

(No Model.)

R. F. PRATT & C. D. WAINWRIGHT.

CORRUGATED TUBING.

No. 365,630.

Patented June 28, 1887.

FIG. 1.

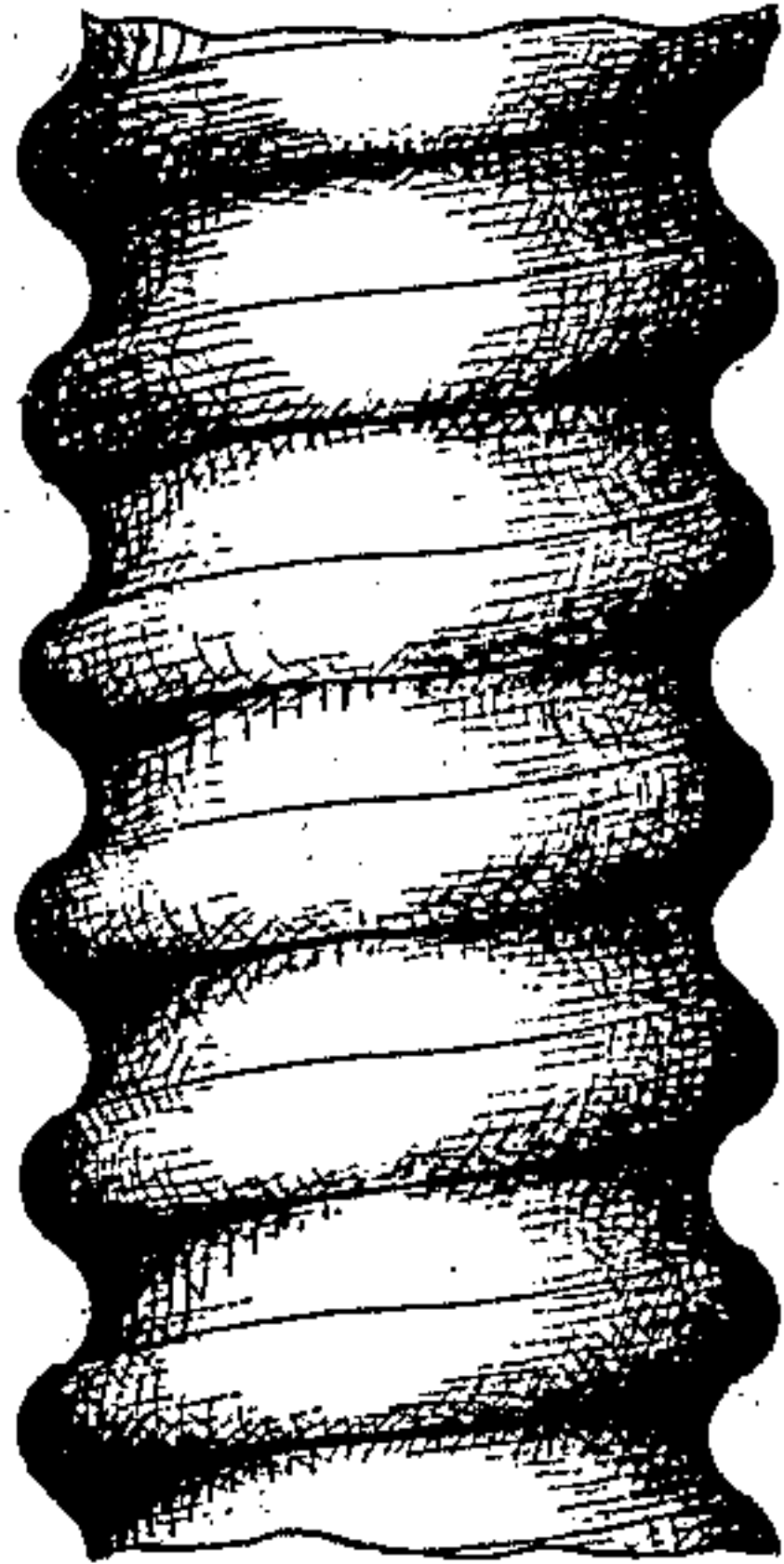


FIG. 2.

