(No Model.) 2 Sheets—Sheet 1.

R. H. THOMPSON.

MACHINERY FOR MANUFACTURING PACKING AND LINING FABRICS.

No. 252,547. Patented Jan. 17, 1882.

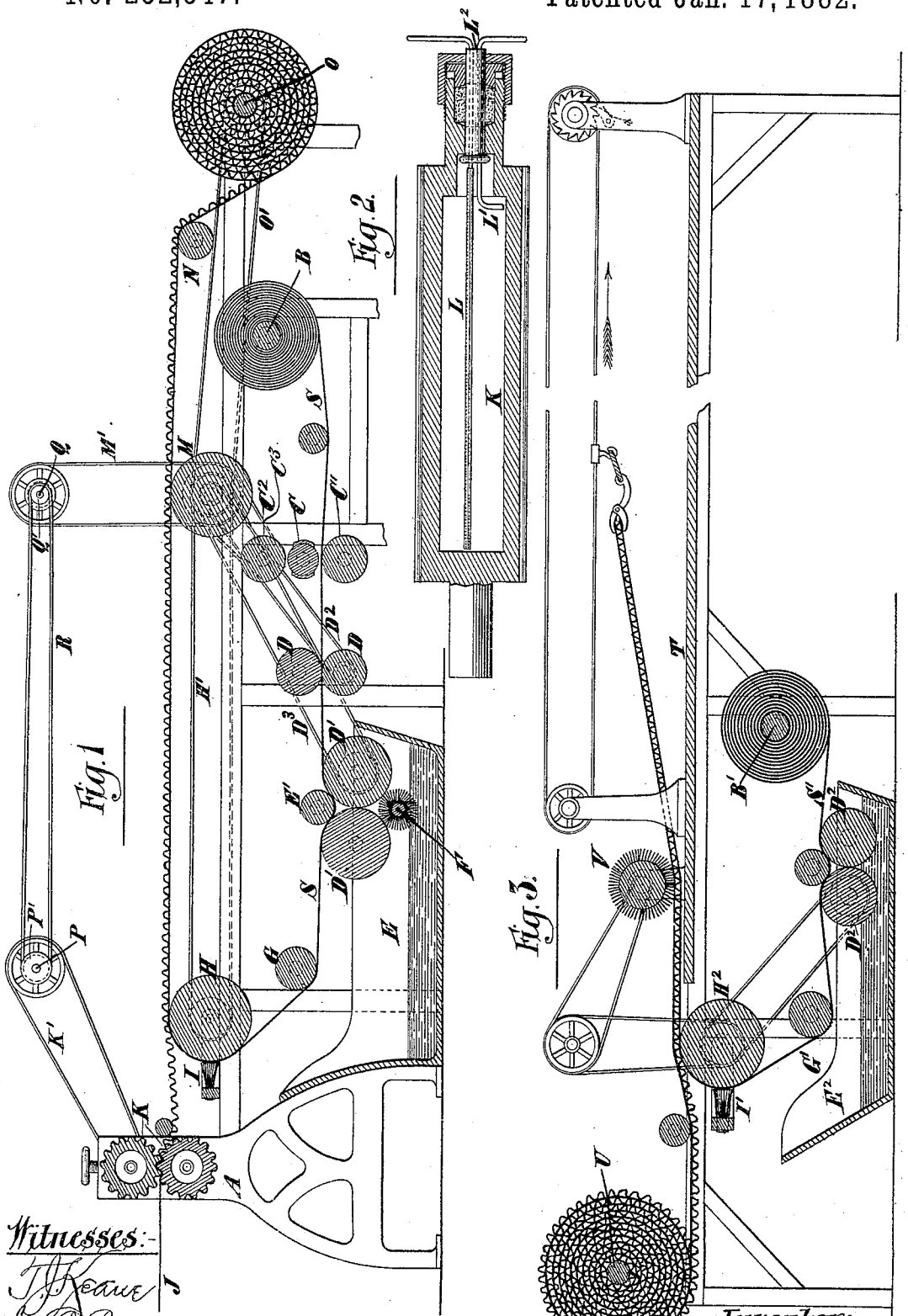


Fig. 1

Fig. 2.

Fig. 3.

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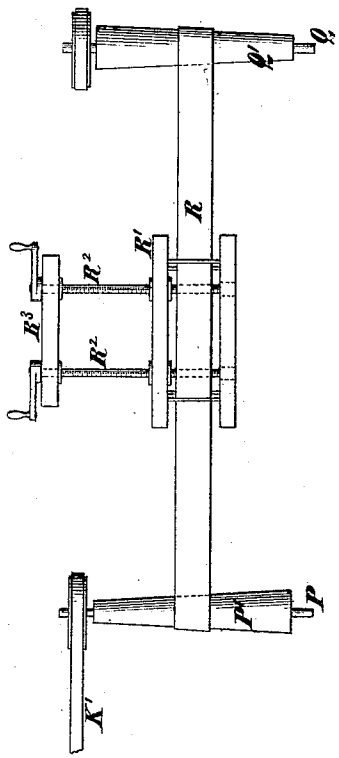
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Fig. 4.



