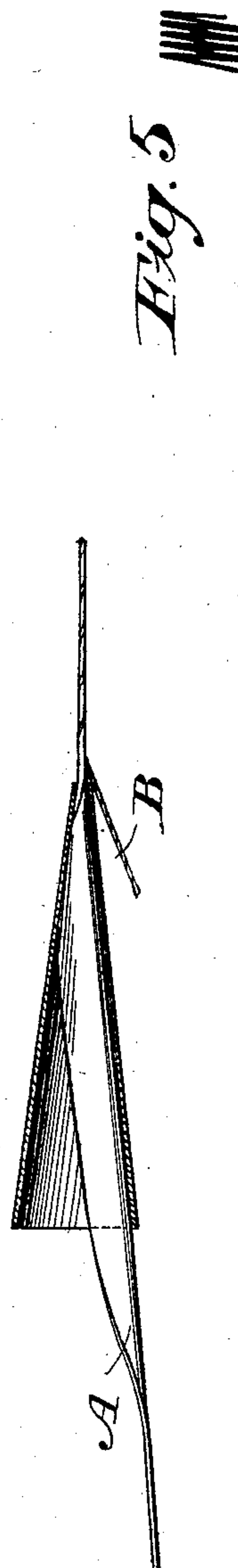
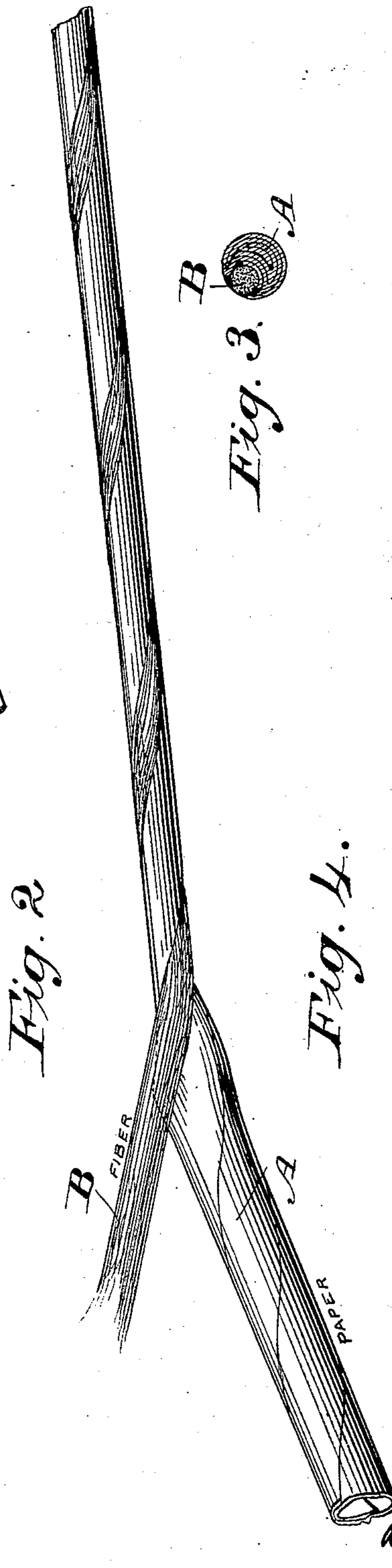
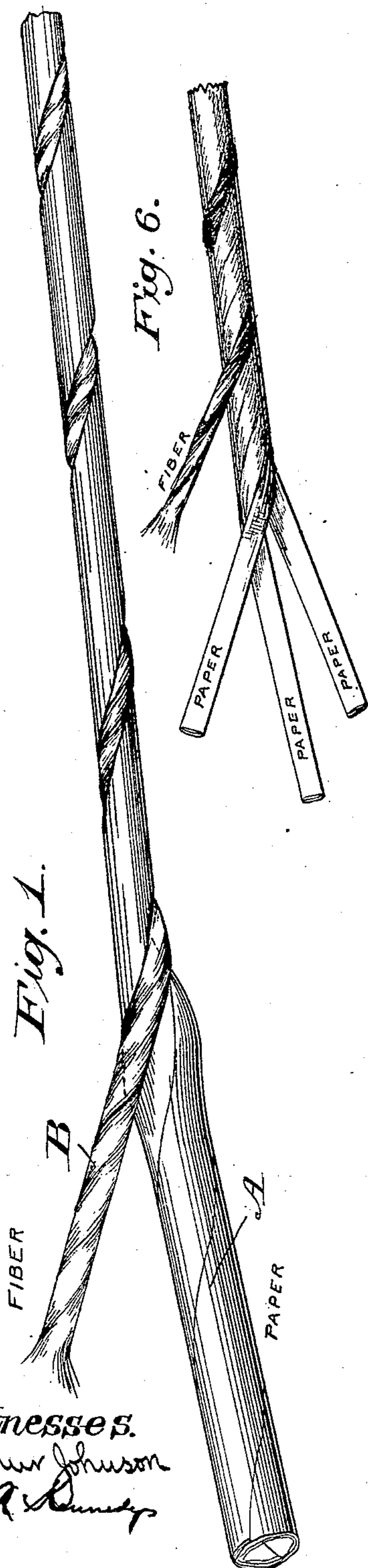


(Specimens.)

