

H. W. STRUSS.
TUBULAR BRAIDING MACHINE.

No. 458,644.

Patented Sept. 1, 1891.
Fig. 1.

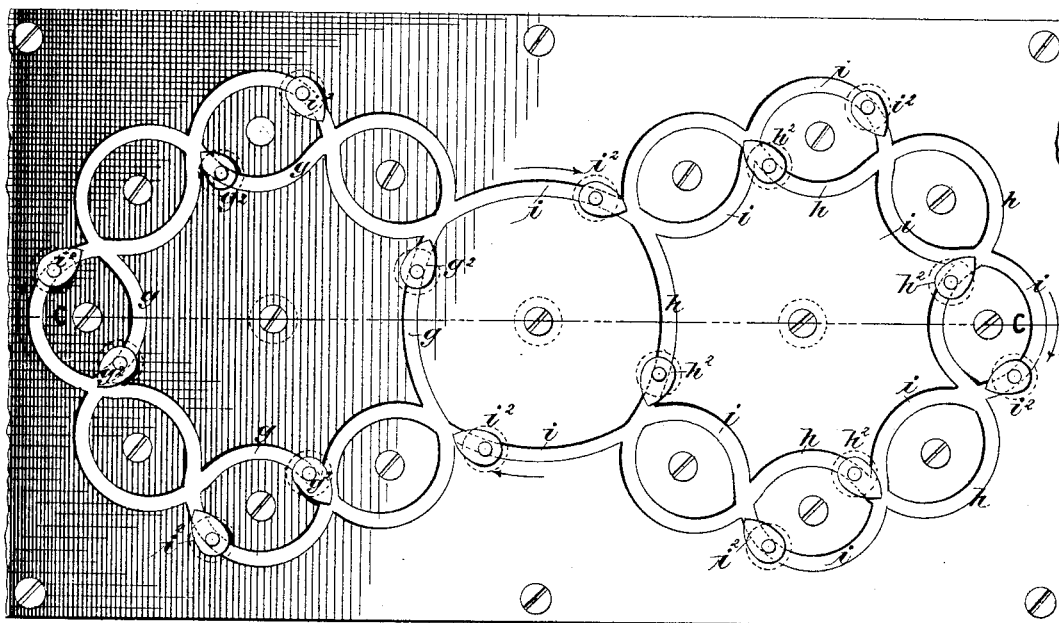
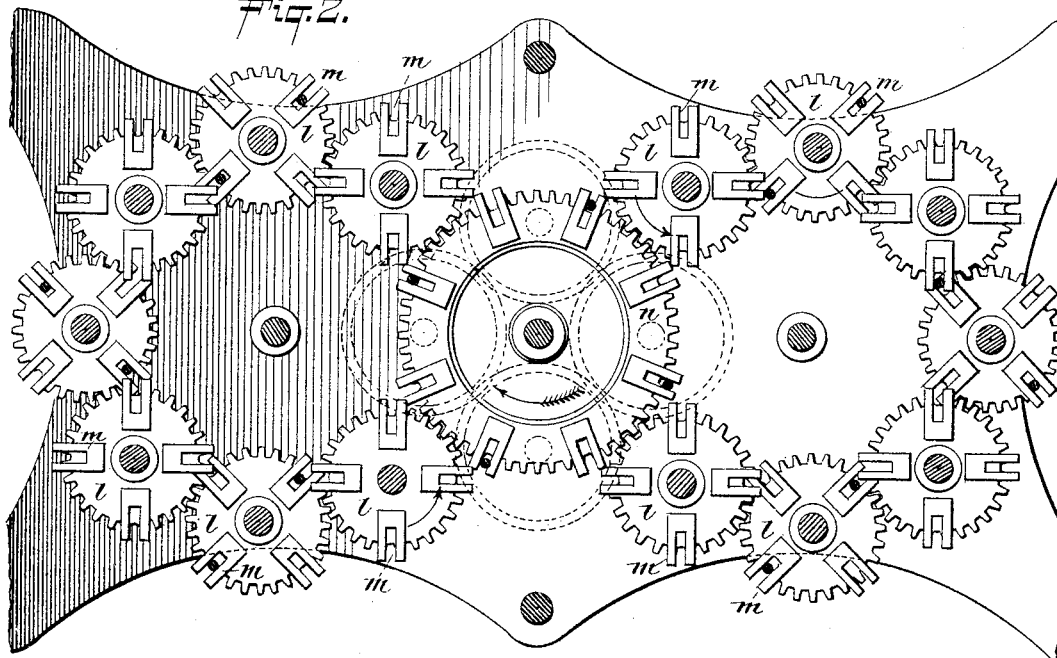


Fig. 2.



