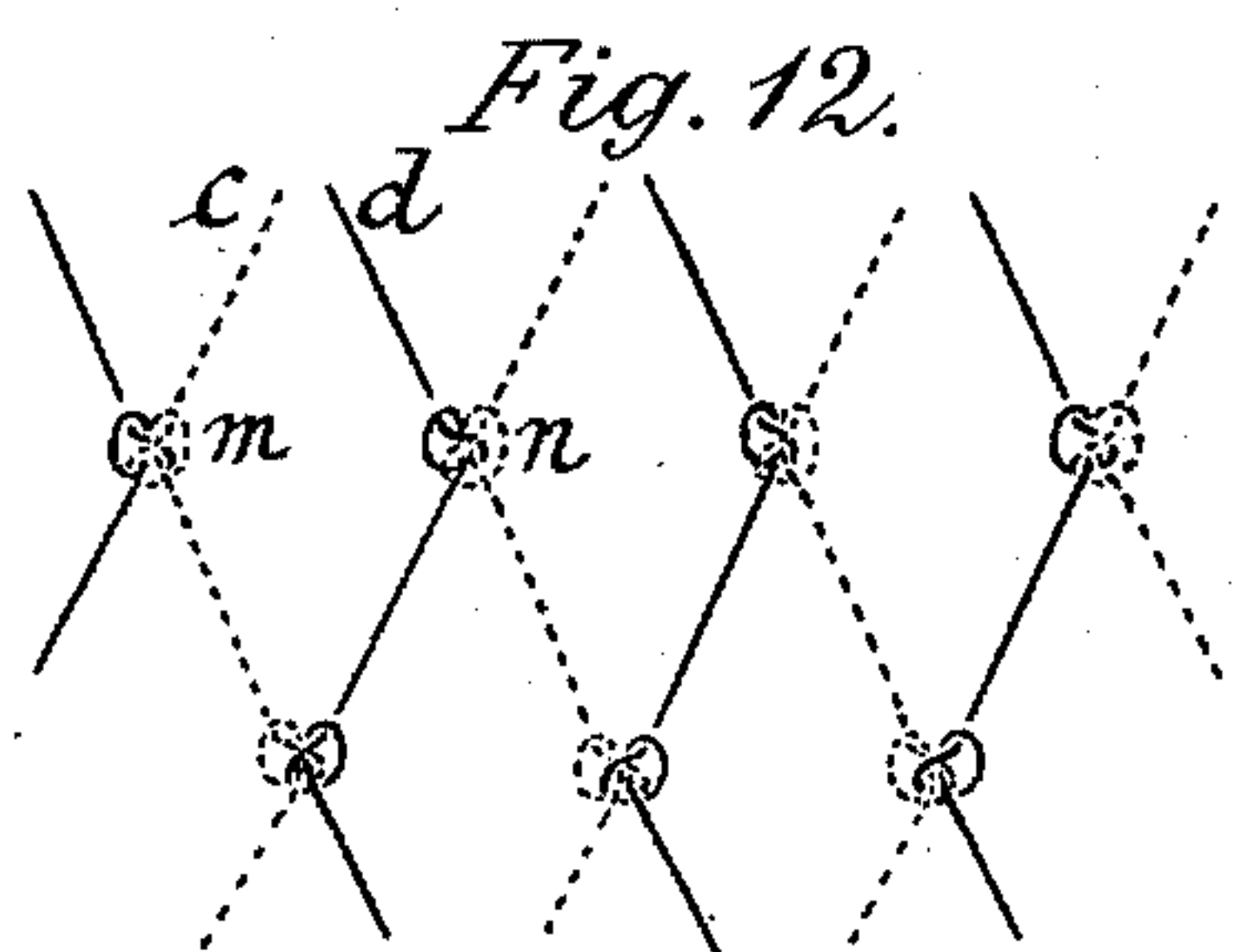
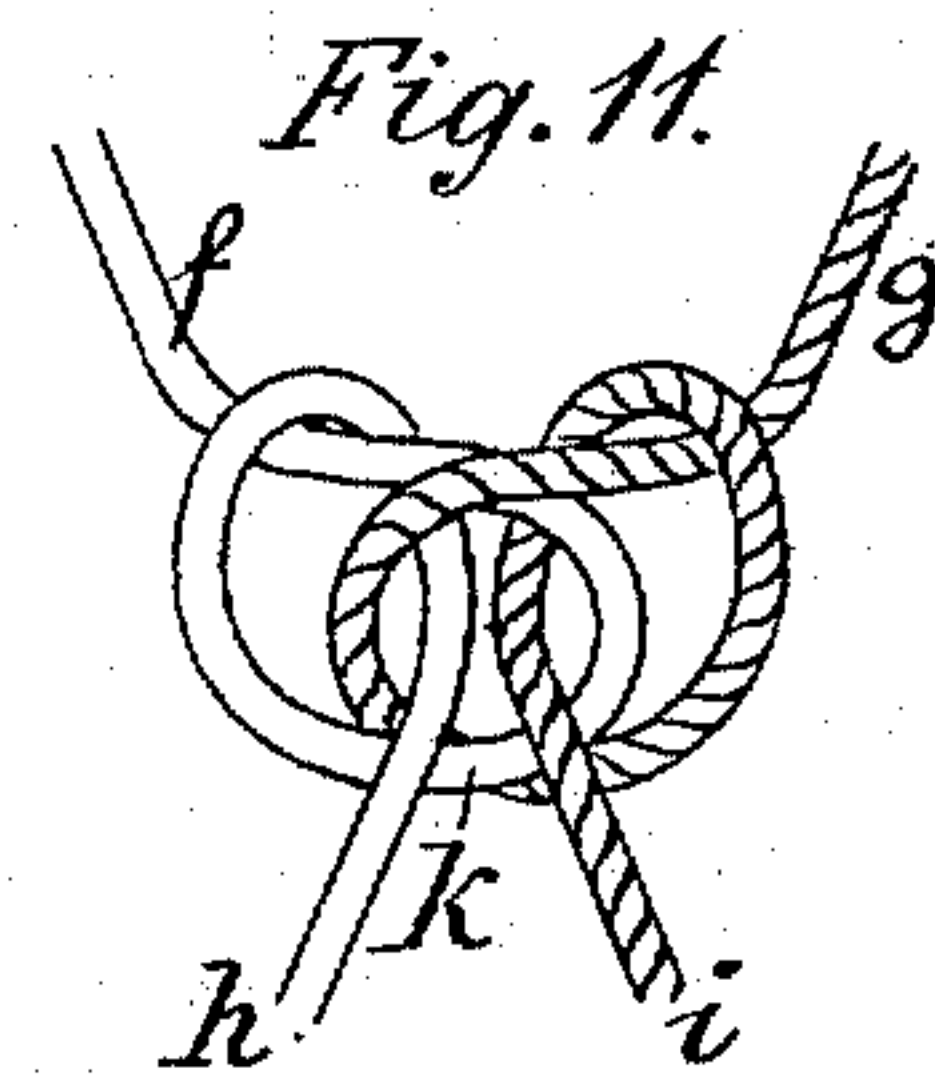
