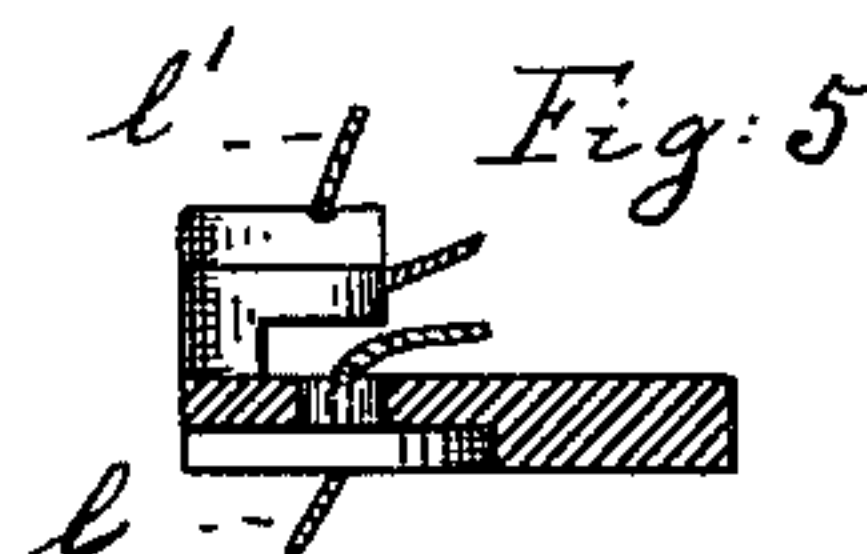
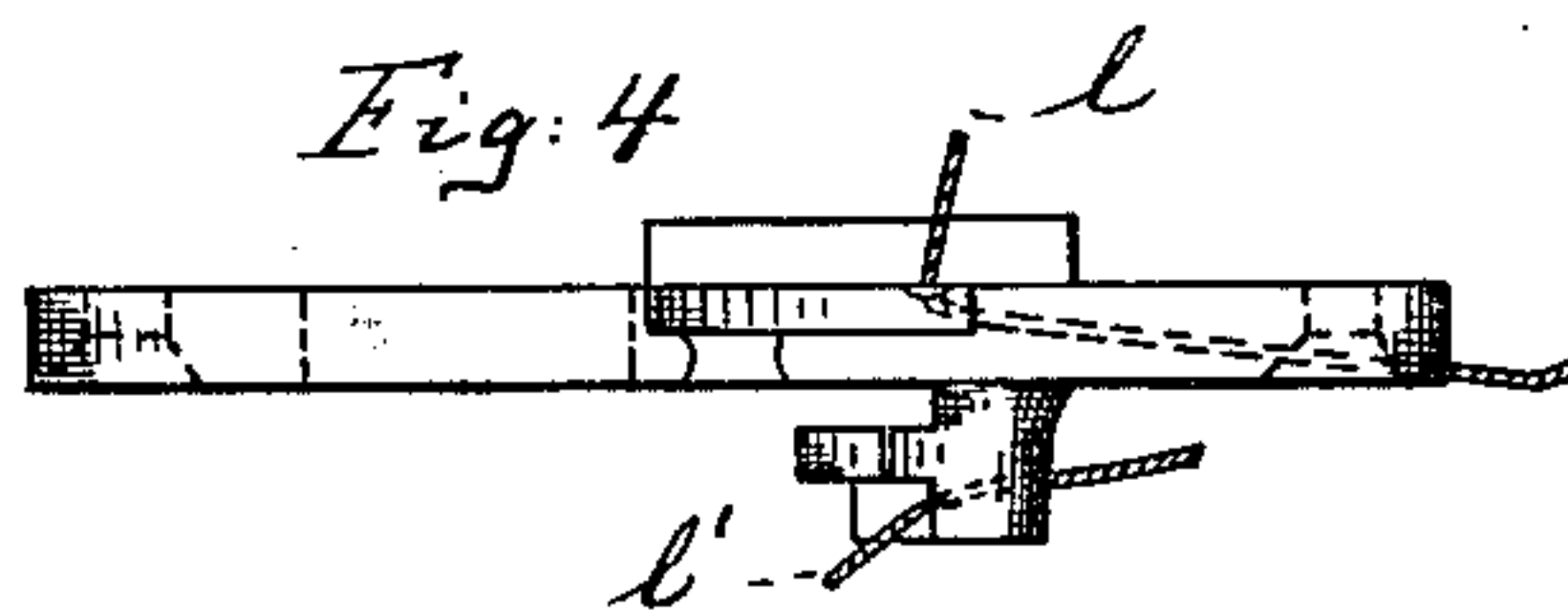
