No. 672,313. Patented Apr. 16, 1901.

E. H. COOMBS & F. W. LIEBCHEN.

CALIPER ADJUSTING ATTACHMENT.

(No Model.) (Application filed Oct. 15, 1900.)

Fig. 4

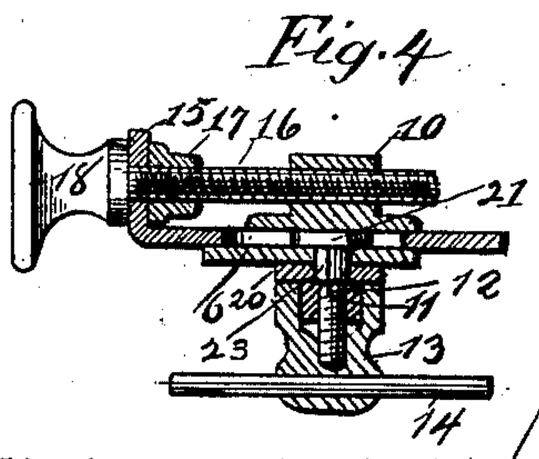


Fig. 1

Fig. 5

Fig. 6

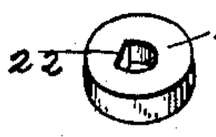


Fig. 7

Fig. 2

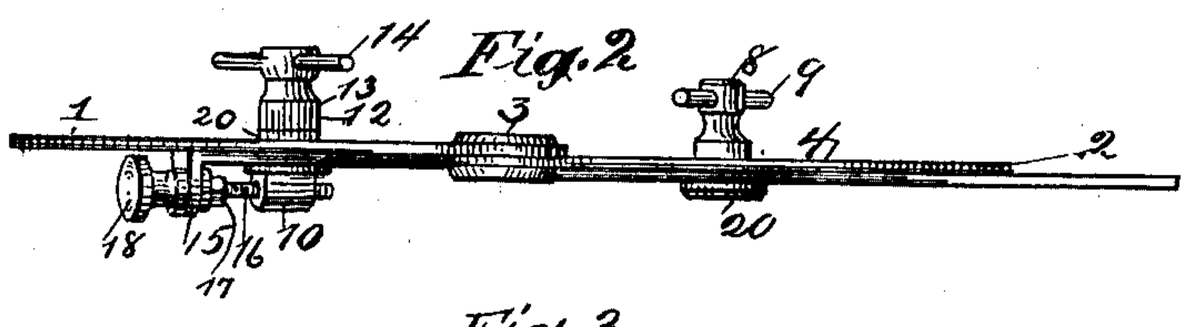
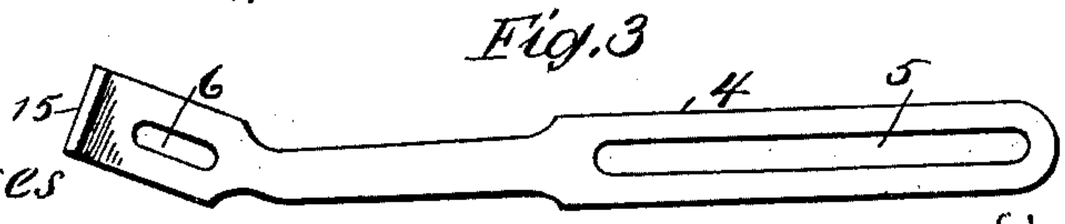


Fig. 3



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UNITED STATES PATENT OFFICE.

EDWARD H. COOMBS AND FRED W. LIEBCHEN, OF CLEVELAND, OHIO.

CALIPER-ADJUSTING ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 672,313, dated April 16, 1901.

Application filed October 15, 1900. Serial No. 33,061. (No model.)

To all whom it may concern:

Be it known that we, EDWARD H. COOMBS, a citizen of Canada, and FRED W. LIEBCHEN, a citizen of the United States, both residents of Cleveland, county of Cuyahoga, State of Ohio, have invented certain new and useful Improvements in Caliper Attachments, of which we hereby declare the following to be a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to improvements in caliper attachments; and it consists in the construction and combination and arrangement of parts, as hereinafter described, shown in the accompanying drawings, and specifically pointed out in the claims.

In the drawings, Figure 1 is a plan view of the device. Fig. 2 is an edge view thereof. Fig. 3 is a view of the connecting-link between the arms of the calipers. Fig. 4 is a transverse section of fine-adjusting mechanism upon one arm, and Fig. 5 is a transverse section of the clamping device for the other arm. Figs. 6 and 7 are perspective views of washer and nut, showing their flat sides.