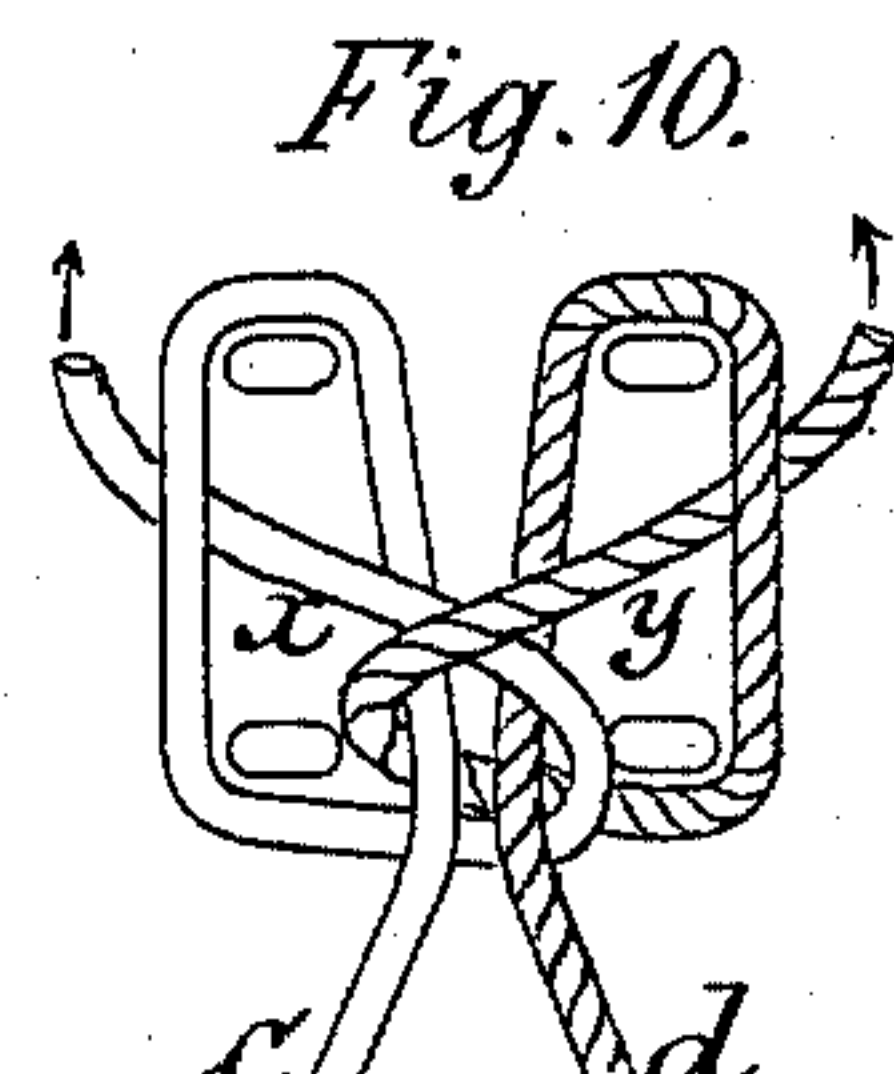
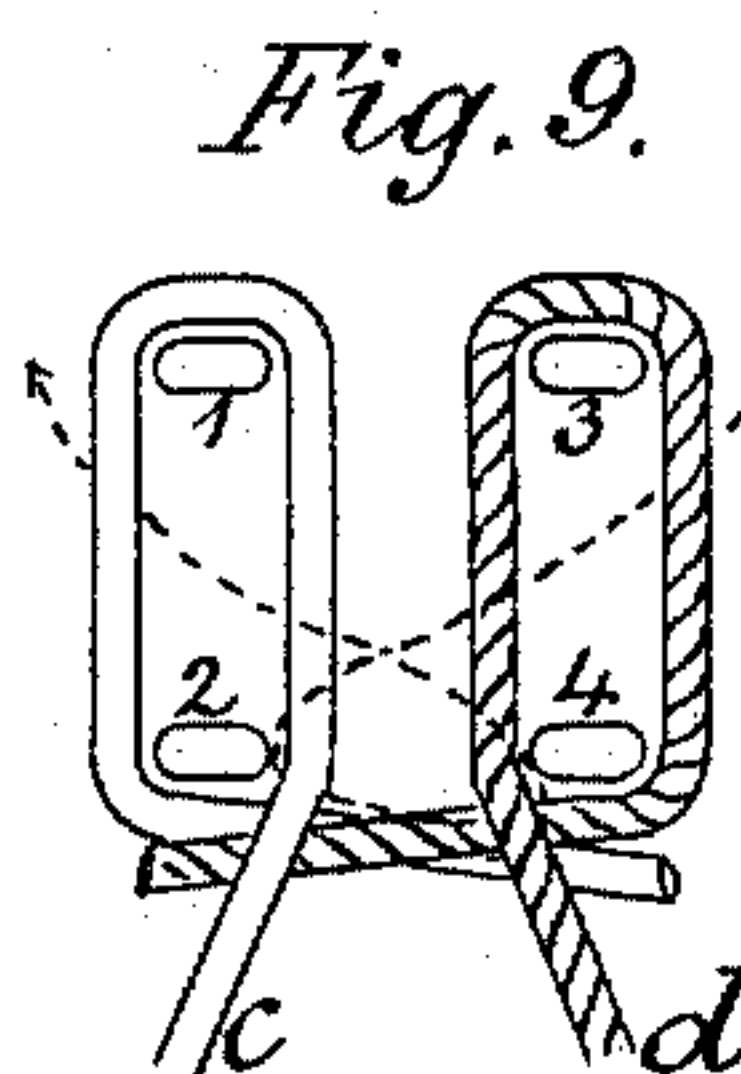