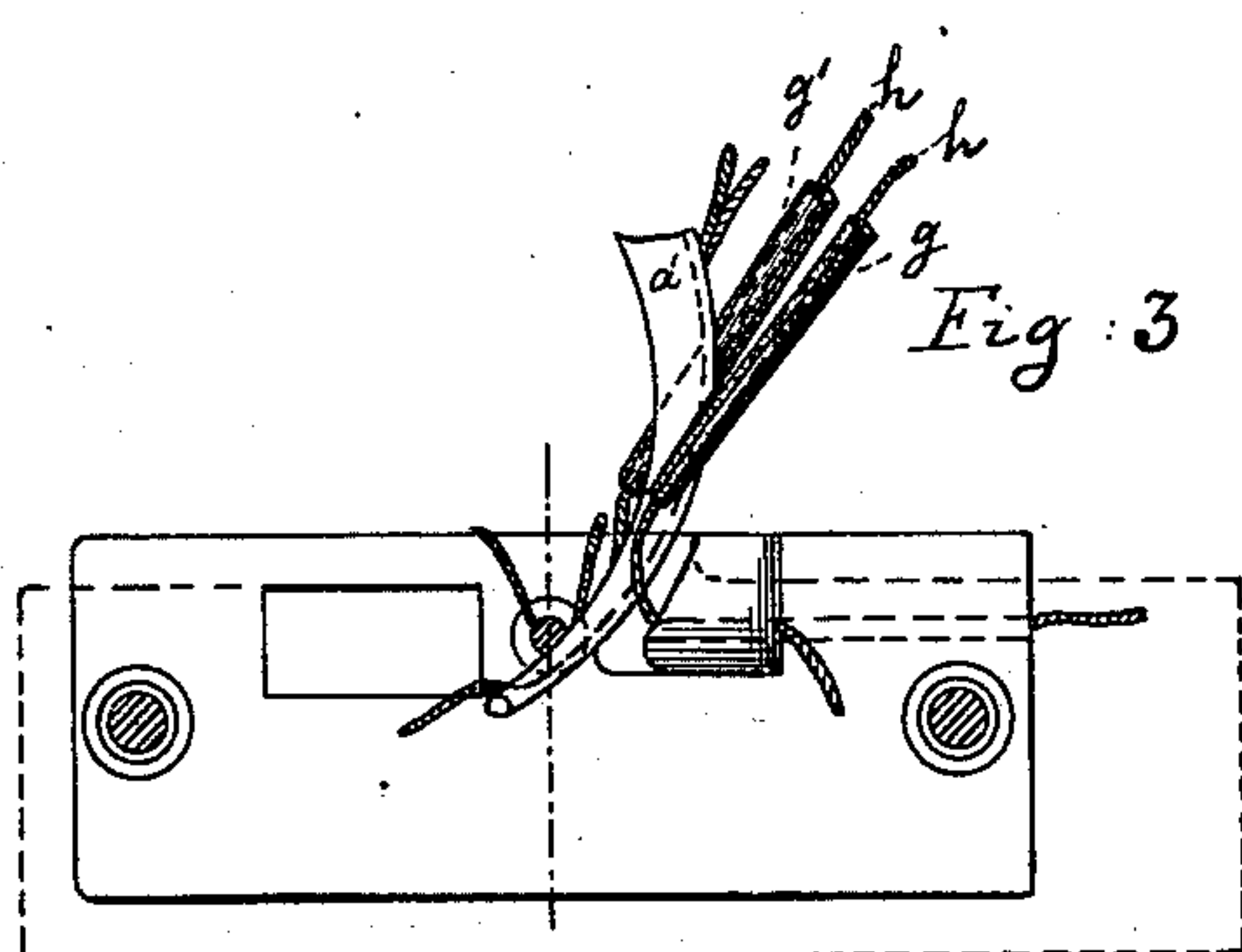
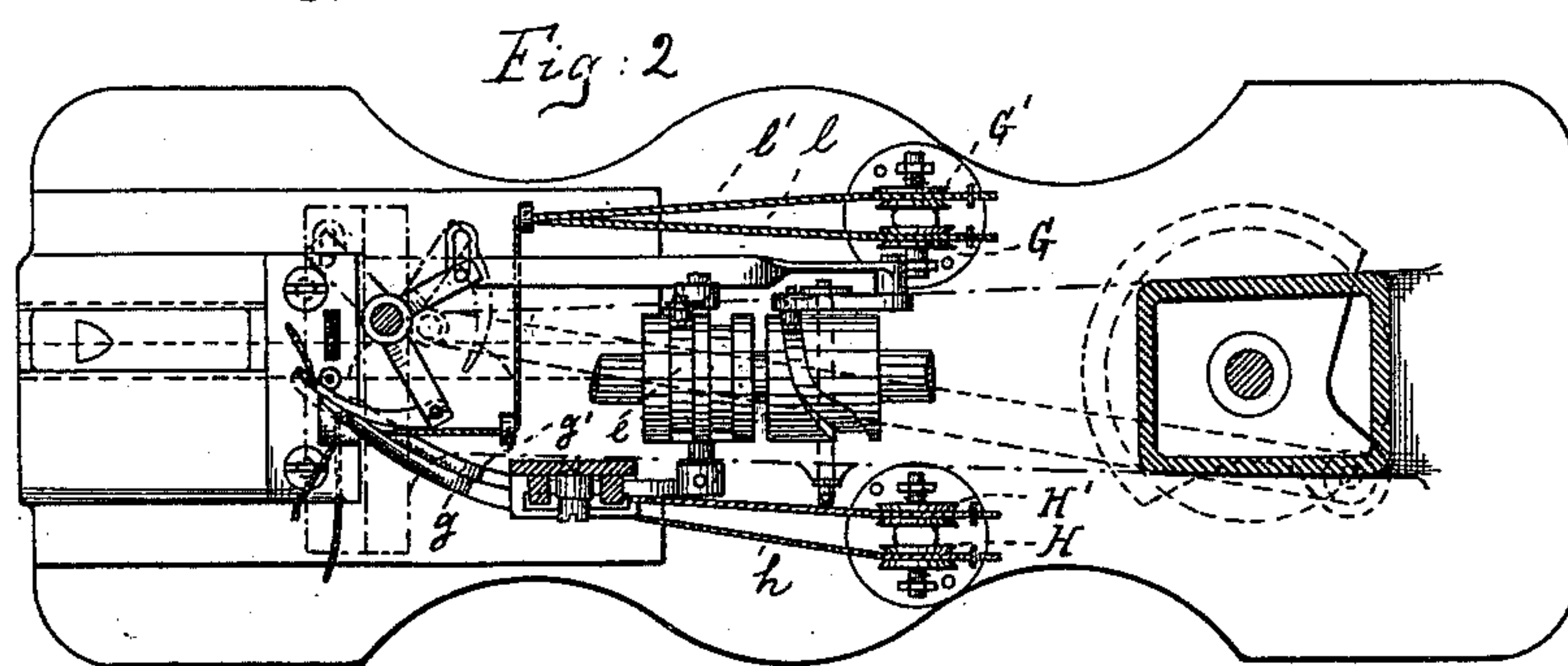


