Feb. 4, 1941. H. WOLFF 2,230,507

APPARATUS FOR APPLYING ADHESIVE STRIPES ON A CONTINUOUS WEB

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Fig. 2.

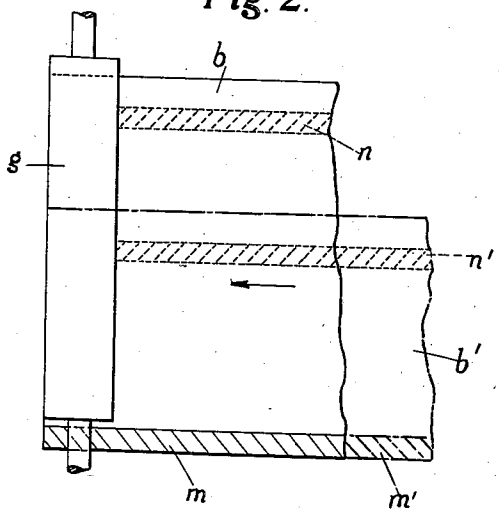


Fig. 1.

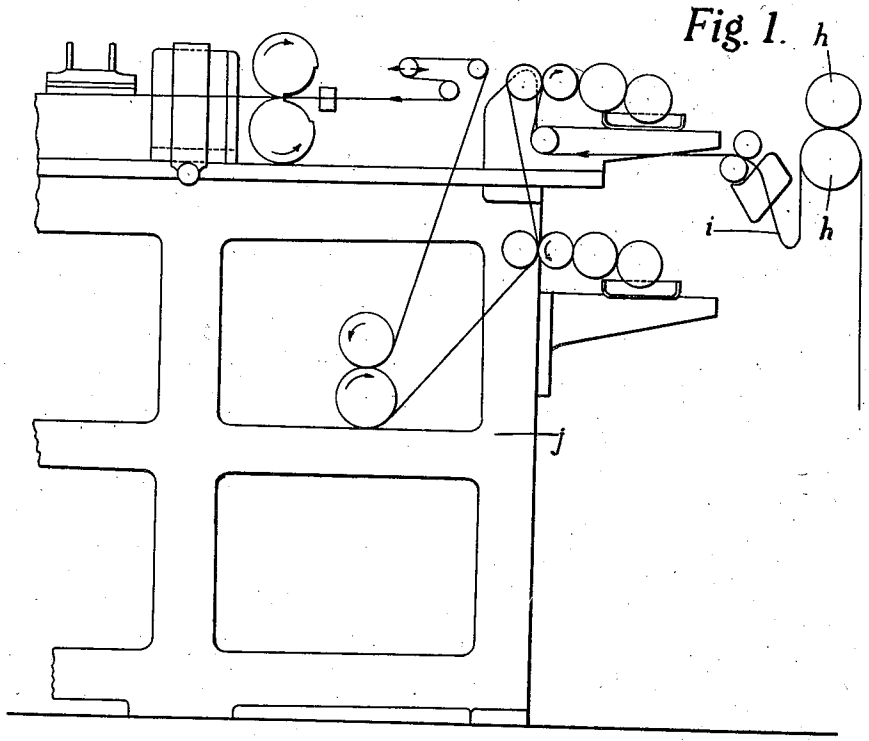
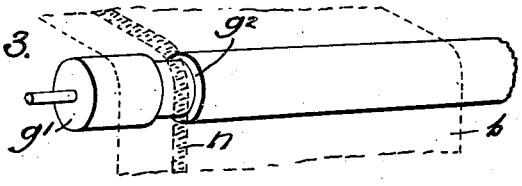


Fig. 3.