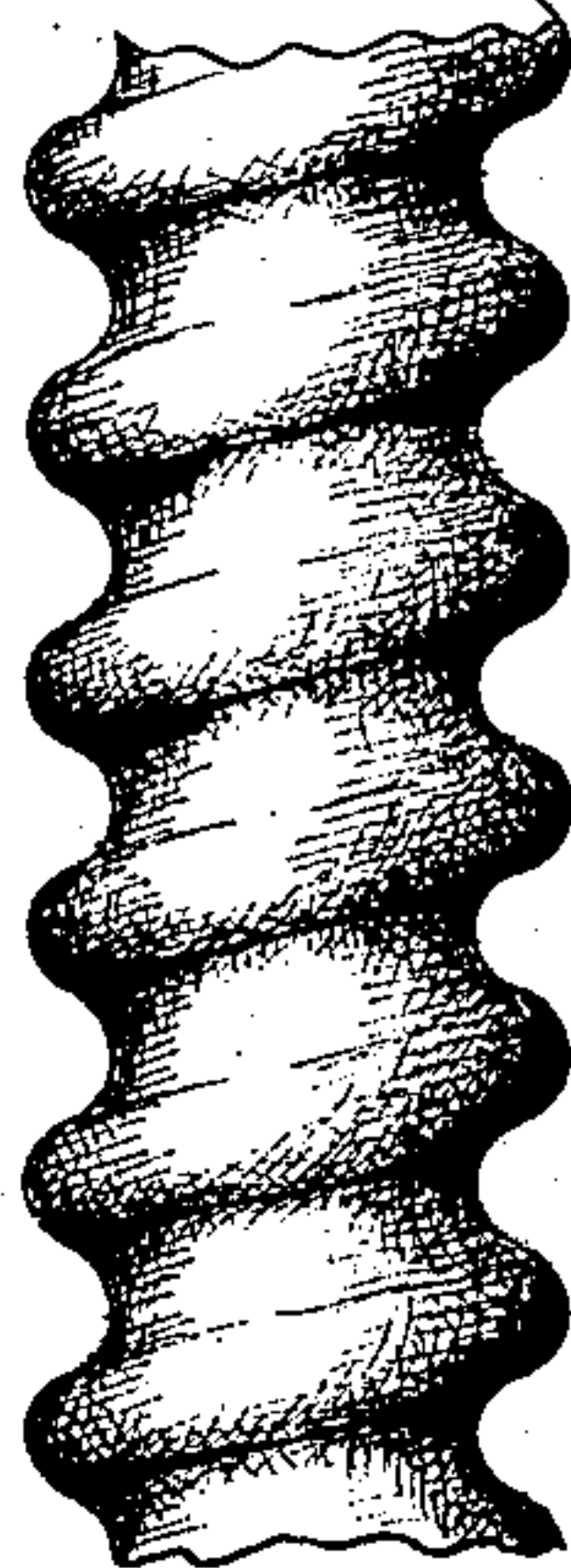


FIG. 3.

