

J. H. AMESBURY.
 CORRUGATING MACHINE.
 APPLICATION FILED JAN. 27, 1912.

1,051,660.

Patented Jan. 28, 1913.

2 SHEETS—SHEET 1.

Fig. 3.

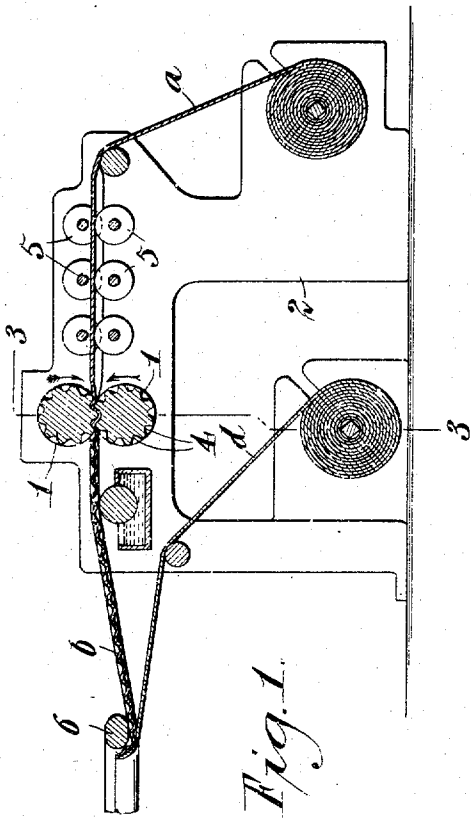
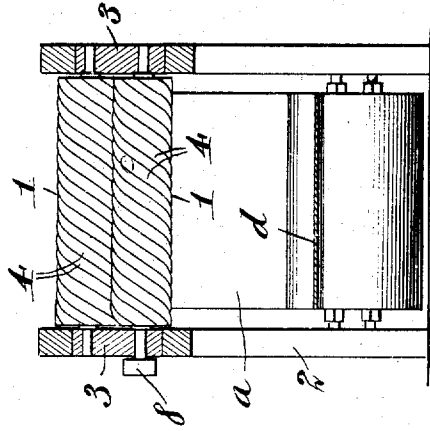
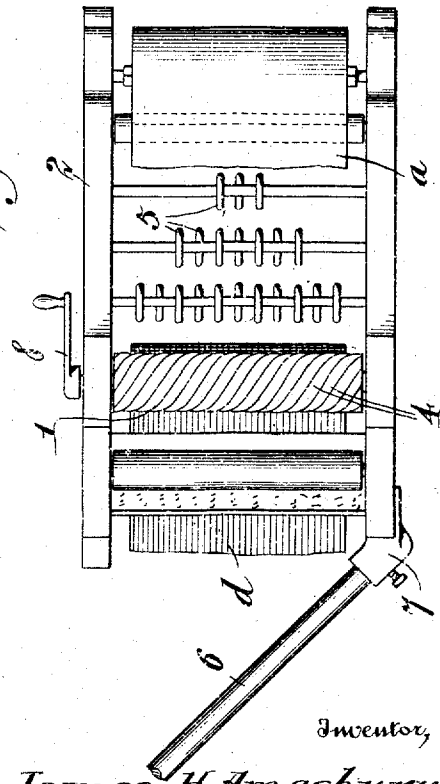


Fig. 1.

Witnesses:
Christ Feinle, Jr.,
J. C. Larned

Fig. 2.



Inventor,
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2 SHEETS—SHEET 2

Fig. 4.

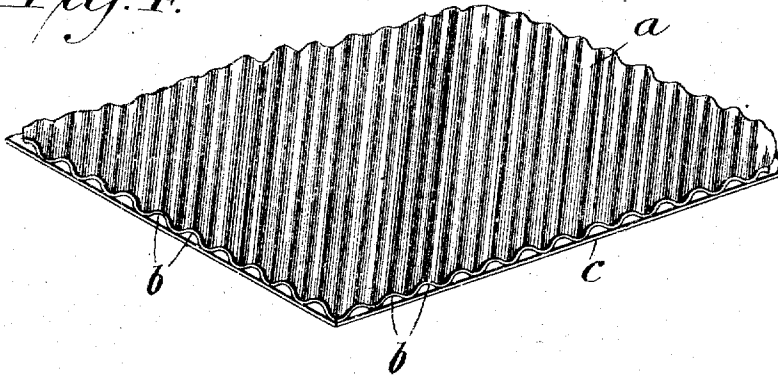


Fig. 5.