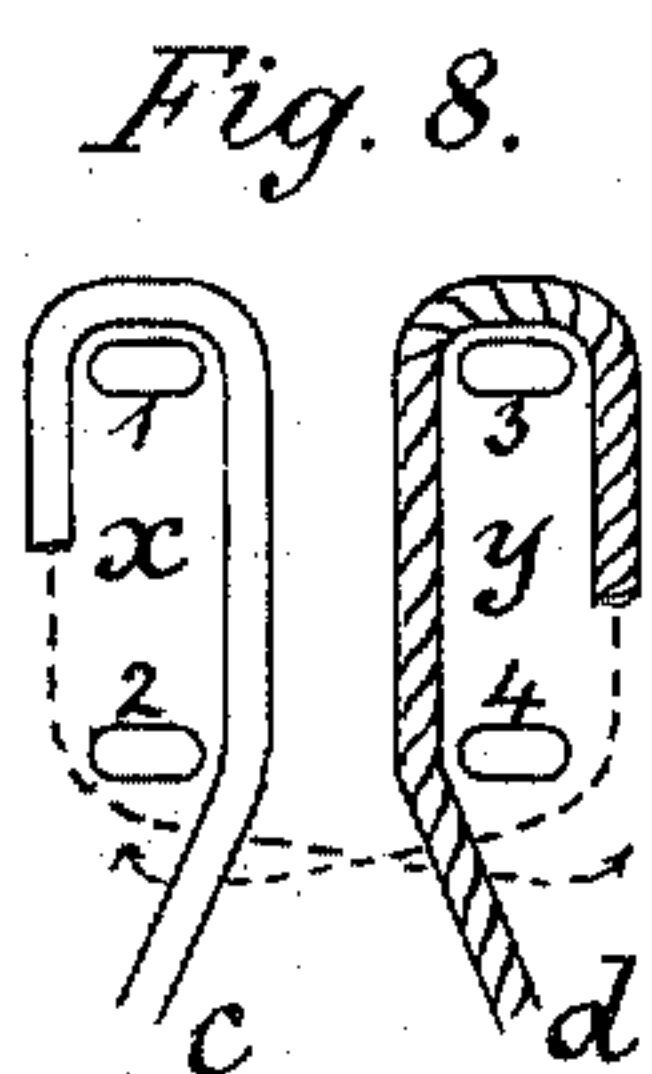
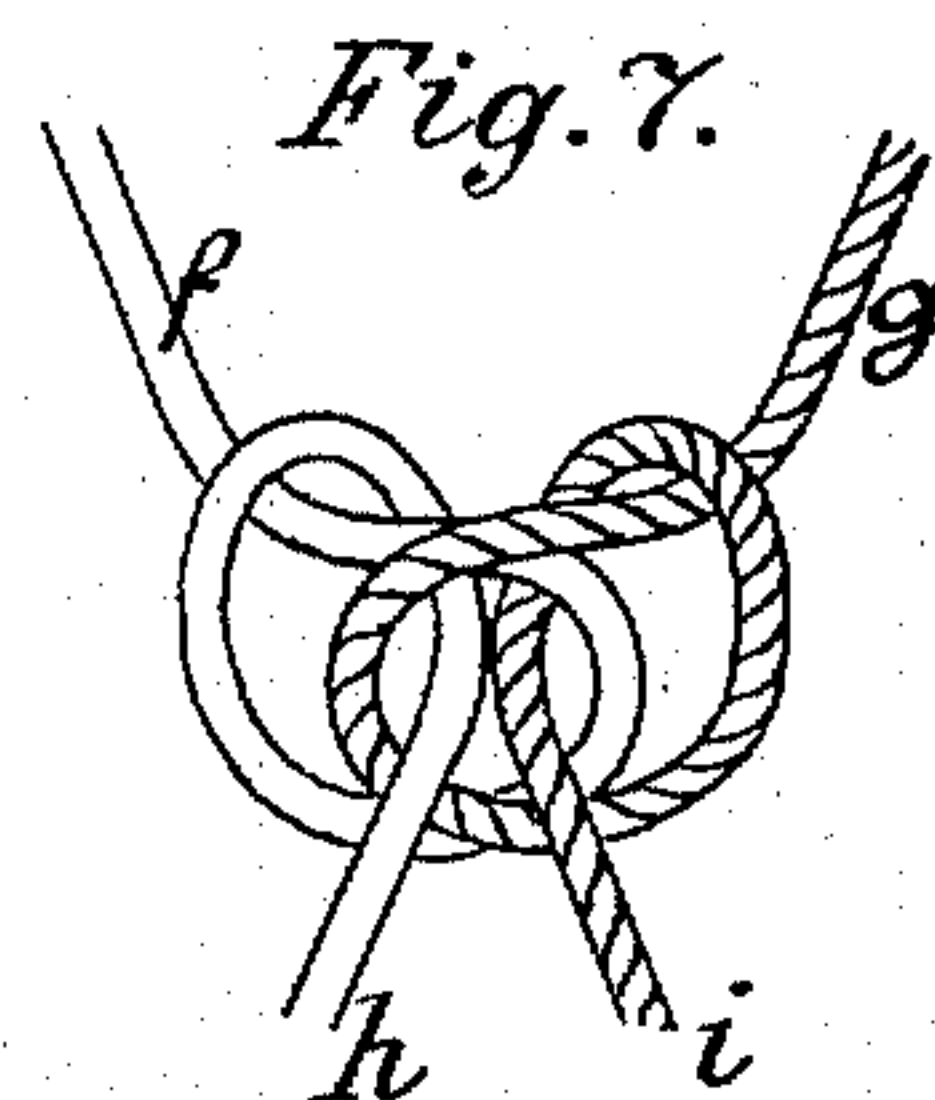