2 Sheets—Sheet 1.

Patented Aug. 6, 1889.



Witnesses:
Wm Wagner.
A. Jonghman.

Inventor:
L. Otto, per
Roeder & Briesen
attys.

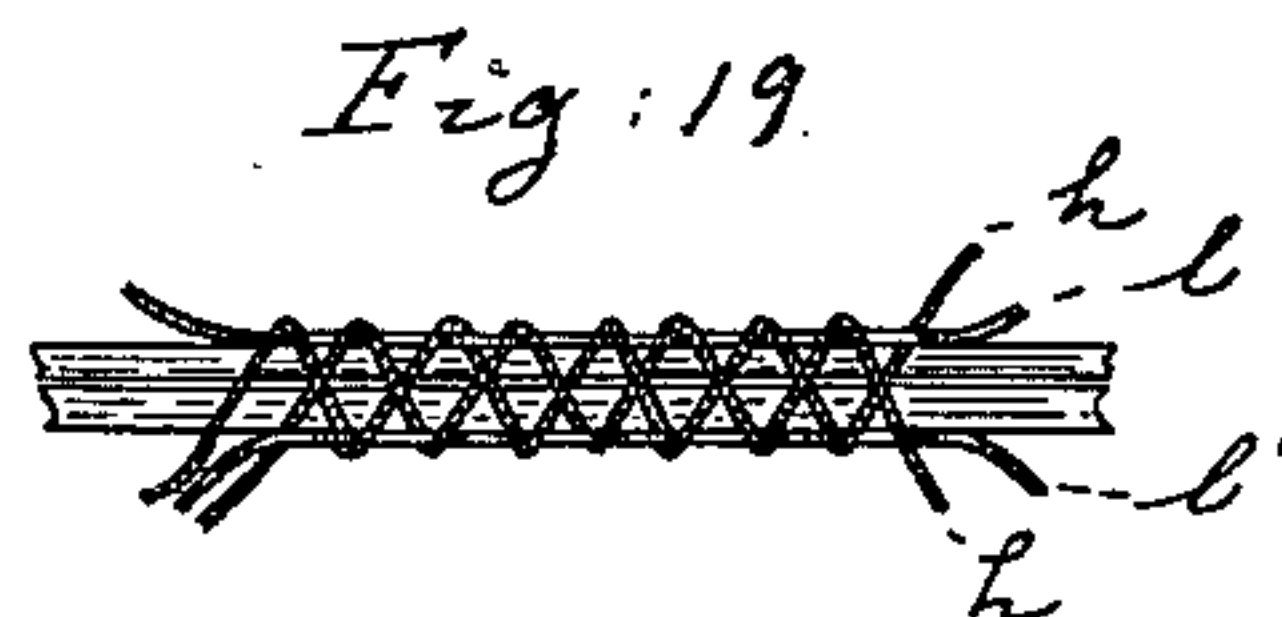
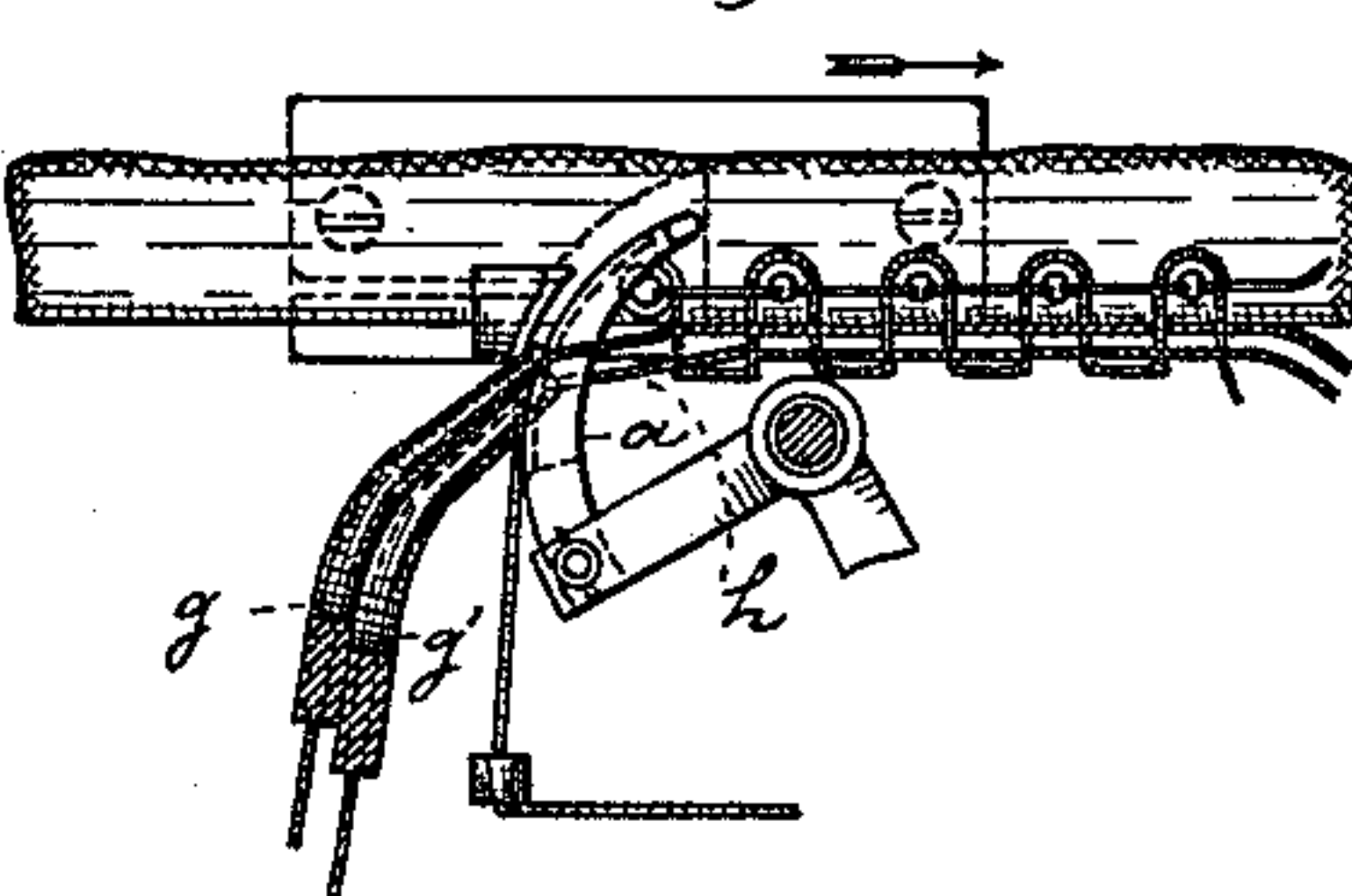
