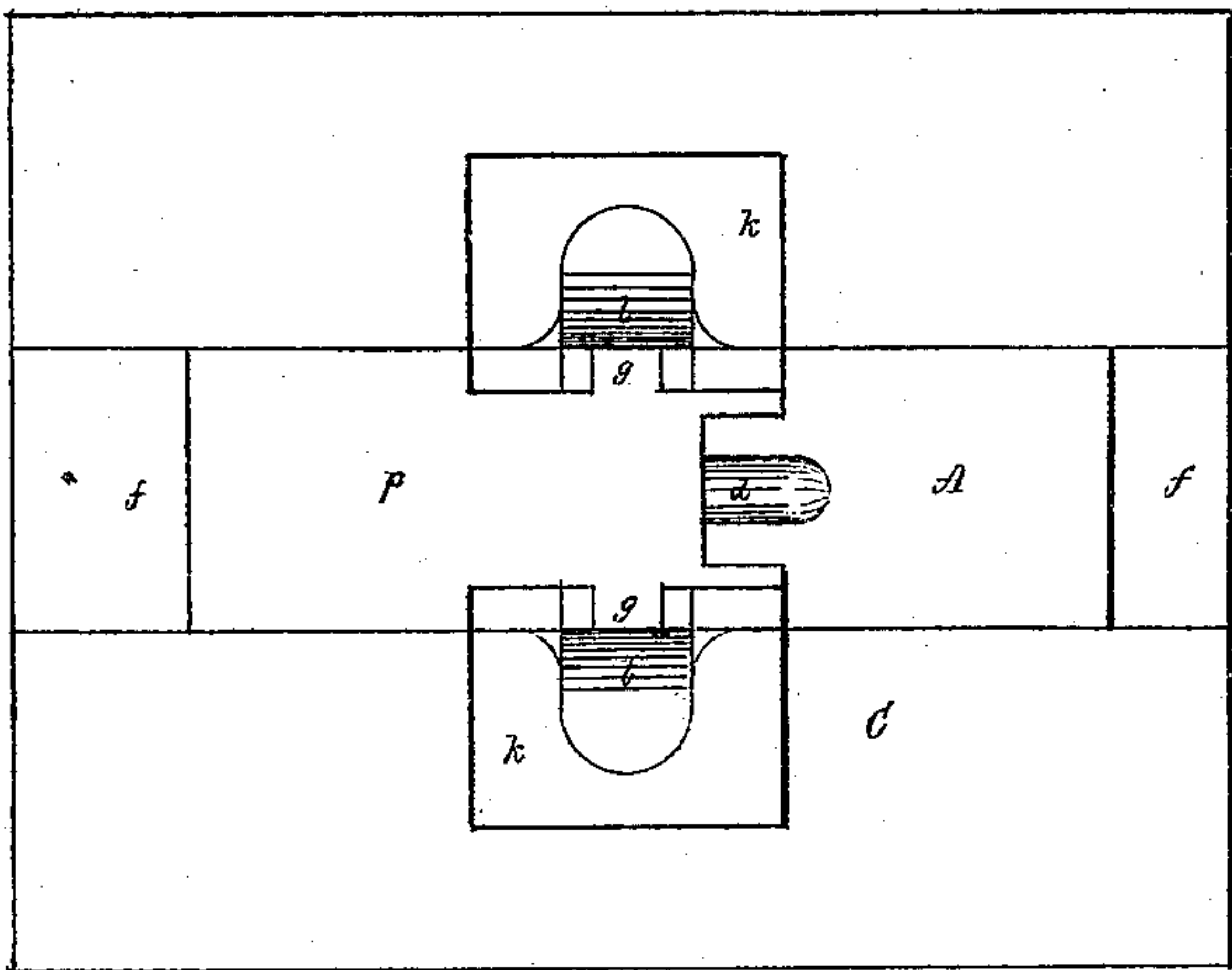
*H. M. Beecher,*

*Coupling Iron.*

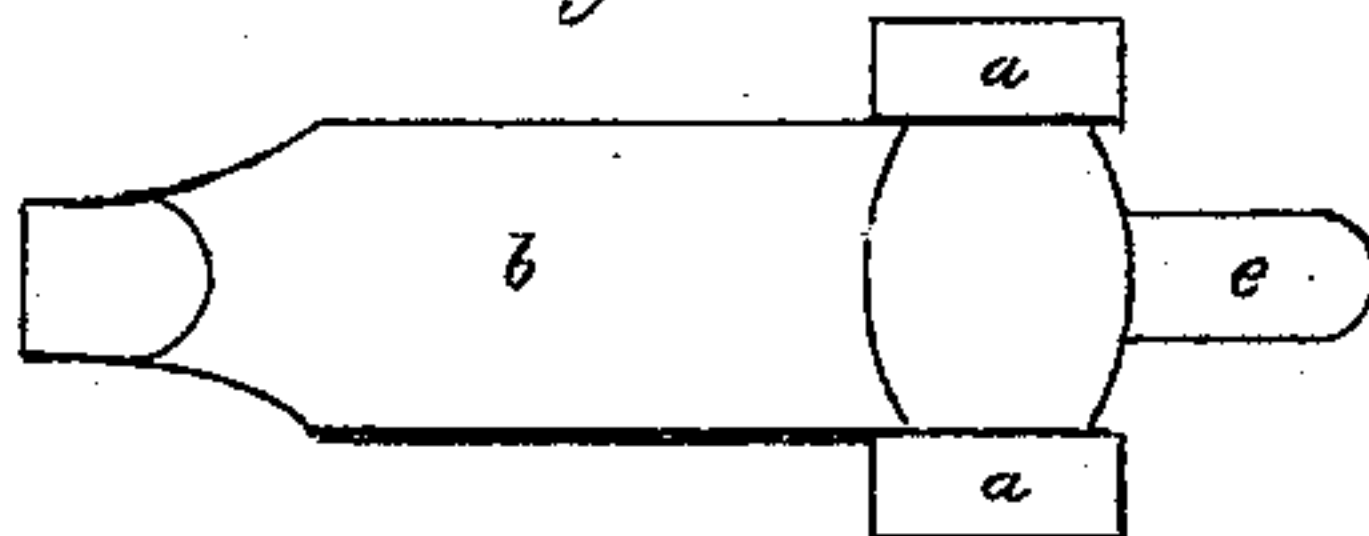
*No. 93,951.*

