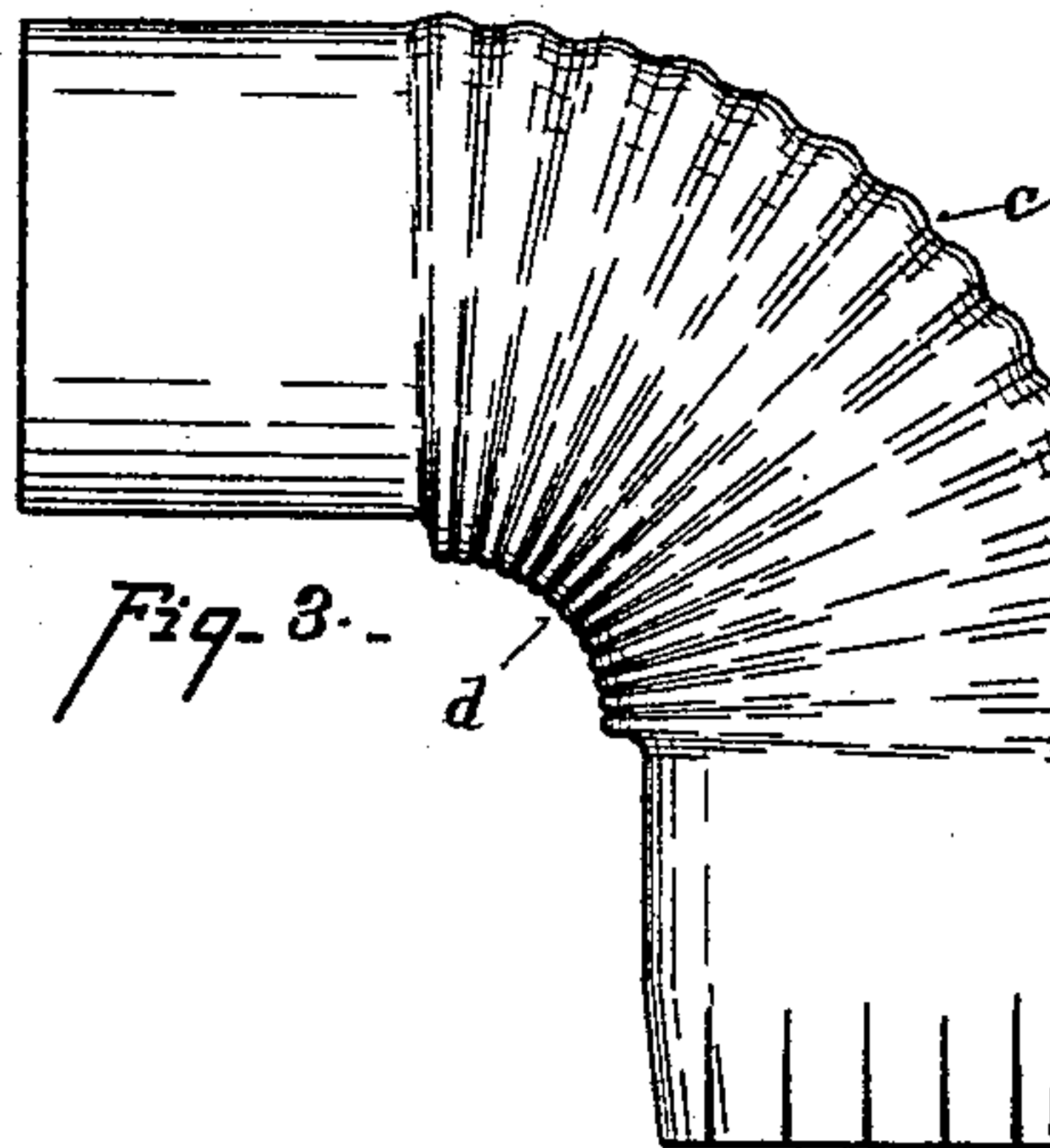