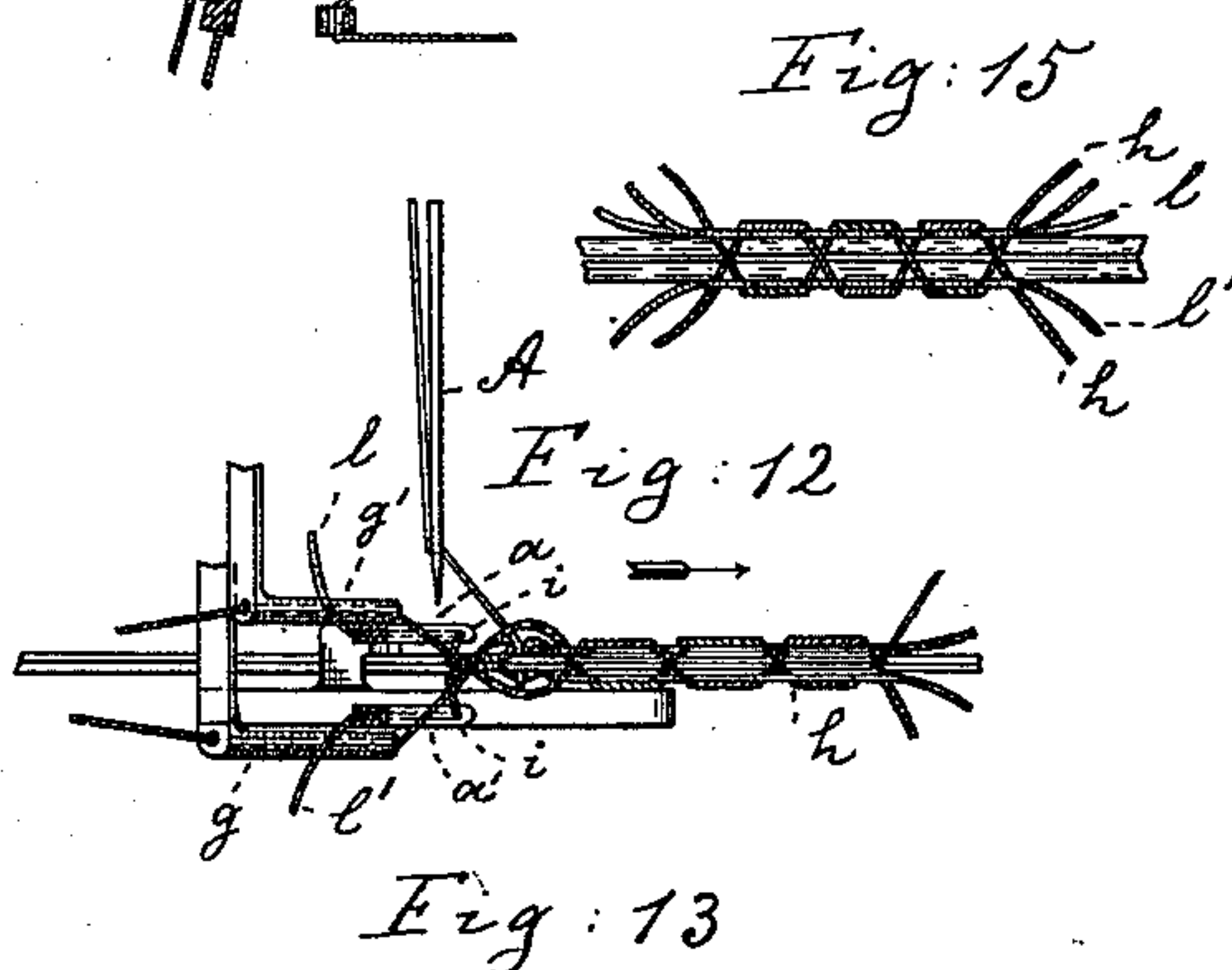
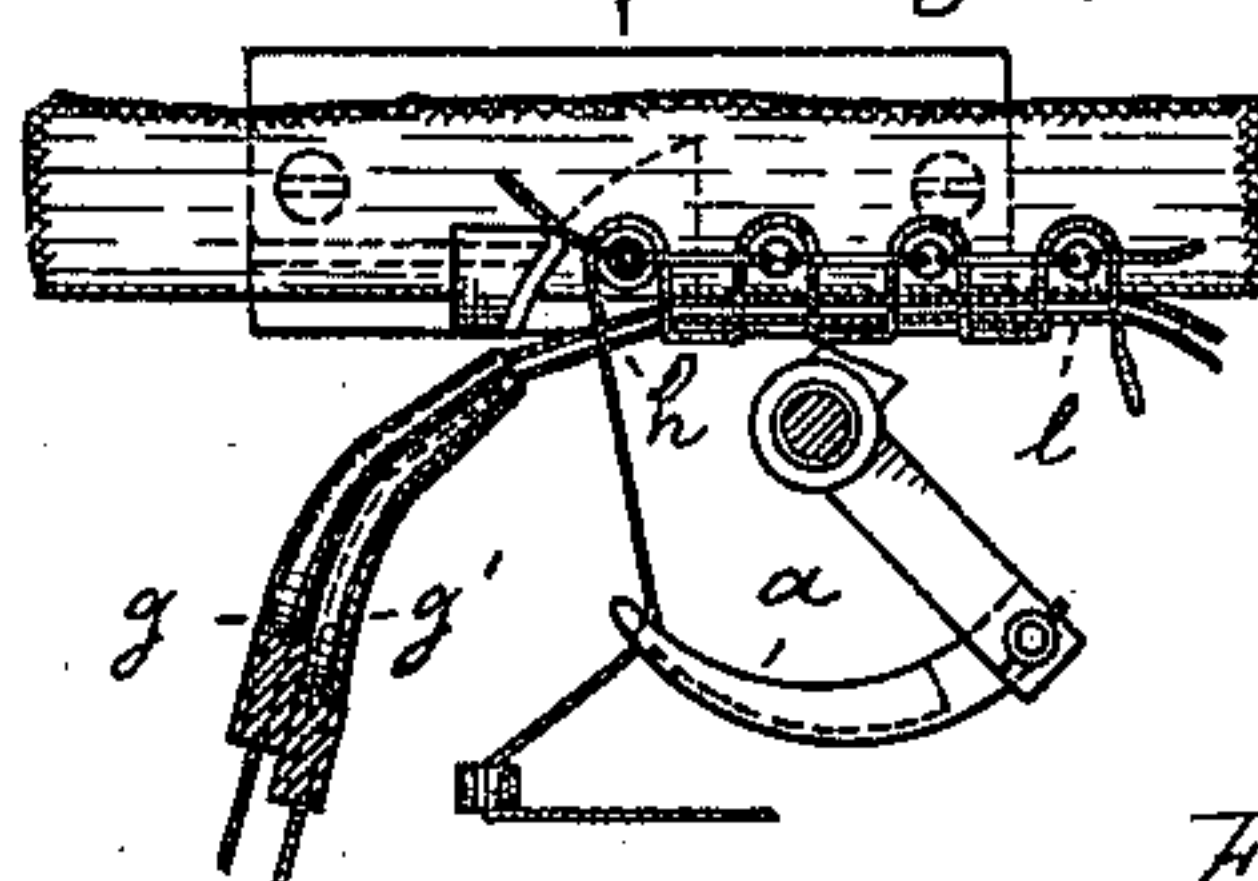
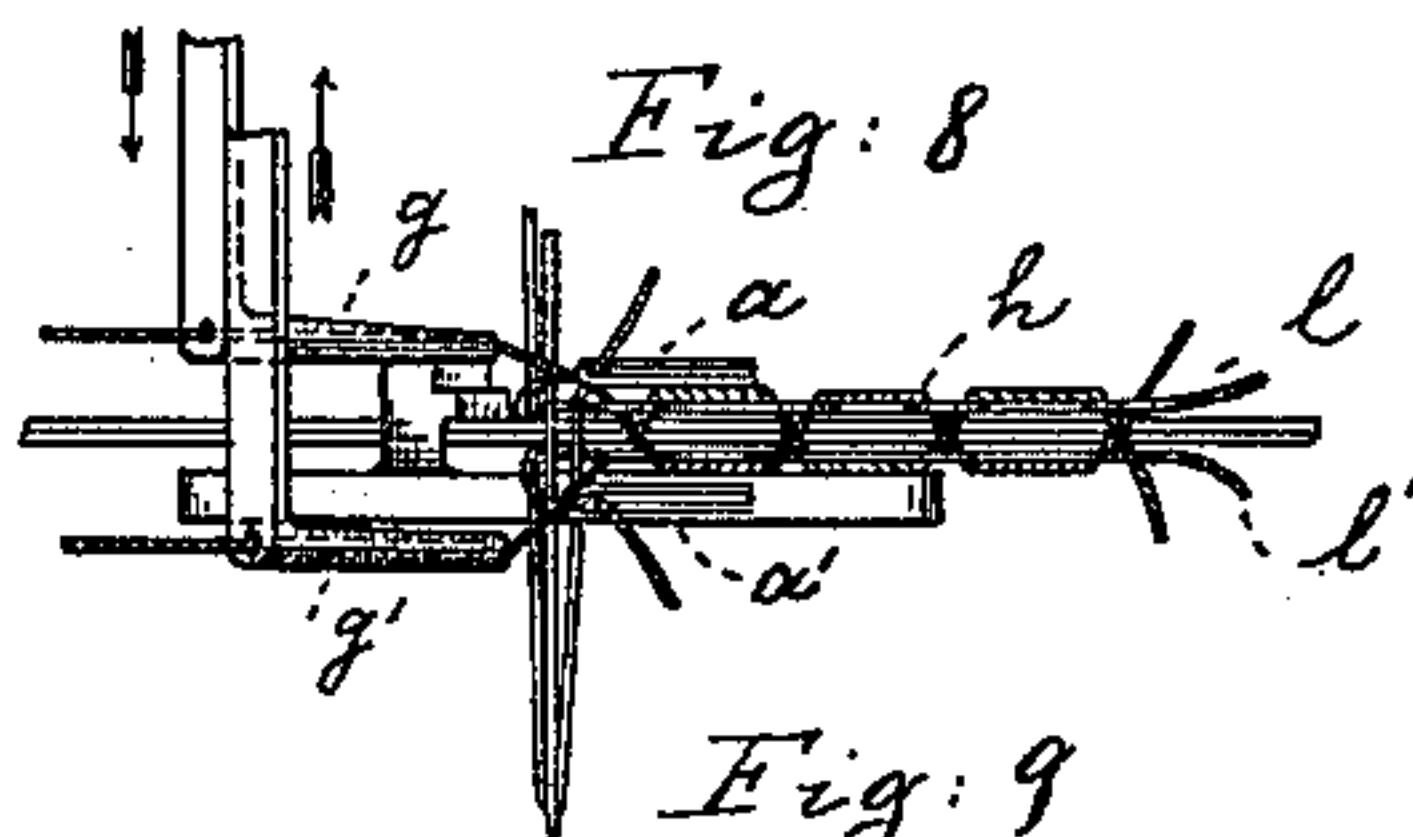
