

No. 607,415.

Patented July 12, 1898.

J. E. ROBINSON.

PROCESS OF FORMING CELLULOID OR SIMILAR OPEN SEAM COVERINGS.

(Application filed Mar. 16, 1897.)

(No Model.)

Fig. 1

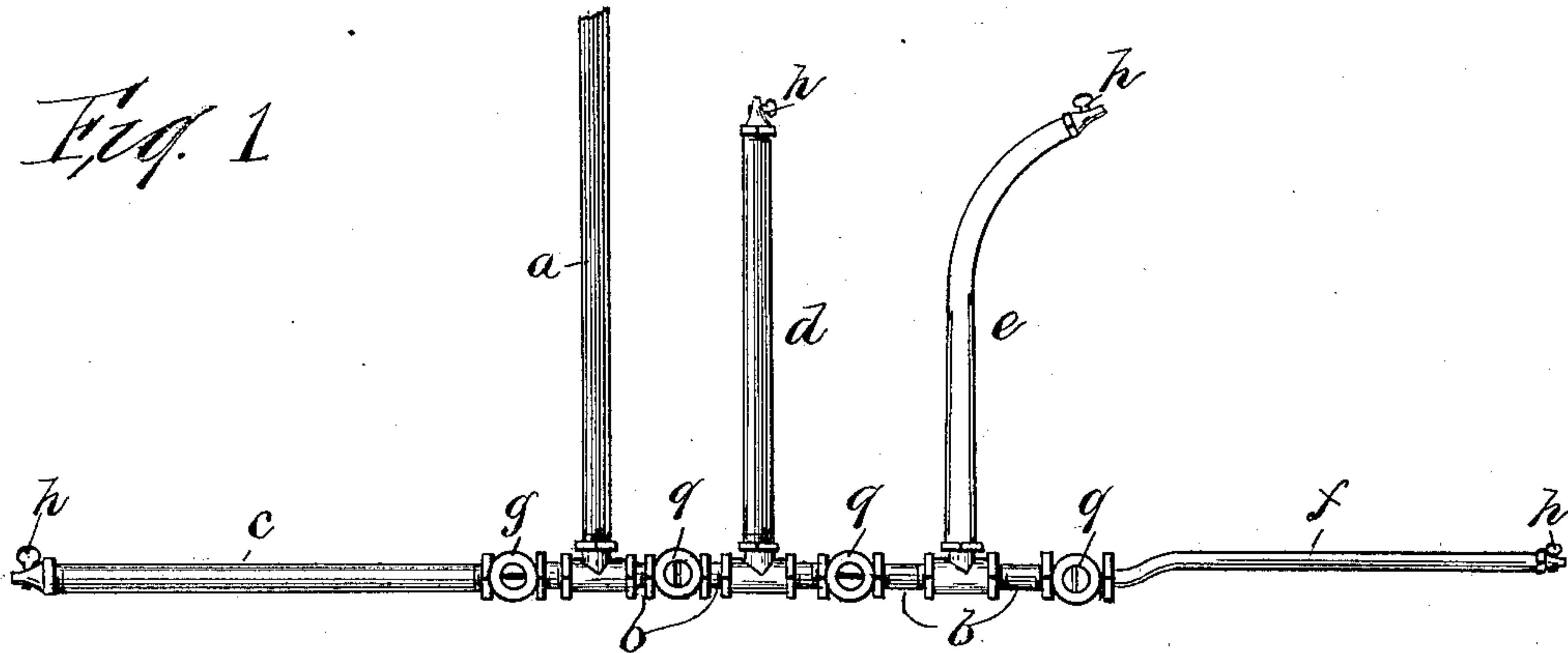


Fig. 2.

