No. 625,642. Patented May 23, 1899.

T. CLARKSON.

APPARATUS FOR HEATING OR COOLING FLUIDS.

(Application filed Feb. 21, 1899.)

(No Model.)

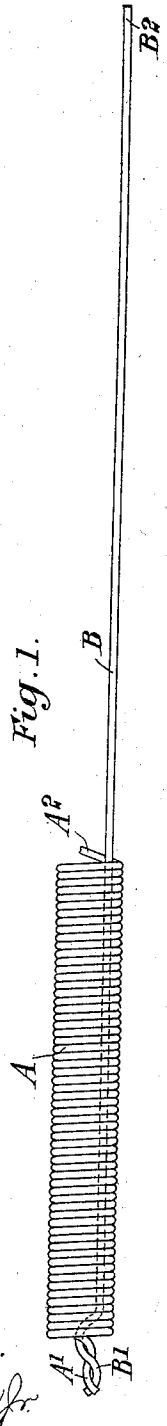

Fig. 1.

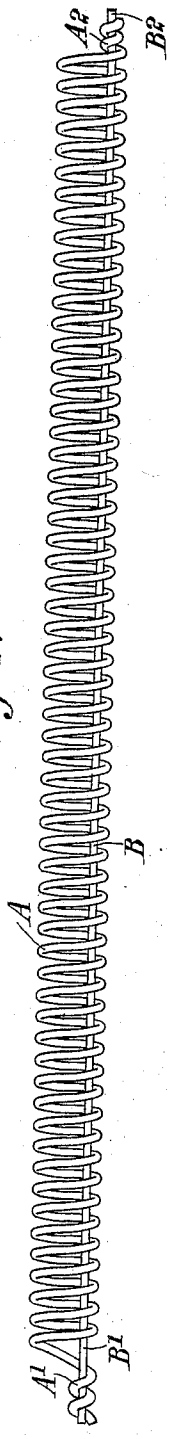

Fig. 2.

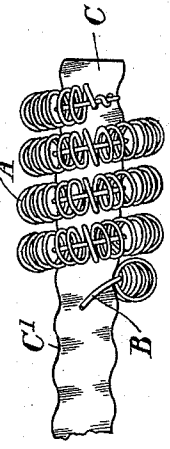

Fig. 3.

Witnesses:
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UNITED STATES PATENT OFFICE.

THOMAS CLARKSON, OF LONDON, ENGLAND.

APPARATUS FOR HEATING OR COOLING FLUIDS.

SPECIFICATION forming part of Letters Patent No. 625,642, dated May 23, 1899.

Application filed February 21, 1899. Serial No. 706,379. (No model.)

To all whom it may concern:

Be it known that I, THOMAS CLARKSON, a subject of the Queen of England, residing at London, England, have invented a certain new and useful Apparatus for the Heating or Cooling of Fluids, of which the following is a specification.

This invention relates to apparatus for the heating or cooling of fluids, and has for its object to facilitate the construction of such apparatus. It has already been proposed to coil helically around a condenser or similar tube a helical coil of wire, attaching the coil to the tube by soldering, sweating, or other suitable means. In applying the coiled wire to the tube difficulty has been experienced in keeping the coil uniformly stretched. According to this invention a tie-wire is employed, which prevents the coil being extended beyond a certain length.

The accompanying drawings illustrate a method of carrying out this invention.

Figure 1 is an elevation of a closely-coiled piece of wire before stretching. Fig. 2 is a similar view showing the coil extended to the desired length and held by the tie-wire. Fig. 3 is an elevation of a portion of a condenser-tube with the wire coil applied.

Like letters indicate like parts throughout the drawings.

A wire A is coiled closely in a helical manner and has a second wire B passed through it, one end of which, B′, is attached by soldering or otherwise to one end A′ of the coil A. The wire B is longer than the closely-wound coil A, the difference in length depending on the extent to which the coil is intended to be stretched. The coil A is now stretched out and the other end A^2 is attached to the other end B^2 of the wire B. It will thus be seen that when coiling the wire A upon a condenser-tube C in the manner shown in Fig. 3 it is impossible to extend the wire coil A unduly, while the chance of insufficient tension being applied is also avoided. By these means the wire A can be uniformly coiled upon the condenser-tube. The latter may, if desired, be helically indented, as at C′, the coil of wire A resting in this indentation.

When the coil A has been applied to the tube C, the two may be soldered, sweated, or otherwise connected together, as found convenient. It is to be noted that the wire B, in addition to insuring the proper stretching of the coil A, materially assists in keeping the latter attached throughout its length to the tube C and prevents individual coils from breaking loose. If desired, the tie-wire B may be laid along the mandrel upon which the wire A is coiled, or other methods may be employed for introducing it.

I claim—

1. In apparatus for the heating or cooling of fluids the combination with a tube of a helically-coiled wire coiled helically upon the tube and a tie-wire within the coiled wire substantially as set forth.

2. In apparatus for the heating or cooling of fluids the combination with a helically-coiled wire coiled helically of a tie-wire within the coiled wire as set forth.

In witness whereof I hereto set my hand in the presence of the two subscribing witnesses.

THOMAS CLARKSON.

Witnesses:
HAROLD WADE,
HARRY B. BRIDGE.