*Patented Aug 24. 1869.*

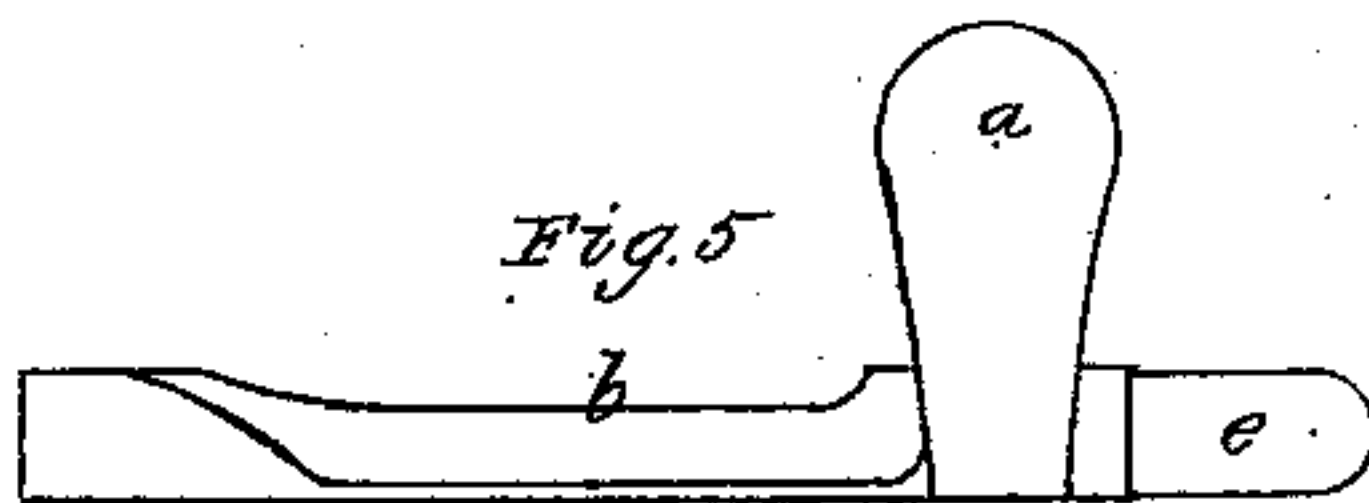
*Fig. 7.*



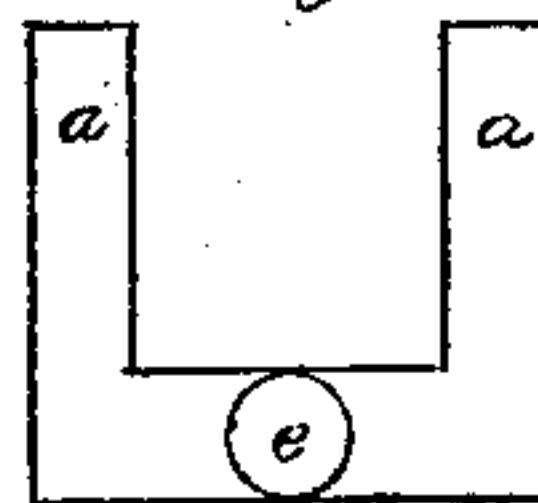
*Fig. 4.*