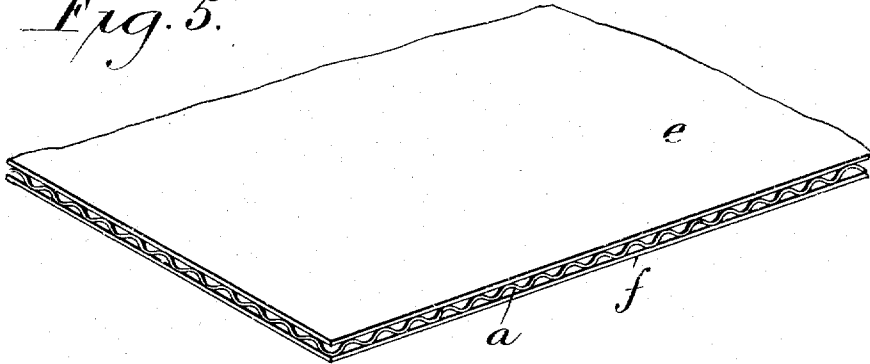
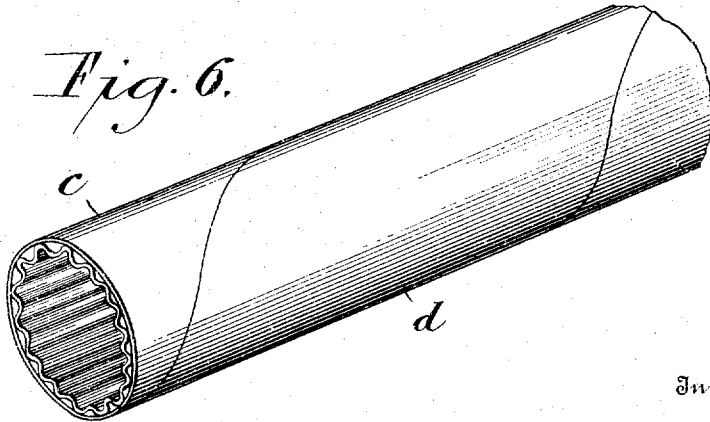


Fig. 6.



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UNITED STATES PATENT OFFICE.

JAMES H. AMESBURY, OF PHILADELPHIA, PENNSYLVANIA.

CORRUGATING-MACHINE.

1,051,660.

Specification of Letters Patent.

Patented Jan. 28, 1913.

Application filed January 27, 1912. Serial No. 673,823.

To all whom it may concern:

Be it known that I, JAMES H. AMESBURY, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented new and useful Improvements in Corrugating-Machines, of which the following is a specification.

This invention relates to improvements in machines for corrugating paper sheets or strips used in the manufacture of packing boards and tubes, such as are employed in packing bottles and other frangible articles, the invention also relating to improvements in packing boards and tubes of this class and consisting, in connection with a facing sheet of a corrugated sheet or strip provided with corrugations which are arranged diagonally with respect to and extend across the facing strip, one object of the invention being to provide an improved machine of this kind which forms a sheet or strip of paper with diagonal corrugations, another object of the invention being to provide an improved packing board or tube with a sheet or strip which is formed with diagonal corrugations whereby the strength of the packing board or tube is very greatly increased.

The invention consists in the construction, combination and arrangement of devices, hereinafter described and claimed.

In the accompanying drawings:—Figure 1 is a vertical longitudinal sectional view of a corrugating machine and tube forming machine constructed in accordance with my invention. Fig. 2 is a plan of the same. Fig. 3 is a vertical transverse sectional view of the same on the plane indicated by the line 3—3 of Fig. 1. Fig. 4 is a detail perspective view of one form of packing board constructed in accordance with my invention with diagonal corrugations. Fig. 5 is a similar view, showing another form of my improved packing board. Fig. 6 is a sectional perspective view, showing a packing tube constructed in accordance with my invention.