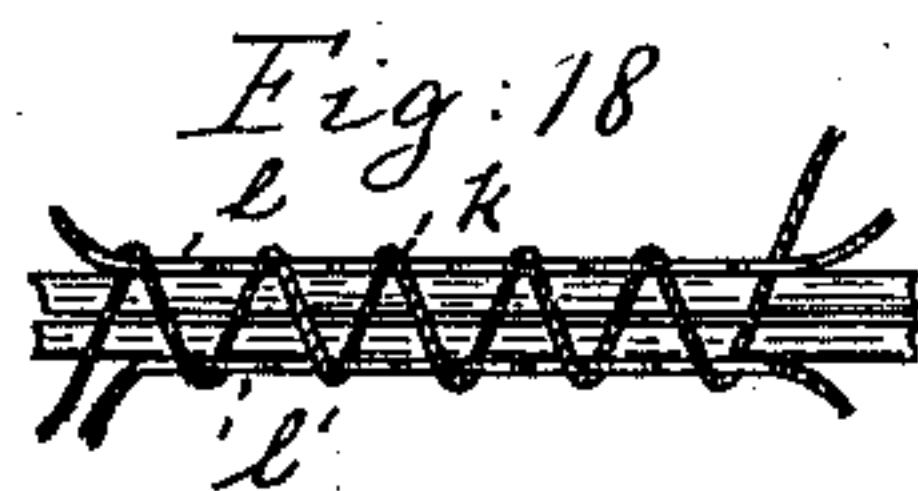
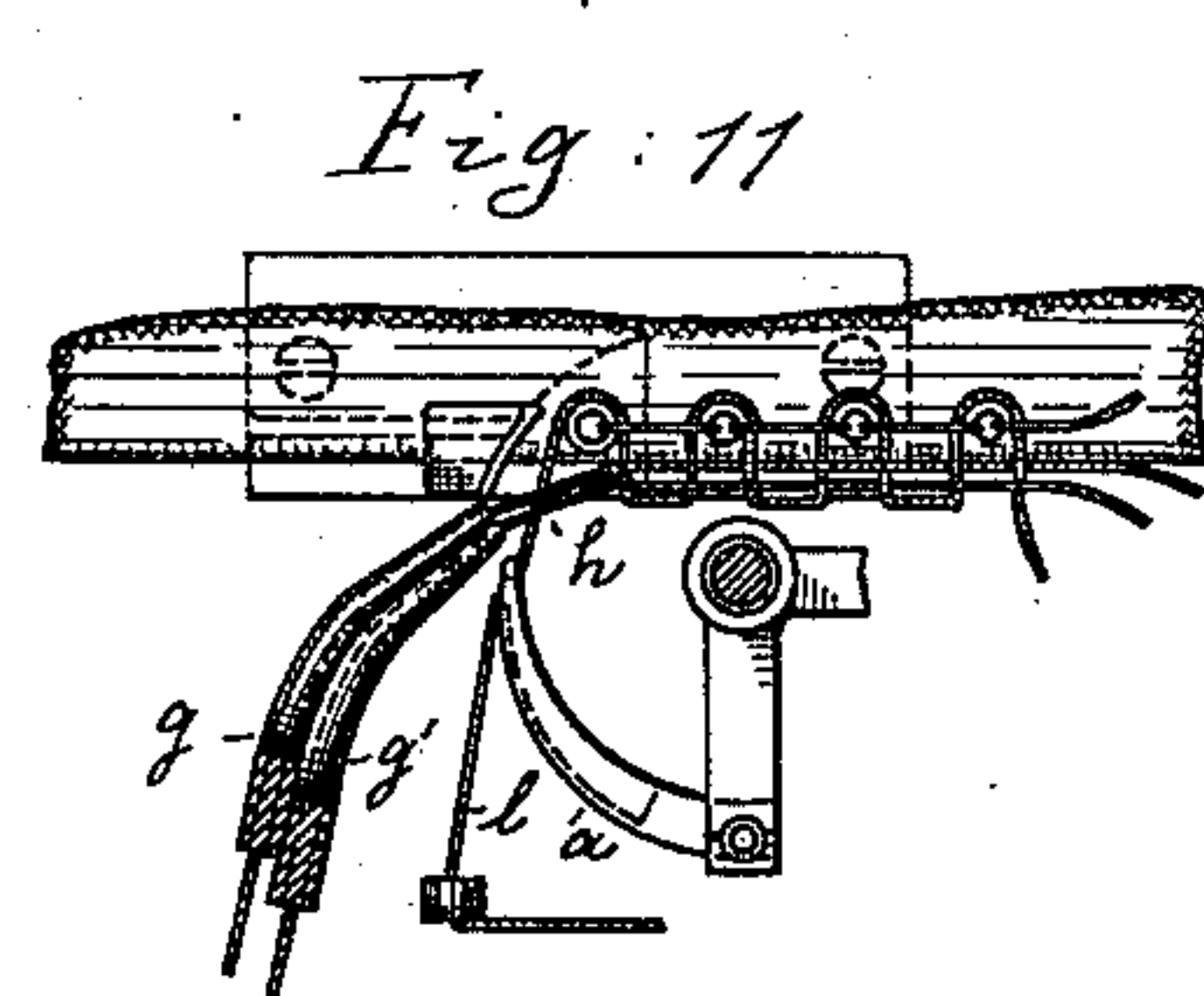
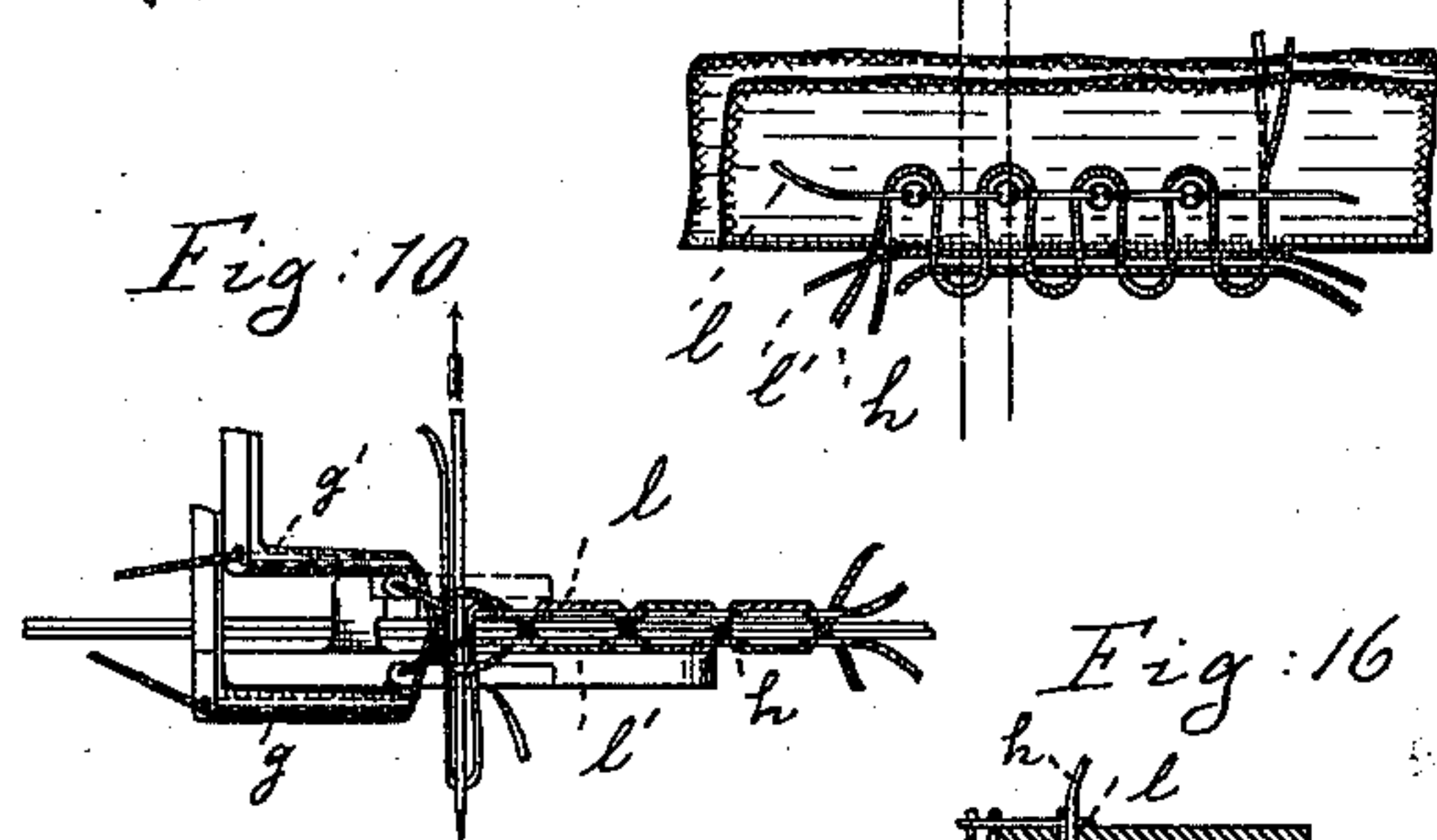