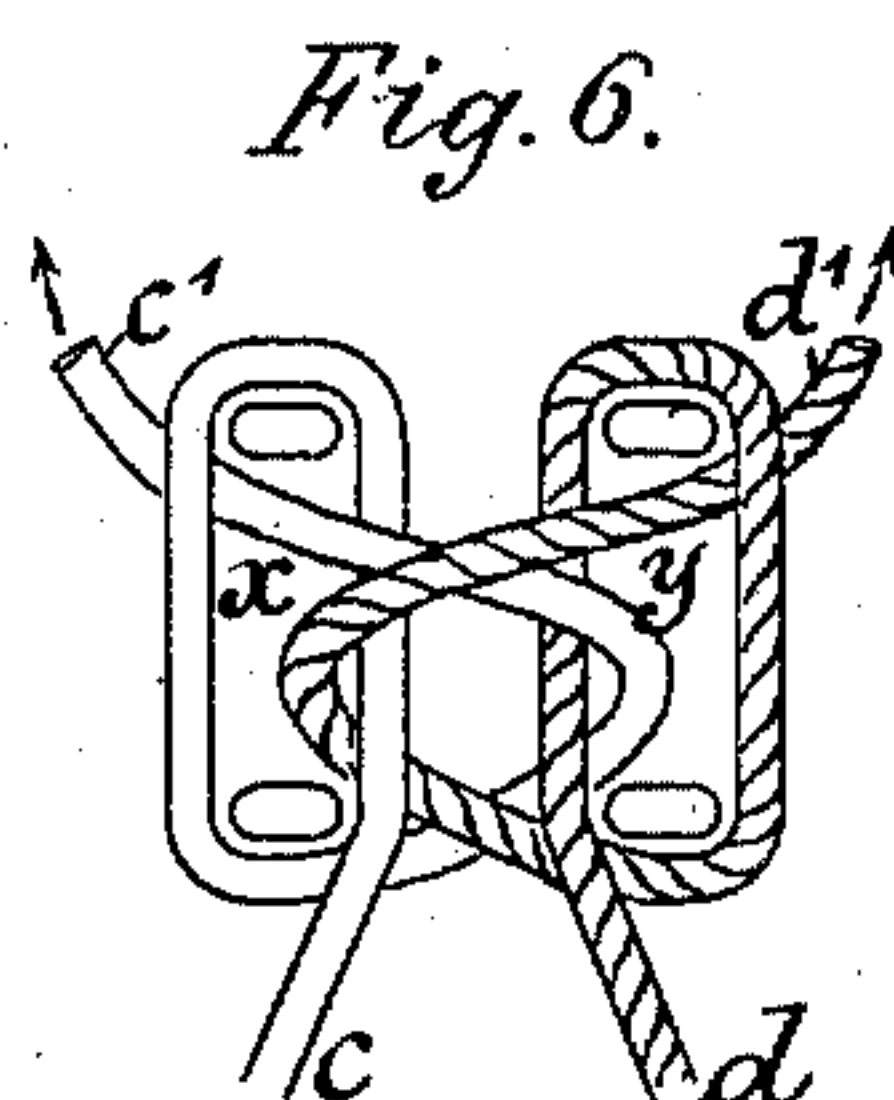
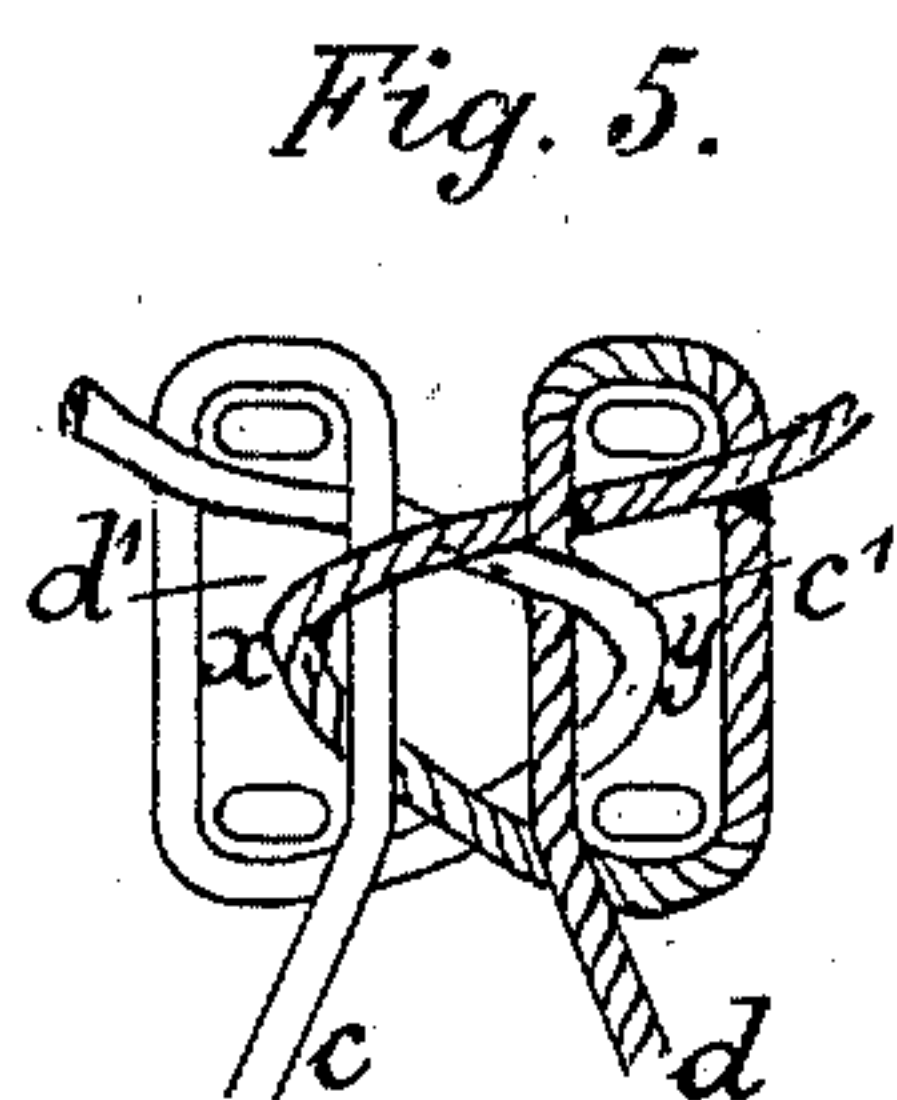
