(Specimens.)

G. L. RICE.

TWINE.

No. 436,261. Patented Sept. 9, 1890.

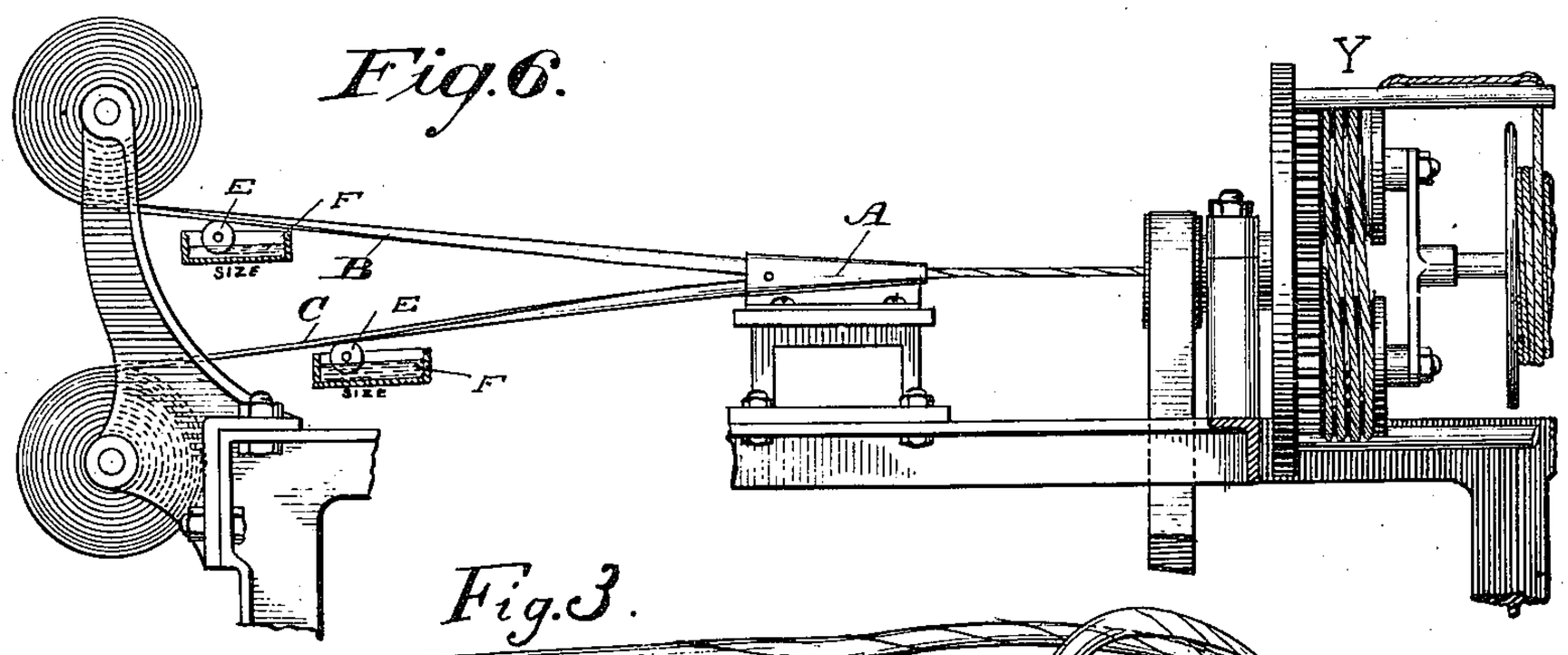


Fig. 6.

Fig. 3.

