

T. L. BAYLIES.

Vises.

No. 153,418.

Patented July 28, 1874.

Fig. 1.

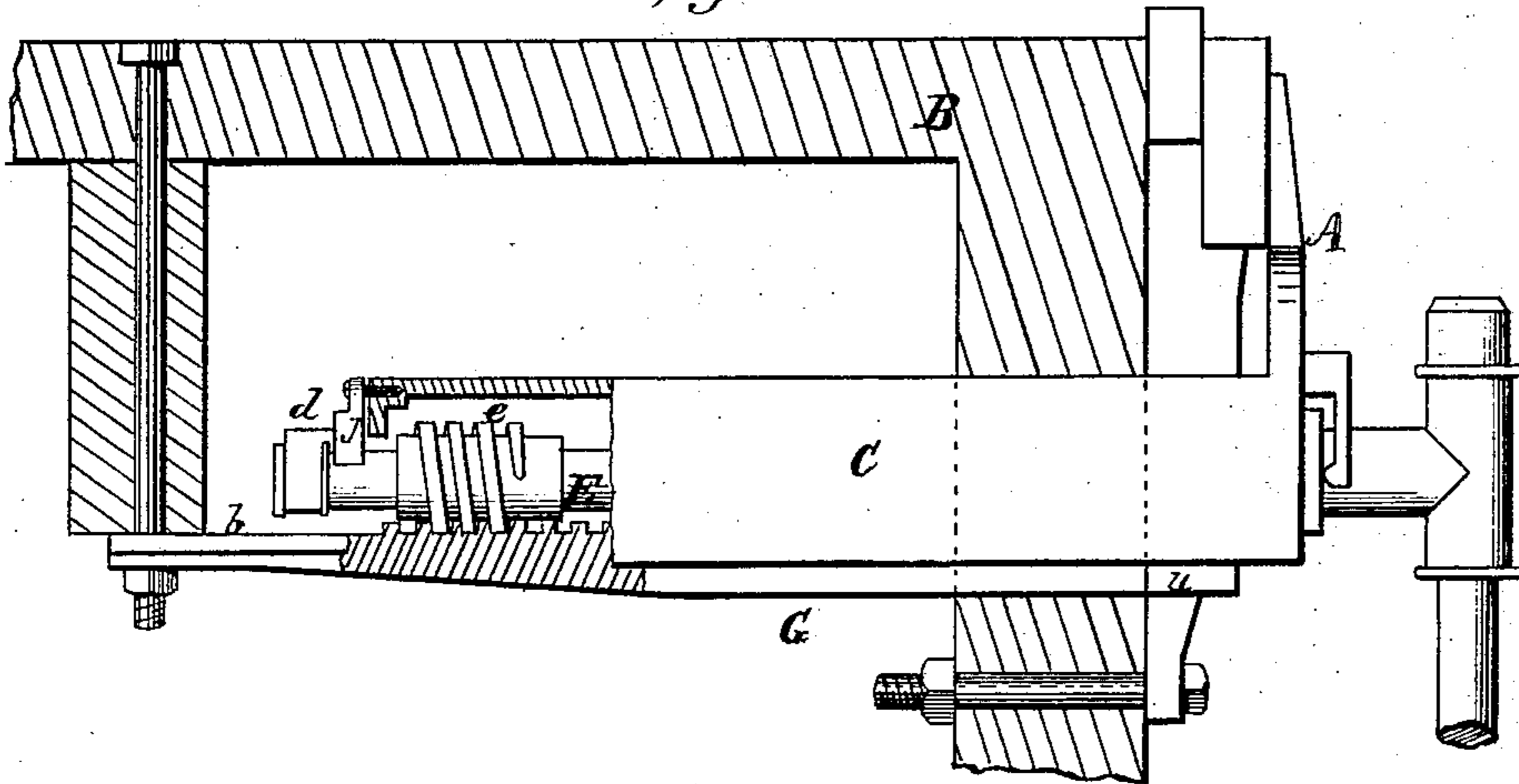


Fig. 2.