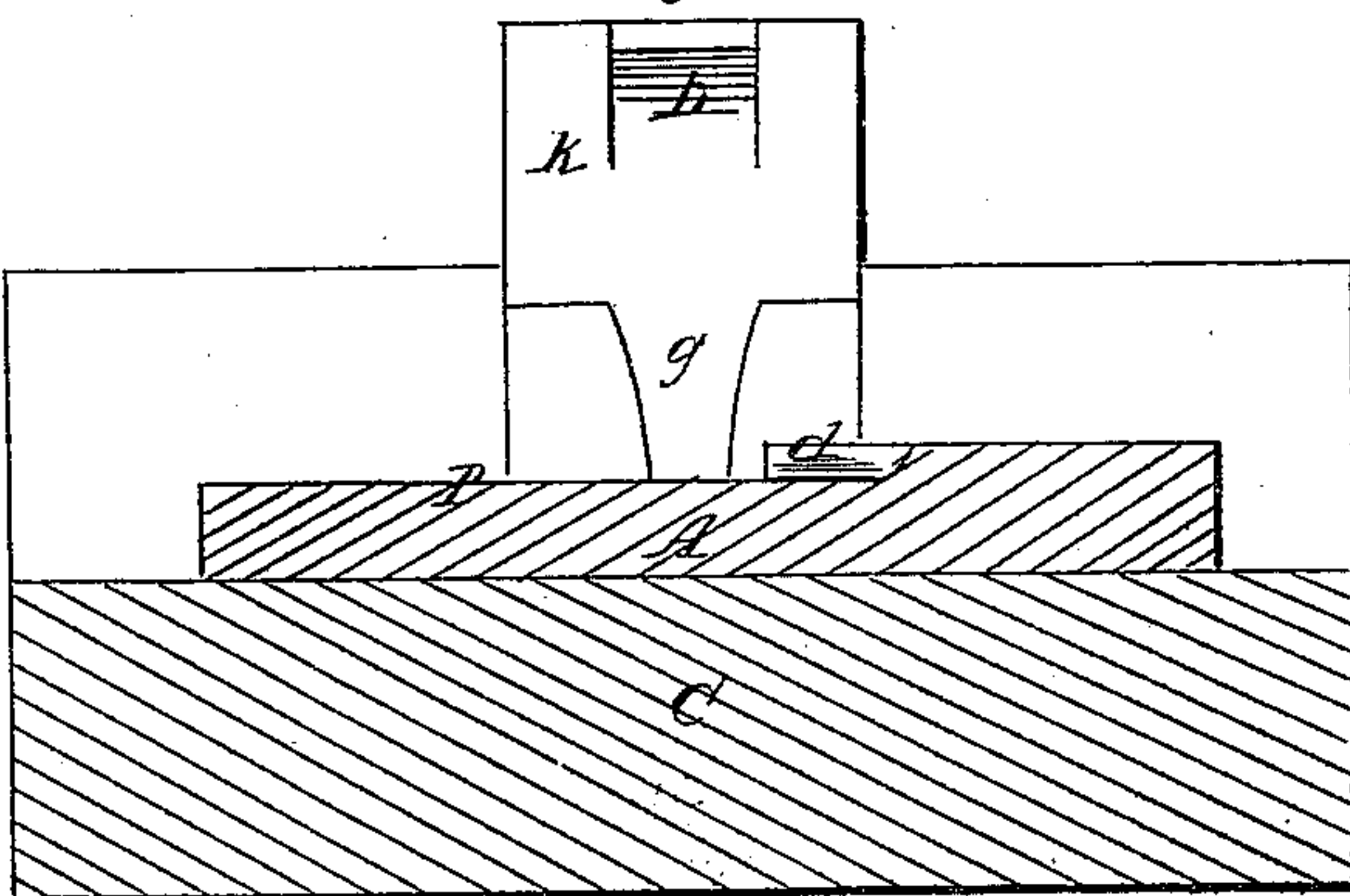
*Fig. 5.*



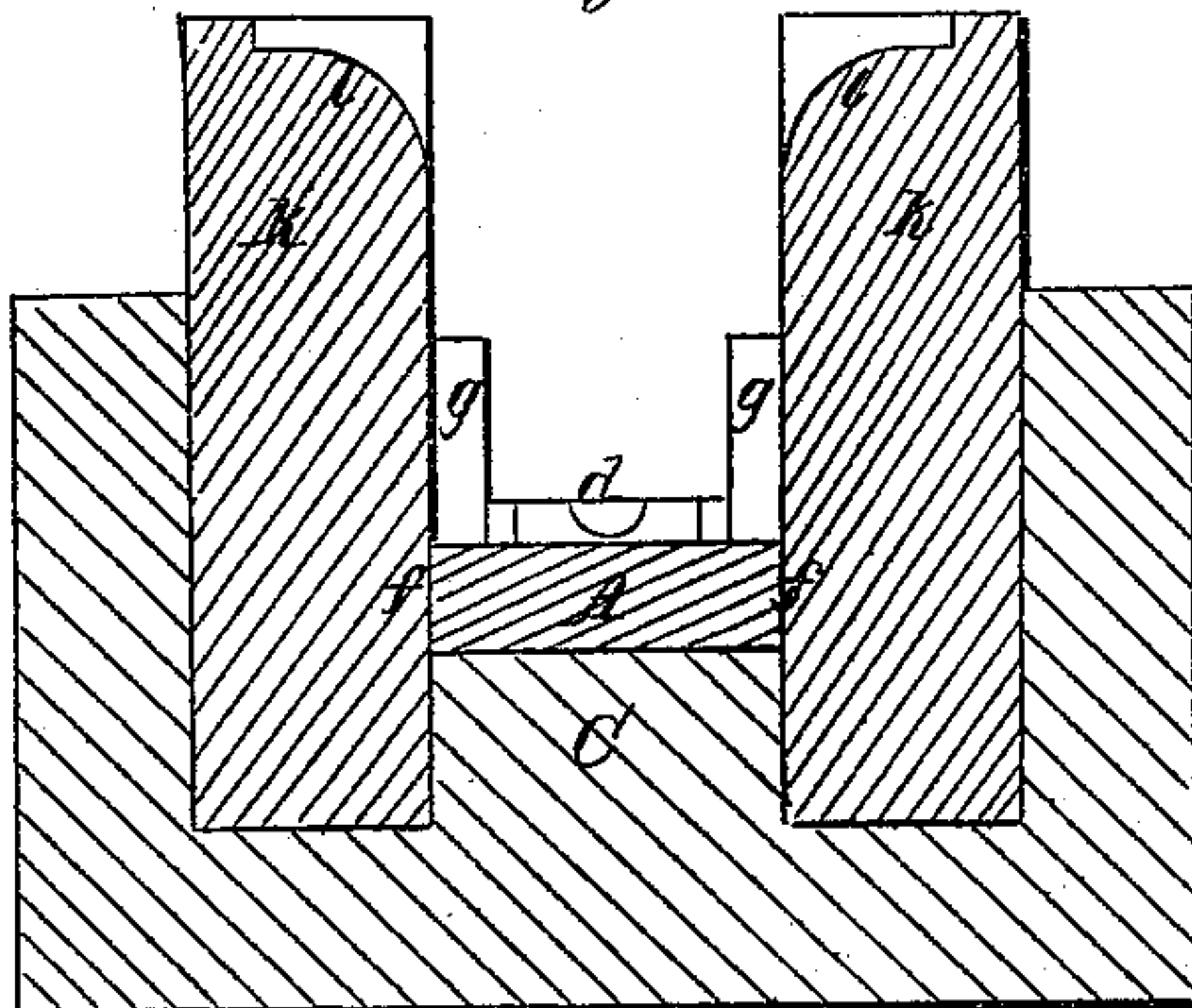
*Fig. 6.*



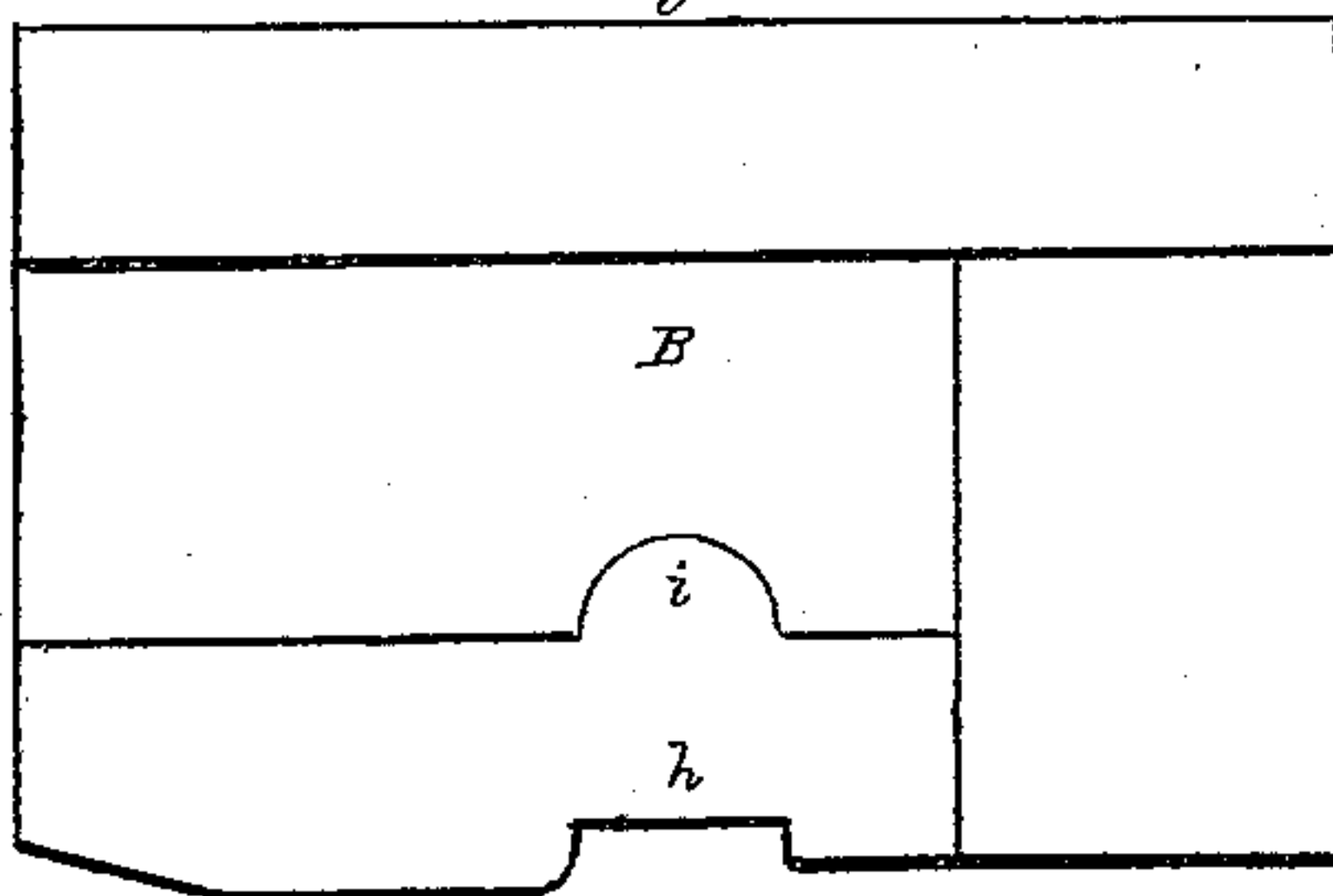