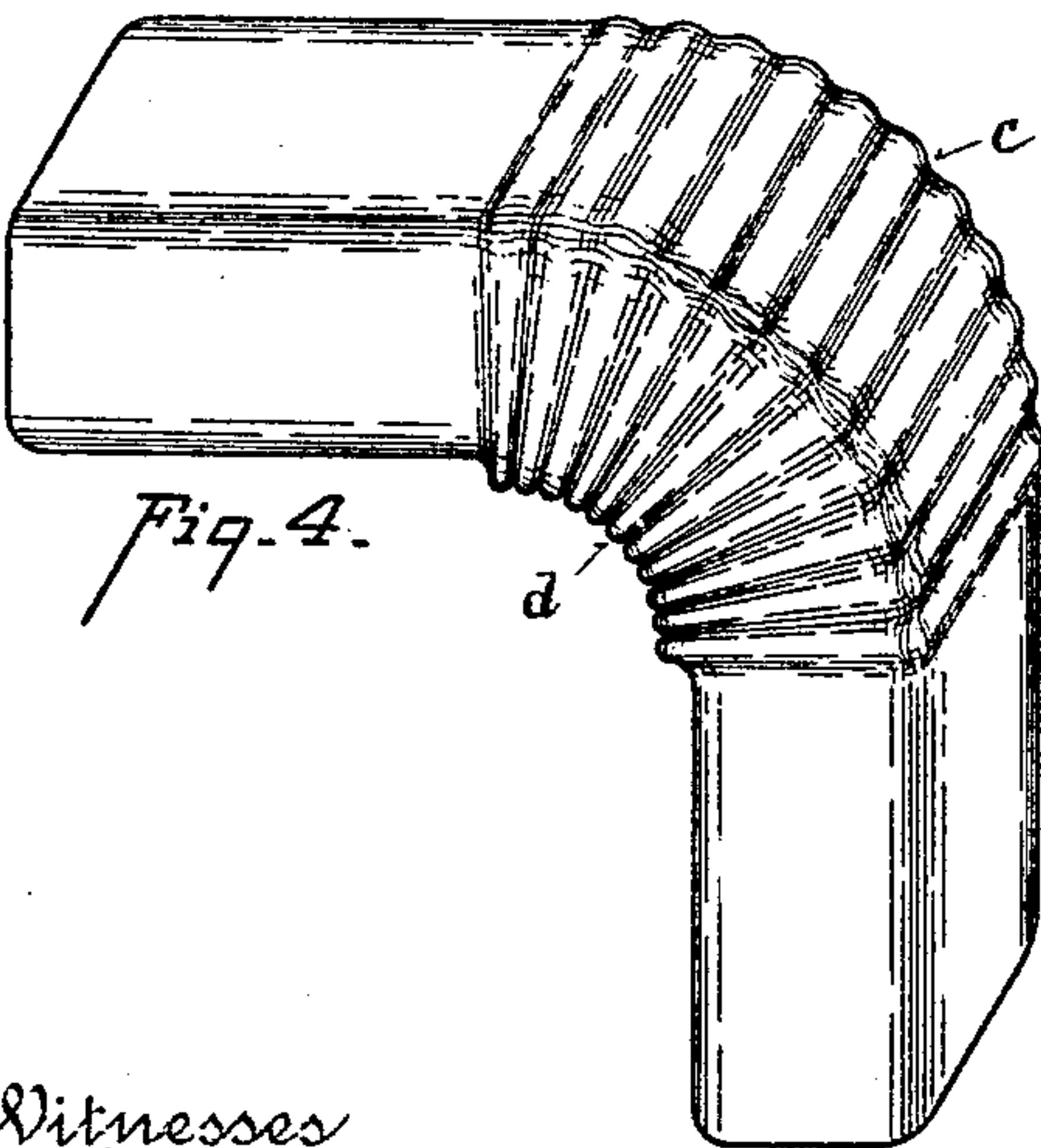
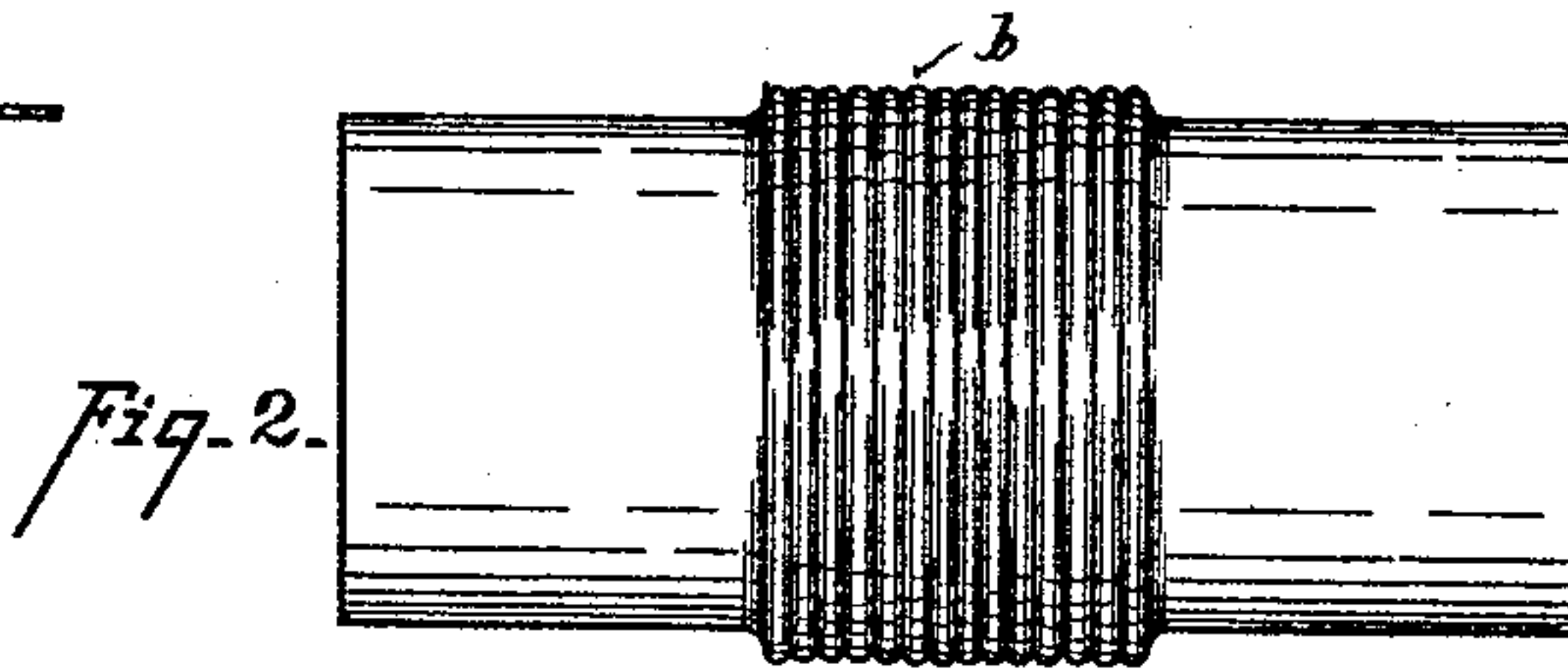
