R. P. BELL.

Watchmaker's Lathe-Chuck.

No. 218,155. **Patented Aug. 5, 1879.**

Fig. 1.

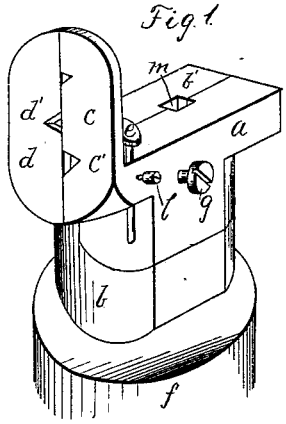


Fig. 2.

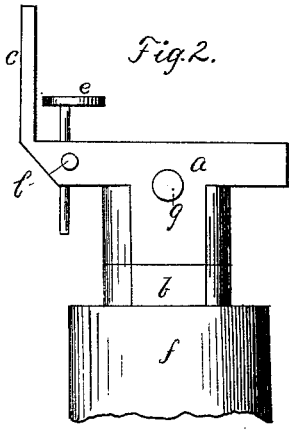


Fig 3

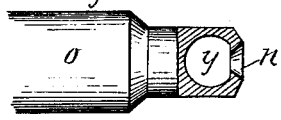


Fig. 6.

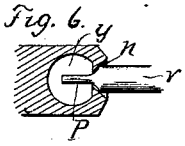


Fig. 4.

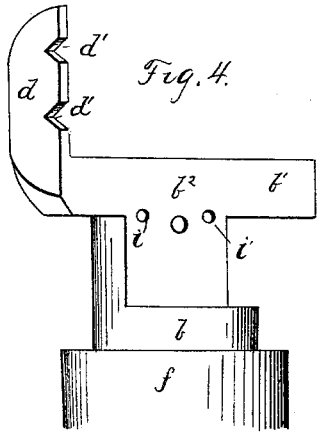
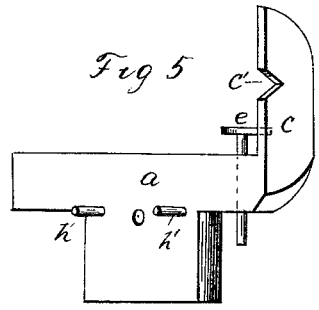


Fig 5



WITNESSES

M. M. Lacey

J. B. Holderby

INVENTOR

Ralph P. Bell

By R. S. & A. P. Lacey ATTORNEYS

UNITED STATES PATENT OFFICE.

RALPH P. BELL, OF FORT DODGE, IOWA.

IMPROVEMENT IN WATCH-MAKERS' LATHE-CHUCKS.

Specification forming part of Letters Patent No. **218,155**, dated August 5, 1879; application filed November 30, 1877.

To all whom it may concern:

Be it known that I, RALPH P. BELL, of Fort Dodge, county of Webster, and State of Iowa, have invented a new and useful Improvement in Attachments to Lathes for Turning Pivots in all Kinds of Watch-Work; and I do hereby declare the following to be a full, clear, and exact description of the construction and operation of the said invention, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a perspective view of one part of my invention, showing the adjustable jaws *c* and *d*, the adjusting-screw *g*, and the supporting-shank *b*. Fig. 2 is a side elevation, showing the adjustable piece *a*, with its jaw *c*, the rest *e*, and its adjustment-screw *l*. Fig. 4 is a perspective view of the supporting-shank *b*, with its jaw *d*. Fig. 5 is a perspective view of the movable piece *a*, with its jaw *c*, also the steady-pins *h* and *h'*. Fig. 3 is a side view of the spindle *o*, with a sectional view of the end of the spindle, showing the perforation *y* and female center *n*. Fig. 6 is a transverse section of the end of the spindle *o*, also showing a pivot, P, inserted into the perforation *y*.

The nature and object of my invention are the production of a new device whereby pivots in watch-work may be turned with safety, accuracy, and dispatch. This result I accomplish in my invention, which I will now proceed to describe.

f is the ordinary upright adjustable standard, provided in its end with a socket, in which the foot of the shank *b* is placed, with capability of easy removal when desired. On the end of the shank *b*, I form a suitable cross-head, *b'*, from one end of which projects the jaw *d*, parallel with the line of the shank *b*, and sufficiently above the head to give ample room for the turning of the staff and the proper adjustment of the rest.

c is a movable jaw, formed on a head, *a*, which jaw and head are constructed to fit snugly against the jaw *d* and head *b'*, as shown. In the clamping-edges of the jaws *c d*, I form alternating triangular notches *d' c'*, of different sizes, in which the staffs are held, the latter touching the jaws on the three sides of the notches.