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UNITED STATES PATENT OFFICE.

ROBERT H. THOMPSON, OF BROOKLYN, NEW YORK.

MACHINERY FOR MANUFACTURING PACKING AND LINING FABRICS.

SPECIFICATION forming part of Letters Patent No. 252,547, dated January 17, 1882.

Application filed October 24, 1881. (No model.) Patented in England March 10, 1881.

To all whom it may concern:

Be it known that I, ROBERT H. THOMPSON, of Brooklyn, in Kings county, and the State of New York, have invented certain new and useful Improvements in Machinery for Manufacturing Packing and Lining Fabrics, of which the following is a specification.

My improvements relate particularly to machinery for manufacturing packing or lining fabric consisting of a sheet of paper having fastened to it a sheet or strip of corrugated paper or like material; but some of the improvements are also applicable to machinery for manufacturing packing or lining fabric consisting of a sheet of paper having cork or other elastic material secured to it.

The improvements consist in the combination, with rollers between which a sheet or strip of paper for forming the base of a packing or lining fabric is passed, of a tank containing adhesive material, rollers therein adapted to deposit the adhesive material on the sheet of paper, and a brush rotating in engagement or contact with the last said rollers for supplying the adhesive material to them.

The improvements further consist in the combination, with a strip of paper for forming the base of a packing or lining fabric, rollers for passing it along, and means for applying adhesive material to it, of rolls for corrugating another sheet of paper or like material, means for moving this corrugated sheet along and into contact with the sheet of paper for forming the base of the fabric, so as to cause it to be secured thereto, and mechanism for driving the rollers, whereby the sheet of paper for forming the base of the fabric is moved along, and for driving the means whereby the corrugated sheet is moved along, capable of operating so as to vary the relative speeds of the two sheets and take out any slack which may occur in either. This mechanism for driving may consist of reversed cone-pulleys, a belt applied to them, and means for shifting the belt.

The improvements also consist in the combination, with the corrugating-rolls, of novel means for heating them.

The improvements also consist in a combination of parts whereby the fabric is prevented from being fed so fast as to destroy or impair the corrugated sheet.

In the accompanying drawings, Figure 1 is a central longitudinal section of a machine embodying my improvements. Fig. 2 is a section of one of the corrugating-rolls and means for heating it. Fig. 3 is a longitudinal section of a modified form of the machine, and Fig. 4 is a plan of mechanism for driving the different sets of rollers in the machine.

Similar letters of reference designate corresponding parts in all the figures.

Referring, first, to Figs. 1, 2, and 4, A designates the frame of the machine, which may be of any suitable material and form.

B designates a roller journaled in the frame A, and having wound upon it a sheet or strip of paper, S, which is adapted to form the base of a packing or lining fabric. From this roller this paper passes between rollers C C′, the former of which carries type, whereby an appropriate trade-mark or advertisement may be printed on the upper side of the paper, and the latter of which forms a bed for supporting the paper during the printing.

Above the type-carrying roller C is an inking-roller, C^2, which may have a surface of felt or like material saturated with ink for supplying the type with sufficient ink at each contact therewith for the next printing. The paper S next passes between rollers D, and subsequently it passes over two rollers, D′, which are arranged side by side and run in a tank, E, containing paste or other adhesive substance. A roller, E′, holds the paper in contact with the rollers D′ and insures the adhesive substance being distributed upon its under side. If desirable, the rollers D′ may be arranged above the level of the adhesive substance, and a brush, F, arranged below them, so that it will dip into the adhesive substance and distribute it on them. This is advantageous, for it insures a proper quantity of the adhesive substance being applied to the said rollers and enables all the adhesive substance to be taken up from the tank and used. From the rollers D′ the paper passes around a roller, G, and thence over a roller, H, so that its side which is coated with the adhesive substance is uppermost. Opposite the roller H is a stationary brush, I, and

as the paper passes this brush the adhesive substance is smoothed over its surface, and all superfluous substance is removed and allowed to fall back into the tank, the latter being made to extend under it.

J designates another sheet or strip of paper, which is corrugated and fastened in that condition to the sheet or strip S. It passes between intermeshing fluted rolls K, which may be connected to run in unison by gear-wheels on their journals. They are hollow, and are heated by steam circulating through pipes L. The steam enters through pipes L, leading from any suitable source, one to each roller, and issues from numerous perforations with which the pipe is provided. The water formed by condensation of the steam passes off through pipes L′, extending one from the lower portion of each roller out through one of its journals. The pipes L and L′ are, of course, stationary, and preferably they are arranged in a sleeve, L^2, whereby they are supported. After being corrugated the paper J passes over the roller H, and there becomes united to the sheet or strip of paper S. The fabric thus produced passes thence over a roller, M, thence over a roller, N, and subsequently around a roller, O, with the corrugated sheet J inward. In lieu of passing around the roller O, it may be carried off by any suitable apparatus and distributed, so as to dry quickly.