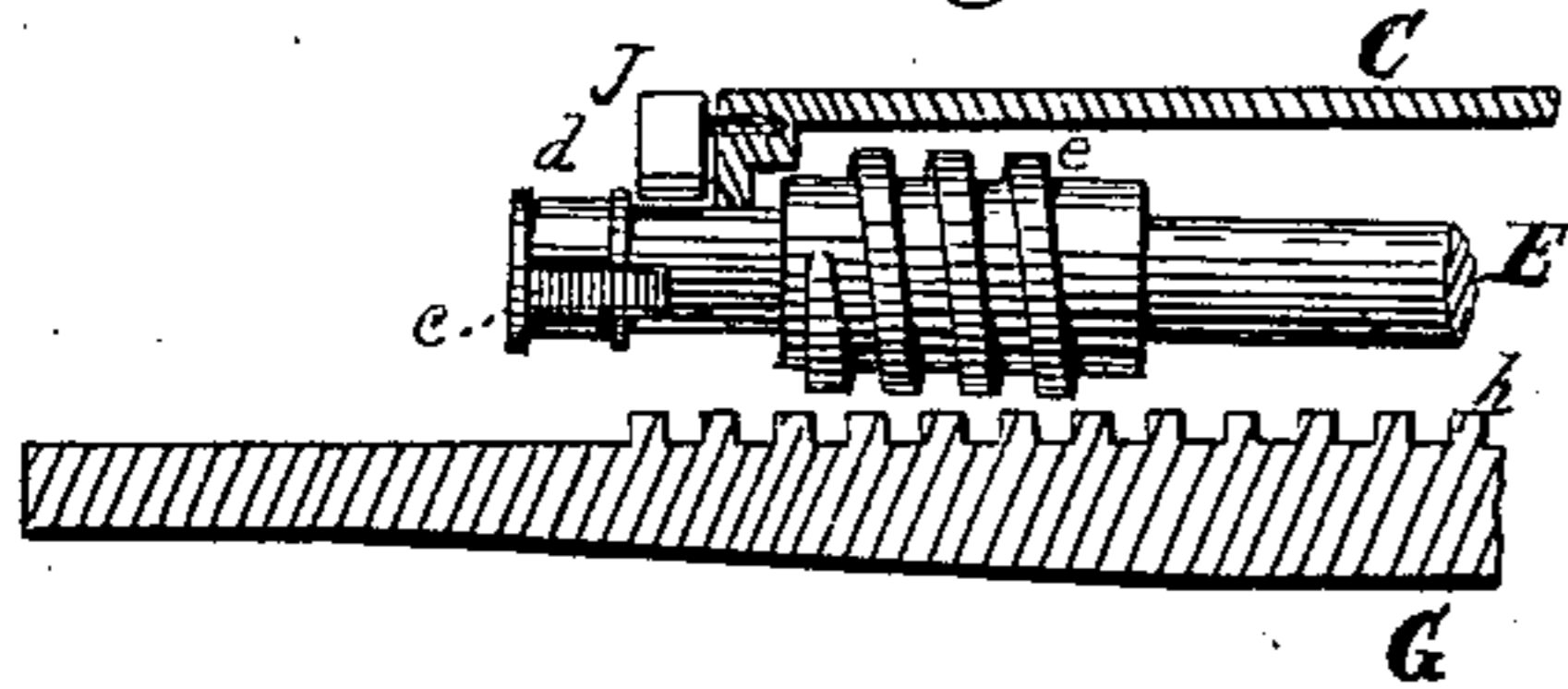


Fig. 3.