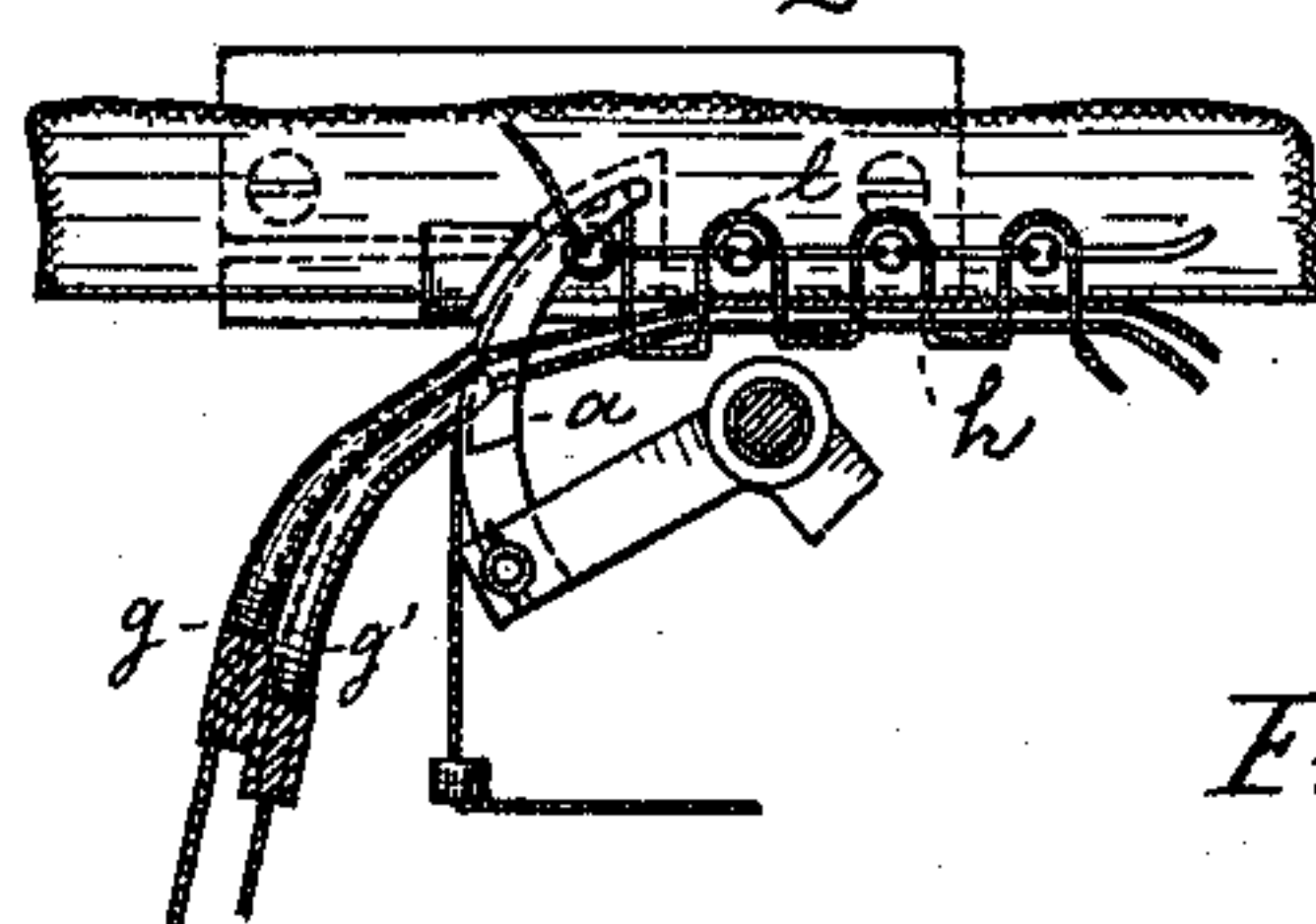
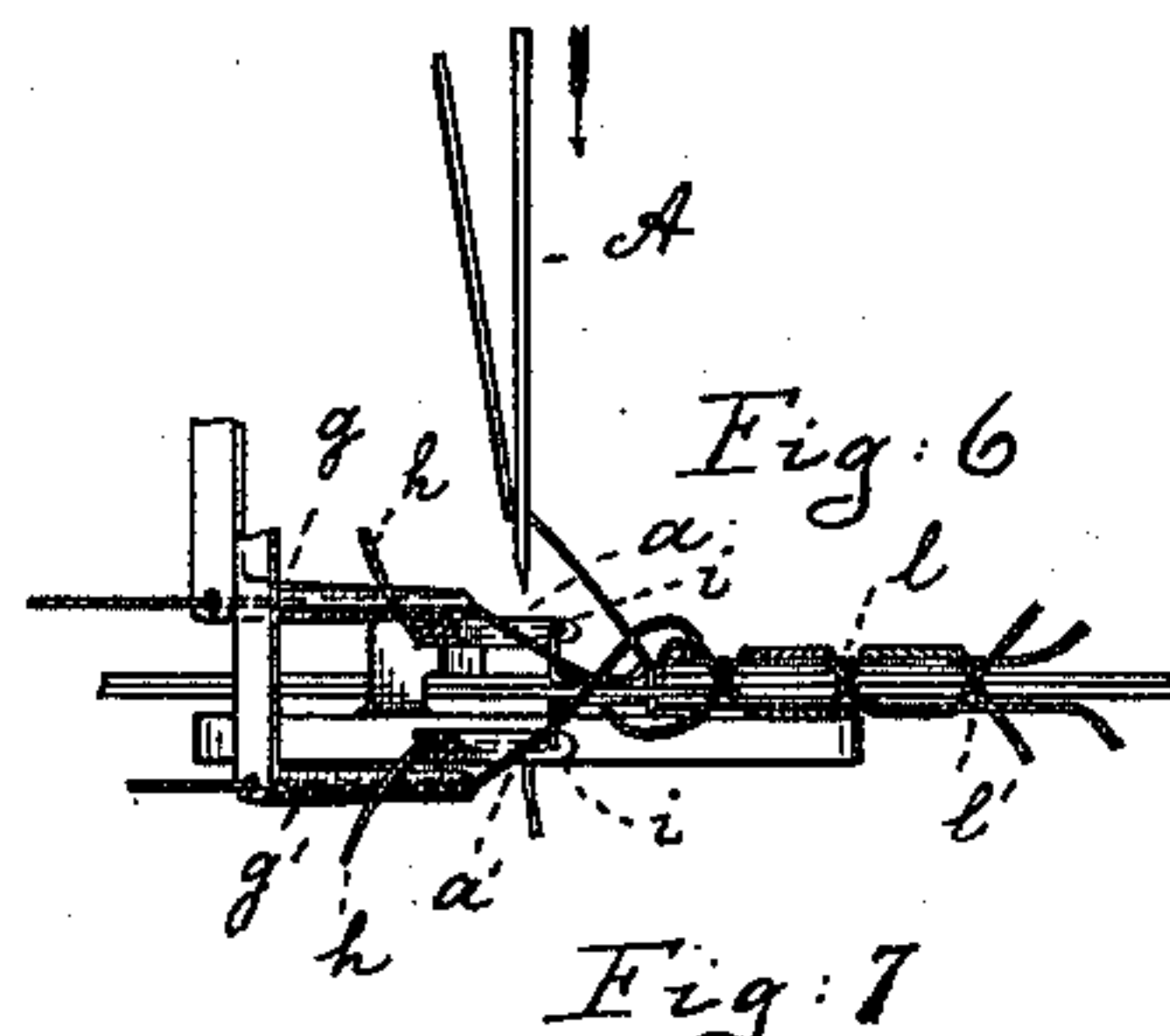
(No Model.)

