(No Model.)

J. H. DYSON.

CALIPERS.

No. 454,569. Patented June 23, 1891.

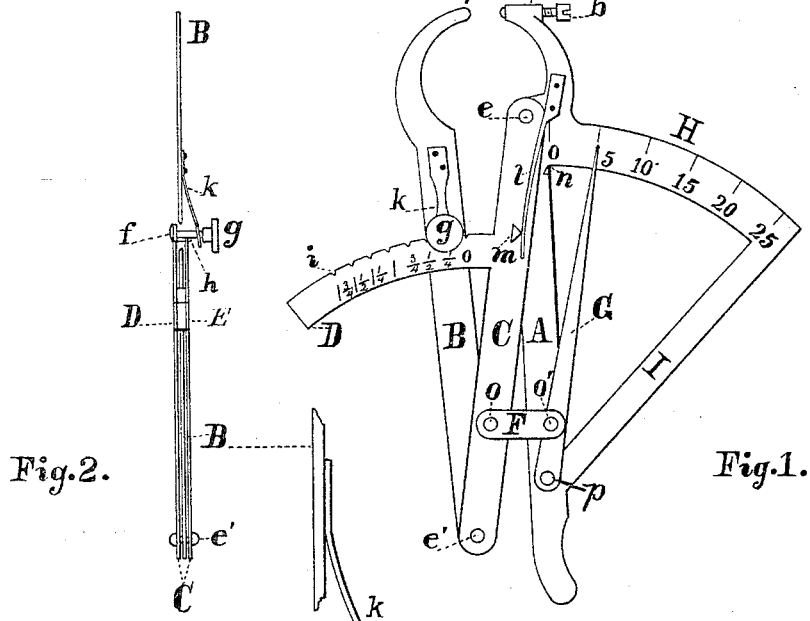

Fig.1.

Fig.2.

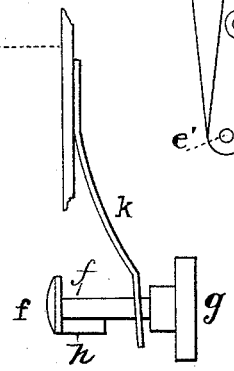

Fig.3.

John H. Dyson Inventor

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CALIPERS.

SPECIFICATION forming part of Letters Patent No. 454,569, dated June 23, 1891.

Application filed September 26, 1890. Serial No. 366,187. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. DYSON, a citizen of the United States, residing at Mazomanie, Dane county, Wisconsin, have invented new and useful Calipers, of which the following is a specification.

My invention relates to improvements in calipers; and the object of my improvements is to provide for the construction of calipers with a convenient measure of the opening of one arm and a means of staying such arm and a separate and magnifying scale and pointer, the latter operated by the other arm and indicating minute distances, so that the whole distance between the points of the arms is measured with great accuracy, and convenience in construction and manipulation.

For the above purpose my invention consists in certain peculiar and novel features of construction and arrangement, as hereinafter described, and pointed out in the appended claims. I attain this object by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of my whole device, each arm opened a distance. Fig. 2 is a left-hand view of the left arm, partially broken away, the link between the arms and the attached parts; and Fig. 3 is a side view of the catch-pin and spring detached.

The arms of the calipers are constructed of metal strips with bowed ends normally in contact. The right arm A overreaches the left in length to allow the peculiar and separate manipulation of the arms, as hereinafter set forth. The adjusting-screw *b* passes laterally through the right arm at the front end *a* for contact with the left arm B at its end *d* for keeping the device true. The link C, formed of an upper and lower thin metal strip, is pivoted to the lower end of the arm B, normally embracing the edge of the straight portion of such arm, and such link is also pivoted to the right arm A at the rear of its bow. *e'* and *e* designate such pivots.

For the operation of the left arm and the measuring of the distance of its opening the link C at its central part carries the measuring-wing D, extending to the left, the forward edge representing the segment of a circle described by the central point of that part of the left arm which lies and moves beneath such edge. Such wing has the notches *i* cut into its forward edge at distances uniform and such that while such central point of the arm is passing from one notch to the next the extreme end *d* will describe one of the usual spaces or divisions of spaces used in measuring distances, and such notches are numbered consecutively from right to left.