*Fig. 9.*



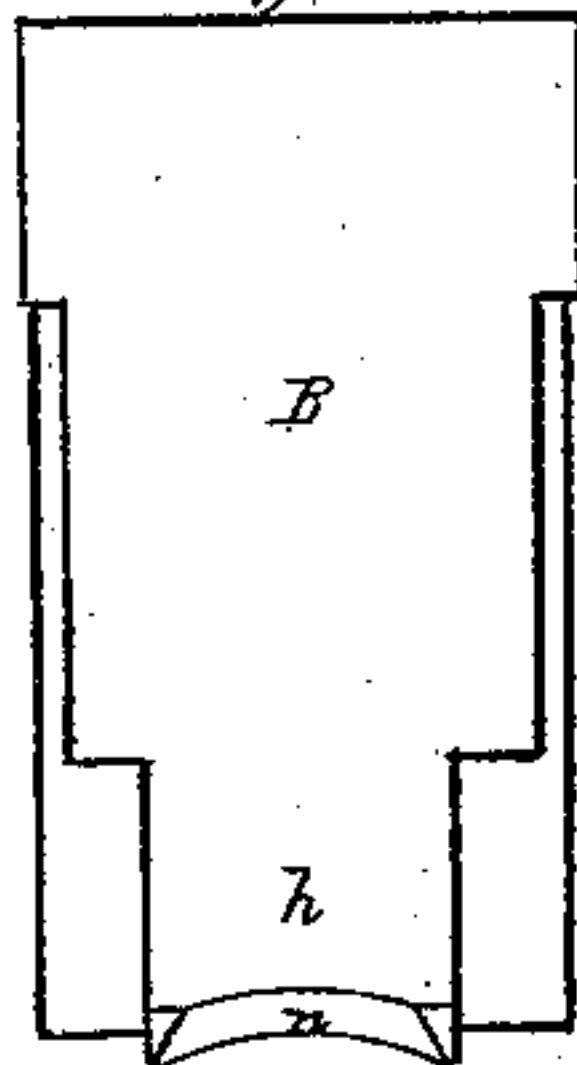
*Fig. 8.*



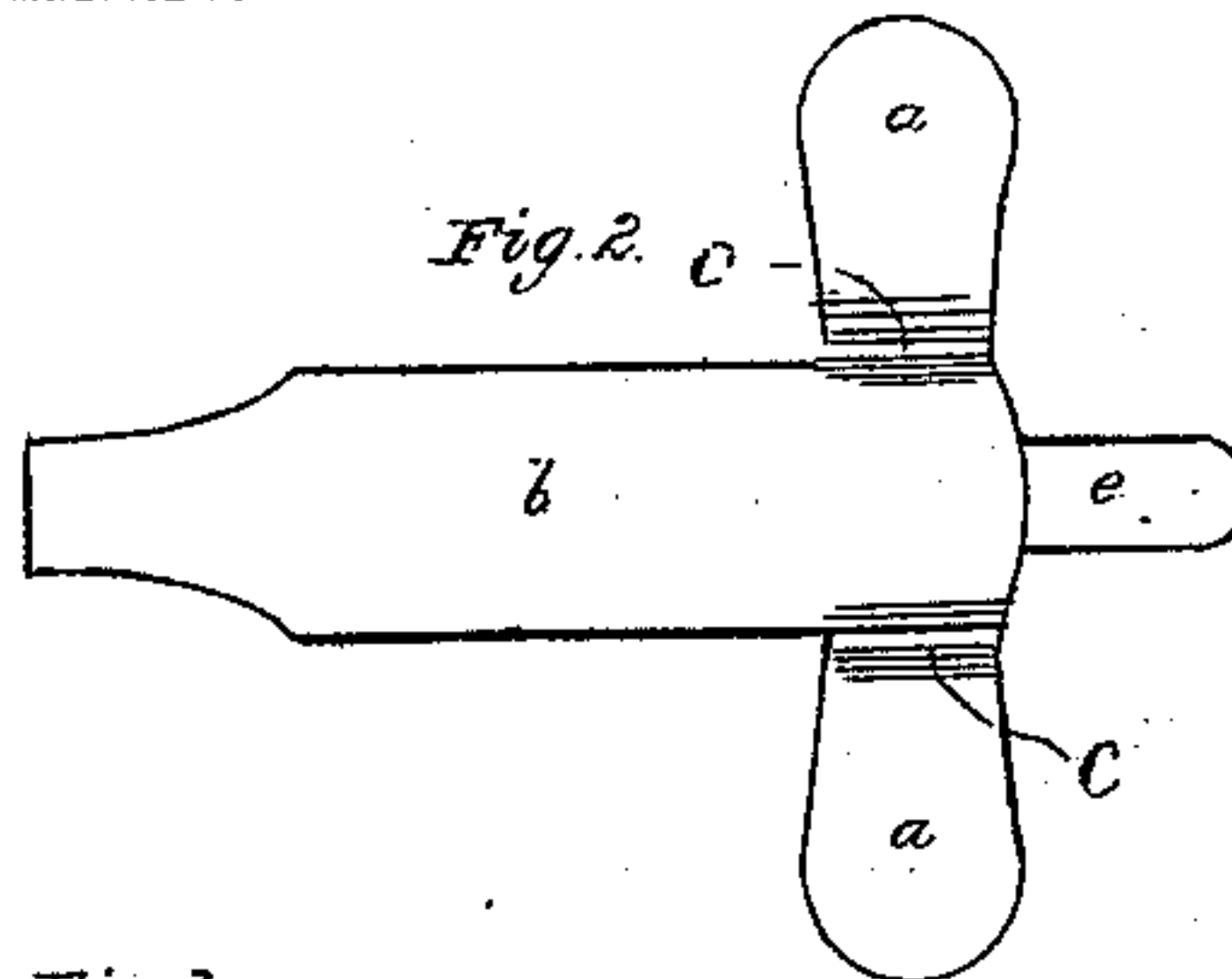
*Fig. 11.*



