DANIEL SNELL.

Improvement in Tumbling-Shafts.

No. 114,616. Patented May 9, 1871.

Fig. 1.

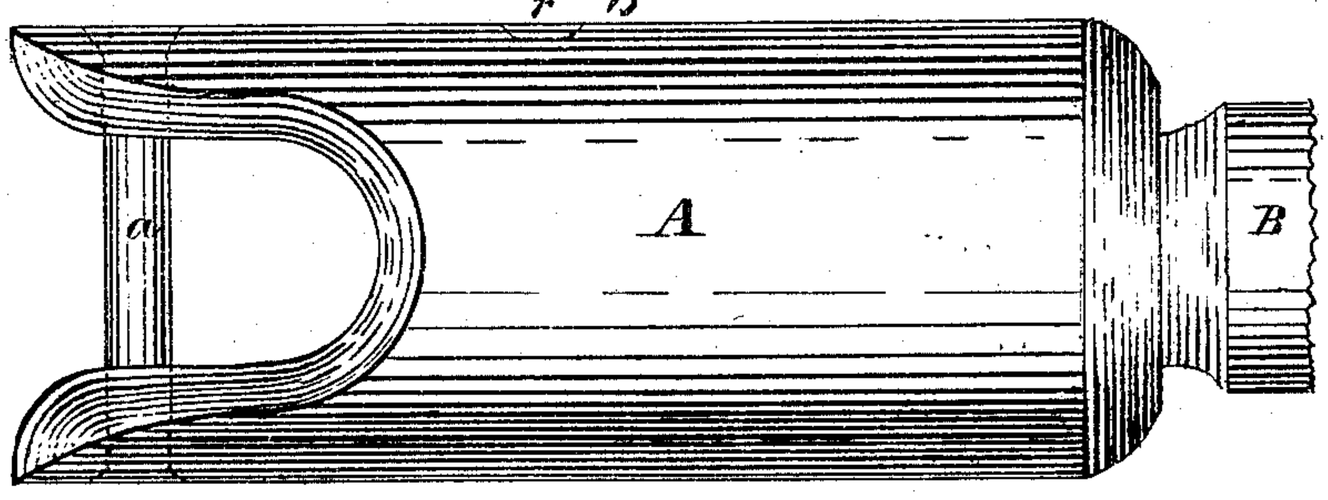


Fig. 2.

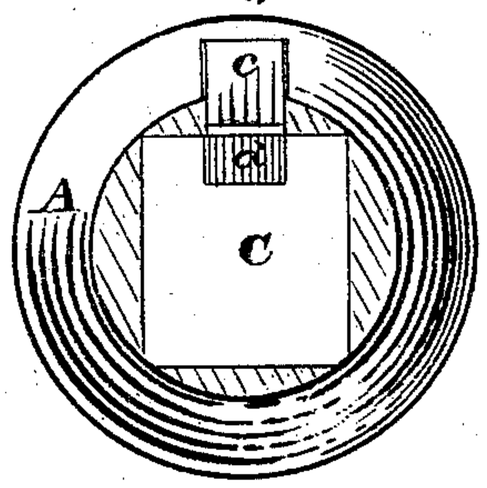


Fig. 3.