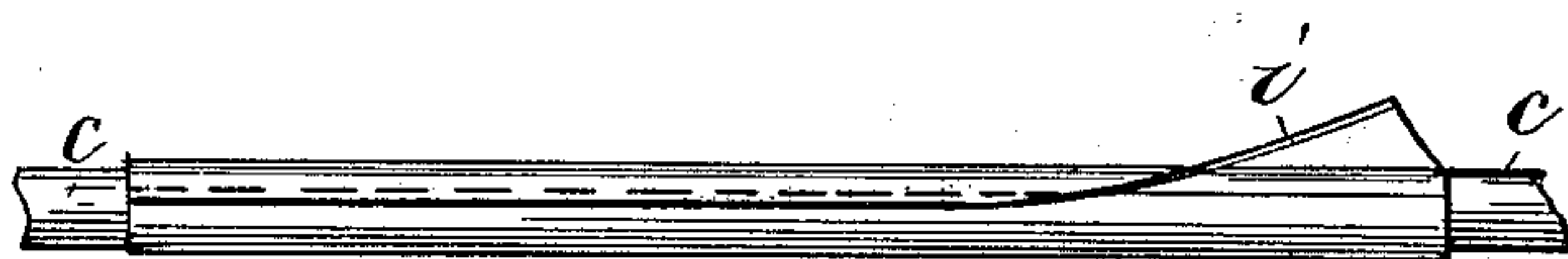


Fig. 3.