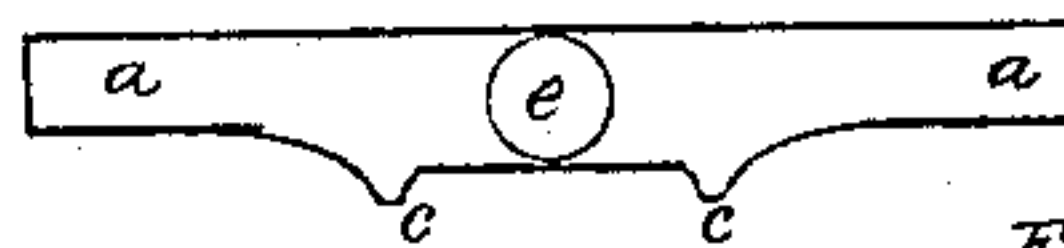
*Fig. 12.*



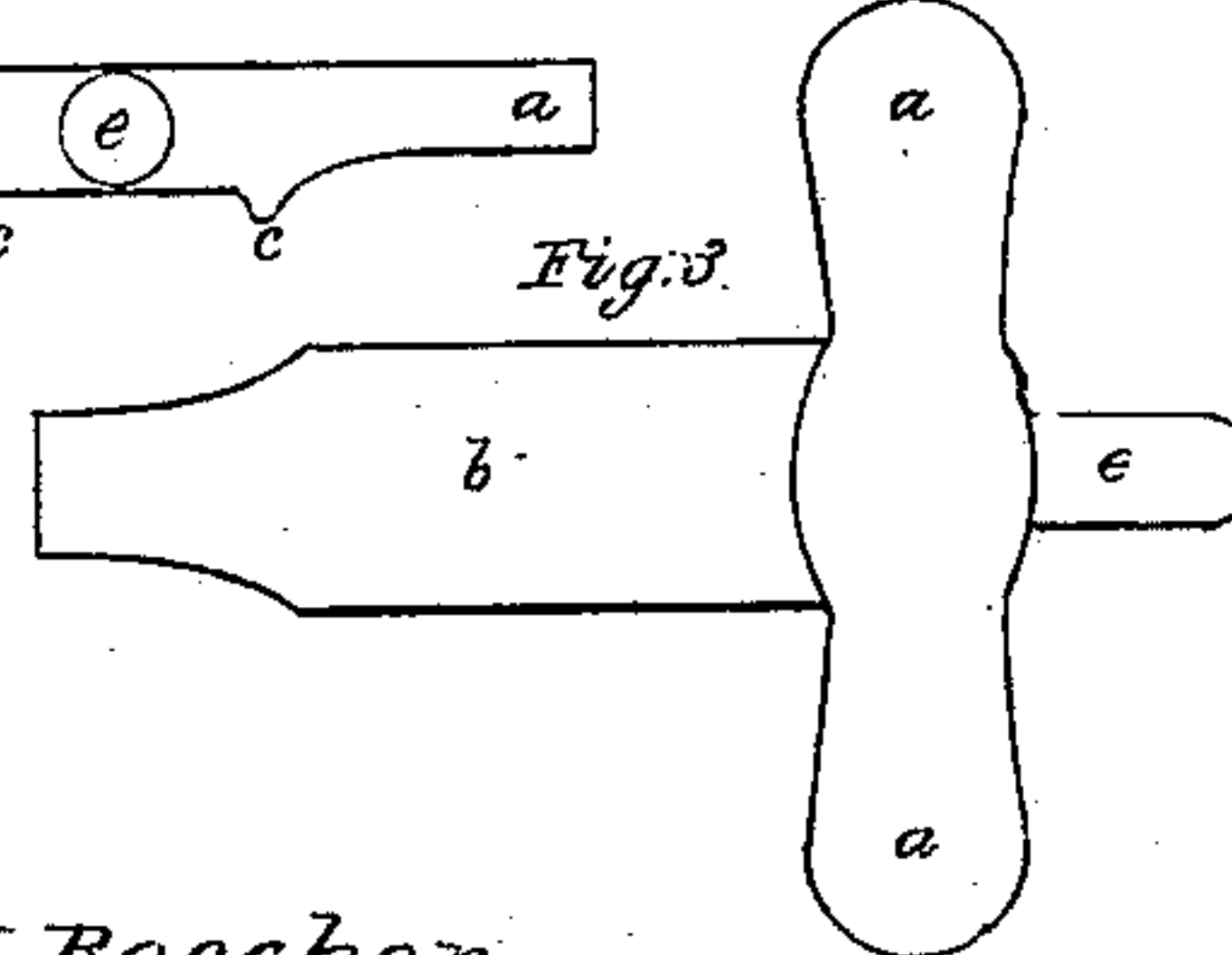
*Fig. 2.*



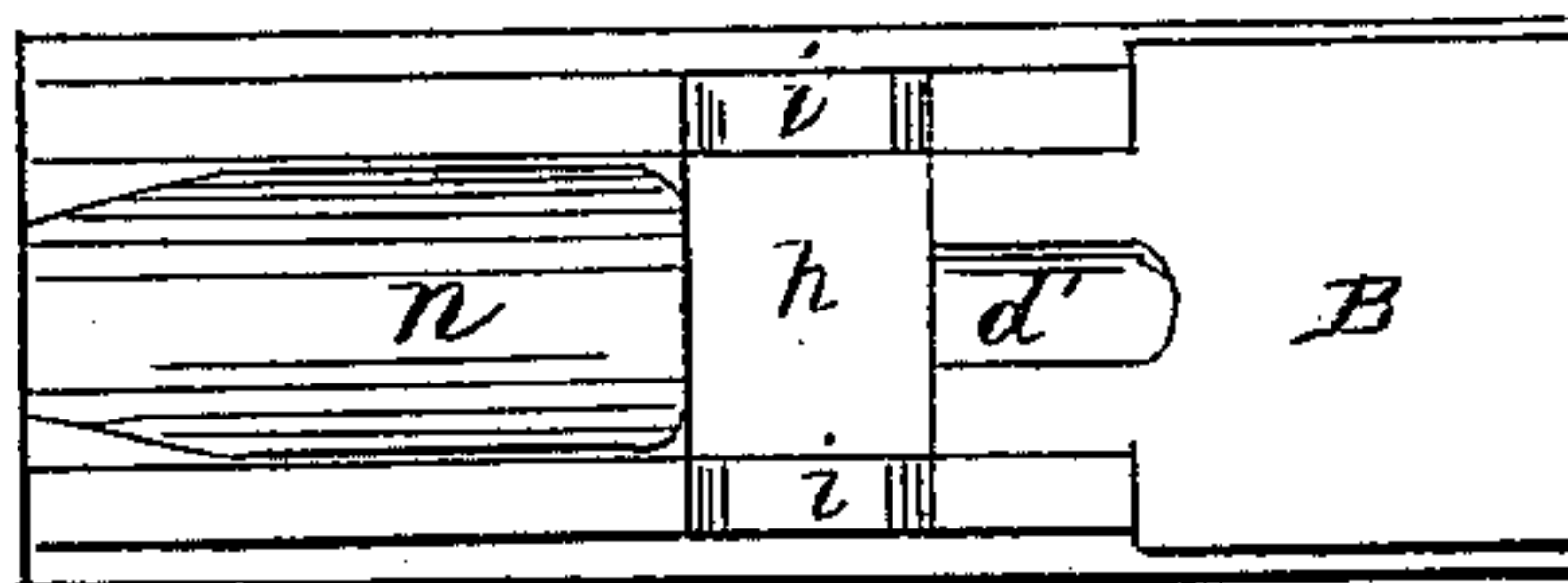
*Fig. 1.*



*Fig. 3.*



*Fig. 10.*



*Witnesses.*

*J. N. Piper*  
*J. Brown*

*H. M. Beecher*

*by his attorney.*

*N. W. H. W.*



# United States Patent Office.

HENRY M. BEECHER, OF PLANTSVILLE, CONNECTICUT, ASSIGNOR  
TO H. D. SMITH AND COMPANY.