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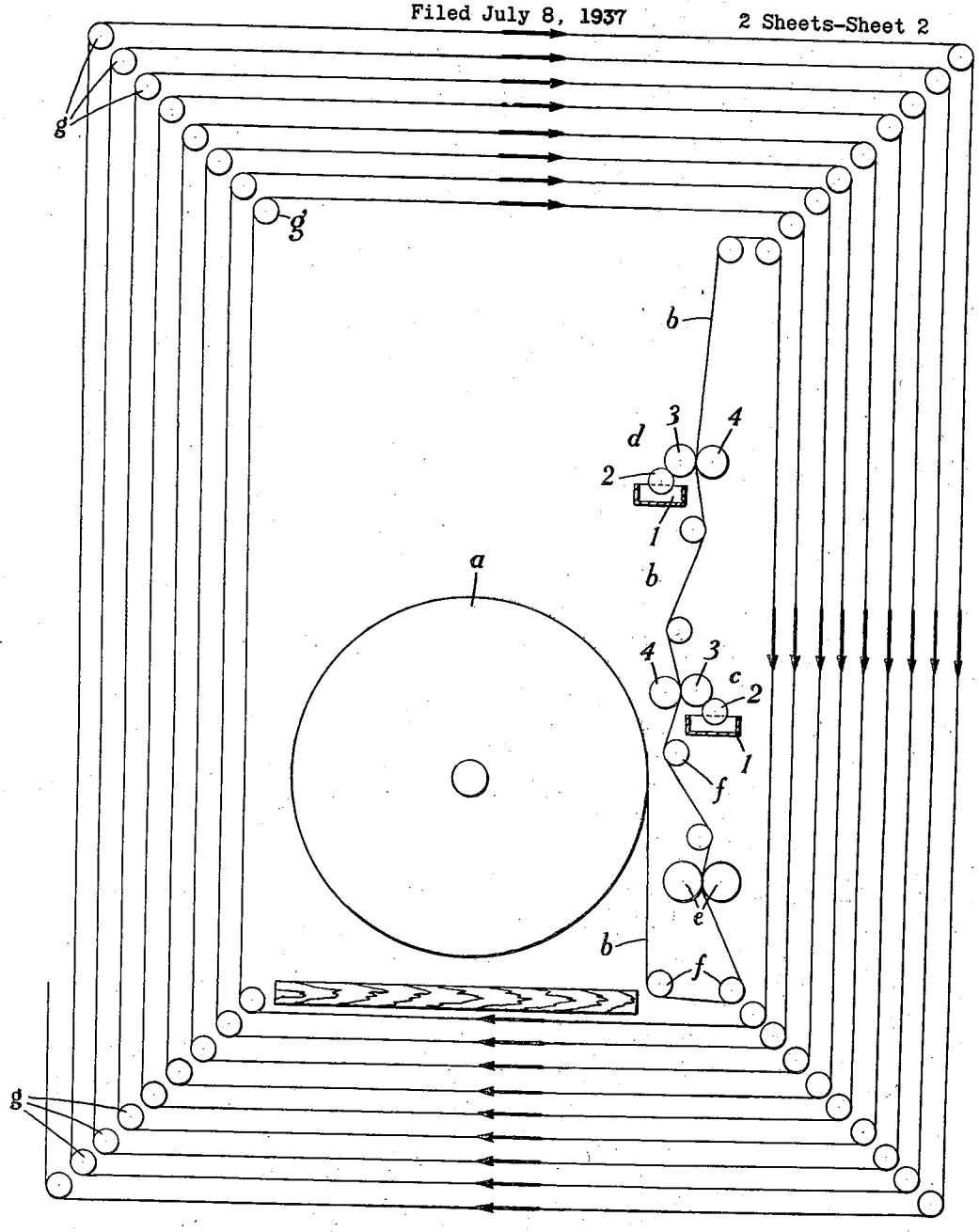

Fig. 1a

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UNITED STATES PATENT OFFICE

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APPARATUS FOR APPLYING ADHESIVE STRIPES ON A CONTINUOUS WEB

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Application July 8, 1937, Serial No. 152,652
In Great Britain July 20, 1936

3 Claims. (Cl. 91—55)

This invention is concerned with the manufacture from a continuous web of paper, of envelopes, bags and similar containers or wrappers of the dry sealing type, viz., those wherein parts are furnished with coatings of an adhesive compounded for example from rubber or rubber latex, which coatings when brought into mutual contact adhere strongly without the need for any moistening, and its object is to provide an improved method of operation and means for putting the manufacturing operation into practice.