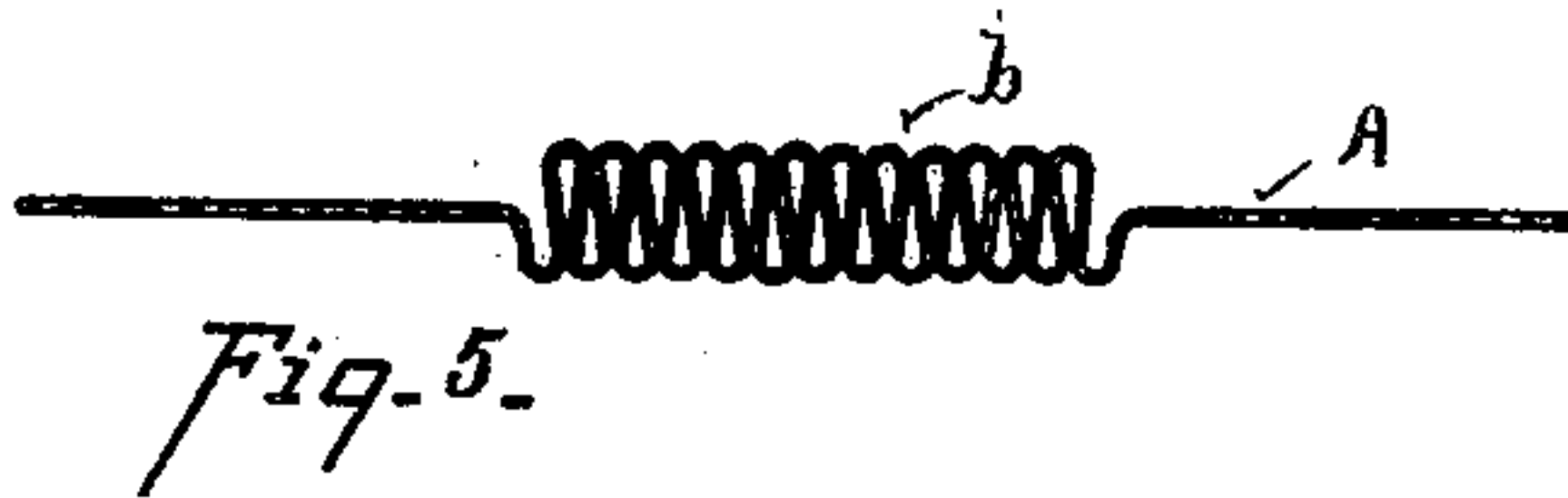
