F. FAIRBANKS.
Testing-Machine.

No. 210,107. Patented Nov. 19, 1878.

Fig. 1.

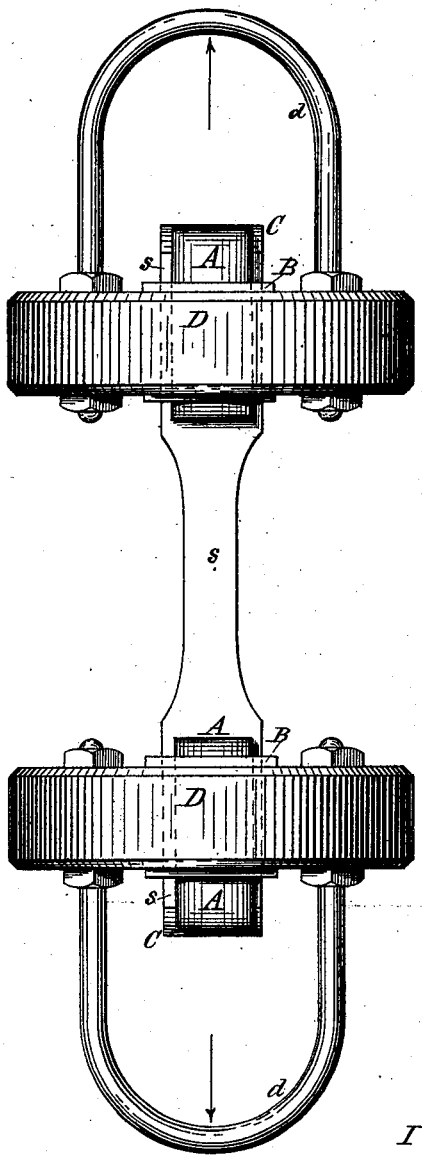


Fig. 2.

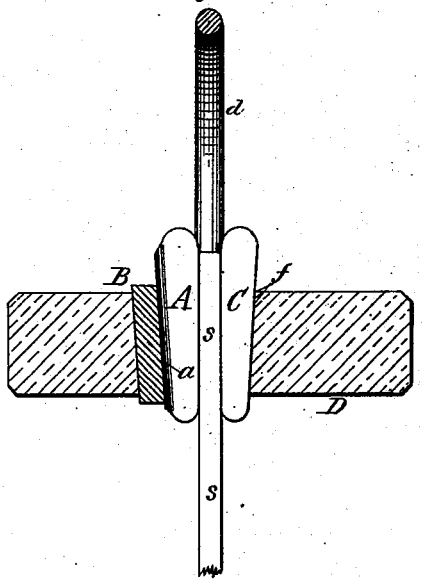


Fig. 3.

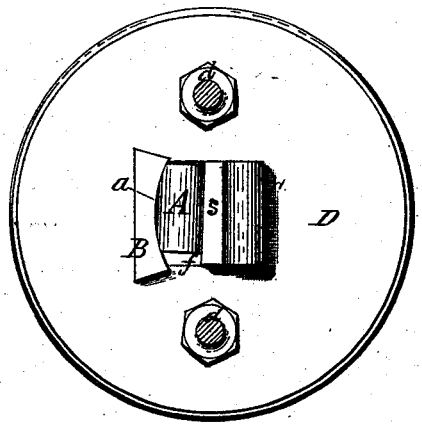
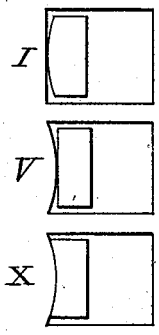


Fig. 4.



Attest:

Chas. M. Higgins.

Henry L. Barclay.

Inventor:

Franklin Fairbanks

by his Attorneys.

D. H. Wales & Son.

UNITED STATES PATENT OFFICE.

FRANKLIN FAIRBANKS, OF ST. JOHNSBURY, VERMONT, ASSIGNOR TO E. & T. FAIRBANKS & CO., OF SAME PLACE.

IMPROVEMENT IN TESTING-MACHINES.

Specification forming part of Letters Patent No. **210,107**, dated November 19, 1878; application filed October 23, 1878.

To all whom it may concern:

Be it known that I, FRANKLIN FAIRBANKS, of St. Johnsbury, Caledonia county, State of Vermont, (assignor to E. & T. FAIRBANKS & Co., of same place,) have invented a new and useful Improvement in Testing-Machines, of which the following is a specification:

My improvement applies to the clamp or holder of testing-machines in which the specimen to be tested for tensile strength is held; and it consists in a peculiar formation of the clamping-wedges and wedge-seats, by which a uniform gripe is obtained upon the specimen, whether the two griped faces thereof be relatively parallel or not, as hereinafter set forth.

In the drawings annexed, Figure 1 is a front elevation of an ordinary specimen holder or clamp provided with my improvement, and Fig. 2 is a central section of one-half thereof at right angles to the line of view in Fig. 1. Fig. 3 is a plan view, and Fig. 4 illustrates modifications.