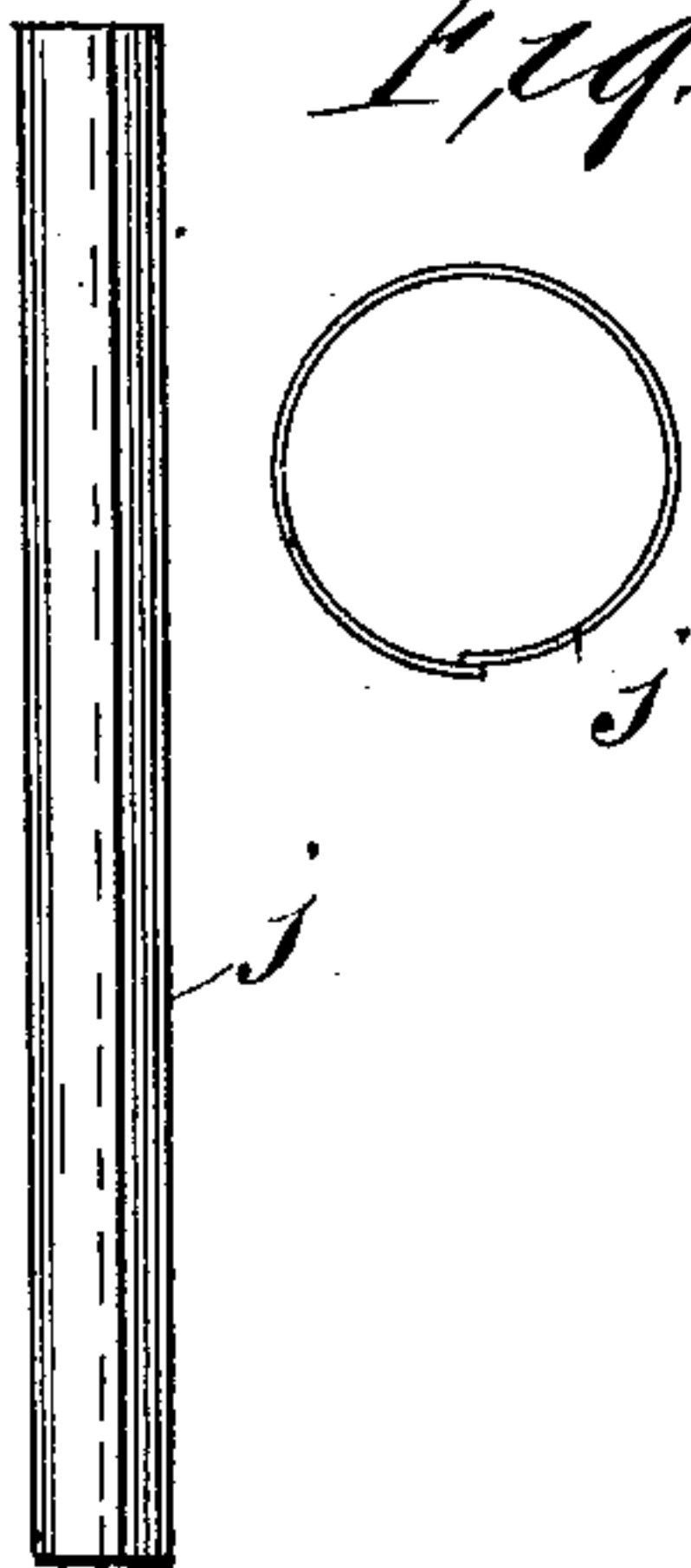


Fig. 4.

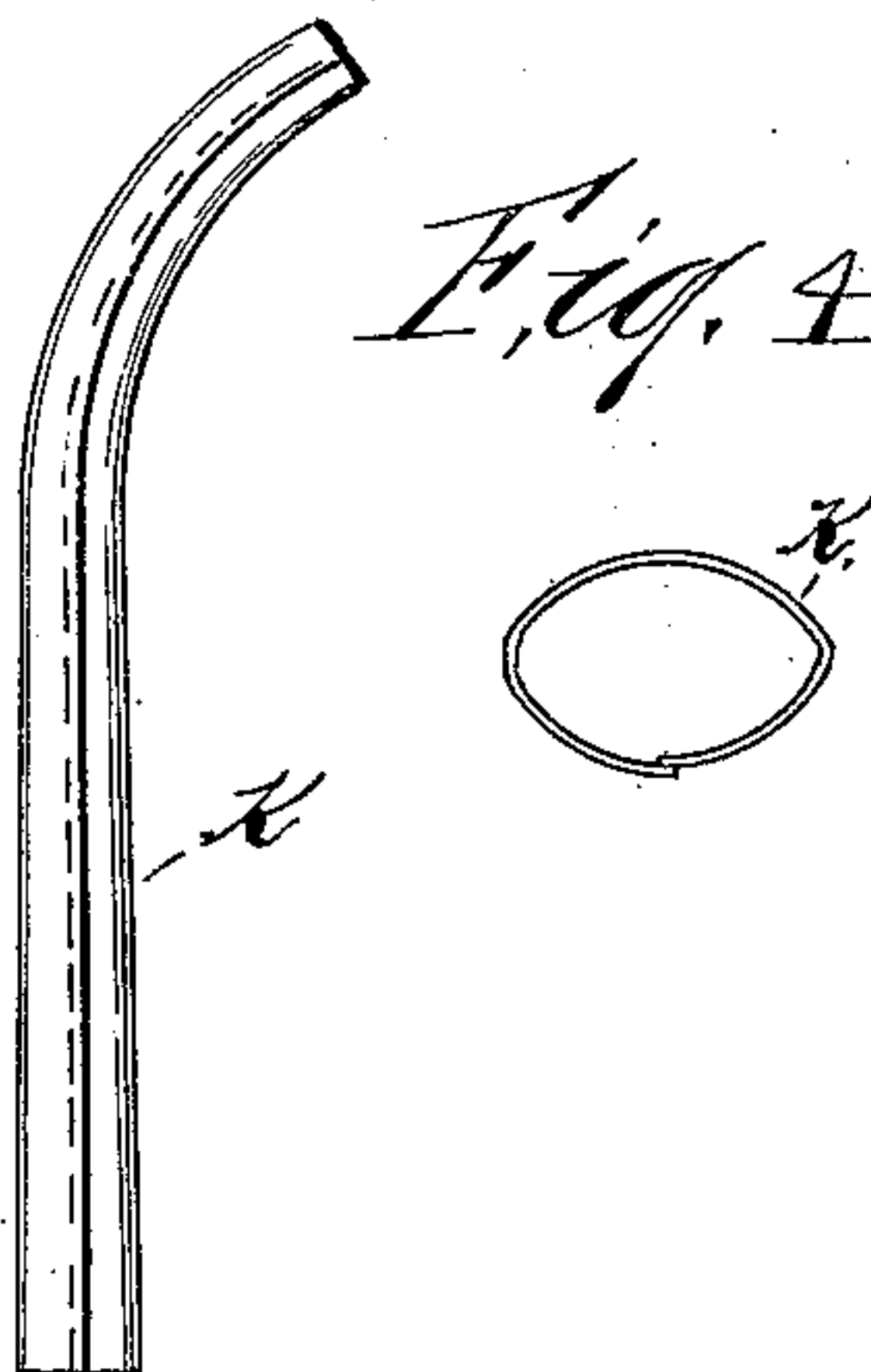
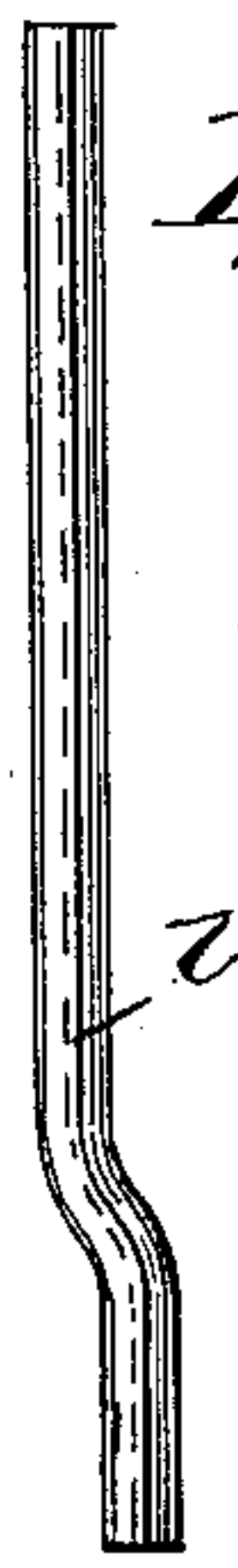