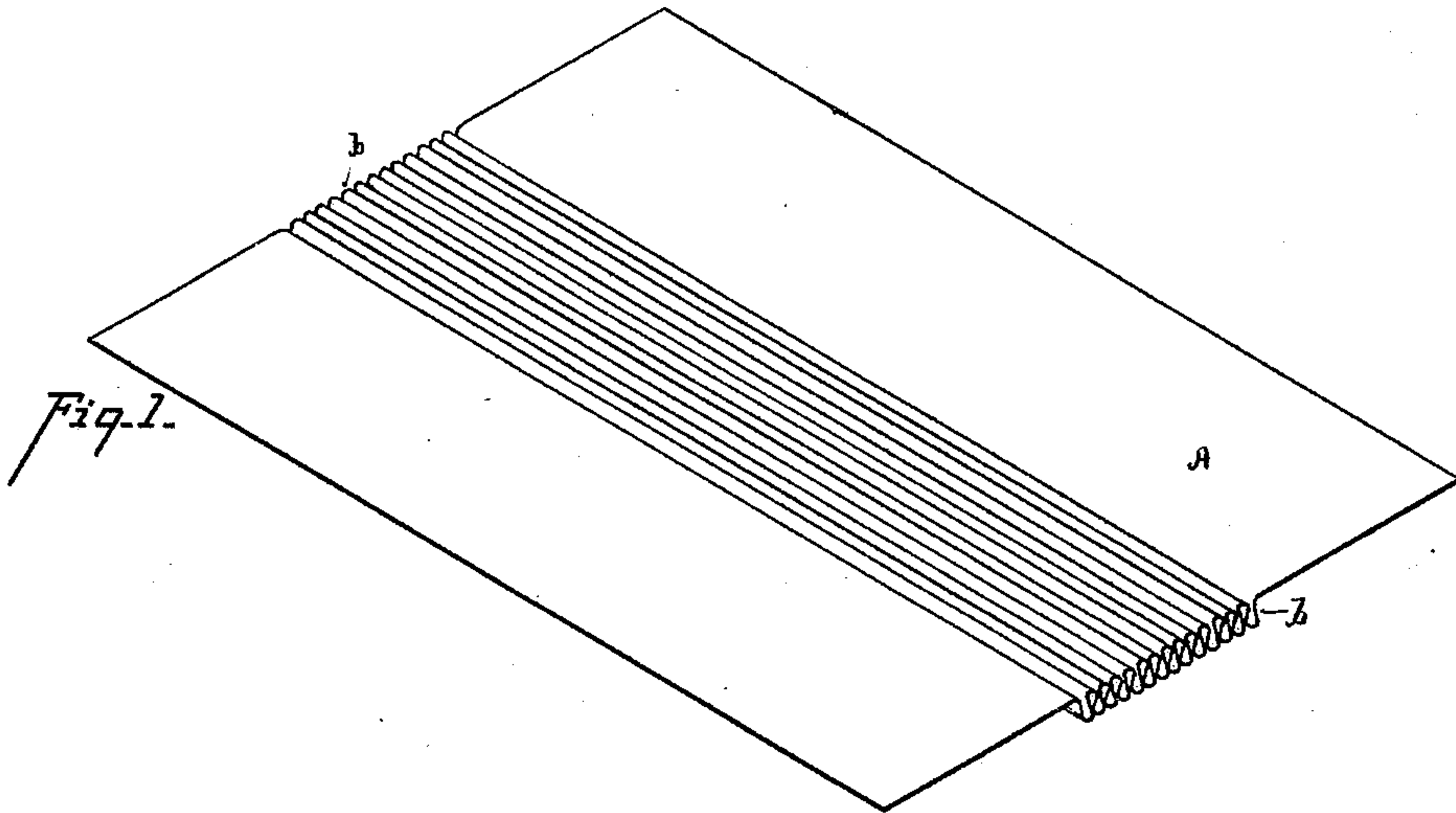