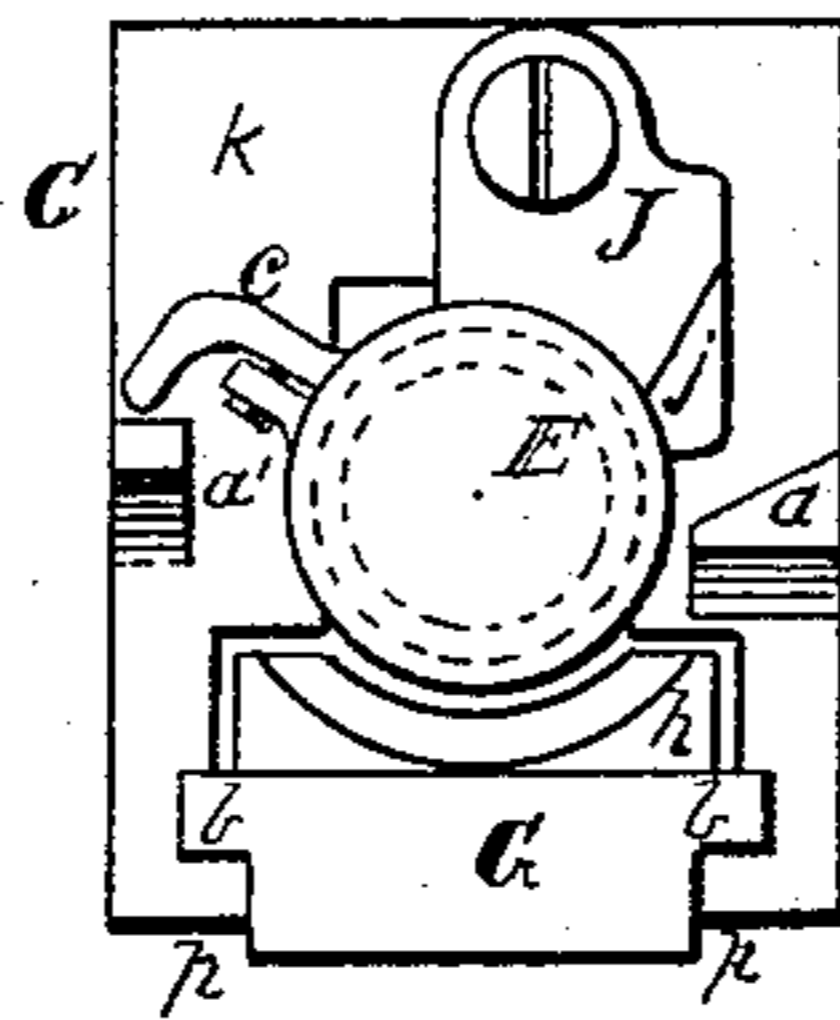


Fig. 4.