Fig. 5.



Witnesses:
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UNITED STATES PATENT OFFICE.

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PROCESS OF FORMING CELLULOID OR SIMILAR OPEN-SEAM COVERINGS.

SPECIFICATION forming part of Letters Patent No. 607,415, dated July 12, 1898.

Application filed March 16, 1897. Serial No. 627,854. (No specimens.)

To all whom it may concern:

Be it known that I, JAMES E. ROBINSON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Processes of Forming Celluloid or Similar Open-Seam Coverings, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

The object of my invention is to provide an improved process for forming sheet-celluloid or other similar material into such shapes that the resulting products may be employed in the covering and embellishment of the various parts of bicycle-frames—such as the main tubing, braces, and forks—and other like purposes, which covers may be furnished to bicycle-manufacturers in quantities and by them applied to bicycle-frames, all of which is hereinafter more particularly described, and definitely pointed out in the claim.

In the drawings, Figure 1 is a view of my improved molding apparatus with means for regulating the supply of heat thereto. Fig. 2 is a detail view of a mandrel with a sheet of celluloid or other similar material partially formed thereon and showing the manner in which said mandrel is utilized; and Figs. 3, 4, and 5 are side and end views, respectively, of the several finished products.

Referring to the drawings, *a* represents a steam service-pipe which is connected by means of a suitable union with a horizontal pipe *b*, with which in turn are preferably connected as many pipes or branches as there are different-shaped pieces of covering to be formed, each branch or section, as the case may be, being hollow and having the outer shape or contour of a given portion or part of a bicycle-frame or other structure. The part *c*, for example, should conform to the size and shape of the tubing of the main frame. The parts *d* and *e*, respectively, one straight and the other curved, are elliptical in cross-section and are intended to be utilized successively for forming the covering of the arms or limbs of the fork, and the part *f* is designed for use in forming the covering for the rear braces. Valves *g*, adapted to be operated by hand in the usual way, are inter-

posed in the pipe *b*, so as to control the flow of steam to any one of the branches or mandrels. Petcocks *h* are placed in the ends of the respective hollow mandrels, as shown, to enable the cold air to be released and the steam to be admitted to the mandrel.

