(No Model.)

O. D. WARFIELD.

COMBINED OUTSIDE AND INSIDE CALIPERS.

No. 380,836. Patented Apr. 10, 1888.

Fig. 1.

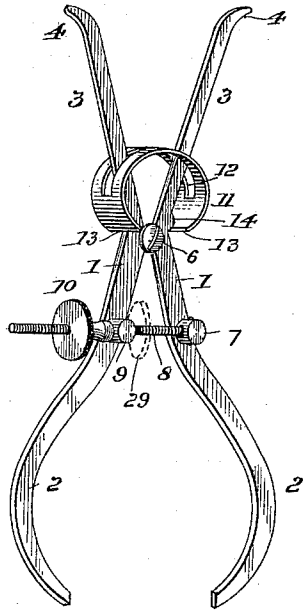


Fig. 2.

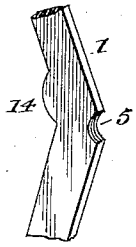


Fig. 3.

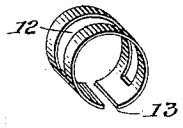


Fig. 4.

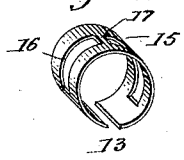
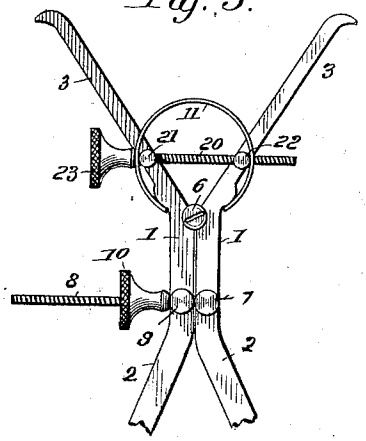


Fig. 5.



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OLIVER D. WARFIELD, OF CHICOPEE FALLS, MASSACHUSETTS.

COMBINED OUTSIDE AND INSIDE CALIPERS.

SPECIFICATION forming part of Letters Patent No. 380,836, dated April 10, 1888.

Application filed November 3, 1887. Serial No. 254,166. (No model.)

To all whom it may concern:

Be it known that I, OLIVER D. WARFIELD, of Chicopee Falls, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Combined Outside and Inside Calipers, of which the following is a full, clear, and exact description.

This invention relates to an improvement in the construction of outside and inside calipers, as hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a perspective view of the invention. Fig. 2 is a detail view of one of the legs with parts broken away. Fig. 3 is a detail view showing the spring. Fig. 4 is a modification of the device shown in Fig. 3, and Fig. 5 is a modification of the device shown in Fig. 1 with the lower portion broken away.

Referring to Fig. 1, a pair of calipers of suitable metal is shown, formed with legs 1 1, having the lower bowed arms, 2, and the upper inclined arms, 3, with curved points 4, whereby the device is adapted to be used as outside and inside calipers. The legs 1 1 are jointed by means of a semicircular threaded recess, 5, in each leg, and a screw, 6, resting in the semicircular recesses 5, which latter are screw-threaded, as well as the screw 6, to hold the legs 1 1 steadily in place. One of the legs is provided with a pivoted stud, 7, in which is mounted a threaded rod, 8, passing through and adapted to slide in a pivoted stud, 9, on the other leg, and having a thumb-nut, 10, by means of which the legs are adjustable.

The calipers are provided with a removable spring, 11, formed from a strip of metal or other suitable material bent in the shape of a bow, and having a slot, 12, through which the ends 3 of the legs project and are adapted to move. The edges 13 of the spring 11 bear against the legs 1, and beneath the projections or shoulders 14, which prevent the spring from slipping upward. It will be seen that as the spring 11 has its edges 13 forced apart by the legs the tension of the spring will be increased.

In lieu of the spring just described, a bowed spring, 15, may be employed similar to the spring 11, but formed with two slots, 16, instead of a single slot, the slots being separated by a cross-piece, 17, which permits the arms 3 of the legs to approach sufficiently near each other for practical use.

It will be seen from the foregoing description that by the adjustment of the nut 10 upon the rod 8 and the tension of the spring 11 the legs of the calipers are held securely in any position with freedom of movement, as required. In order to caliper a small space and preserve the adjustment, a nut, 29, is placed upon the rod 8 between the studs 7 and 9, which nut serves in addition to the nut 10 in the adjustment of the legs 1 to preserve the adjustment of the arms.

In Fig. 5 I have shown a modification of my invention, whereby a positive movement and adjustment of both pairs of arms 2 and 3 is obtained. For this purpose, in addition to the spring 11 on the arms 3, I make use of a screw-threaded rod, 20, passing through pivoted studs 21 and 22 on the arms 3, said rod sliding through the stud 21 and engaging by its thread the stud 22, and being provided with a milled head, 23.

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

1. The combination, in a pair of calipers, of legs 1 1, formed with inclined arms 3, bowed arms 2, semicircular threaded recesses 5, and screw 6, with pivoted studs 7 and 9, screw-threaded rod 8, thumb-nut 10, and slotted spring 11, substantially as described.

2. Calipers consisting of legs formed with inclined arms at one end and bowed arms at the other, and with semicircular threaded recesses and a pivot-screw resting therein, a screw-threaded rod, an adjusting-nut, and a spring, substantially as described.

3. The combination, with a spring consisting of a bowed strip of metal slotted between its ends, of a pair of caliper-legs extending

through the slotted portion of the spring and movable therein, substantially as described.

4. The combination, with calipers having pivoted double-ended legs and means for adjusting the same, of a removable spring, substantially as described.

5. The combination, in a pair of calipers, of legs 1 1, having arms 2 3, semicircular threaded recesses 5, and screw 6, with pivoted studs 7 and 9, screw-threaded rod 8, thumb-nuts 10 and 29, and slotted spring 11, substantially as described.

OLIVER D. WARFIELD.

Witnesses.

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