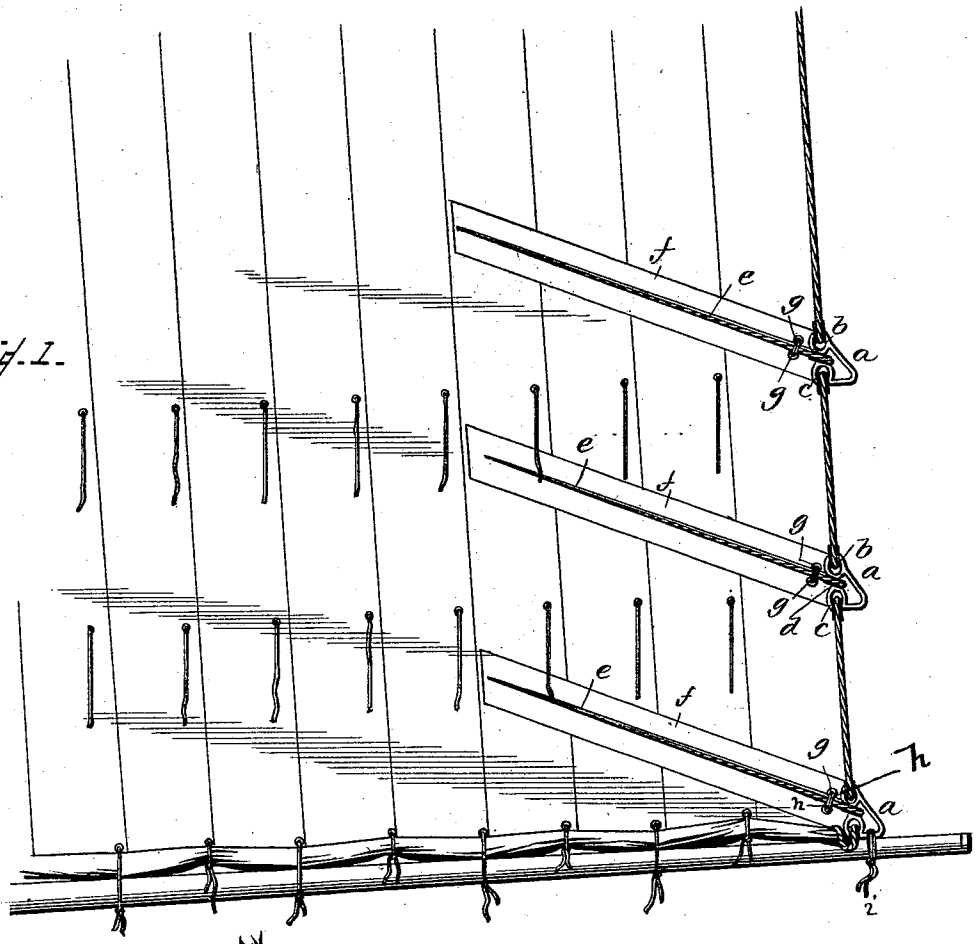
(No Model.)

F. M. WILSON.

RIGGING FOR SAILS.

No. 455,030. Patented June 30, 1891.

Fig. 1.



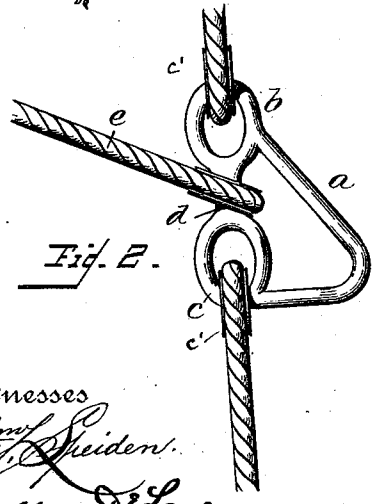
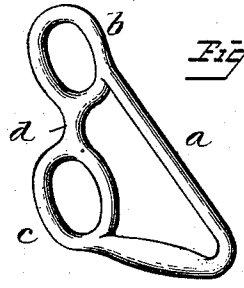


Fig. 2.