The improved apparatus herein described is especially well suited for producing envelopes and bags of the kind having for the purpose of sealing, stripes of a dry sealing medium on the one hand upon the inner surface of a sealing flap projecting in extension of the front wall and on the other hand upon the outer surface of the rear wall said stripes extending parallel with the line of fold of the sealing flap.

The object of the present invention is to provide for use in connection with a machine arranged to make such envelopes and bags from a continuous web of paper means adapted to apply to the web the requisite coatings of dry sealing adhesive and to dry said coatings adequately prior to delivering the web to the envelope making machine.

With this object in view therefore the invention consists in running the continuous web of paper which is to be made into envelopes or bags from a supply reel through devices arranged to apply to opposite faces of the web longitudinally directed stripes of sealing adhesive and subsequently drying the stripes of adhesive before the web reaches the envelope forming machine.

The invention also consists in the apparatus provided for effecting the foregoing operations including means for running the web continuously from a supply reel, two adhesive applying devices adapted to engage opposite faces of the web and means adapted to sustain the web until the adhesive material is dried and therefore ready for delivery to the envelope making machine.

The invention is hereinafter more fully described with reference to the accompanying drawings wherein a practical form of the machine is shown by way of example.

In these drawings—

Fig. 1 is a schematic side elevation of the web coating apparatus for use with an envelope making machine. Fig. 1*a* is a schematic view of the web coating and drying apparatus.

Fig. 2 is a fragmentary plan view on a larger scale showing one of the guide rollers comprised within the drying equipment and a portion of the coated web engaged therewith.

Fig. 3 illustrates a gapped or grooved guide roll employed for carrying a web having an adhesive stripe on the inner face.

Referring to Fig. 1, *a* denotes a reel of paper which constitutes the source of supply from which is drawn a web *b* having a width appropriate to the size of the envelope to be made. Adjacent this reel *a* two adhesive applying devices are furnished these being arranged to act upon the web and apply to opposite sides thereof longitudinally directed stripes of a latex or rubber based adhesive. The adhesive applying devices comprise in each case a bath **1** containing a supply of the liquid adhesive, a transfer roller **2** partly immersed in said adhesive in the bath, an adhesive applying roller **3** engaged with the transfer roller **2** and the face of the web *b* and a support roller **4** adapted to maintain the web in contact with the adhesive applying roller.

The paper web *b* on leaving the reel is preferably engaged by one or more pairs of driving rollers *e e* and is suitably directed by guide rollers *f f* to the adhesive applying devices *c* and *d* which operate in turn upon the opposed faces of the web.

After receiving the stripes of rubber adhesive the web *b* is passed continuously over a plurality of rollers *g g* which are preferably so placed as to guide the web through a succession of substantially rectangular circuits progressively increasing in size, thus enabling the adhesive coatings to dry. These drying circuits may conveniently surround the supply reel *a* and the adhesive applying devices in order to economise space and the drying action occurring may be assisted if desired by directing a current of air across the running web by any suitable means (not shown in the drawings).