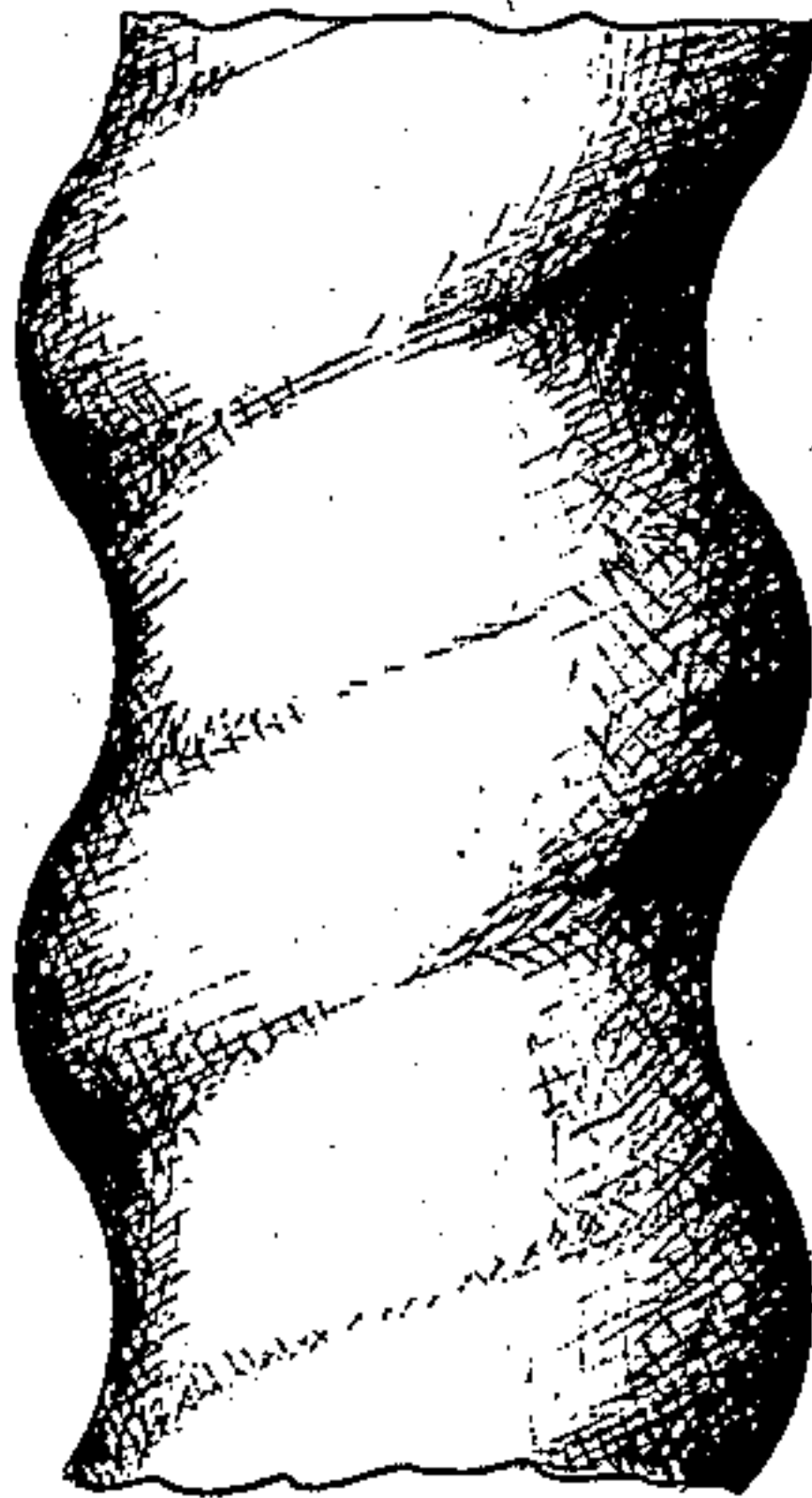


FIG. 4.

