Feb. 20, 1923. 1,446,094.

P. T. JACKSON.

PAPER SEAL.

FILED NOV. 3, 1919.

Fig. 1

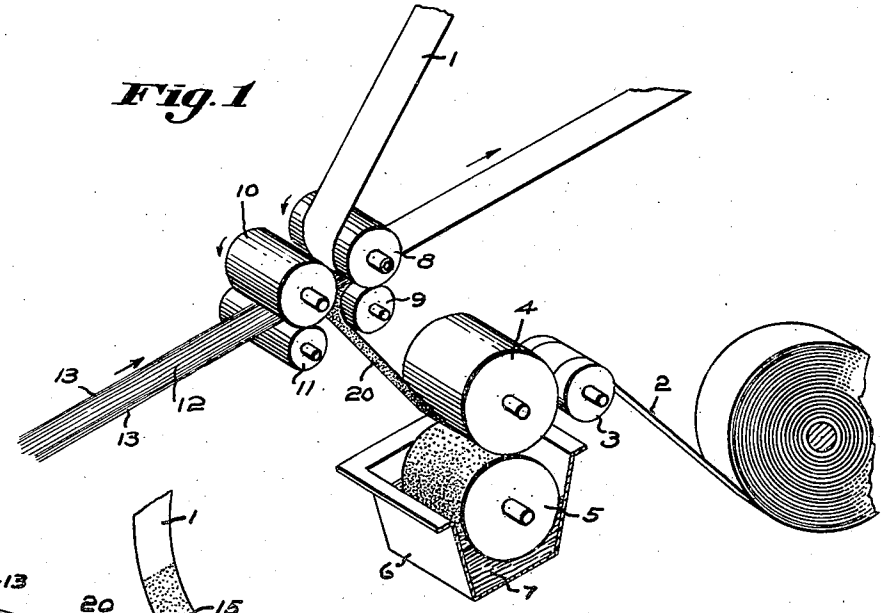


Fig. 2

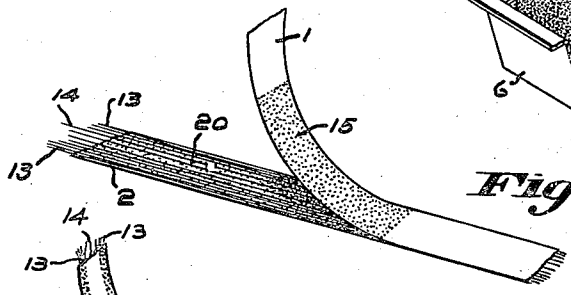


Fig. 3

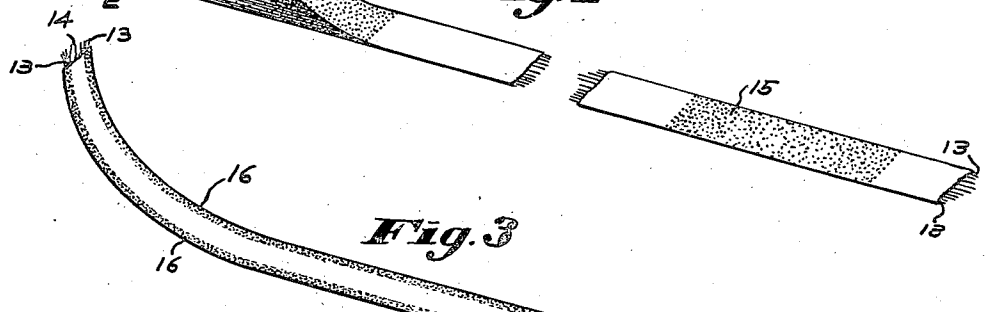
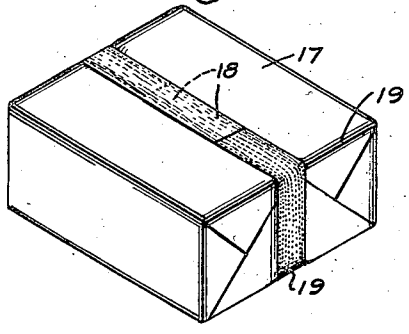


Fig. 4





Inventor:
Patrick T. Jackson
by Robt. C. Harris
Attorney

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UNITED STATES PATENT OFFICE.