The head *a* of the jaw *c* rests on the end of the shank *b*, and is snugly articulated with said shank and with the head *b'*. It may be moved laterally on the end of the shank *b*, and, by means of a set-screw, *g*, can be adjusted to staffs of different sizes.

In the side of the head *b'*, I form holes *i i'*, into which the dowels *h h'* in head *a* are inserted. The dowels give steadiness to the lateral movement of the head *a*.

In the head *a*, in rear of and close to the jaw *c*, I form a vertical hole, in which is placed the shaft of an adjustable rest, *e*, which is held in place by a set-screw, *l*. The rest *e* is moved outward or inward with the movements of the head *a* in adjusting the jaws *c* and *d* to staffs of different sizes. The relative position of the rest to the staff is thus always perfectly preserved.

The head *a*, with its jaw *c*, may be moved outward from the head *b'* by any suitable prying-instrument inserted in the recess *m*, formed between the said heads, as shown.

It will be understood by those who use lathes that the bearing *n* may be made either a "live" or a "dead" center. This is accomplished by fixing the spur or spindle *o* in the frame-work of the lathe and providing it with suitable pulleys, so that it can be revolved when desired, or fixed rigidly in position by a suitable set-screw.

The other part of my invention consists in providing a bearing for one of the ends of the staff while a pivot is being turned upon the other end. This is a matter of great delicacy, as a pivot, being so small, has not strength enough to be used for a bearing. To avoid this difficulty I construct a spindle, *o*, and in the end of the same, parallel with the axial line, is turned the cone-shaped or ordinary female center or bearing *n*, and the cross mortise or perforation *y*, formed at right angles to the axial line of said spindle, and cutting off the point or center of the female center *n*, which will leave a hole of proper size for the admission of the pivot P, and still small enough to prevent the shoulder upon the staff *r* from entering. The said shoulder, resting upon the faces *n* of the remaining portion of the female center, constitutes the bearing for this end of the staff, while the perforation *y* gives absolute security for the pivot.

The reason for having the perforation or cavity *y* larger than its neck is, that should the triangular bearing in the jaws *c* and *d* not be brought exactly to center, (thereby throwing the staff off center at that end,) the pivot upon the opposite end of the staff will be secure in the cavity *y* and remain uninjured by reason of having room to move without obstruction.

A pivot may be turned true with this device, even if the operator should fail to get one of the ends of the staff centered, as the triangular bearing in the jaws *c* and *d* will admit of a slight variation and still hold the staff firmly, and the cavity *y*, as before explained, gives ample protection to the pivot.

This device is operated as follows: One end of the staff is fitted to the conical face *n;* the other end is held by a bearing in the jaws *c* and *d*. Then adjust the rest *e* and cut off and turn down the pivot with chisels or cutters for that purpose. After finishing the pivot, reverse the staff, passing the pivot already turned into the cavity *y* till the shoulder rests against the conical face *n*. Then bring up the jaws *c* and *d* to the other end of the staff, and proceed to turn a pivot as before.

The motion is given to the staff through the spindle *o* (said spindle being connected to the revolving pulley of the lathe) by means of the ordinary dog or carrier attached to the spindle *o*, and extending into the balance-wheel on the staff and striking against the spokes in the wheel.

One of the principal features in my invention consists in applying the motion and furnishing a bearing to one end of the staff, and at the same time making the pivot on that end secure.

I hereby disclaim all rights of invention to the ordinary female center in common use.

I claim as my invention and desire to secure by Letters Patent—

1. In a watch-maker's lathe, the spindle or spur *o*, constructed with the axial and conical-shaped bearing *n*, and with the mortise *y*, formed through it at right angles to its axial line, and communicating with the opening in the apex of the bearing *n*, substantially as and for the purpose set forth.

2. The combination, with the jaws *c* and *d*, constructed and arranged as described, of the adjustable rest *e*, journaled in the jaw *a* and held by a screw, *l*, so that it moves laterally simultaneously with the movement of the jaw *a* as the latter is adjusted to staffs of different sizes, substantially as set forth.

3. The combination, with the shaft *b*, constructed with the cross-head *b'* and jaw *d*, formed thereon and projecting outward from its face or end, and provided with notches *d'* and guide-holes *i i'*, of the adjustable head *a*, provided with the jaw *c*, arranged parallel with and so that it will clamp against the jaw *d*, and having dowels *h* and set-screw *g*, and articulated with the head *b'* and shaft *b*, so that it may be adjusted laterally, substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand this 22d day of November, A. D. 1877.

RALPH P. BELL.

Witnesses:

R. W. JOHNSON,

I. GARMOE.