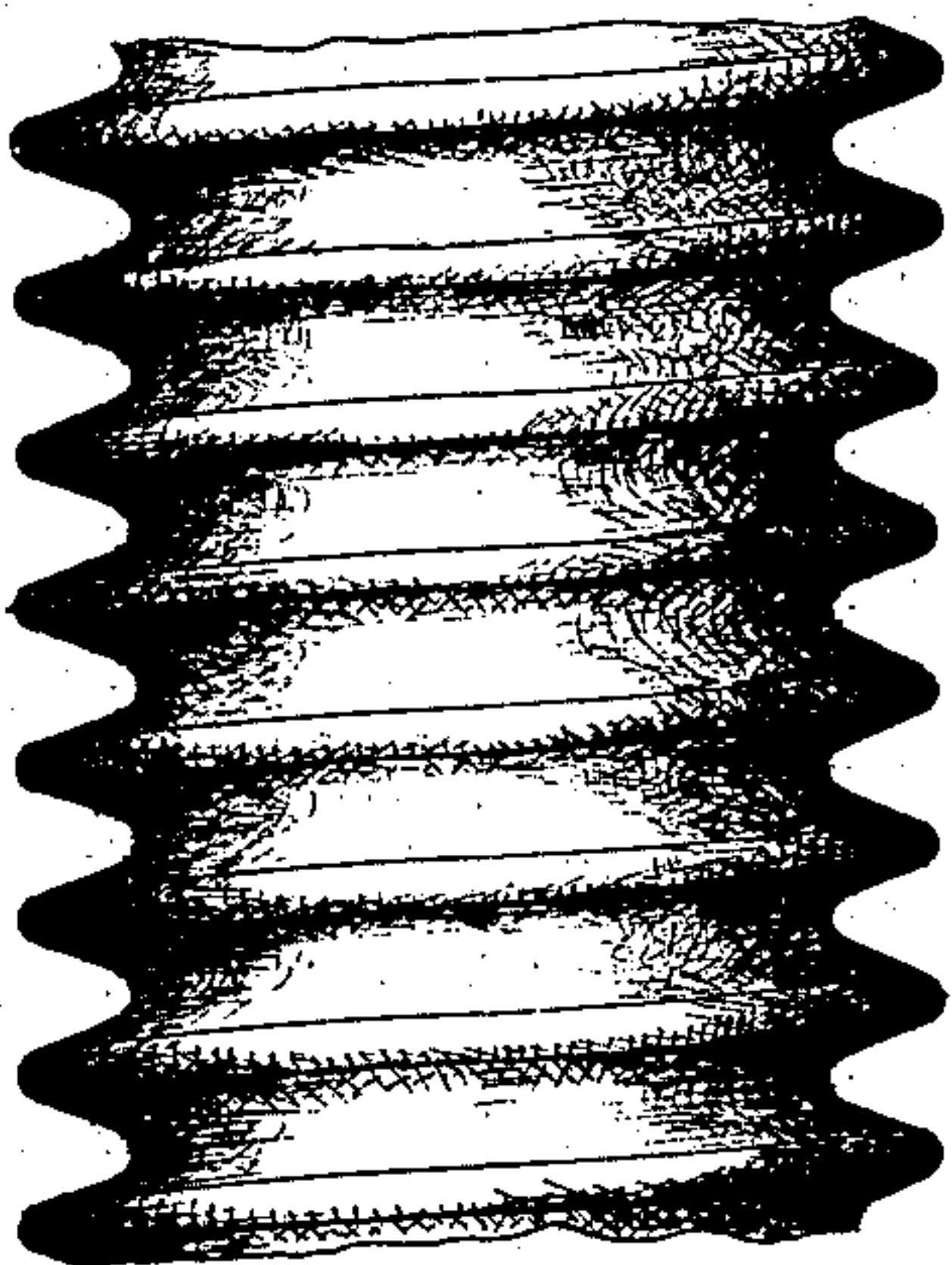