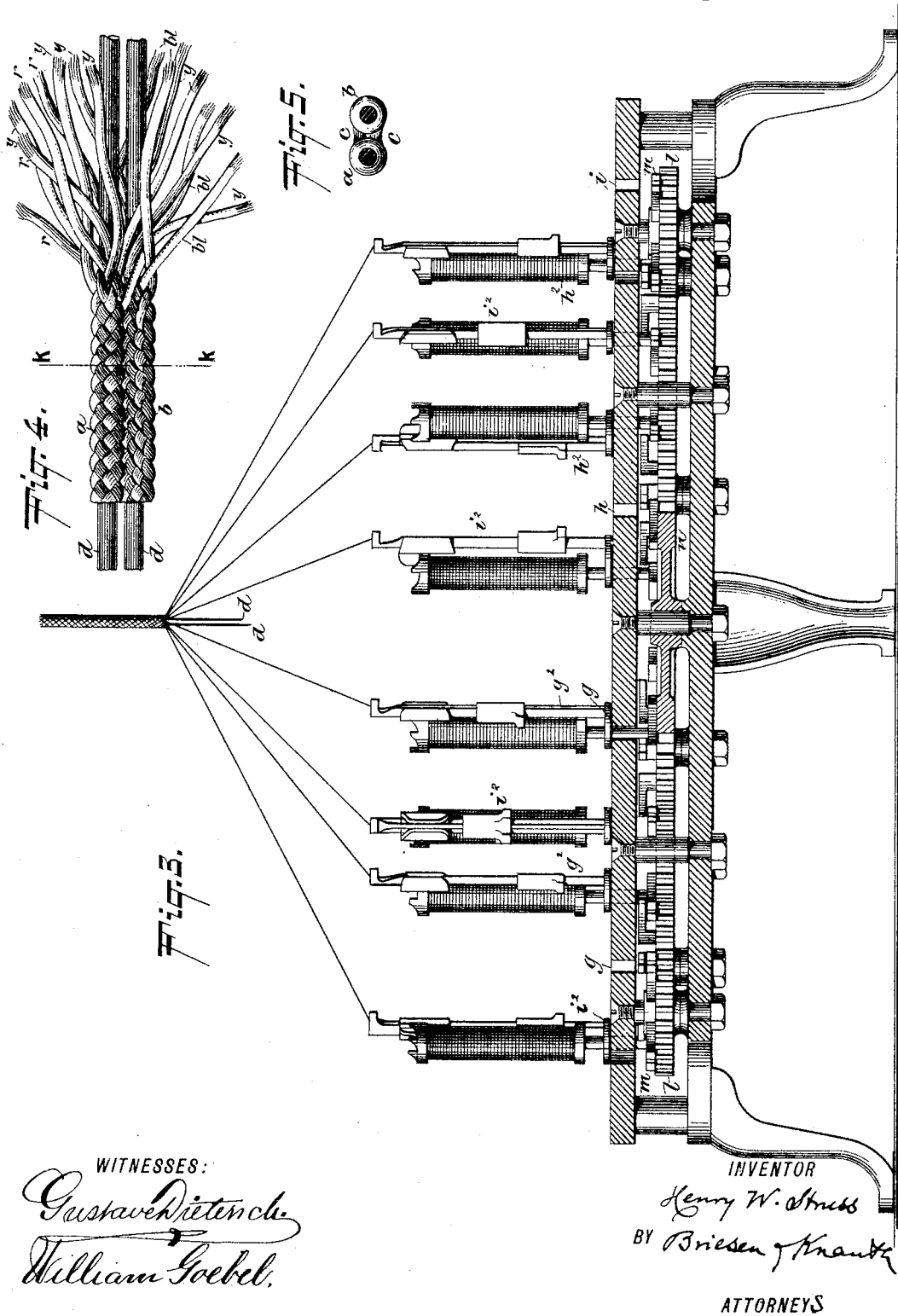
WITNESSES:
Gustav Dietrich.
William Goebel.

INVENTOR
Henry W. Struss
BY *Briesen & Knaut*
ATTORNEYS.

H. W. STRUSS.
TUBULAR BRAIDING MACHINE.

No. 458,644.

Patented Sept. 1, 1891.



WITNESSES:
Gustave Dietrich.
William Goebel.

INVENTOR
Henry W. Struss
BY *Briesen & Knaut*
ATTORNEYS

H. W. STRUSS.
TUBULAR BRAIDING MACHINE.

No. 458,644.

Patented Sept. 1, 1891.

Fig. 6.