W. DEERING.
TWINE.

No. 437,378.

Patented Sept. 30, 1890.



Witnesses.
Arthur Johnson
H. A. Dunning

Inventor.
William Deering
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UNITED STATES PATENT OFFICE.

WILLIAM DEERING, OF EVANSTON, ILLINOIS.

TWINE.

SPECIFICATION forming part of Letters Patent No. 437,378, dated September 30, 1890.

Application filed December 23, 1889. Serial No. 334,657. (Specimens.)

To all whom it may concern:

Be it known that I, WILLIAM DEERING, of Chicago, in the county of Cook and State of Illinois, have invented a new Twine for General Uses, more particularly for use in binding grain, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 shows the general form of my twine, and Fig. 2 shows a slight modification of the same. Fig. 3 is a sectional end view of the same. Fig. 4 is a sectional view of the funnel through which the paper portion of the twine is formed, together with the materials of which the twine is composed, in the proper positions relative to the funnel. Fig. 5 is a modification showing the paper formed into plaits instead of into a tube. Fig. 6 is a perspective view of my twine with the paper portion in three strands or strips.

The object of my invention is to produce a twine that shall be cheap to manufacture, durable, and well adapted to purposes where twine is subjected to breaking-stresses after being tied into a knot—as, for instance, after being tied around a sheaf of grain that is to be shocked, pitched, and stacked, and in the act of binding grain where it is subjected to stresses while being held, and, also, in the act of forming the knot.

Another object of my invention is to make paper available as much as possible as material from which to produce twine for the above and other purposes. When paper alone is used and is subjected to the action of moisture, it deteriorates somewhat, and when placed around bundles of grain becomes wet from rains and is somewhat likely to be broken. I combine with a paper cord a twine of some fibrous material, so that if the stiffer portion—that is, the paper—is bitten off in being grasped by the twine-holder in a grain-binder the cord as a whole will still be held, because the fibrous portion of it being adapted to fold into the holder will not be cut off thereby.

In the drawings, A is a strip of paper preferably formed into a tube.

B is a fibrous cord of jute, hemp, flax, manila fiber, or any suitable material. It is not

essential that B be a twisted cord, as it may be simply a sliver, as shown in Fig. 2.

I prefer to coil the strip of paper into the form of a tube by drawing it through a funnel, as shown in Fig. 4, and then by twisting collapse the tube. Experiments have determined that in that manner the tearing of the edges of the paper when the latter is formed into a twine is avoided to a great extent. I do not, however, limit myself to forming the strip of paper into a tube, because in lieu thereof it may be folded, as shown in Fig. 5; nor do I limit myself to the use of a single strip of paper, as I find that the tendency to tear at the edges may be reduced by using a number of narrow strips, as shown in Fig. 6.

In the process of manufacture I find it preferable to pass the strip or strips of paper through a conical tube, as shown in Fig. 4, and thence directly into a throstle, which may be of any of the ordinary kinds used in twine-spinning machinery, which gives a twist to the formed strip of paper and at the same time winds the twine B tightly around it.

With the paper tube in a wet condition the fibrous twine B is so deeply sunk into the surface of the former as to make a smooth cord, the said twine B being so nearly surrounded by the paper as to be held from unwinding under all ordinary circumstances, as will be seen by reference to Fig. 3.

In order that the paper shall be made as strong as possible and the fibrous cord also be cemented thereto, I size both strands, preferably, with a weak glue. Any glutinous substance—such as starch—may be used; but I prefer to use glue and to mix with it a small percentage of glycerine or molasses, either of which will keep it somewhat soft and prevent the twine from getting brittle.

I do not claim as my invention, broadly, the combination of a paper filling and a covering of fibrous material. My present invention contemplates only the twisting of a paper cord or twine and a fibrous twine together as one.

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

1. A twine for grain-binding and other pur-

poses, composed of a strip or strips of paper
formed into a cord and having wound there-
around a strand of soft fibrous cord, the two
twisted tightly together, substantially as de-
5 scribed.

2. A twine for grain-binding and other pur-
poses, composed of a strip or strips of paper
formed into a cord and having wound around
and deeply embedded therein a strand of soft
10 fibrous cord, substantially as described.

3. A twine for grain-binding and other pur-

poses, composed of a strip or strips of paper
formed into a cord and having wound there-
around a strand of soft fibrous cord, the two
twisted tightly together and cemented by 15
suitable sizing material, substantially as de-
scribed.

WILLIAM DEERING.

Witnesses:

JOHN F. STEWARD,
ARTHUR JOHNSON.