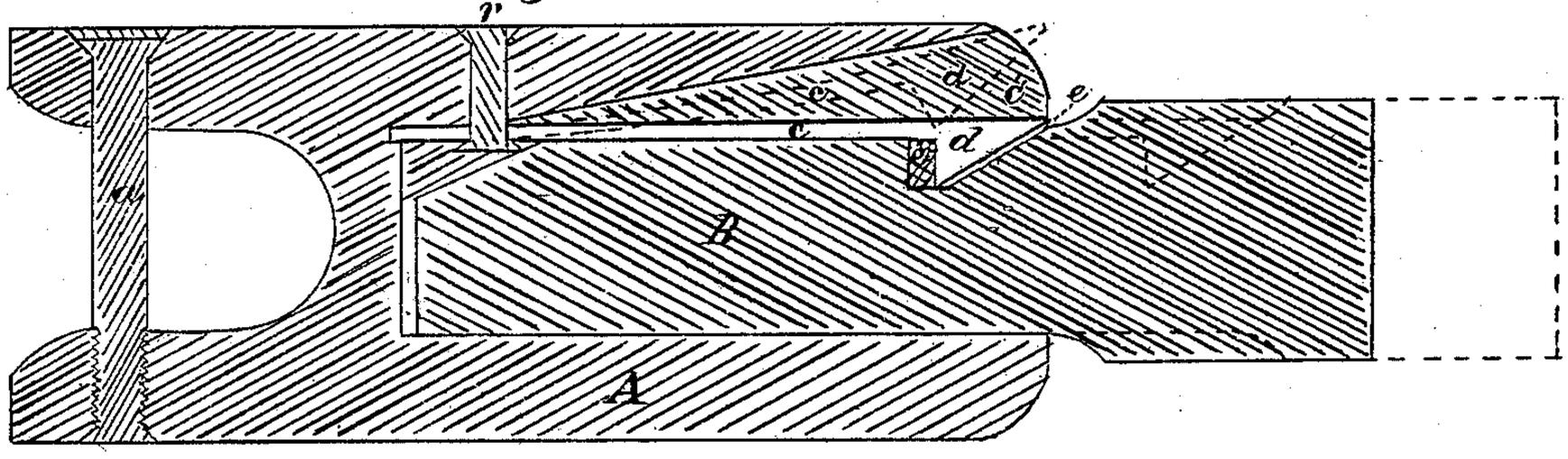


Fig. 5.

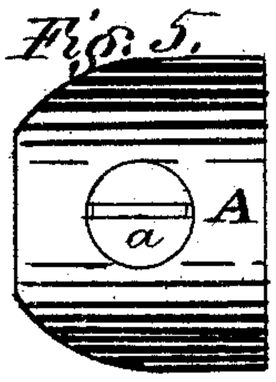
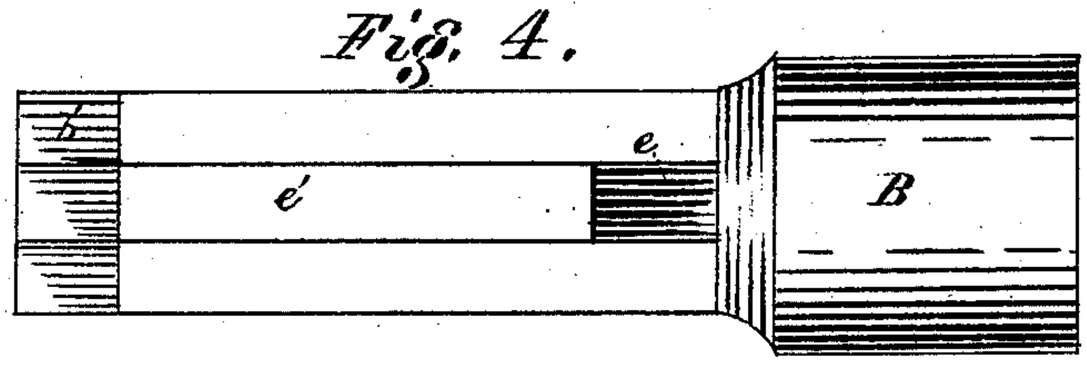


Fig. 4.



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United States Patent Office.

DANIEL SNELL, OF CLARK COUNTY, OHIO.

Letters Patent No. 114,616, dated May 9, 1871.

IMPROVEMENT IN TUMBLING-SHAFTS.

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

I, DANIEL SNELL, of the county of Clark and State of Ohio, have made certain Improvements in Tumbling-Shafts, of which the following is a specification.

The first part of my invention relates to the fastening of the rod portion of a tumbling-shaft to the knuckle-pieces in such manner that the same may be easily and quickly detached therefrom or attached thereto, the object of this part of my invention being to take the shaft-sections apart without the necessity of separating the knuckles, which are coupled by screw-bolts riveted in.