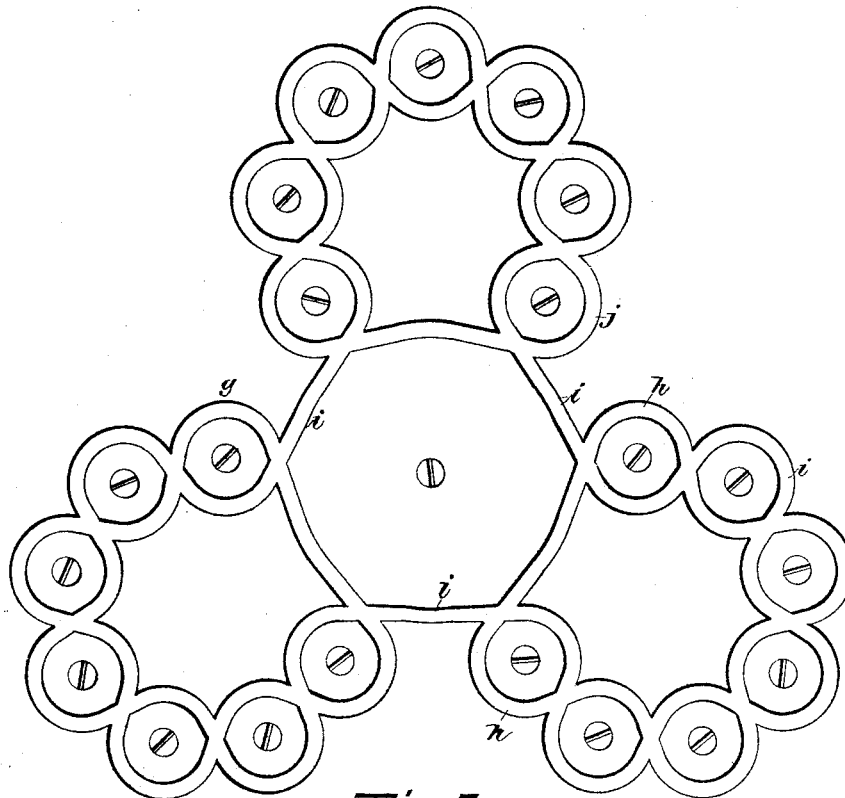


Fig. 7.

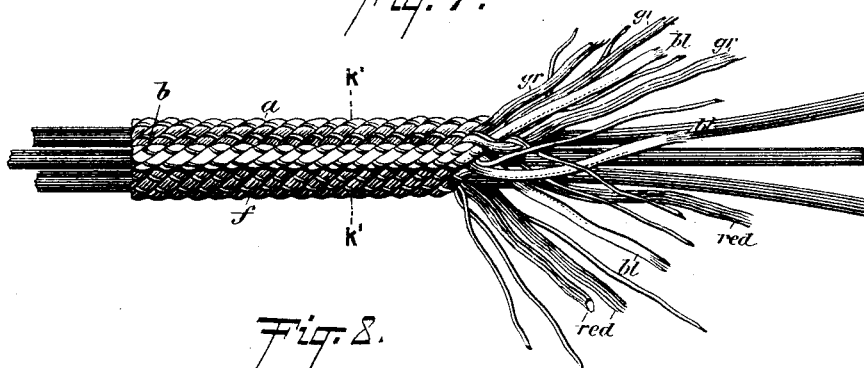


Fig. 8.

WITNESSES:
Gustave Dietrich
William Goebel



INVENTOR
Henry W. Struss
BY *Briesen & Knautz*
ATTORNEYS.

UNITED STATES PATENT OFFICE.

HENRY W. STRUSS, OF NEW YORK, N. Y.

TUBULAR-BRAIDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 458,644, dated September 1, 1891.

Application filed September 19, 1890. Serial No. 365,504. (No model.)

To all whom it may concern:

Be it known that I, HENRY W. STRUSS, residing in the city of New York, in the county and State of New York, have invented an

Improvement in Tubular-Braiding Machines, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof, wherein—

Figure 1 is a top view of that part of my improved braiding-machine showing the tracks for the carriers. Fig. 2 is a top view of that part of the braiding-machine showing the cog-wheels and carrier-shanks. Fig. 3 is a vertical central section of the machine on the line *c c*, Fig. 1; Fig. 4, a side view of a double-tube braiding produced by the machine; Fig. 5, a cross-section of said braiding on the line *k k*, Fig. 4. Fig. 6 is a top view of a track of a modified form of machine, showing an arrangement for braiding three tubes; Fig. 7, a side view of the triplicate tubular braiding produced by said modification; and Fig. 8, a cross-section thereof on the line *k' k'*, Fig. 7.

This invention relates to a new arrangement of tracks of a tubular-braiding machine; and it consists, substantially, in a machine having two or more substantially circular tracks that are combined with an interlocking track and with a set of carriers that move in the circular tracks in one direction and with another set of carriers moving in the interlocking track in the opposite direction, all as hereinafter more fully described.