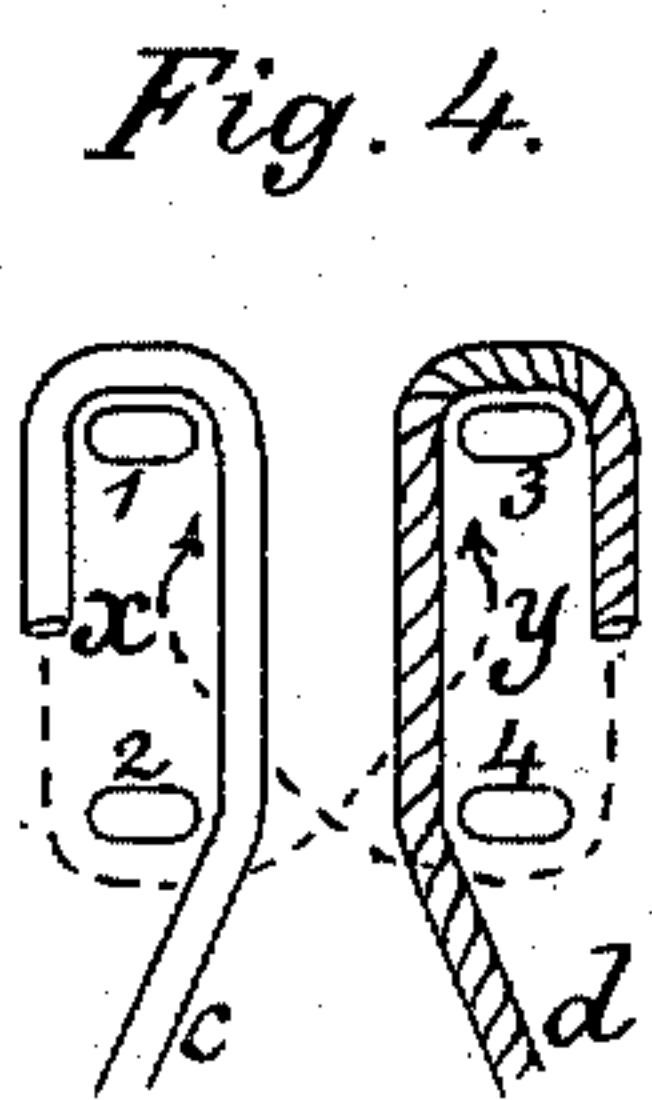
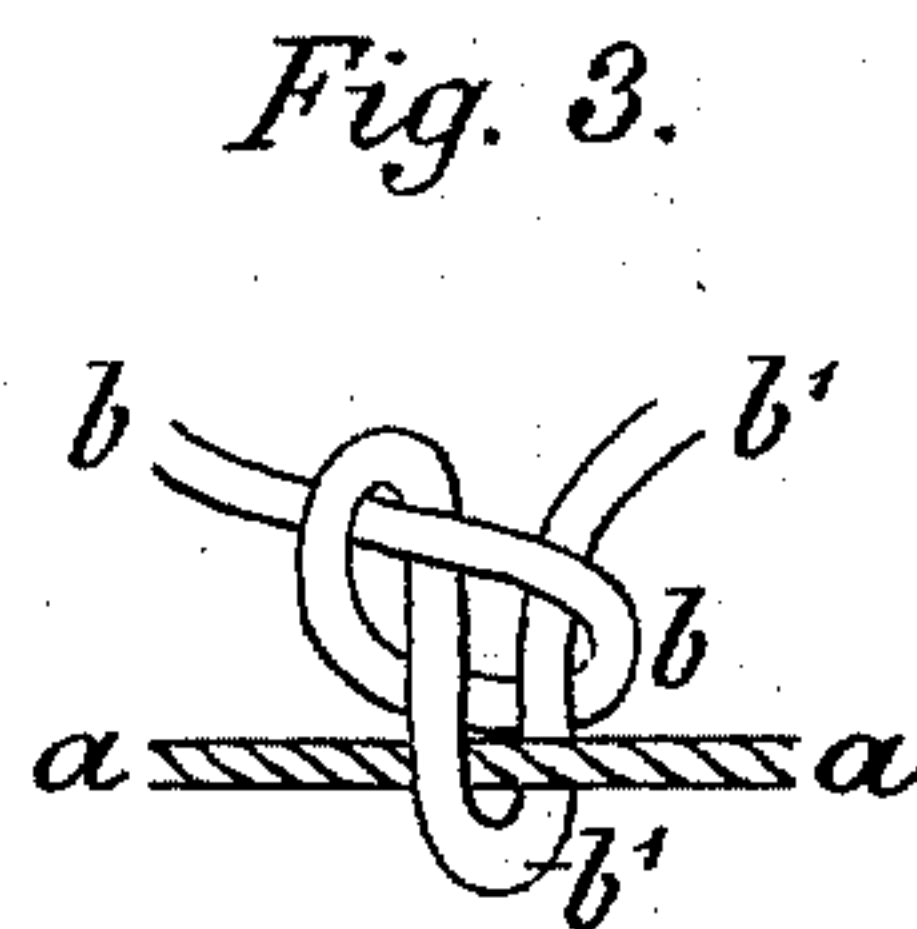