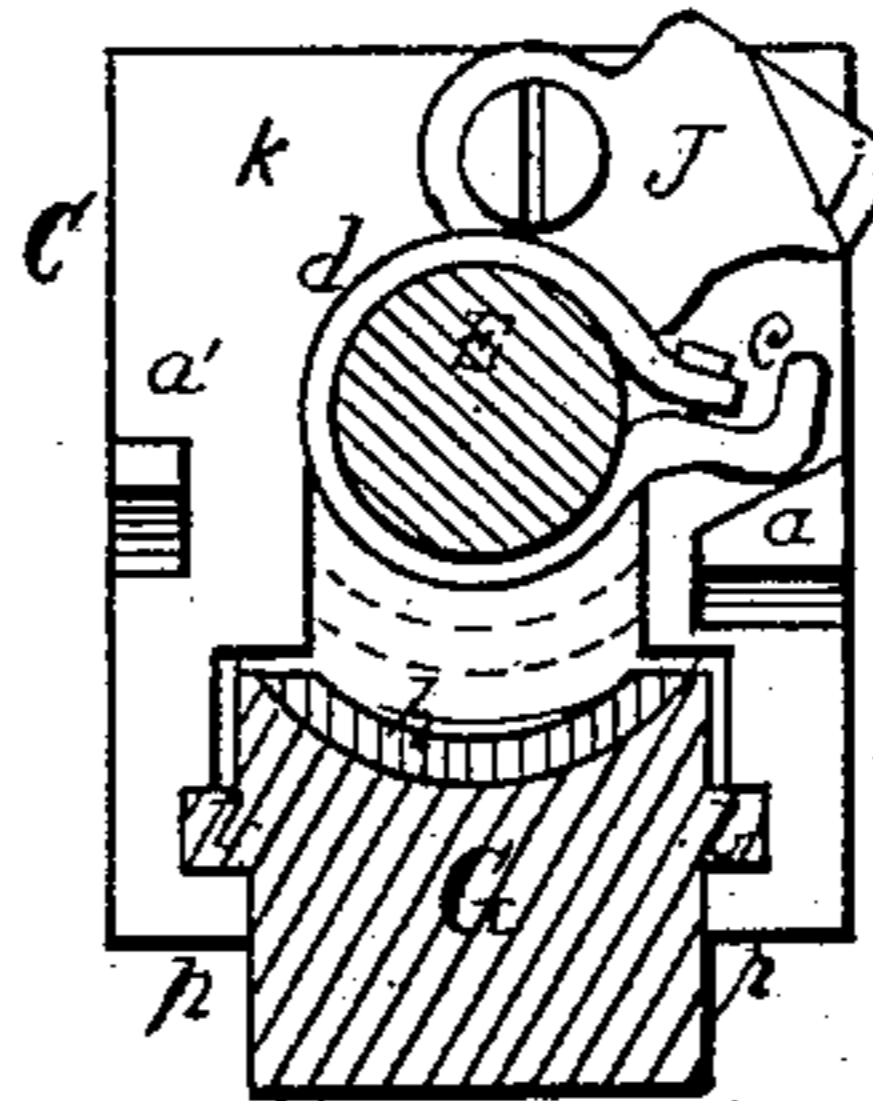


Fig. 6.

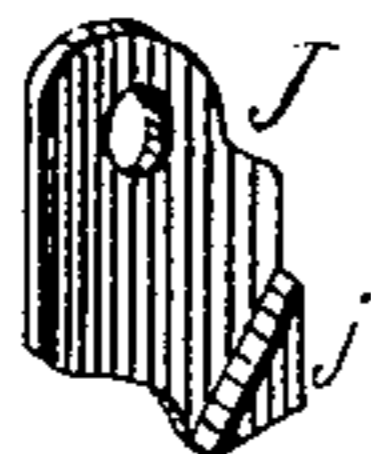


Fig. 7.

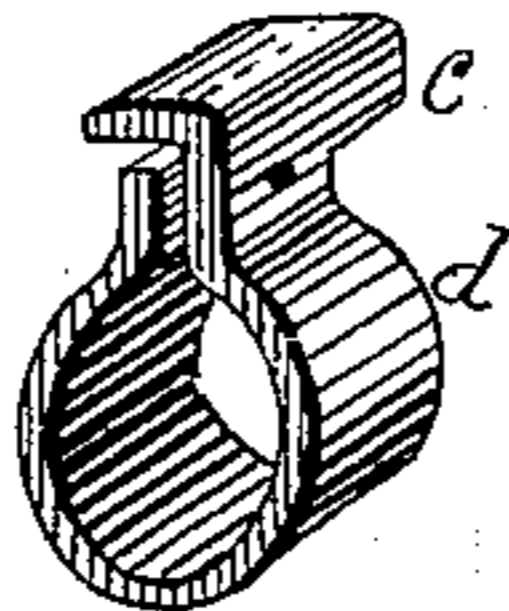


Fig. 5.