P designates a counter-shaft, which may be supported from the ceiling and derive motion from any suitable source of power. It is provided with a cone-pulley, P′.

Q designates a similarly-arranged shaft provided with a reverse cone-pulley, Q′. A belt, R, is fitted to these rollers, so as to transmit motion from one to the other.

R′ designates a frame through which the belt works. It is connected by screws R^2 to a bracket or hanger, R^3, which is affixed to the ceiling or other support, and by manipulating these screws may be shifted sidewise to cause the belt to run on a larger portion of one cone-pulley and a smaller part of the other, or vice versa. In this way the speed of the shaft Q may be from time to time varied relatively to that of the shaft P. From the shaft P motion is transmitted to the corrugating-rolls K by means of a belt, K′, and from the shaft Q motion is imparted to the roller M by a belt, M′. From this roller M motion is transmitted to the rollers H and O by belts H′ and O′. A belt, C^3, transmits motion from the roller M to the roller C^2, and through gear-wheels motion is communicated to the rollers C and C′. A belt, D^2, transmits motion from the roller M to one of the rollers D, and by gear-wheels this motion may be transmitted positively to its fellow roller. Another belt, D^3, transmits motion from the roller M to one of the rollers D′, and thence motion is imparted to the other of said rollers.

By shifting the belt R the speed of the various rollers which operate on the sheet of paper S may be varied relatively to the speed of the corrugating-rolls, and in this way any slack which may occur in either paper may be taken up without stopping the machine.

The rollers D regulate the speed at which the sheet of paper S is fed along; hence the roller O, even as the paper wound on it materially increases in diameter, cannot draw the fabric so fast as to pull out the corrugations in that part of the sheet J between the corrugating-rolls K and the point where such sheet is joined to the sheet S. To further prevent this the belt O′ is adapted to slip on the pulley on the shaft or journal of the roller O, over which it passes.

If it is desired to produce a fabric having a piece or strip of plain or smooth paper on each side, rollers like those already described for feeding and applying adhesive material to the sheet S may be duplicated above the meeting edges of the corrugating-rolls K, and the adhesive material may be supplied to the rollers, whereby it is to be applied to the paper from a hopper, or in any other suitable manner. If desirable, however, the fabric composed of the plain strip of paper S and the corrugated strip of paper J may be made as first described, and an additional strip of plain paper may be subsequently applied to the other side of the corrugated strip. In such case the fabric with the corrugated strip outward is placed on a roller, U, Fig. 3, and a strip of paper, S′, is placed on a roller, B′, and passes thence over rollers D^2, arranged in a tank, E^2, of adhesive material. Thence the paper passes around a roller, G′; thence over a roller, H^2, to a table, T, where it is joined to the fabric as it passes from the roller U. A brush, I′, is preferably employed to remove superfluous adhesive material from the strip S′ and to distribute the remainder properly. A rotary brush, V, arranged in bearings so that it can rise and fall, impinges on the fabric and presses it into close contact with the strip of paper S′.

It will be seen that by my invention I produce a machine whereby lining and packing fabrics may be very cheaply and effectively manufactured. Obviously the appliances for feeding and applying adhesive material to the strip S or S′ may be employed in connection with means for distributing granulated cork upon the adhesive material, so as to produce a fabric consisting of a strip of paper having cork granules or chips secured to one side.

I do not here claim a packing or lining fabric composed of a plain sheet of paper and a corrugated sheet secured thereto by adhesive substance; nor do I claim, broadly, the combination of fluted rollers for corrugating one sheet and means for applying adhesive substance to the other sheet in a machine for making such a fabric.

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

1. The combination, with rollers between which a sheet or strip of paper forming the

base of a packing or lining fabric is passed, of a tank containing adhesive material, rollers therein adapted to apply the adhesive material to the paper, and a brush rotating in contact with the last said rollers for supplying the adhesive material to them, substantially as specified.

2. The combination, with a strip of paper for forming the base of a packing or lining fabric, rollers for passing it along, and means for applying adhesive material to it, of rollers for corrugating another sheet of paper or like material, means for moving this corrugated sheet along and into contact with the sheet of paper for forming the base of the fabric, so as to cause it to be secured thereto, and mechanism for driving the rollers, whereby the sheet of paper for forming the base of the fabric is moved along, and for driving the means whereby the corrugated sheet is moved along, capable of operating so as to vary the relative speeds of the two sheets, substantially as specified.

3. The combination, with the rollers D′ G H and the corrugating-rolls K, of the cone-pulleys P′ Q′, and the frame R′, screws R^2, and hanger R^3, substantially as specified.

4. The combination, with the corrugating-rolls K, of the stationary pipes L L′, substantially as specified.

5. The combination, with the corrugating-rolls K, of the stationary pipes L L′ and sleeve L^2, substantially as specified.

6. The combination, with the corrugating-rolls K, the roller H, and the roller O, of the rollers D, substantially as specified.

7. The combination, with the corrugating-rolls K, the roller H, and the roller O, of the rollers D and the slipping belt O′, substantially as specified.

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Witnesses:
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