By the use of this invention I propose to produce at one time two or more braided tubes that are connected with one another into a single fabric, which may be useful for covering two or more telegraph-wires and for other suitable purposes.

In Fig. 4 of the accompanying drawings the letters *a b* show two braided tubes made on my machine, Fig. 5 showing how they are connected into a continuous fabric by strands *c c*, that extend from one tube to the other. The tubes *a b* are shown to cover telegraph-wires *d d* or analogous rods; but these rods may be omitted, if desired. In Figs. 7 and 8 the same principle of tubing is shown in triplicate, there being three tubes *a, b, and f*, connected by *c* into a continuous fabric.

For the purpose of making this tubing a

braiding-machine constructed on well-known principles, excepting so far as the arrangement of tracks and direction of carriers is concerned, is employed. For a type of machine to which my invention applies I will refer to the braiding-machine shown in Patent No. 112,946, of March 21, 1871. According to my invention the carriers which lay the threads to be braided around the wires *d d* (see Fig. 3) or other guide-rods are arranged to run in peculiar tracks, there being for each of the two or more tubes *a b f* one carrier running in what I would call a "substantially circular track," and another carrier running in the same track in an opposite direction to the first carrier, and running also from said track to the track of the carrier for the second tube, &c. Thus with more particular reference to Fig. 1, which shows the arrangement of tracks for making the double tube shown in Fig. 4, it will be seen that I have provided the three tracks *g, h, and i*. The track *g* is what I would call a "substantially circular track," and the track *h* is also what I would call a "substantially circular track"—that is to say, each of these two tracks is continuous, forming an undulating circular figure—whereas the track *i* traverses in undulating form the tracks *g* and *h* and runs at the same time from one of these tracks to the other, as is clearly shown in Fig. 1. The thread-carriers for the track *g* are in the drawing Fig. 1 shown at *g²*. The thread-carriers for the track *h* are in the drawing Fig. 1 shown at *h²*, while the carriers that run in the track *i* are marked *i²*. Fig. 1 indicates, in connection with these carriers, by the direction in which the same are pointed and likewise by the arrows, that the carriers *g²* and *h²* run in one and the same direction, and that the carriers *i²* run in the reverse direction. This motion of the carriers is brought about by the set of toothed wheels *l l* and their claws *m*, said toothed wheels interlocking either with a single central-toothed wheel *n*, as shown by full lines in Fig. 2, or with a system of four (more or less) toothed wheels in the center, as shown by dotted lines in the same figure.

As there is no novelty in the manner of transmitting motion to the carriers, I do not deem it necessary to further specify the con-

struction of these toothed wheels and their claws. Suffice it to say, that when the machine is set in operation in the manner substantially as the machine of Patent No. 112,946

5 the carriers g^2 , which, say, carry the red threads of Fig. 4, run in the undulating and continuous track g in one special direction, said track being crossed from time to time by the carriers i^2 , which lay the yellow thread of Fig. 4 in

10 the opposite direction, interbraiding the same with the red thread, thus producing the tube a of Fig. 4, in which figure the letters r stand for red, the letters y for yellow, and the letters b for blue. The track h has the carriers

15 h^2 , which convey the blue threads on the undulating continuous track h , said blue threads being interbraided with the yellow threads that are conveyed in the opposite direction by the carriers i^2 , and by this means the tube

20 b is formed; but as the carriers i^2 run in the track i from the track g to the track h and return, they produce in so doing the connecting-strands c , by which the tubes a b are united into one continuous braided fabric.

25 The modification shown in Fig. 6 is simply represented for the purpose of indicating that the invention can be applied to the production of three or more braided tubes that are connected into one fabric. In this figure

30 the tracks g h are shown as being crossed by a track i , there being an additional undulating and substantially circular track j in this figure, which, in like manner, is traversed by

the track i ; or, in other words, Fig. 6 represents three tracks g h j , traversed and connected by the track i for the purpose of producing, on the principle represented with reference to Fig. 1, a triplicate tube, such as is shown in Figs. 7 and 8, it being of course understood that the carriers on tracks g , h , and j run in one direction, while the carriers on the track i run in the opposite direction. I am thus enabled with the aid of the machine which I have described to produce double, treble, or quadruple tubes properly connected into a single fabric, and each a braided tube, by a single operation of the machine.

What I claim, and desire to secure by Letters Patent, is—

In a machine for braiding two or more connected tubes, the combination of two or more continuous tracks and corresponding sets of carriers, with an additional track interlocking with and connecting the said continuous tracks and a corresponding set of carriers therefor, and with mechanism, substantially as described, for moving the sets of carriers in the said continuous tracks respectively in one direction and the other set of carriers in the additional track in the opposite direction, substantially as herein shown and described.

HENRY W. STRUSS.

Witnesses:

HARRY M. TURK,
GUSTAV SCHNEPPÉ.