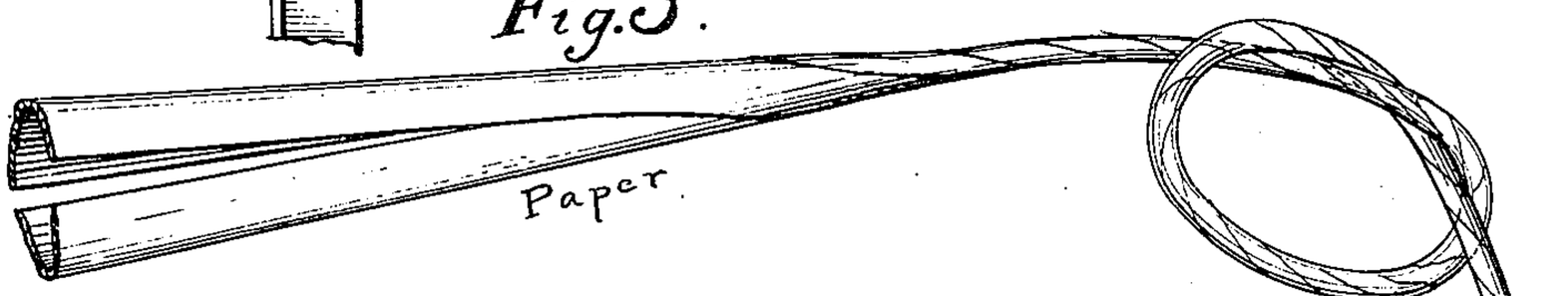
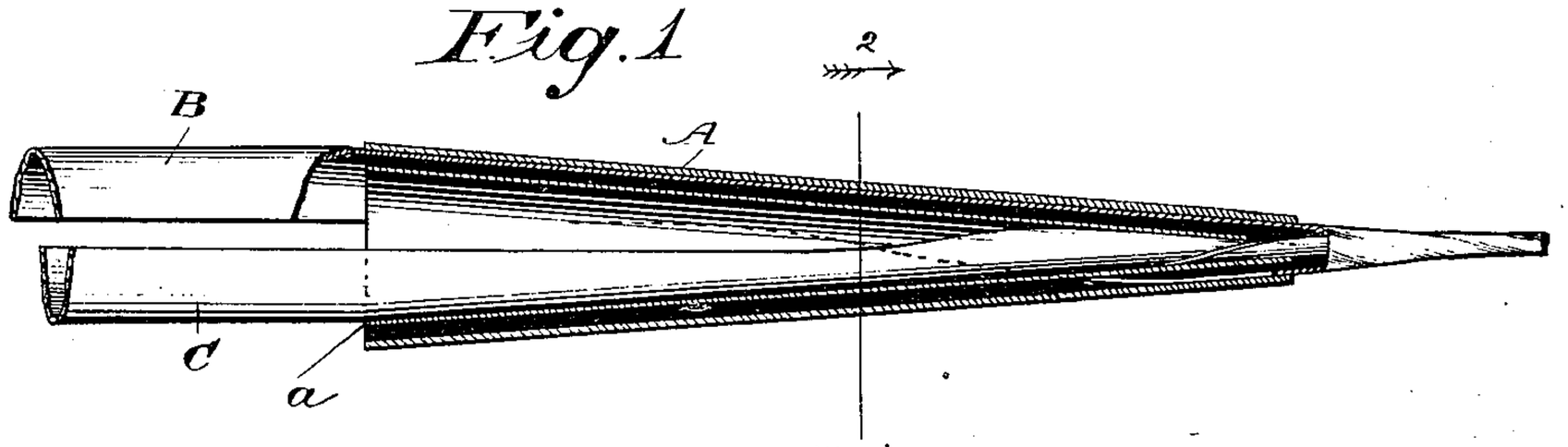


Fig. 2.

Fig. 5.

Fig. 4.

Fig. 1



Witnesses.
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UNITED STATES PATENT OFFICE.

GEORGE L. RICE, OF CHICAGO, ILLINOIS, ASSIGNOR TO WILLIAM DEERING & COMPANY, OF SAME PLACE.

TWINE.

SPECIFICATION forming part of Letters Patent No. 436,261, dated September 9, 1890.

Application filed January 3, 1890. Serial No. 335,774. (Specimens.)

To all whom it may concern:

Be it known that I, GEORGE L. RICE, of Chicago, in the county of Cook and State of Illinois, have invented an Improved Twine, of which the following is a full description, reference being had to the accompanying drawings.

The object of my invention is to produce a twine from paper that can be used for various purposes, more particularly that of binding grain. I accomplish the result by forming two or more strips of paper into a tube, and then causing the walls of the said tube to collapse, and twisting the tube thus formed so as to give flexibility to the twine so produced.

I am aware that twine has heretofore been made by forming a single band of paper into a tube and collapsing the same; but I find that where sufficient width in a single band of paper is used in order to get the necessary strength the maximum tensile strength is not attained because of slight inequalities in the strain upon different portions of the band of paper that is formed into the tube. The edges being most likely to tear by cutting the paper into narrow strips, the tearing tendency upon the said edges when twisted is less. I form the strips jointly into a tube and then twist the same, collapsing the walls and then closing them inward.

Figure 1 shows the means by which I form the two strips of paper into a tube, one strip inclosing the other wholly or in part. Fig. 2 is a sectional view of the two parts of the paper as if cut on the line 2 2 of Fig. 1, slightly enlarged, however. Fig. 3 is designed to show the two strips of paper formed into a tube and a portion of the tube twisted so as to form twine. Fig. 4 shows a section of the completed twine, and Fig. 5 is a cross-section showing a second mode of uniting the paper strip to form the tube. Fig. 6 shows the relative positions of the supports for the rolls of paper strips, the tube-forming cones, and the throstle.

Whether the tube is formed as in Fig. 2 or as in Fig. 5 makes no difference in the quality of twine produced.

In the drawings, A is a metallic tube into which the two strips of paper B and C are drawn. The tube A is made at its lesser end of such caliber as to form the paper tube of the size required. With the papers B and C drawn through a simple conical tube like A they will form either as shown in Fig. 2 or Fig. 5. From preference I provide another conical tube *a*. In this case I carry the strip of paper C through the inner conical tube *a* and the strip of paper B through the outer conical tube A, the strips of paper passed through the tube B being thus placed around C, as shown in Fig. 6. These conical tubes are placed so that their points shall be directed to a throstle of any of the usual forms—such, for instance, as is shown in Fig. 6 at Y.

In order to cause the strips forming the tube to adhere, I apply a sizing of starch or weak glue to one or both of the contiguous surfaces. The size may be applied by means of any suitable character—such, for example, as rolls E, running in contact with the strips and mounted in vessels F containing the size.

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

A twine consisting of a collapsed and twisted tube of paper, the tube composed of a plurality of strips, substantially as described and shown.

GEORGE L. RICE.

Witnesses:
ARTHUR JOHNSON,
A. L. UPTON.