PATRICK T. JACKSON, OF CAMBRIDGE, MASSACHUSETTS, ASSIGNOR TO PAPER PRODUCTS MACHINE COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

PAPER SEAL.

Application filed November 3, 1919. Serial No. 335,496.

To all whom it may concern:

Be it known that I, PATRICK T. JACKSON, a citizen of the United States, and a resident of Cambridge, county of Middlesex, and State of Massachusetts, have invented an Improvement in Paper Seals, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to paper seals for packages as substitutes for string, cord and the like.

The object of the invention is to provide a paper seal for sealing or tying up packages which shall be strong, durable and efficient, and without liability of transverse rupture.

The paper seal is preferably formed of a layer or strip of paper, on one surface of which are adhesively secured a series of long staple unspun fibres which add to the paper strip the required strength, both longitudinally and transversely, so that when placed about a packages danger of rupture of the paper seal will be obviated. The longitudinally extending unspun fibres are preferably formed of long staple fibres, such as sisal or the like, and they are adhesively secured to the paper strip under a degree of lengthwise tension whereby the full effect and strength of the unspun fibres is imparted to the paper strip.

In one of the best forms of the invention, two paper strips are adhesively secured together, face to face, and the unspun fibres are embedded in the adhesive between the paper strips, one of the exposed surfaces of one of the paper strips being provided with an adhesive whereby the combined paper strips and longitudinally extending unspun fibres may be secured to or about a package.

In applying a paper seal about a package, great danger exists of tearing the paper transversely by the strain placed thereon, but by the present invention this danger is obviated, and to further insure against such transverse rupture of the paper strip or strips, the present invention contemplates that the longitudinally extending unspun fibres shall be increased in number along the edges of the paper strip and preferably be secured between the strips under longitudinal or lengthwise tension.

The exposed surface of one of the paper strips may be provided with adhesive throughout its extent, or it may have the adhesive applied at intervals, or the adhesive may be applied to the exposed surface only along the edges thereof, the essential being that an exposed surface of one of the paper strips be supplied with an adhesive by which the paper seal may be secured to or about the package.

In the drawings:

Fig. 1 represents, graphically, one form of means whereby the longitudinally extending unspun fibres may be applied to and between the superposed paper strips under lengthwise tension.

Fig. 2 is a perspective view of a paper seal formed of an upper and an under strip of paper having the longitudinally extending unspun fibres secured to the adhesive which connects the paper strip, one of the paper strips being provided on its exposed surface with an adhesive at intervals.

Fig. 3 is a perspective view of a paper seal wherein the exposed surface of a paper strip has an adhesive extending only along its edges.

Fig. 4 is a perspective view of a package with the paper seal passing about and secured thereto.

Having reference more particularly to Fig. 1, the paper strips 1 and 2 are fed from a suitable source of supply and one of them has applied to one of its surfaces an adhesive, preferably of waterproof character. In the present instance of the invention the paper strip 2 is passed over a roll 3 and then between the rolls 4 and 5, the lower roll dipping into a suitable tank 6 containing an adhesive 7. From between the rolls 4 and 5, the paper strip, now with the adhesive applied to one of its surfaces, as indicated, passes between the rolls 8 and 9, which are rotated at desired speed to feed the paper strips between them. These rolls, or one of them, may be heated, if desired, in order to maintain the adhesive, when of quick drying quality, in a sufficiently plastic condition.

Mounted adjacent to the rolls 8 and 9 are the rolls 10 and 11 through which pass the long staple unspun fibres 12 which may be fed from a suitable preparing machine in the form of a sheet or layer having approximately the thickness of a single fibre. Such

preparing machine is well known in the art and needs no special description herein, as it forms no part of the present invention. The rolls 10 and 11 are preferably rotated at somewhat slower speed than the rolls 8 and 9, the effect being that the unspun fibres 12 will be longitudinally or lengthwise tensioned when they pass between the rolls 8 and 9, and the superposed paper strips 1, 2.