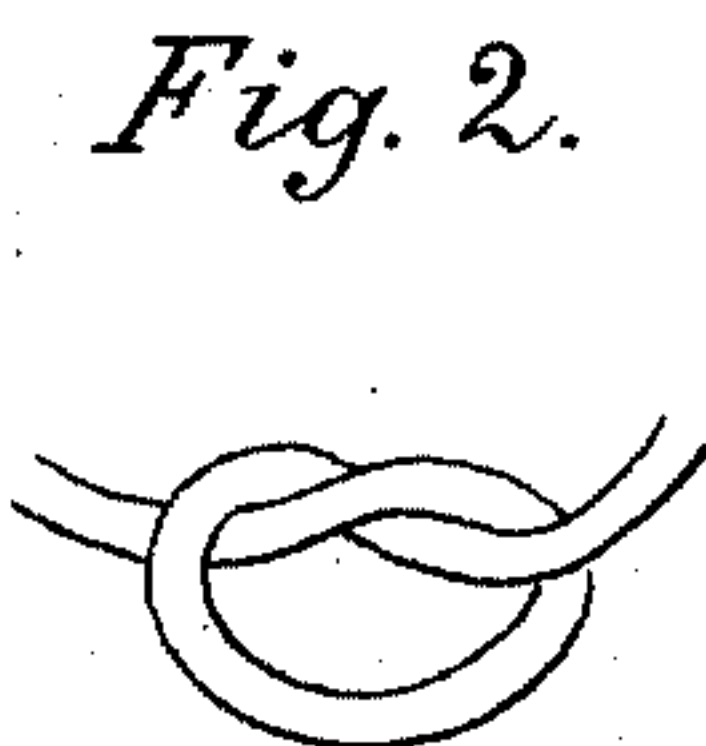
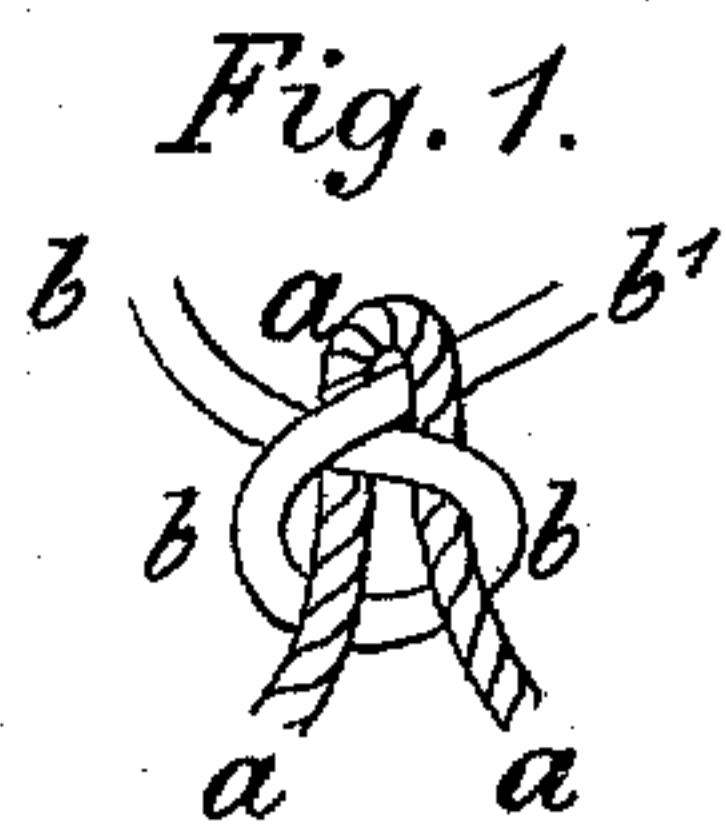