As shown in the drawings, the clamp or holder consists, as usual, of two strong circular heads, D D, fitted with strong loops or bails *d d*, by which they are attached to the machine. The specimen *s* extends, as shown, between the heads, being fastened at each end in the center of the heads, which are pulled apart by the action of the machine to test the tensile strength of the specimen in the usual manner. A tapering or wedging opening, *f*, inclined or wedging on its two opposite sides, is formed in the center of each of the heads, as seen best in Fig. 2, and the ends of the specimen are inserted therein and held by the keys or wedges A C, tightly driven into the wedge-socket *f* on each side of the specimen, as shown.

Heretofore it has been usual to form the keys or wedges and the wedge-seat in the heads with flat or square faces, and hence it is necessary that the griped faces of the specimen should be also relatively square or perfectly parallel, in order that a uniform and secure gripe be obtained thereon by the tightening of the wedges. The fact is, however, that the specimens usually tested, such as boiler-plate, &c., often so vary in thickness that the opposite sides are not exactly parallel, and hence, as the usual square-faced wedges cannot evenly adjust themselves thereto, the gripe consequently becomes firmer on one side of the specimen than on the other. Under these conditions, therefore, a difficulty is very often experienced in obtaining a satisfactory test; for, instead of the specimen breaking square off or straight across, as is necessary for a proper test, it tears diagonally, commencing on the side which is held the firmest, and thus prevents a satisfactory or properly comparative test being obtained.

Now, the main feature of my invention consists in forming the back of the wedges, and also preferably the face of the wedge-seat, either or both, on a convex or curved contour, the wedge being narrower than the seat, so that the flat griping face of the wedge can thus adjust itself by a slight lateral play and swiveling movement on the wedge-seat to a firm and even bearing on the specimen.

As shown in the drawings, the griping face of the adjustable wedge A is flat, as usual, but the back is curved or convex, and the wedge-seat *a* is preferably made concave to conform therewith, as shown, while the wedge is slightly narrower than the seat. It will thus be seen that the slight swiveling and lateral movement which the described construction permits to the adjusting-wedge enables its griping face to become adjusted exactly to the face of the specimen, whether parallel or unparallel, and yet the wedge obtains a firm and secure bearing on its seat, so that its gripe on the specimen is thus rendered perfectly equable and secure.

One of the wedges in each head is preferably made adjustable in the manner described, while the other wedges, C C, are preferably of the usual flat square form, and also a close fit, as usual for the wedging socket or seat in the head, as shown. Both wedges, however, may be made adjustable or swiveling; but the arrangement shown is most convenient and is preferred.

The wedge-seat *a* for the adjustable wedge is preferably formed on a movable piece or block, B, as shown, of dovetailed form in section, which is fitted in a dovetailed socket in

the head, as best seen in Fig. 3. By this construction the wedge-seat may be formed of hardened steel separate from the heads, and may be better adjusted in position in the head, and may be removed for fitting or renewal, as will be understood.

The surface of the wedges, and also the sides of the wedge-sockets in the heads, are all preferably hardened.

It is not essential, as may be perceived, that the opposing faces of the adjustable wedge and wedge-seat be relatively formed in the precise manner shown in the main figures, as they may be relatively varied or transposed with equivalent effect. Thus the wedge-seat may be flat and the back of the wedge convex, as shown at I in Fig. 4, or vice versa, as shown at V; or the wedge may be concave and the seat convex, the reverse of that in the main figures, as shown at X; but in all cases, as may be perceived, either the back of the wedge or the face of the seat must be convex, and the wedge a little narrower than the wedge socket and seat, as shown in the main figures, which represent the preferred arrangement.

By this improvement in the clamping device, it is found that a strong and evenly-distributed gripe can always be obtained upon the specimen without regard to ordinary irregularities of thickness, the line of fracture being thereby rendered straight or square, and a true and reliable test thus accomplished.

What I claim as my invention is—

1. An improved specimen-holder for testing-machines, formed by the combination, with the clamp head or heads D, provided with a central wedging-socket, *f*, of the adjustable swiveling wedge or wedges A, formed narrower than the wedge-sockets, and capable of swiveling and lateral movements upon its seat *a*, the meeting face of one of which, the seat or wedge, being convex, while that of the other is concave, convex, or flat, substantially as herein shown and described.

2. In a specimen-clamp for testing-machines, the combination, with the clamp head or heads D, provided with central wedge-sockets *f*, of the square or flat wedge or wedges C and adjusting or swiveling wedges A, substantially as shown and described.

3. The combination, in a specimen-clamp for testing-machines, with the clamp-head or heads D, having central wedge-sockets *f*, of the square or flat wedges C, the swiveling adjusting-wedges A, and the movable wedge-seat *a* B, substantially as herein shown and described.

FRANKLIN FAIRBANKS.

Witnesses:
E. D. BLODGETT,
WM. P. FAIRBANKS.