One of the difficulties encountered in paper seals, as substitutes for string, twine and the like, is that it readily tears or ruptures transversely when being placed about the package, and as a means for giving additional edge strength, and resistance to such rupture, the present invention contemplates that the unspun fibres shall be increased in number along the edges of the paper strip, as indicated at 13. That is, the unspun fibres along the edges of the paper strips, as indicated in Fig. 2, are greater in number than are the unspun fibres along the central portion at 14 of the paper strips. One of the paper strips is supplied with an adhesive on its exposed surface, as at 15. This adhesive may extend over the entire width of the exposed surface of the paper strip, as indicated in Fig. 2, or it may extend along the edges of the paper strip, as at 16 Fig. 3; in either event the adhesive on the exposed surface of the paper strip forms a ready and convenient means for adhesively securing the paper seal to the package.

By amplifying the number of longitudinally extending unspun fibres along the edges and between the paper strips, as indicated in Figs. 2 and 3, the danger of transverse rupture or tear of the paper seal as it is placed about a package, is largely overcome and a reliable seal is provided having the desired longitudinal and transverse strength. The unspun fibres are preferably applied to the adhesive under longitudinal tension which serves to maintain the longitudinally extending unspun fibres in longitudinal relation with the paper strips and brings into action the tensile strength of the unspun fibres to resist rupture of the paper strip transversely.

When the paper seal is passed about a package, as 17, Fig. 4, the overlapping ends 18 are adhesively secured together and serve to effectively seal the package. Where the paper seal passes about the corners 19 of a package, as in Fig. 4, transverse rupture of the paper seal is most liable to occur, and at these points the longitudinally tensioned unspun fibres assert themselves in adding the required strength to the paper seal to prevent rupture or transverse tear.

The adhesive for securing the two paper strips face to face, as indicated at 20, Figs. 1 and 2, is preferably of waterproof character, so that when the overlapping end portions of the paper strip are sealed together by moistening, as in Fig. 4, the waterproof adhesive between the paper strips prevents separation of the paper strips at the moistened portion. The adhesive applied to the exposed surface of one of the paper strips serves to hold the paper seal in proper position on the package and prevents slip or a tendency of the paper seal to slip from the package.

Claims:

1. A narrow binder forming a substitute for string to bind packages and adapted to be secured adhesively to packages, comprising narrow superposed paper strips adhesively secured together, a series of substantially parallel unspun fibres extending longitudinally between the paper strips and secured to the paper strips under lengthwise tension by the adhesive, the unspun fibres along the edges of the paper strips being increased in number to resist transverse rupture of the narrow binder, and one of the paper strips having its exposed surface provided with an adhesive for securing the binder formed of the paper strips and unspun fibres about a package.

2. A narrow binder forming a substitute for string to bind packages and adapted to be secured adhesively to packages, comprising narrow superposed paper strips adhesively secured together, a series of substantially parallel unspun fibres extending longitudinally between the paper strips and secured to the paper strips under lengthwise tension by the adhesive, and one of the paper strips having its exposed surface provided with an adhesive for securing the binder formed of the paper strips and unspun fibres about a package.

3. A narrow binder for binding packages by adhesive engagement therewith, comprising narrow superposed paper strips adhesively secured together face to face, and reinforced by a series of substantially parallel unspun fibres constituting a layer of fibres having a thickness approximately the same as a single fibre and having the individual fibres of the series secured between the paper strips under lengthwise tension by the adhesive.

4. A narrow binder for binding packages by adhesive engagement therewith, comprising a narrow paper strip reinforced by a series of substantially parallel unspun fibres constituting a layer of fibres having a thickness approximately the same as a single fibre and having the individual fibres of the series secured to a face of the paper strip under lengthwise tension by adhesive, and the paper strip having adhesive applied to its opposite face for securing the binder formed of the paper strip and unspun fibres about a package.

5. A narrow binder forming a substitute for string to bind packages, comprising two

narrow superposed paper strips secured together by waterproof adhesive and reinforced by a series of substantially parallel unspun fibres extending longitudinally between the paper strips and secured thereto under lengthwise tension by the adhesive, the unspun fibres along the edges of the paper strips being increased in number to resist transverse rupture of the narrow binder, and adhesive applied to an exposed face of one of the paper strips to secure the reinforced binder about a package.

In testimony whereof, I have signed my name to this specification.

PATRICK T. JACKSON.