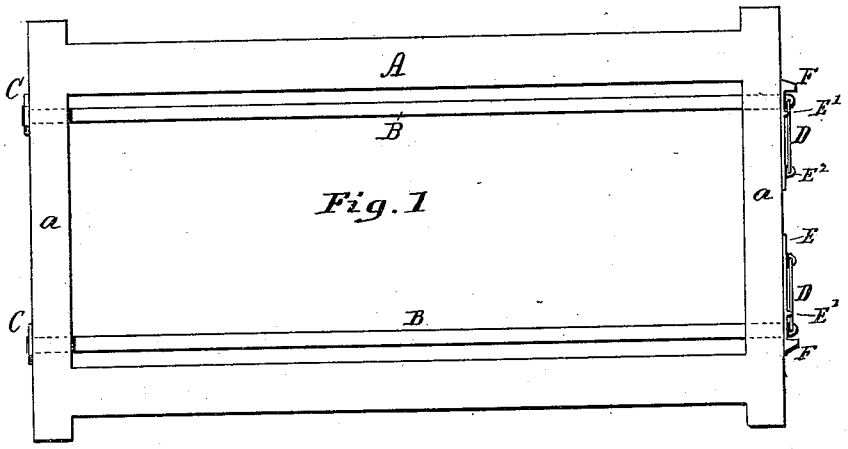
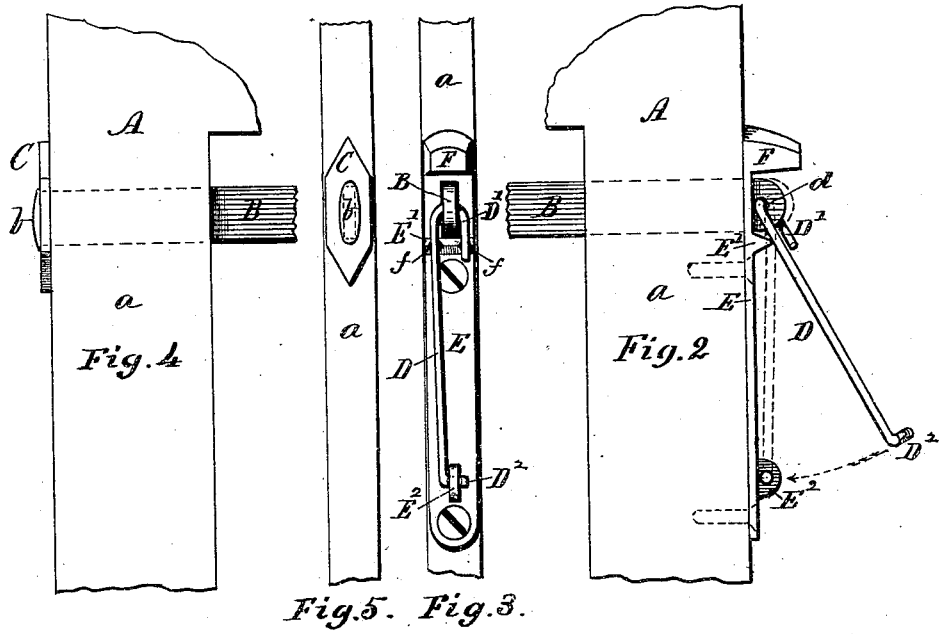
J. BUTTERWORTH.

Heddle-Rod Tightener.

No. 205,611. Patented July 2, 1878.





Witnesses,

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UNITED STATES PATENT OFFICE.

JONATHAN BUTTERWORTH, OF WORCESTER, MASSACHUSETTS.

IMPROVEMENT IN HEDDLE-ROD TIGHTENERS.

Specification forming part of Letters Patent No. **205,611**, dated July 2, 1878; application filed November 7, 1877.