(No Model.)

F. DIECKMANN.
SHEET METAL ELBOW.

No. 500,119.

Patented June 27, 1893.



Witnesses
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UNITED STATES PATENT OFFICE.

FERDINAND DIECKMANN, OF CINCINNATI, OHIO.

SHEET-METAL ELBOW.

SPECIFICATION forming part of Letters Patent No. 500,119, dated June 27, 1893.

Application filed January 21, 1893. Serial No. 459,066. (No model.)

To all whom it may concern:

Be it known that I, FERDINAND DIECKMANN, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Sheet-Metal Elbows, of which the following is a specification.

My invention relates to sheet metal elbows formed of a single piece.

Its object being an improved method of construction, whereby a much stronger elbow is obtained.

In the accompanying drawings; Figure 1, is a perspective view of the blank from which the elbow is formed, and showing the manner of crimping the same. Fig. 2, is a side elevation of a cylinder or tube formed from the blank Fig. 1. Fig. 3, is a side elevation of a finished elbow. Fig. 4, shows a modified form of elbow made from the same blank. Fig. 5, shows a modification in the manner of crimping the blank.

It has been customary heretofore in the construction of elbows from a single sheet of metal to first form the blank sheet into a tube of the desired size and shape, securing the joint by rivets or otherwise, and then by means of proper machinery to form the crimps necessary to take up the surplus metal in forming an elbow. By crimping the metal after it has been formed into a tube, the crimps are spun or formed by the local expansion of the metal at the point where the crimp is formed, which weakens the metal at the crimps, and frequently causes it to break or split at that point during the process of construction.

The object of my invention is to avoid weakening the metal at any point during the process of construction, and is also a great improvement over the process heretofore in use in cost of production, and also in the production of desirable forms of elbow which it has been impossible to produce economically heretofore.

The process which I employ consists in first forming a series of crimps *b*, across the face of the flat sheet or blank *A*, the crimps being sufficient in number to form the bend of the elbow, and preferably of the form shown, that is deep and narrow. The blank is then bent into the form of a tube, see Fig. 2 of the desired pattern, rectangular, circular, corru-

gated, or otherwise, and the joint secured by solder, rivets or other approved method. The tube is then bent to the desired angle to form the elbow, as shown in Figs. 3, and 4, the crimps being expanded upon the outer side *c*, of the elbow, while upon the inner side *d*, they remain in the same condition as in Fig. 2. If desired however the crimps may be arranged farther apart so that the act of bending will compress the crimps at *d*, at the same time that they are being expanded at *c*. The former method is preferable however. The elbow is then finished by galvanizing, which seals and secures all joints.

In Figs. 1, 2, 3, and 4, the crimps are shown as extending wholly upon one side of the sheet, while in Fig. 5, which I consider the preferred form for general use, the crimps extend equally upon each side of the sheet. They may be variously arranged however depending upon the form of elbow to be made. It will thus be seen that by this process I avoid weakening the metal by spinning or forcing up the crimps, the crimps being formed by bending, and the metal required to form the crimps being taken up at the expense of the length of the sheet.

In Figs. 3 and 4 the crimps at *c* are shown as not entirely re-expanded, presenting a slightly corrugated surface, which is the preferred form. They may, however, if desired, be entirely re-expanded along the face *c* so as to present a smooth surface.

Various styles of elbows may be readily made without changing the blank, as for instance the styles Figs. 3 and 4, or the elbow may be formed with large longitudinal corrugations throughout its length to prevent injury from the freezing of water in the pipe.

Having described my invention, what I claim is—

A sheet metal elbow formed of a single sheet of metal by first crimping the said sheet or blank to the desired pattern and then forming the said blank into an elbow, substantially as specified.

In testimony whereof I have hereunto set my hand.

FERDINAND DIECKMANN.

Witnesses:

FERDINAND DIECKMANN, Jr.,
ADOLPH DIECKMANN.