2 Sheets—Sheet 2.

R. OTTO.
SEWING MACHINE.

No. 408,427.

Patented Aug. 6, 1889.



Witnesses:
W. Wagner.
A. Goughmans.

Inventor:
R. Otto, per
Roeder & Briesen
attys

UNITED STATES PATENT OFFICE.

RICHARD OTTO, OF PLAUEN, SAXONY, GERMANY.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 408,427, dated August 6, 1889.

Application filed November 23, 1888. Serial No. 291,720. (No model.) Patented in Germany March 1, 1887, No. 41,227; in England May 11, 1887, No. 6,926, and in Austria-Hungary November 13, 1887, No. 24,938 and No. 50,932.

To all whom it may concern:

Be it known that I, RICHARD OTTO, of Plauen, in the Kingdom of Saxony, Germany, have invented a new and Improved Sewing-Machine, (for which I have obtained patent in Germany, dated March 1, 1887, No. 41,227; England, dated May 11, 1887, No. 6,926, and Austria-Hungary, dated November 13, 1887, Nos. 24,938 and 50,932,) of which the following is a specification.

This invention relates to a sewing-machine in which, in addition to the ordinary needle and shuttle threads, a pair of looper-threads and a pair of chain-threads are employed for making a stitch. The chain-threads are alternately crossed and interlooped with the looper-threads, of which one is placed on each side of the fabric. The needle and shuttle threads serve to complete and bind the stitches.

The invention consists in the various features of construction more fully pointed out in the claim.

In the accompanying drawings, Figure 1 is a side elevation of the machine. Fig. 2 is a top view thereof. Figs. 3 to 19 are details of various parts of the machine and of the stitches.

The letter A represents a needle co-operating with a looper or a shuttle A' in the ordinary manner.

$a a'$ are a pair of loopers having perforations i and oscillating in horizontal planes on both sides of the work-plate. The loopers $a a'$ are set in motion from shaft B by means of cam B', lever E, and connecting-rod F.

$g g'$ are the guides for the chain-threads, that are alternately raised and lowered, so that the chain-threads h cross at each stitch. The looper-threads $l l'$, placed, respectively, on the top and bottom of the fabric, Fig. 15, pass through these crosses. The guides $g g'$ are pointed and receive their up-and-down motion by levers D f , operated by cam e .

d are rails secured to guides $g g'$ and sliding in ways on the machine-head, so as to guide the parts $g g'$ in their motion.

G G' are the spools that hold the looper-

threads $l l'$, such threads going to the loopers $a a'$.

H H' are the spools that hold the chain-threads h .

J is the spool for the needle-thread, while the shuttle has its own spool.

In Fig. 1 the spools H H' and G G' are placed back of each other for greater clearness.

When the needle A descends, Figs. 6 and 7, the loopers $a a'$ are with their threads in their extreme positions behind the needle. On the return motion of the loopers, the threads $l l'$ remain suspended behind the needle, Fig. 9. In this position the loopers $a a'$ have passed their threads through the cross formed by the chain-threads h of the guides $g g'$. The guides $g g'$ now change their position—that is, the guide g' ascends and the guide g descends, Fig. 10. The cross thus produced locks the looper-threads $l l'$. During the same time the needle ascends and in conjunction with the shuttle-thread sews the two looper-threads $l l'$ tightly against both sides of the fabric. The loopers now resume their most extreme position behind the needle, while the needle assumes its most elevated position, and the fabric is fed forward. The needle A now makes the next descent and again retains the threads $l l'$ brought by the loopers behind the stitch-hole to be formed, Figs. 12 and 13. The loopers $a a'$ pass forward through the cross, the chain-thread guides change positions, and the needle sews the looper-threads down, so that a series of loops is formed, as shown in Figs. 14 to 16.

If heavy cords are to be worked in, the two guides $g g'$ are replaced by but one guide, which alternately ascends and descends. This produces the looping of a chain-thread k around the looper-threads $l l'$, as shown in Fig. 18. Fig. 19 shows a stitch made by a double motion of the guides $g g'$ during each full motion of the needle.

My improved construction can be applied to any system of sewing-machines.

What I claim is—

The combination, with a sewing-machine

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having needle and shuttle, of the horizontally-oscillating loopers a a' , the one above and the other below the work-plate, and with a vertically and independently reciprocating
5 thread-carrying guide g , substantially as specified.

In testimony whereof I have signed my name

to this specification in the presence of two subscribing witnesses.

RICHARD OTTO.

Witnesses:

HERM. VIERTEE,
MORITZ OTTO.