To all whom it may concern:

Be it known that I, JONATHAN BUTTERWORTH, of Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Heddle-Rod Tighteners; and I declare the following to be a description of my said invention, sufficiently full, clear, and exact to enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 represents a front or rear view of a heddle-frame provided with my improved heddle-rod tighteners. Fig. 2 represents a front or rear view of my improved heddle-rod tightener, drawn on a larger scale. Fig. 3 is an end view of the same. Fig. 4 shows an edge view of the rod-head plate, and Fig. 5 is a face view of the same.

The object of my invention is to provide a simple and convenient means for tightening and securing heddle-rods within their frames.

My invention consists in a rod tightening and fastening device, constructed and operating as hereinafter described.

In the drawings, A denotes the harness or heddle frame. B indicates the rods upon which the heddles are supported. Said rods B are passed through the side bars *a a* of the frame A, in the usual position. The frame is provided at one end with plates C, through which the rods pass, and are prevented from withdrawing by a slight heading or riveting down on the end of the rods, as indicated at *b*. The opposite end of the rod B is fitted to connect with the tightening-lever D, in the present instance by a simple hole, *d*, punched through its end. E indicates a metal plate, secured to the outer edge of the side bar *a*, and having an opening or eye for the end of the rod B. Near one end of said opening is arranged a projection or lug, E^1, which serves as a fulcrum for the lever D, while at or near the opposite end of the plate E is a latch lug or eye, E^2, for locking down the lever-arm and retaining the parts in secured position. The lever D is, in the present instance, formed of a piece of wire, with one of its ends bent into a hook, D^1, that passes through the hole *d* of the rod B, with the end of said hook D^1 returned parallel, or nearly so, with the lever-arm, and of sufficient length to rest upon the fulcrum-lug E^1, while its other end, D^2, is bent at an angle, so as to pass through the eye E^2, the offset portion D^2 being notched or recessed, whereby the spring of the lever-arm will cause the notch or recess to embrace the upper part of the loop or lug E^2, so that the parts cannot jar out of place when the frames are in use. The fulcrum-lug E^1 may be provided with depressions to receive the hooked end and bar of the lever D, as at *f*, so as to prevent any liability of the lever slipping toward one side or rolling laterally. The rod B is fastened by hooking the lever D through its end, as illustrated in Fig. 2, and then pressing down the end of the lever and securing it at the lug E^2, as indicated by dotted lines in same Fig. 2.

The fulcrum-lug E^1 and latch-lug E^2 may, if preferred, be fixed directly on the side bar *a*, without the plate E, and any suitable means may be employed for the connecting lock or attachment of the lever ends to the rod B and lug E^2 without departing from my invention.

In lieu of forming the fulcrum-piece E^1 on the plate F, it may be formed on the under side of the lever D. I prefer, however, the form and construction shown.

At the end of the plate E, I extend a projecting lug, F, to a distance greater than any of the other projecting parts, so that when the frames A are stood upon end their weight will be borne by the long lugs F F, thus guarding the levers D and rod ends from pressure or injury.

Should the rod-tension become too slack by reason of the wearing of the parts, the rods may be shortened by riveting or heading down the end *b* to a little greater extent.

The plates C are formed from sheet metal, with a suitable opening to fit the rod, and are slipped over the rod before it is inserted through the bars *a a*.

It will be observed that all of the parts are simple and can be cheaply constructed, while their operation is effective and convenient.

Having described my improved heddle-rod

tightener, what I claim as new and of my invention, and desire to secure by Letters Patent, is—

1. In combination with rod B, perforated at *d*, fulcrum-piece E^1, having depressions *f*, and loop or eye E^2, the wire lever D, having hooked end D^1 and recessed offset end D^2, for the purpose set forth.

2. In combination with the plate E, provided with the guard-lug F, rod tightening and securing devices, substantially as and for the purpose set forth.

Witness my hand this 31st day of October, 1877.

JONATHAN BUTTERWORTH.

Witnesses:

CHAS. H. BURLEIGH,

BENJAMIN JAMES.