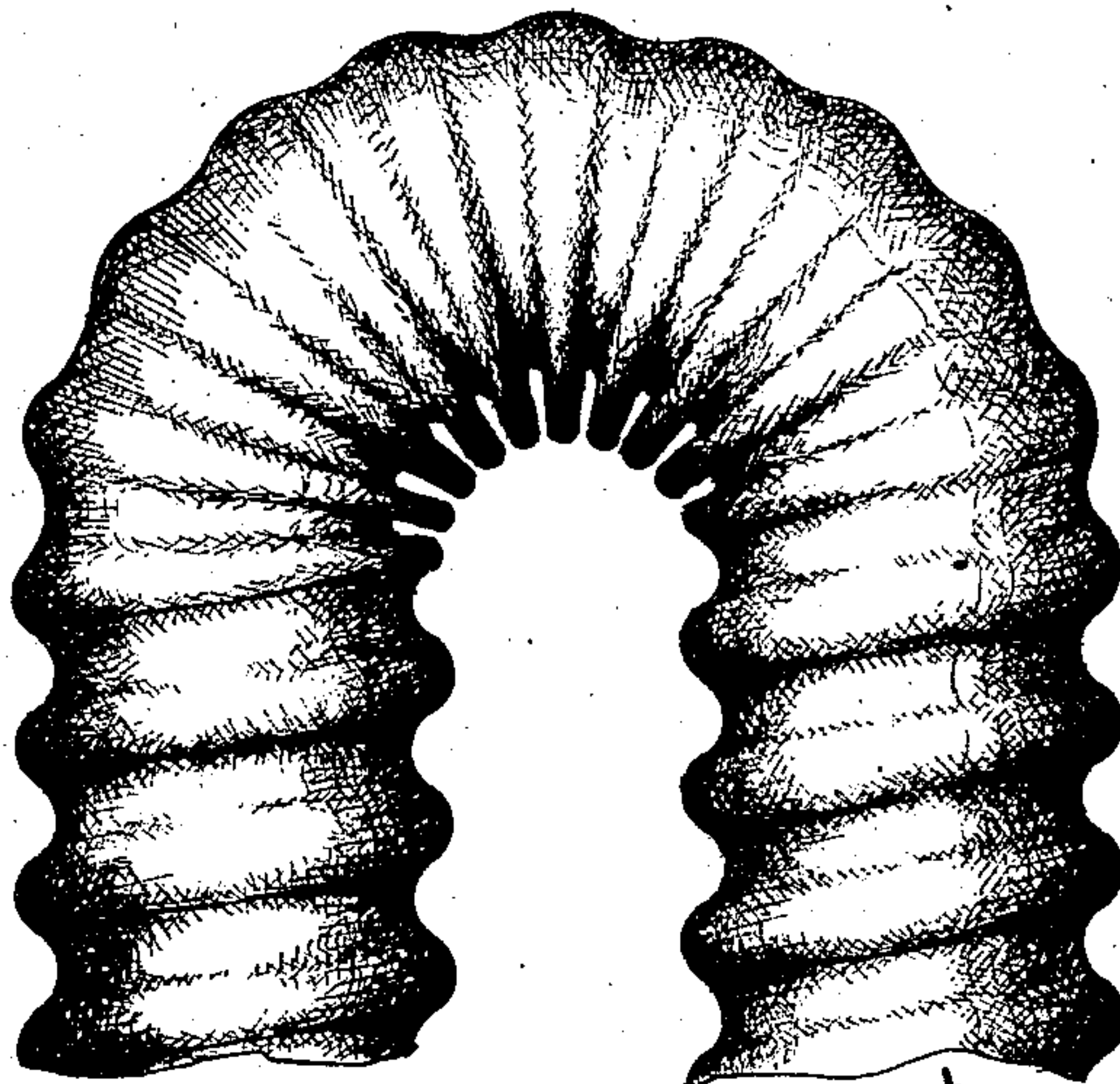