The second part of my invention consists in constructing the tumbling-shaft, with the connecting parts of the same, with smooth and even surfaces, presenting no projections whatever, as bolts, keys, rivets, and the like, to catch the clothing of the operator or those passing over it when the shaft is in motion, thus preventing all liability to those accidents so frequent in using shafts of the ordinary kind with bolt-and-key couplings.

Figure 1 is a view of a section of my improved tumbling-shaft, including one of the knuckle-pieces, with a portion of the rod attached.

Figure 2 is a view of the end of the knuckle-piece at the right hand of A in fig. 1.

Figure 3 is a longitudinal section of the parts shown in fig. 1, showing the position of the parts when the rod is inserted and when only partially pushed in, as seen in dotted lines.

Figure 4 shows the end of the rod, with the notch in the same, for reception of the spring catch, which fastens the two together.

Figure 5 shows head of screw-bolt *a*.

A is the knuckle-piece or half of the coupling part of the tumbling-shaft.

B the end of the rod, which is square, to fit the hole in the knuckle-piece.

C is the hole in the end of A for reception of the end of rod B.

The screw-bolt *a* couples the knuckle-piece to its fellow.

The spring catch *c* works in slot *c'* in the piece A.

It has an angular or beveled head which projects down into the hole C, in fig. 2, when the end of rod B is out.

This spring is about three and a half inches long in the full-sized knuckle, and its inner end is fastened at the back end of hole C by a rivet, *r*, passing through from the inside to the outside of knuckle-piece A.

Slot *c'* is deep enough to allow the spring with its head *d* to recede into it when rod B is pushed in against it, as seen in dotted lines, fig. 3.

The end of the rod at *b'* is beveled, to ease the action of the spring in its backward movement.

When the rod B is pushed into its place the head part *d* of spring falls into notch *e*.

A shallow guiding-groove *e'* is continued from the notch to the beveled end of the rod. This serves to guide the spring head *d* to its notch *e*, and, at the same time, prevents its being moved laterally by jamming, making its action more certain.

The notch *e* is made long enough to allow the rod to have a slight play endwise.

The notch and groove may be on one or more sides of the rod B, as also bevel *b'*.

The screw-bolt *a*, which passes through the fork of A and couples it to its fellow, has a slotted head, like a wood screw, let into a countersink in the cheek-piece of fork, and a thread cut on its lower end, which passes far enough through to slightly rivet it with a few blows of a hammer on that side, which has also a slight countersink for that purpose, so that when fitted together the shaft and coupling have an entire smooth or even surface.

The ordinary tumbling-shaft has caused many serious, and, in some cases, fatal accidents from the bolt-and-key coupling, and the advantages of my mode of construction, which is designed to carefully guard against these causes, will be gratefully appreciated by those who have realized the danger of running machinery with this means of transmitting power.

In attempting to oil the shaft-bearings when the machinery is in motion the danger is greatest, and in most instances, where the bearing was near the coupling parts, the accidents have resulted from this cause. As my shaft is constructed this can be done without danger.

I am aware that coupling-knuckles have been made with a square hole for the insertion of the square end of the rod part of the shaft, and I make no claim to this as any part of my invention, which is adapted to other forms of the hole and rod; nor do I claim as any part of this invention a loosely-inserted or sliding rod, as that was the subject of my former patent.

I claim as my invention—

1. Spring catch *c*, or its equivalent, slot *c'*, and notch *e*, in combination with knuckle-piece A and rod B, substantially as shown, for the purposes set forth.

2. Bevel *b'* and groove *e'*, in combination with spring catch *c*, notch *e*, rod B, and knuckle-piece A, substantially as shown, for the purpose set forth.

3. Screw-bolt *a*, in combination with knuckle A, substantially as shown, for the purpose set forth.

4. Constructing a tumbling-shaft with permanently-joined knuckle-couplings, presenting an even surface, as shown, in combination with the detachable parts, substantially as described, for the purpose set forth.

Witnesses: DANIEL SNELL.

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