Letters Patent No. 93,951, dated August 24, 1869.

## IMPROVED DIE FOR FORMING CARRIAGE-SHAFT SHACKLES.

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

To all persons to whom these presents may come:

Be it known that I, HENRY M. BEECHER, of Plantsville, of the county of Hartford, and State of Connecticut, have made a new and useful invention, having reference to Dies for the Formation of Carriage-Shaft Connections or Shackles; and do hereby declare the same to be fully described in the following specification, and represented in the accompanying drawings, of which—

Figure 1 is a front-end view,

Figure 2, a bottom view, and

Figure 3, a top view of a shaft-shackle blank, as it is swaged out preparatory to having its arms bent up, with respect to the shank, in manner and by mechanism as hereinbefore described.

Figure 4 is a top view,

Figure 5, a side elevation, and

Figure 6, a front-end view of the shaft-shackle blank, as bent and formed by the said mechanism.

Figure 7 is a top view,

Figure 8, a transverse section, and

Figure 9, a longitudinal section of the lower or stationary die, employed in effecting the bending and forming of the blank.

Figure 10 is an under-side view,

Figure 11, a side view, and

Figure 12, an end view of the drop-die.

The object of the stationary and drop-dies to be hereinafter described, is to impart to the article, or shackle-blank, as exhibited by figs. 1, 2, and 3, the form of that shown in figs. 4, 5, and 6. In these latter figures it will be observed that the arms *a a* of the cross, shown in figs. 1, 2, and 3, have been bent up into, or about into parallelism with each other, and so as to stand at right angles, or thereabout, to the bottom of the shank *b*, the vertices of the angles of the shank and arms being completed.

It will be seen that the arms are pressed down, so as to project at equal distances from the shank.

The blank, shown in figs. 1, 2, and 3, is first swaged with projections *c c*, which, when the arms are bent up, as described, serve to fill out and complete the blank at and near the vertices of the angles of the arms and shank.

The plate of the lower or stationary die is shown at *A*, as provided with a semi-cylindrical recess or die, *d*, which, with another such recess or die *d*, formed in the drop-die *B*, serves to complete the round part or head *e* of the cross.

This plate *A* may be in one piece with the bed-block *C*, or it may be separate therefrom, and be slid into a groove or channel, *f*, made through it.

Arm-dies *g g* are arranged on opposite sides of the channel *f*, and extend up from the plate *A*, in manner as represented.

They co-operate with the part *h*, and two semi-circular arches or upsetting-dies, *i i*, formed in the drop-die *B*, in manner as represented.

Leading upward from the arm-dies, and (formed in manner as shown) in posts *k k*, erected on the bed-block, are two recesses or bending-guides *l l*, curved and otherwise formed, as shown in the drawings.

There is a hollow or die *n*, in the bottom of the drop-die, such being to operate with the flat surface *p*, of the plate *A*, in giving form to the shank *b* of the shaft-shackle, as shown in figs. 4, 5, and 6.

In using the dies, the blank is to be so laid on the lower one, with the arms resting in the bending-guides, after which the drop-die is to be forced down upon the blank, so as to crowd it down into the bed-block, and the arm and head-dies thereof, so as to cause the arms to bend up into right angles with the shank and enter the upsetting-dies, and be crowded down to a level with each other by them.

I claim as my invention, in the above-described mechanism, the following, viz:

The combination and arrangement of the bending-guides *l l*, and the arm-dies *g g*, with the bed-plate *A* and the drop-die *B*.

Also, the combination and arrangement of the upsetting-dies *i i*, with the drop-die *B*, and with the arm-dies *g g*, bending-guides *l l*, and die-plate *A* of the bed-block.

Also, the combination of the head-dies *d d*, with the die-plate *A*, the drop-die *B*, the arm-dies *g g*, the bending-guides *l l*, and the upsetting-dies *i i*.

Also, the combination and arrangement of the shank-dies *n p*, the head-dies *d d*, the arm-dies *g g*, the upsetting-dies *i i*, and the bending-guides *l l*, the whole being applied to the bed-block and the drop-die substantially in manner and so as to operate as and for the purpose or purposes hereinbefore specified.

HENRY M. BEECHER.

Witnesses:

SIMEON H. NORTON,  
SARAH E. NORTON.