(No Model.)

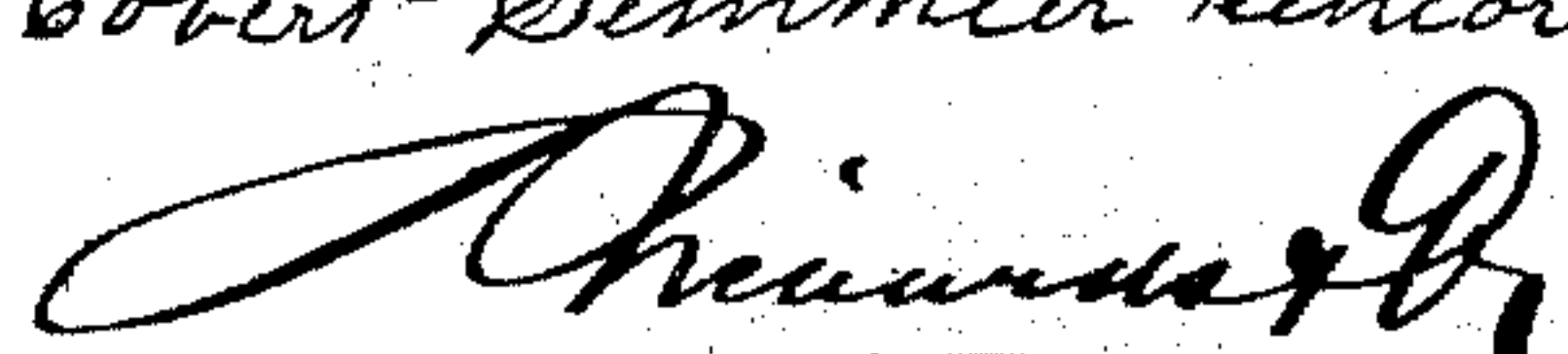
R. SEMMLER, Sr.
KNOT FOR NET FABRICS.