Referring particularly to the machine shown in Figs. 1, 2 and 3, in accordance with my invention, I provide a pair of corrugating rolls 1 which are arranged side by side and are mounted for revolution in a suitable supporting frame 2 which is provided with bearings 3. These rolls are provided with corrugations 4 which are spiral, the pitch of which is about 45° and which

extend from end to end of the rolls, the said rolls being intermeshed so that their corrugations engage. These rolls are spaced a slight distance apart, to correspond with the thickness of the paper strip or sheet which is run between them to be corrugated thereby. In connection with the pair of corrugating rolls, I provide feeding means such, for instance, as a series of rollers 5 which are arranged to one side of the corrugating rolls. At the opposite side of the corrugated rolls is a spindle 6 which is arranged at an angle of about 45° with respect to the rolls, is appropriately spaced therefrom and is provided with a suitable support 7. For the purposes of this specification, a crank handle 8 is shown connected to the axis of one of the rolls to enable the rolls to be rotated in the direction indicated by the arrows, so as to cause them to provide a paper strip *a* fed between them, with bias or diagonal corrugations *b*. The paper strip or sheet fed to the rolls is initially gathered to some extent by the feed rolls.

In the operation of the machine, the tension on the strip or sheet of paper running between the corrugating rolls is such on the far side of the corrugating rolls as to tend to wind the strip or sheet spirally so as to form a tube *c* on the spindle. This tube is backed on its outer side by a paper backing *d*, glued or otherwise united thereto. When desired, I can also put an inner facing on the sheet. The tube thus formed is provided with longitudinal corrugations on its inner side which extend therethrough from end to end and render the tube exceedingly strong. Where the spindle is not employed the paper, as it issues in corrugated form from between the corrugating rolls passes between forming rolls or devices 8 which are employed to paste either a single or double backing sheets on one or opposite sides of the corrugated sheet.

For the purposes of this specification, I show a packing board constructed in accordance with my invention, which comprises a corrugated sheet *a* and a single-backing sheet *c*, the corrugations *b* being diagonal, that is to say, being substantially at an angle of 45° with respect to the edges of the packing board.

In Fig. 5, I show another form of packing board in accordance with my invention in which two backing sheets indicated respectively at *e* and *f* are employed, and

pasted or otherwise suitably secured on opposite sides of the corrugated strip *a*.

I claim:—

- 5 1. A machine of the class described embodying a pair of rolls having intermeshing spiral corrugations, and means to form longitudinal gathers or crimps in a paper strip and fit the same between the rolls for corrugation thereby.
- 10 2. A machine of the class described embodying a pair of rolls having intermeshed spiral corrugations, and means to initially gather or crimp a paper strip and feed the same between the rolls for corrugation
- 15 thereby.
3. A machine of the class described em-

bodying a pair of corrugating rolls, in combination with a spindle arranged at the discharge side of the rolls and at an angle with respect thereto.

4. A machine of the class described embodying a pair of rolls having intermeshing spiral corrugations to diagonally corrugate a strip or sheet of paper between said rolls, and means to affix a backing sheet to the said corrugated sheet.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES H. AMESBURY.

Witnesses:

F. WM. FINK,
CHARLES S. RUSSELL.

Correction in Letters Patent No. 1,051,660.

It is hereby certified that in Letters Patent No. 1,051,660, granted January 28, 1913, upon the application of James H. Amesbury, of Philadelphia, Pennsylvania, for an improvement in "Corrugating-Machines," an error appears in the drawings requiring correction as follows: Sheet 1, Fig. 3 of the drawings, *the corrugations of one roll should run in the opposite direction from that indicated in said figure;* and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 18th day of March, A. D., 1913.

[SEAL.]

C. C. BILLINGS,

Acting Commissioner of Patents.

pasted or otherwise suitably secured on opposite sides of the corrugated strip α .

I claim:—

- 5 1. A machine of the class described embodying a pair of rolls having intermeshing spiral corrugations, and means to form longitudinal gathers or crimps in a paper strip and fit the same between the rolls for corrugation thereby.
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bodying a pair of corrugating rolls, in combination with a spindle arranged at the discharge side of the rolls and at an angle with respect thereto.

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In testimony whereof I affix my signature in presence of two witnesses.

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