Having thus described suitable apparatus for carrying it into effect, I will now explain my improved process.

I first cut from the sheets of celluloid or other similar material a number of pieces of proper size and of the desired shape to fit the various mandrels, allowance being preferably made in each case for a slight overlapping of the edges. A supply of blanks having been provided, the petcocks *h* and valves *g* are opened until the air is released and the mandrels *c*, *d*, *e*, and *f* become heated. When the mandrels are sufficiently hot to enable the sheet of celluloid or other material to be molded thereon, the operator, wearing asbestos-covered gloves or mittens, places a blank sheet of celluloid or other material upon the mandrel designed therefor and carefully wraps it around and presses it into shape to fit the mandrel, rubbing and pressing it until it assumes the exact form of the mandrel. In Fig. 2 I have shown a blank *i* upon the mandrel *c*, the same being shown as partially formed in tubular shape, with the edge overlapping, as indicated in dotted lines. The hand-pressure exerted will be sufficient to give the blank the exact contour of the mandrel, but it is not sufficient to unite the longitudinal edges, as would be the case if the mandrel and blank were placed in a mold and pressure applied. The result is that an open-seam tube will be formed which may be opened and sprung over the bar to be covered.

In forming the covering for the fork the blank is first placed upon the straight mandrel *d* and shaped thereto, when it is removed and in turn applied to and carefully fitted upon the curved mandrel *e*. The curved braces may be formed upon a single mandrel *f*. As soon as the sheet is accurately formed to the mandrel the steam is shut off from the latter, when in a few seconds the temperature of the mandrel is sufficiently lowered to enable the molded product to retain its shape without danger of distortion, when it may be

readily removed therefrom. The steam is then turned on and the operation repeated with another set of blankets.

In Figs. 3, 4, and 5 are represented the finished products. In Fig. 3, *j* indicates a tube of celluloid or other like material adapted for covering the main portion of the frame, while *k* and *l*, respectively, Figs. 4 and 5, represent like covering adapted to be applied to the forks and braces.

I have discovered that when the hollow mandrels are heated from within to about 200° Fahrenheit the shells or covers may be formed rapidly and molded with uniform accuracy and smoothness into a merchantable product adapted to be applied as a covering for the protection and embellishment of bicycle-frames. More or less judgment, however, is required on the part of the operator in molding the curved portions of the tubes, inasmuch as it is necessary to shape them when the mandrel is hottest.

It is obvious that the mandrels may be heated by means of electrical heat with a suitable rheostat or any well-known device for regulating the current; but it is immaterial which is employed so long as the mandrel is heated from within and means are provided for lowering the temperature, when in the judgment of the operator it may be neces-

sary, in order to enable the molded shell to set to the exact shape desired.

I do not claim in this application the method of covering bicycle and other hollow frames, as the same forms the subject-matter of my application, Serial No. 627,855, of even date herewith.

Having thus described my invention, I claim—

The process of forming celluloid or other similar open-seam coverings for bicycle-frames, which consists in first cutting the blank from sheet-celluloid or other suitable material to proper shape and dimensions, then shaping the same by hand-pressure upon a heated mandrel with its longitudinal edges uncemented, so as to have a longitudinal seam or opening therein, and finally causing the temperature of the mandrel to be lowered sufficiently to enable the molded product to become set to the desired shape to permit its removal therefrom by opening its longitudinal edges; substantially as described.

This specification signed and witnessed this 10th day of March, A. D. 1897.

JAMES E. ROBINSON.

In presence of—

JAMES JAY TAYLOR,
ALBERT G. SPALDING.