Hitherto it has been difficult to obtain an exact adjustment of large calipers, owing to the spring of the large arms when the joint between the arms is sufficiently tight to hold them firmly together, and a fine adjustment has been obtained only by repeatedly tapping one of the arms until the adjustment became as nearly correct as possible. To obviate this difficulty and make the fine adjustment positive to the highest degree, we employ the construction shown in the accompanying drawing, in which—

1 and 2 are the arms of the calipers.

3 is the pivotal point joining the arms.

4 is a link connecting the arms and provided with the long slot 5 for coarse adjustment and the short slot 6 for fine adjustment. The link 4 is secured to the arm 2 by means of the threaded pin 7, provided with a head 20, passing through the slot 5 and the arm 2. This is secured by means of the cap-nut 8, turned by means of the cross-pin 9. By this arrangement the parts are fastened securely at any point desired.

The fine adjustment is shown mounted upon arm 1 and consists in the sliding head 10, provided with a narrow guide 21, which runs in the slot 6, and with the threaded pin or bolt 11, which passes through the slot in the link 4 and through the arm 1. This is secured by means of a nut 12 underneath the arm 1, the washer 20, and the cap-nut 13 provided with a cross-pin 14 and placed over all. The washer 20 is provided with the flat side 22 in its opening to prevent it from turning upon the bolt, which has a corresponding flat side 23. The extremity of the link 4 is turned up at 15, and a screw 16 passes loosely through it and through the head 10, which is screw-threaded to receive it. A nut 17 next to the turned-up portion of the link, together with the head 18 of the screw, secure the screw from longitudinal movement. It will be seen that this construction enables the workman to obtain a very fine adjustment. The coarse adjustment is first made with the long slot upon the link, and the clamping-nut is then turned to secure the link firmly to the arm 2. The screw 16 is then turned until the arm 1 is brought to exactly the right position.

It is not necessary that the clamping-nut 12 and washer 21 should be screwed tightly against the arm 1, but they should be set so as to give sufficiently free movement to the arm, since the arm 1 cannot move except as it is moved by the adjusting-screw 16.

The cap or telescoping nut 13 over all prevents any accidental disturbance of the clamping-nut 12, which is set with as much frictional resistance as is necessary, so that it will still move freely; but the washer 20 is broad enough to prevent the arm 1 from tipping out of line with the arm 2 when the nut 12 is screwed down to tighten the parts, thus maintaining the exact level. This fine adjustment may be attached to any pair of calipers, since it can easily be detached and adjusted in place.

Having described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In an attachment for a pair of calipers the combination with the pivoted arms, of a link connecting them, the said link being provided with a long slot at one extremity and a short slot at the other extremity, a threaded pin passing through said long slot and an adjacent arm and a nut therefor, a sliding head

provided with a threaded pin, passing through the said short slot in the link and the other arm, a lock-nut and washer for said pin and a cap-nut over said lock-nut, an upturned extremity of the link and a screw passing through said sliding head and the said upturned portion of the link and provided with a head on one side of said upturned portion and a nut on the other, substantially as described.

2. The combination with the caliper-arms, of a link connecting them, a coarse adjustment for the one arm of the calipers, and a fine adjustment for the other arm, the said fine adjustment consisting of a slotted and upturned extremity of the link, a sliding head provided with a guide adapted to run in said slot and a threaded pin passing through said slot and arm, a washer secured from turning and sleeved over said pin, a nut upon the pin and a cap-nut over all, and a screw passing through the upturned extremity of the link and the sliding head and provided with an exterior head and an inner nut next to said upturned portion, substantially as described.

3. In a fine adjustment for a pair of calipers the upturned and slotted extremity of a link connecting the arms, in combination with a sliding head provided with a guide adapted to run in said slot, and a screw-threaded pin adapted to pass through said slot and adjacent arm, a washer over said pin provided with a straight side in its opening corresponding to a straight side on the pin, a nut on the pin adjacent to the washer, a cap-nut inclosing the first-named nut, and a headed screw passing through the upturned portion of the link and through the said sliding head, and a nut on the inside of the said upturned portion of the link, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

EDWARD H. COOMBS.
FRED W. LIEBCHEN.

Witnesses:
JOHN A. FREW,
FRED. W. GREEN.