FIG. 5.



Witnesses.

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UNITED STATES PATENT OFFICE.

RONELLO F. PRATT, OF REVERE, AND CHARLES D. WAINWRIGHT, OF MEDFORD, MASSACHUSETTS, ASSIGNORS TO THE WAINWRIGHT MANUFACTURING COMPANY, OF PORTLAND, MAINE.

CORRUGATED TUBING.

SPECIFICATION forming part of Letters Patent No. 365,630, dated June 28, 1887.

Application filed August 2, 1886. Serial No. 209,805. (No model.)

To all whom it may concern:

Be it known that we, RONELLO F. PRATT and CHARLES D. WAINWRIGHT, citizens of the United States, R. F. PRATT residing at Revere, Suffolk county, and C. D. WAINWRIGHT, at Medford, in the county of Middlesex, both of the State of Massachusetts, have invented a new and useful Improvement in Corrugated Tubing, of which the following is a specification.

Our invention relates to a peculiar construction of corrugated tubing whereby we combine great strength with very thin material.

Figures 1 to 4 of the accompanying drawings represent straight pieces of this improved wrought-metal tubing having different styles of corrugations. Fig. 5 represents a bent piece of this improved corrugated tubing.

The principal use to which the spirally-corrugated tubing is applied and for which it is especially adapted is in connection with feed-water heaters or condensers in which the water is made to pass through the tubes and is heated by exhaust-steam surrounding the tubing, or steam may pass through the tubing, which is surrounded by water. The tubing is also used in expansion-joints, steam-boilers, and in steam or hot-water radiators, and it is also applicable to various other uses independently of its connection with feed-water heaters, condensers, expansion-joints, boilers, and radiators.

In manufacturing spirally-corrugated tubing according to our invention we take either solid drawn seamless tube, brazed tube, lap or butt welded tube, composed of brass, copper, iron, steel, tin, lead, zinc, or any suitable metal, and corrugate it spirally with a single rib and groove from one end of the tube to the other similar to the thread of a screw, which tube when so corrugated is very strong and rigid, and can consequently be made of very thin metal, thus admitting of the maximum amount of heat to be imparted to water passing through the same from the surrounding steam, or vice versa.

To produce a spirally-corrugated wrought tube we take a plain wrought-metal tube and place it upon a spirally-corrugated mandrel,

which is then placed between the centers of a lathe, and a roll with annular corrugations is then forced onto the tube, so as to cause it to take the form of the corrugated mandrel, the annular corrugated roll being caused to travel from end to end of the tube by the spiral corrugations on the mandrel. When the tube has been corrugated, the mandrel, with the tube upon it, is removed from the lathe and the mandrel is rotated, which causes it to unscrew out of the tube. Another method of forming the corrugations on the tube is to clutch a wrought-metal tube in the head of the machine and insert a short spirally-corrugated mandrel on the end of a rod that is free to travel (but not rotate) from end to end of the tube. An annular corrugated roll is forced onto the tube, so as to cause it to take the form of the corrugated mandrel. This roll is caused to travel from end to end of the tube by the screw-feed of the machine, while the short mandrel is caused to travel inside by the corrugations formed on the tube. The tubing is capable of being bent to any degree of curvature, as exemplified in Fig. 5, and this without straining or injuring the outer portion of curved part, the double arches forming braces of great strength. A longitudinal section of the tube shows the metal in a continuous sinuous curve longitudinally of the tube without angles. As thus constructed it is stronger than a tube with angular corrugations, and can be more easily bent without liability of breakage. The expansion and contraction of the tubing, due to changes of temperature, take place in the body of the tubing, and consequently do not affect the joints of the same.

By reason of the peculiar form of the tubing any scale formed within or without the same is readily thrown off.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. A wrought-metal tube having spiral corrugations, composed of a continuous spiral rounded external rib and a continuous spiral rounded groove between the coils of said rib, the metal being in a continuous sinuous curve longitudinally of the tube, substantially as described.

2. The process of forming spirally-corru-
gated wrought-metal tubes, which consists,
first, in placing a plain wrought-metal tube on a
spirally-corrugated mandrel, then rolling the
5 metal of the tube into the corrugations of the
mandrel, and then unscrewing the mandrel
from the tube, substantially as described.

In testimony whereof we have signed our

names to this specification in the presence of
two subscribing witnesses.

RONELLO F. PRATT,
CHARLES D. WAINWRIGHT.

Witnesses:

J. H. ADAMS,
E. PLANTA.