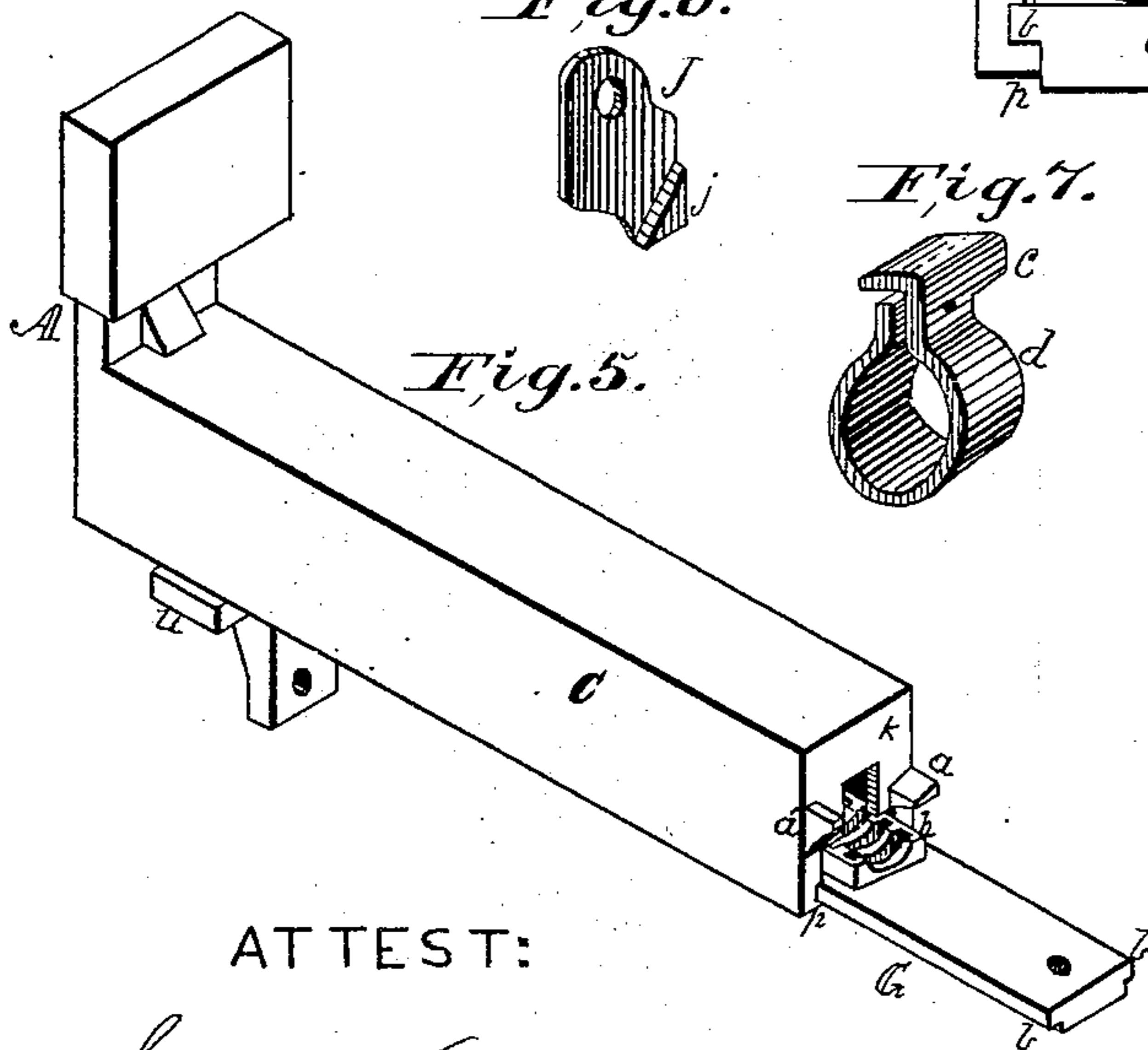
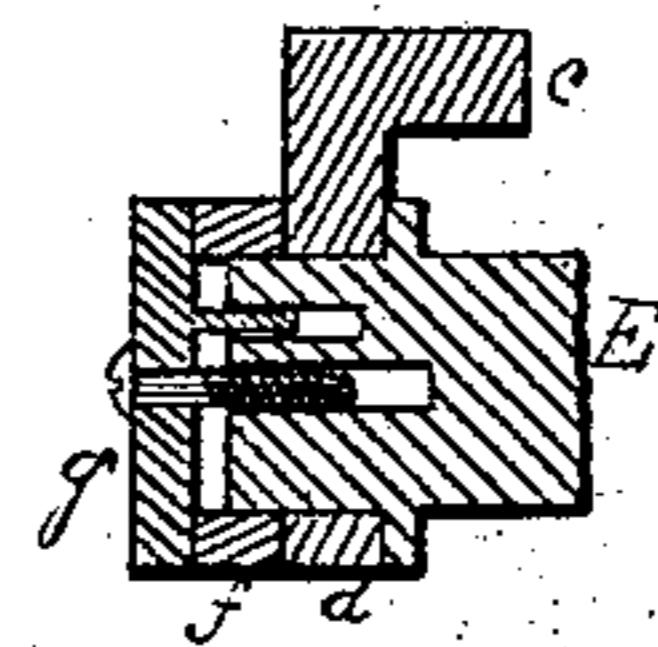


Fig. 8.