No. 483,291.

Patented Sept. 27, 1892.



Witnesses:
E. R. Botton
H. Palmer

Inventor:
Robert Semmler senior
By 
his Attorneys.

UNITED STATES PATENT OFFICE.

ROBERT SEMMLER, SR., OF SIEGMAR, GERMANY.

KNOT FOR NET FABRICS.

SPECIFICATION forming part of Letters Patent No. 483,291, dated September 27, 1892.

Application filed January 29, 1892. Serial No. 419,698. (No model.) Patented in Germany July 7, 1891, No. 60,248, and in Italy November 12, 1891, No. 30,606.

To all whom it may concern:

Be it known that I, ROBERT SEMMLER, Sr., a subject of the Emperor of Germany, and a resident of Siegmars, Saxony, Germany, have
5 invented certain Improvements in Knots for Net Fabrics, (patented in Germany July 7, 1891, No. 60,248, and in Italy November 12, 1891, No. 30,606,) of which the following is a specification.

10 The object of the present invention is to make a net fabric in which the threads will be so connected that each will be secured to the other by a separate knot, thus holding the connections immovable and greatly in-
15 creasing the strength and durability of the fabric.

In the accompanying drawings, forming part of this specification, Figures 1, 2, and 3 are views explanatory of the ordinary method
20 of connecting the threads of a net fabric, and Figs. 4 to 7 are views illustrating the manufacture of net fabrics according to my improvements. Figs. 8 to 11 illustrate a slightly-different method of arranging the threads, in
25 which the coil passes in front of instead of to the rear of the thread; and Fig. 12 is a detail view of the fabric.

The knot ordinarily made by hand and machine tying has the threads before being
30 drawn taut disposed as shown in Fig. 1, and neither forming a knot, such as shown in Fig. 2. In Fig. 1 thread *a* forms an open and thread *b* a cross loop, the former lying in the latter, one portion *b'* of which lies in the open
35 loop formed by thread *a*. In such instance if both threads are drawn tight a knot is made, (ordinarily known as a "net" or "weaver's" knot;) but if only the thread *a* is drawn and pulled straight the loop formed by thread *a*
40 is pulled out of that formed by thread *b*, and the thread of the latter is also carried along, as shown in Fig. 3. The knot formed by the thread *b* can be shifted on thread *a*, and consequently the connection between *a* and *b* is
45 not sufficiently tight or strong.

My invention obviates the objections incident to the arrangement described by providing an immovable connection formed of a double knot. The method of forming said
50 improved connection is illustrated in Figs. 4 to 7.

To provide the fabric threads *c d* with double knots *m n*, as shown in Fig. 12, the threads *c d* are passed in opposite directions

around the upper pair 1 3 of a series of four 55 pins 1, 2, 3, and 4, each thread being then brought along the outer side of the pins, then passed around a lower pin 2 4, behind itself, and each of them behind the corresponding portion of the adjacent thread, Fig. 5, then 60 each through the loops *xy* of the other thread, as indicated at *c' d'*, then across the led portion of the other thread, Figs. 5 and 6, and finally each passes to the rear through its own loop in the construction shown in Fig. 6, 65 and each thread forming a loop, as shown in Fig. 7. In such an arrangement by drawing the threads *f g h i* each loop can be closed to form a real knot equal to that shown in Fig. 2, and both knots are so interlaced that the 70 connection is absolutely immovable.

As shown in Fig. 5, the threads *c' d'* may be led so that they eventually pass to the rear of their inner parallel portions, and finally forward through the loops *xy*. It will thus 75 be seen that I do not limit myself to the particular way of leading the threads.

In Figs. 8 to 11 the threads *c* and *d* pass around the pins, and instead of entering the loops *xy* pass around each other, as shown in 80 Fig. 9. They then cross and enter the loops *xy*, as shown in Fig. 10, and the knot, as shown by Fig. 11, is formed by pulling the threads.

Having now particularly described and as- 85 certain the nature of the said invention and in what manner the same is to be performed, I declare that what I claim is—

1. The method of connecting the threads in net fabrics, &c., consisting in arranging 90 and interlacing the said threads to provide each with a loop capable of forming a separate knot and drawing said loops taut to establish an immovable connection comprising a knot for each thread, substantially as 95 set forth.

2. A net fabric having its threads joined by two independent and interlaced knots, affording an immovable connection for each thread with the other, substantially as set 100 forth.

In witness whereof I have hereunto set my hand in presence of two witnesses.

ROBERT SEMMLER, SR.

Witnesses:

R. E. JAHN,

A. B. BEYREUTHER.