It should be understood that the stripes of adhesive applied to the web are not only disposed in opposite surfaces of the web but are in addition disposed at or near the opposite edges of the web. Now in order to prevent contact occurring between the guide rollers *g* of the drying device and the newly applied adhesive, the web is preferably so guided laterally as to cause that part of the web bearing adhesive upon the inner face, that is to say that face engaged by the rollers to overhang the ends of the said rollers, as is shown in Fig. 2. In the figure in question *b* denotes a web coated on its upper side at one

edge with a stripe *m* of adhesive and on its remote side near the opposite edge with a stripe *n*. In its passage through the drying machine the web is so guided laterally that the stripe *m* borne on the inner side of the web overhangs the end of the guide roller *g* and so escapes the damage which might occur if contact between those parts were permitted to take place. The same figure also shows how a narrower web b^1 coated with stripes of adhesive m^1 and n^1 respectively would be guided with reference to the guide rollers. Alternatively a similar effect might be achieved by utilising guide rollers which are gapped or grooved peripherally in the region occupied by the adhesive stripe on the inner face of the web. Such a guide roller is indicated by the character g^1 having in the periphery thereof the encircling groove g^2 across which groove the adhesive stripe *n* of the web *b* passes.

In connection with the adhesive applying device C, there is disposed above the adhesive applying and supporting rollers **3** and **4**, a guide roller **5** against which the web bears in its passage to the guide rollers G, and this guide roller **5** may be of the gapped or grooved construction above referred to so that the applied adhesive will not come into contact therewith or the web may be so disposed as to be guided laterally over the roller in the manner above set forth so that the adhesive contact with the roller will not result. This roller being offset slightly from the nip line of the rollers **3** and **4** has the effect of tightening the web slightly so as to present a smooth face for contact by the adhesive transfer roll **3**.

On leaving the drying apparatus the web *b* is engaged by further driving rollers *h h* which maintain it continuously in motion whence it may be permitted to pass in a loose bight *i* prior to entering the envelope making machine part of which is shown schematically at *j*. This latter may be arranged to act upon the web in any way required for printing, embossing, cutting, gumming and folding the envelopes depending upon the exact nature of the finished article desired.

Although in the arrangement just described the machine has been adapted for preparing a web of paper of a width sufficient to produce a single row of envelope blanks it should be understood that by a slight modification the machine could be rendered capable of preparing two such webs simultaneously or a single web of a width sufficient to produce two or more rows of envelope blanks without departing from the essentials of the invention.

It should be understood that the use of rollers for applying the stripes of adhesive is not in any sense essential because other forms of adhesive applying apparatus could be employed without materially affecting the resulting product. Moreover the applied stripes of adhesive may be continuous or interrupted in nature according to preference.

I claim:

1. Apparatus for preparing a web for the manufacture of dry sealing envelopes and bags, comprising means for running the closely spaced web continuously from a supply source, a plurality of groups of web supporting rollers arranged around said means whereby the web may be drawn from the supply source and supported and run continuously in one direction only in a series of substantially concentric closely spaced convolutions thereabout, and means adjacent the supply source and between the same and the first of the supporting rollers over which the web passes, for applying a continuous stripe of a sealing medium to each face of the web before the web passes onto the said rollers.

2. Apparatus for preparing a web for the manufacture of sealing envelopes and bags, comprising means for running the web continuously from a supply source, a plurality of groups of rollers arranged to outline an area in which said supply source is disposed, the rollers of each group being in closely spaced parallel relation and lying in a plane radiating from the area in which said supply source lies, the said web passing from said supply source to and over the rollers of the several groups continuously in one direction only in a series of closely spaced concentric courses, and means disposed within said area between the web source and the rollers to which the web passes, for applying stripes of adhesive material longitudinally to the opposite faces of the web.

3. An apparatus for preparing a web for the manufacture of dry sealing envelopes and bags, comprising means containing a source of supply of an adhesive, a plurality of web supporting rollers disposed around said means whereby the web may be drawn from the supply source and supported to run in a series of substantially concentric closely spaced convolutions thereabout, means disposed within the series of convolutions for transferring adhesive from said source to and applying it in stripes to the opposite faces of the web, and said rollers having circumferentially extending recesses in the plane transversely of the rollers of the stripes applied to the web, by which said stripes may pass over the rollers without contacting the same.

HEINRICH WOLFF.