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THOMAS L. BAYLIES, OF EDGARTOWN, MASSACHUSETTS.

## IMPROVEMENT IN VISES.

Specification forming part of Letters Patent No. **153,418**, dated July 28, 1874; application filed January 8, 1874.

*To all whom it may concern:*

Be it known that I, THOMAS L. BAYLIES, of Edgartown, in the county of Dukes and State of Massachusetts, have invented certain Improvements in Vises, of which the following is a specification:

My invention relates to improvements in that class of vises in which the movable jaw is adjusted directly by the hand of the operator without the aid of the screw-shaft, the latter being used only for the purpose of compression.

The first object of my invention is to connect the screw-shaft with, or disconnect the same from, the nut-sections by the same movements of the operating-lever that impart rotary motion to said screw-shaft, without its being necessary to bring the several devices whereby said object is accomplished into a given relative position to that of the said lever.

In some of the vises heretofore patented, in which the movable jaw is adjusted without the aid of the screw-shaft, and in which the latter is thrown into or out of gear with the nut automatically, a cam or an eccentric rigidly fastened to the screw-shaft is used to produce the desired movement of said shaft; but this arrangement either limits to an inconvenient extent the distance to which the screw-shaft can be turned forward after it has been thrown into gear with the nut, or it requires the shaft to be turned backward in order to release it from the nut the same number of times that it had been turned forward after being connected with the nut.

In the present example, the screw-shaft is thrown into and out of gear with the device, the functions of which correspond to those of the nut ordinarily used, by a combination of devices which contains none of the objectionable features hereinbefore referred to.

The second object of my invention is to impart the necessary movements to the latch which holds the screw-shaft in gear with the nut-sections while an article is clamped in the vise automatically, or by the same movements of the operating-lever that impart rotary motion to said screw-shaft.

My invention consists in the combination,

with the said screw-shaft and nut-sections, of the devices hereinafter described.

In the drawings, the vise is shown in the form best adapted to the use of carpenters and joiners.

Figure 1 is a side elevation of the vise, part in section, and shows the positions the parts assume when an article is clamped in the vise, the work-bench to which the vise is attached being in cross-section. Fig. 2 is a longitudinal vertical section of a part of the back portion of the vise, the parts being in the positions they assume when the screw-shaft is thrown out of gear with the nut-sections. Fig. 3 is a view of the back end of the vise, the parts being in positions corresponding to those shown in Fig. 1. Fig. 4 is also an end view of the vise, the parts being in positions corresponding to those shown in Fig. 2. Fig. 5 is a perspective view of the vise detached from the work-bench, the clamping-screw being removed. Figs. 6 and 7 are perspective views of detached details.

B is the work-bench to which the vise is attached, and forms the stationary jaw of the latter. A is the movable jaw, which is attached to the box-slide C, the latter being open at the bottom. G is the bed-plate, which is secured to the bench in a manner apparent from the drawing. The sides of the bed-plate near the top project so as to form flanges *b b* throughout its entire length. *p p* are flanges which extend along the inside of the lower edges of the sides of the box-slide, and catch under the flanges *b b* on the bed-plate, by which means the back end of the box-slide is prevented from tilting up when an article is clamped in the vise. The front end of the box-slide is supported by the projections *u u*, which are formed on the sides of the bed-plate near the front end of the latter. The back end of the box-slide is supported by the lower edge of the end plate *k*, which rests on the upper face of the bed-plate. *h* are nut-sections formed on the upper face of the bed-plate, and extend along so much of the latter as corresponds to the greatest distance to which jaw A is moved. E is the screw-shaft, which is inserted through an orifice in the front end of the box-slide, and extends longi-

