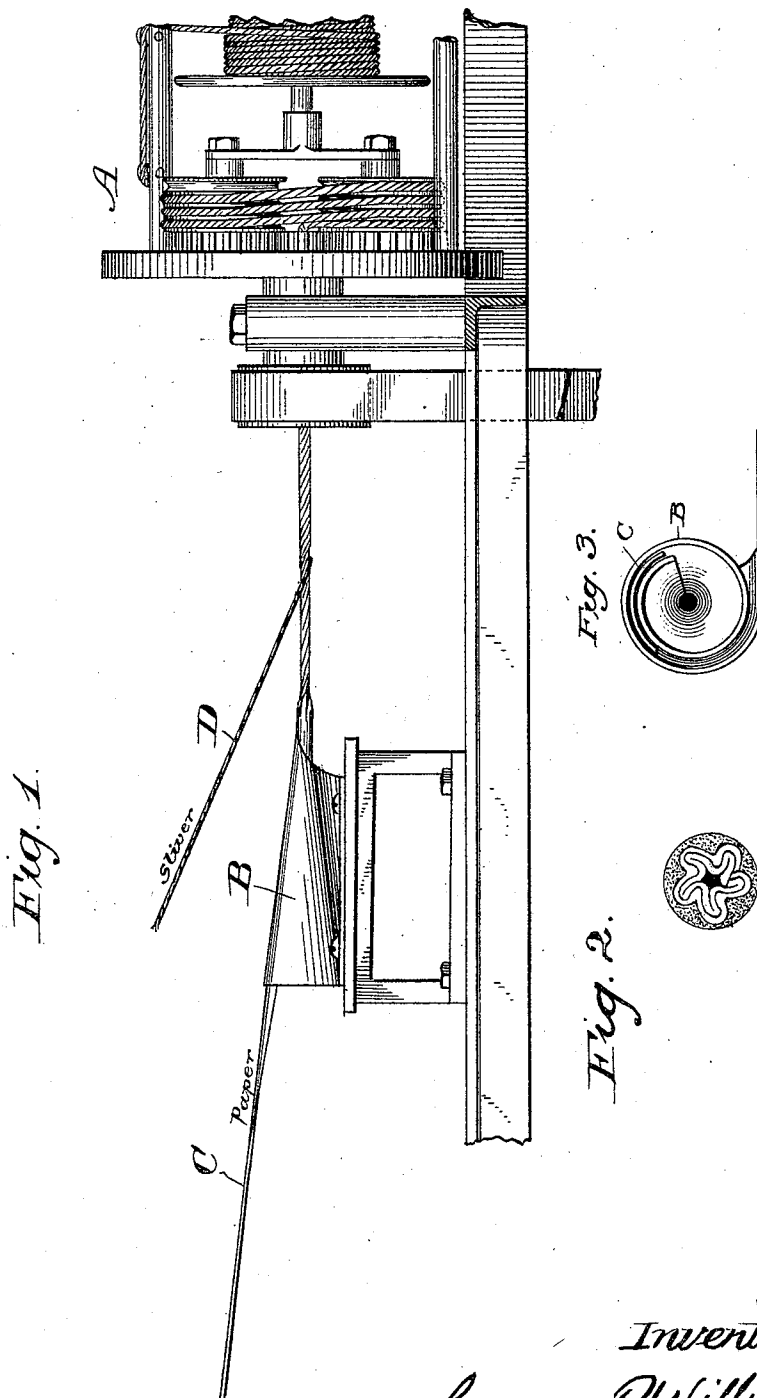


(Specimens.)

F. R. WILLIAMS.
TWINE FOR GRAIN BINDING HARVESTERS.

No. 451,791.

Patented May 5, 1891.



Witnesses.

W. H. Montimer
F. J. Chas. E. Chas.

Inventor.

F. R. Williams

By his Atty
Phil. T. Dodge

UNITED STATES PATENT OFFICE.

FARMER R. WILLIAMS, OF BELOIT, WISCONSIN, ASSIGNOR TO THE WILLIAM DEERING & COMPANY, OF CHICAGO, ILLINOIS.

TWINE FOR GRAIN-BINDING HARVESTERS.

SPECIFICATION forming part of Letters Patent No. 451,791, dated May 5, 1891.

Application filed September 18, 1889. Serial No. 324,332. (Specimens.)

To all whom it may concern:

Be it known that I, FARMER R. WILLIAMS, a citizen of the United States, residing at Beloit, in the county of Rock and State of Wisconsin, have invented certain new and useful Improvements in Twine for Grain-Binding Harvesters, of which the following is a description, reference being had to the accompanying drawings.

My invention consists in a twine produced by forming a strip of paper into a tube and twisting a twine or sliver around the tube thus formed, and then giving the composite twine thus formed a twist, in order to render it flexible.

The formation of the twine above described may be effected by any appropriate mechanism; but in the drawings I have for the purposes of illustration represented one mechanism suitable for the purpose.

Figure 1 represents in side elevation the principal operative parts of an ordinary spinning-machine provided with attachments whereby it is adapted to produce my twine. This machine forms no part of the present invention, being made the subject-matter of a separate application filed on the 18th day of September, 1889, No. 324,333. Fig. 2 is a cross-section of the twine. Fig. 3 is a rear end elevation of the guide or former.

Referring to the drawings, A represents the rotary tubular spinning-head of ordinary construction.

B is a fixed conical guide of helical form in cross-section, as shown in Fig. 3, adapted to coil a paper strip into tubular form as it is drawn therethrough.

C is the paper strip from which the tube is formed.

D is a sliver or cord of fibrous material. As the spinning-head is rotated, the flat paper strip C is first formed by the guide B into a tube and thereafter collapsed and tightly twisted during its passage from the guide to the spinning-head, so as to present a longitudinally-fluted form. The cord or sliver D is continuously delivered to the exterior of the twisted paper, between the guide and the spinning-head, and is thus wound around and closely incorporated with the paper core, the two being finally twisted tightly together into a hard smooth twine with the fibrous material surrounding the fluted core, as plainly shown in Fig. 2.

I find it of advantage to combine the fiber with the paper in the twine to be used on grain-binders, more especially because the fibers prevent the loss of the grain in the event of the paper being cut or broken by the tying or clamping devices of the machine, and also because it renders the paper less liable to kink or buckle as it is drawn from the balls into the binding mechanism.

Having thus described my invention, what I claim is—

1. A twine formed of fibers with a paper filling, substantially as described.
2. A twine consisting of paper in the form of a collapsed tube twisted and covered with fibrous material.
3. A twine consisting of paper in the form of a collapsed and twisted tube and a twisted fibrous covering, the two twisted tightly together.

FARMER R. WILLIAMS.

Witnesses:

ARTHUR JOHNSON,
A. L. UPTON.