Fig. 3.



Witnesses
Wm. J. Sheiden.
Baltus DeLong.

Inventor
Frederick M. Wilson.
By his Attorneys
Baldwin, Dandson & Wight.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

FREDERICK M. WILSON, OF PORT JEFFERSON, NEW YORK.

RIGGING FOR SAILS.

SPECIFICATION forming part of Letters Patent No. 455,030, dated June 30, 1891.

Application filed March 2, 1891. Serial No. 383,363. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK M. WILSON, a citizen of the United States, residing at Port Jefferson, in the county of Suffolk and State of New York, have invented certain new and useful Improvements in Rigging for Sails, of which the following is a specification.

My invention relates to reef-cringles and the manner of connecting them to a sail.

I do not contemplate any material alterations or improvements in the rigging proper, my invention being applicable to all kinds of sails in which clews and cringles are usually employed.

The subject-matter claimed is hereinafter designated.

In the accompanying drawings, illustrating my invention, Figure 1 is a side elevation of a portion of a sail with my improved cringles applied. Fig. 2 is a detail view of the cringle detached from the sail, but showing the manner of attaching the ropes. Fig. 3 is a detail view in perspective of the cringle.

Cringles in general use consist of a piece of rope passed around a grommet or thimble bearing with one side against the outer side of the bolt-rope of the sail, and through eyelets in the sail, one piece of rope and one grommet being placed above the other. My invention constitutes an improvement on this form of cringle.

In carrying out my invention I form a cringle, preferably of a single piece of metal having a general triangular shape, the frame-piece *a* being bent at its lower end at about an angle of forty-five degrees. At each end of the frame-piece *a* is a ring or eyelet *b c*, and these eyelets are connected by a central connecting-piece *d*. The upright ropes at the edge of the sail are connected to the eyelets *b c*. The loops of the ropes where they are connected to the eyelets *b c* are preferably provided with thimbles or bushings *c'*. A bracing-rope *e* is connected to the connecting-piece *d*, and is secured to a re-enforcing strip *f*, secured to the sail, and preferably extending over four or more divisions thereof, or cloths, in an upwardly-inclined direction. The rope *e* is preferably tapered down from its outer to its inner end. Near the edge of the re-enforcing piece are formed grommets *g* on opposite sides of the rope *e*, and fastening devices or seizings *h* extend through the grommets and firmly hold the rope *e* at this point.

In Fig. 1 of the drawings one reef of the sail is shown taken in and secured to the boom. The cringle, which rests on the boom, is fastened thereto by a securing-rope *i*.

It will thus be seen that there is a strong but flexible connection between the rope and the cringle, and there is no danger of breaking or chafing or wearing away of any particular part of the rope. In addition to this, the liability of tearing the sail is reduced to a minimum, the sail being re-enforced near the point of attachment of the cringle, and the rope which is attached to the cringle extends part way across the sail and is attached thereto at different points, so that the strain on the rope is distributed. When a reef is taken in, as indicated in Fig. 1, the lower side of the triangular cringle lies parallel with the boom, and the securing-rope *i* may be passed around it and securely hold it in position. The lower horizontal part of the cringle-iron is preferably flattened, as shown, to provide a better bearing for the securing-rope *i*.

I claim as my invention—

1. The herein-described cringle, having a triangular-shaped frame formed with a straight horizontal lower end, and with rings or eyelets *b c*, connected at their inner ends by a central connecting-piece *d*.

2. The combination, substantially as hereinbefore set forth, of a sail, a sectional bolt-rope, a series of cringles, each formed with two rings or eyelets connected to the bolt-rope of the sail, and each having a connecting-piece between the rings or eyelets and a frame-piece connected to the rings, a series of re-enforcing pieces secured to the sail, and stay-ropes secured to the re-enforcing pieces and attached to the connecting-pieces of the cringles between the rings or eyelets thereof.

In testimony whereof I have hereunto subscribed my name.

FREDERICK M. WILSON.

Witnesses:

LLOYD B. WIGHT,

HARRY STARRETT.