itudinally through the latter. Said screw-shaft is prevented from moving endwise independently of the box-slide by means of any suitable device which will permit the back end of the said shaft to have a slight vertical movement. *e* are screw-threads, which make two or three revolutions only around shaft E, near the rear end of the latter. The diameter of that part of the shaft which is occupied by threads *e* is increased to an extent sufficient to permit friction-band *d*, hereinafter described, to be clear of nut-sections *h* when the threads *e* are in gear with said sections. J is a latch, which is pivoted at its upper end to the back end of the box-slide, near the upper edge of the latter. A projection, *j*, is formed on the rear face of the latch J, the form of which, with that of said latch, is clearly shown in Fig. 6. *d* is a friction-band, which embraces a part of the end of the shaft E that extends beyond the rear end of the box slide. Said band is prevented from moving endwise on said shaft by collars formed on the latter. The tension of said band around shaft E is regulated by a screw, which passes through the ends of the former, as distinctly shown in Figs. 3 and 4. One of the ends of band *d* is formed into an arm, *c*, as clearly shown in Fig. 7. *a* is an abutment, which is secured to the rear face of end plate *k*.

When an article is to be clamped in the vise, the parts being in the positions shown in Figs. 2 and 4, jaw A is pushed against said article and the operating-lever is turned to the right. The first result of the rotary movement thus given to the screw-shaft E is to cause arm *c* to be carried away from abutment *a* by the action of friction-band *d*, by which means the back end of the screw shaft is permitted to descend so as to allow threads *e* to engage with nut-sections *h*. The lower end of latch J swings over the screw-shaft, and prevents the latter from jumping upward so as to allow threads *e* to become disconnected from the nut-sections while the article is held in the vise. The screw-shaft is guided in its vertical movements by the sides of the slot formed in plate *k*. The extent to which friction-band *d* is permitted to turn with the screw-shaft is regulated by the position of stop *a'*, which should not be any lower than that shown in the drawings, as it sometimes happens that the threads *e*, when the screw-shaft first descends, strike on the top of the nut-sections, and the shaft has to be turned one-half or more of a revolution before threads *e* engage with said sections, in which case, were the stop *a'* placed too low, the contact of arm *c* with said stop would raise the end

of the screw-shaft before the latter had descended sufficiently to be held in position by latch J. It is desirable, however, that stop *a'* should be placed as far as is permissible from abutment *a*, in order that threads *e* may remain in gear with the nut-sections long enough to carry jaw A a short distance away from the article in the vise when the screw-shaft is turned backward for the purpose of releasing said article. To release an article from the vise, the operating-lever is turned to the left, which movement causes arm *c* to strike the inclined face of projection *j*, and thus cause the lower end of latch J to swing to one side of the screw-shaft, when the continued backward movement of said lever brings arm *c* in contact with the upper face of abutment *a*, and thus raises the rear end of the screw-shaft sufficiently to throw the threads *e* out of gear with the nut-sections. The amount of friction between band *d* and screw-shaft E is sufficient to impart the required movements to latch J and to overcome the weight of the end of the screw-shaft, but is not sufficient to materially increase the amount of force required to be applied to the operating-lever to clamp an article in the vise after the further rotary movement of band *d* has been arrested by the contact of arm *c* with stop *a'*, as hereinbefore described.

In Fig. 8, which is a longitudinal section through the center of the rear part of the screw-shaft, is shown a modification of the devices for producing the desired amount of friction between the band *d* and the screw-shaft. In the present modification said band is made solid, and a band, *f*, made of rubber, leather, or other suitable material, is placed around the screw-shaft behind band *d*. A disk is pressed against band *f* by a screw, which passes through the center of said disk and extends into the end of the screw-shaft.

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

1. The combination, with the screw-shaft E, provided with the threads *e* and the nut-sections *h*, of friction-band *d*, arm *c*, abutment *a*, and stop *a'*, substantially as described, and for the purpose set forth.

2. The combination of the screw shaft E, friction-band *d*, arm *c*, latch J, and projection *j*, substantially as described, and for the purpose set forth.

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Witnesses:

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VALENTINE PEASE NORTON.