My herein described and illustrated device provides for six spaces, each representing one-fourth of an inch of the motion of the end *d*. The lower strip of the link C carries below the arm the wing E, parallel to and equal in length with the wing D, and narrower than such last wing at the front edge by the depth of the notches *i* upon the latter. Such wings at the outer ends are riveted to a separating-block. The arm B is stayed at and released from the notches *i* by means of the pin *f*, playing upward for staying and downward for releasing in a slot in the central part of such arm adjacent to the front edge of the wing D. Such pin has upon its upper end the large head *g*, upon its lower end a common head, and a spur *h* upon the rear side at a point where it will catch in the notches *i* when the pin is elevated and drop out when depressed. The pin *f* is held in elevated position normally by the upwardly-bearing leaf-spring *k*, in the rear end of which it is placed below its upper head *g*, the other end of the spring being riveted on the arm a distance forward. With the point of the adjusting-screw at one extreme of the object or line to be measured, the arm B must be moved to and stayed at the last number it reaches before passing the object or line, and if such distance is less than a unit of measure on the scale the arm must remain stayed at zero. The additional distance required, or the whole distance if the left arm is so stayed at zero, will be made by opening the right arm, and the distance so made will be indicated to the minutest fraction upon such opening. To provide for such opening of the arm and such indication of the distance, in addition to the parts already described I pivot upon the upper surface of the link C, near its rear end,

by the bolt *o* the left end of the horizontal link F, the right end of which last link is pivoted by the bolt *o'* upon the upper surface of the flat horizontal pointer G, near its rear end, and at such a point that the opening and closing of the arm A from and toward the link C will give a motion to the front end of the pointer a certain number of times—in the device herein illustrated exactly tenfold—that of the screw-point *d* at the end of the arm. The pointer at the rear end is pivoted upon the upper side of the arm A by the bolt *p*. The front end of the pointer reaches and traverses the magnifying-scale H and rests normally at the left end of such scale against the right side of the spur *n*, there placed. The rear ends of the arm A and link C are normally kept apart and the pointer kept against the spur *n* by the force of the leaf-spring *l*, the rear end of which bears against the right side of the spur *m* on the upper surface of the link C to the rear of the pivot-bolt *e* of the arm A, the front end of such spring being riveted to the upper surface of the arm A forward of such pivot-bolt. The front end of the right arm is opened for spanning between it and the front end of the left arm the object or distance to be measured by pressing the rear end of the right arm and of the link C toward each other, and thus also moving the link F and the forward end of the pointer G, such end traversing the scale H. Such scale is formed on a wing which projects to the right from the right edge of the arm A opposite its pivot-bolt *e*, the front edge of the wing forming the arc of a circle concentric with that described by the front end of the pointer. The wing is marked, and such marks are numbered consecutively from left to right into equal divisions indicating the motion of the point of the screw *b*. Each such division in the device herein illustrated is one-tenth of an inch, indicating a motion of such screw-point of one one-hundredth of an inch, and there are twenty-five divisions measuring one-fourth of an inch in all, thereby providing with the first scale for the correct measurement of any distance within the combined capacity of the two scales, and such relations of the two scales will be observed in the construction of all dimensions of devices—that is, the magnifying-scale will provide for an entire space equal to one division of the initial scale. I represents a brace extending from the arm A to the scale-wing H to strengthen the latter.

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

1. In calipers, the combination, with the two arms, of a link pivoted at the end of one arm and intermediate the ends of the other arm, a scale carried by the link and extending over the first arm and notched and graduated, a spring-pressed catch-pin engaging with such notches, a magnifying-scale, a magnifying-pointer, a separating-spring acting upon the link, such last scale, pointer, and spring carried by the last arm, and a link connecting the pointer to the first link.

2. In calipers, two arms, a link between and pivoted to the arms near the bow of one and at the opposite end of the other, an initial scale carried by such link and extending over the latter arm, a catch-pin acting upon such scale, a spring carrying such pin and attached to such latter arm, a magnifying-scale, a magnifying-pointer, a separating-spring which acts upon such link, the latter scale-pointer and spring attached to the first arm, and a link connecting the pointer to said first link, all such parts combined as set forth.

3. Calipers consisting of two arms, an open link receiving and connecting such arms, an open graduated scale projecting from such link and embracing one arm, a means of staying such arms at intervals upon such scale, a magnifying graduated scale projecting from the other arm, a pointer pivoted upon such second arm, and a link connecting such pointer and the first link, all said parts combined as set forth.

JOHN H. DYSON.

Witnesses:
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MAE PRESTON.