A. GEISSLER.

PROCESS OF MANUFACTURING VERY EXTENSIBLE PAPER.

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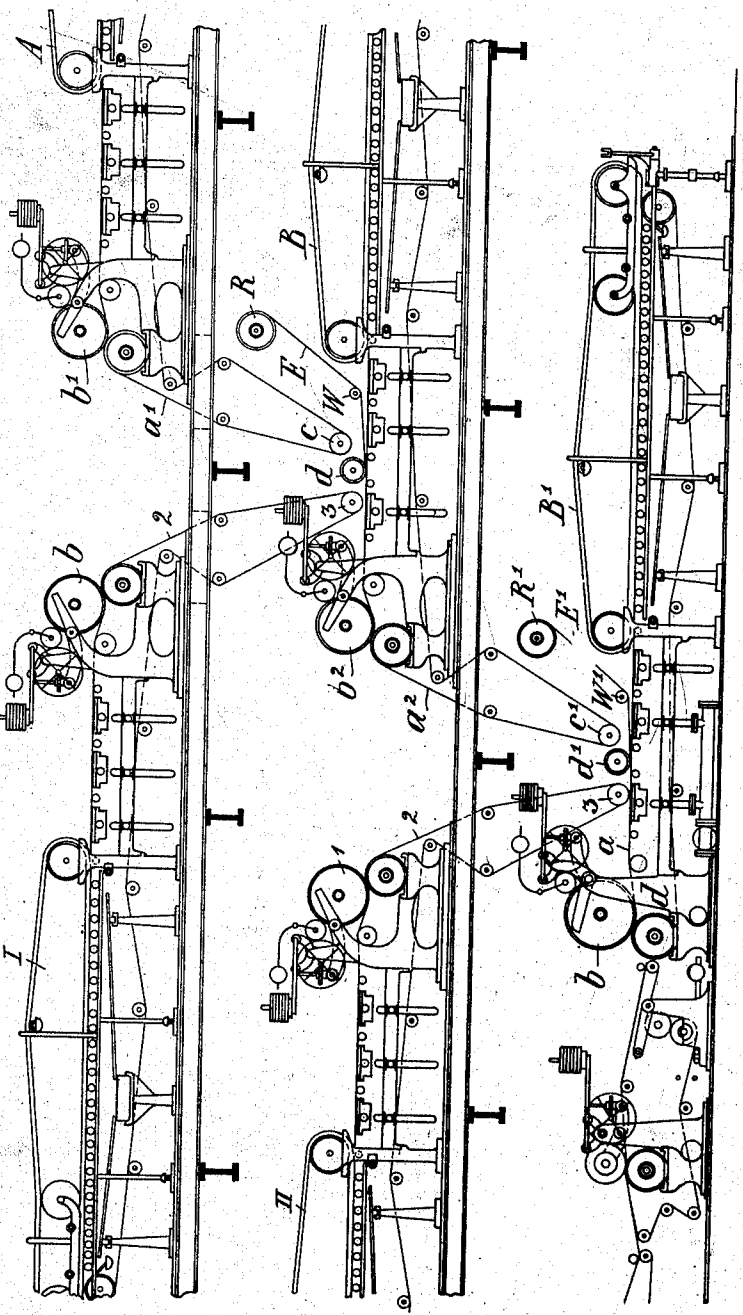

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PROCESS OF MANUFACTURING VERY EXTENSIBLE PAPER.

1,018,897. Specification of Letters Patent. Patented Feb. 27, 1912.

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To all whom it may concern:

Be it known that I, ADALBERT GEISSLER, a subject of the German Emperor, residing at Niederau, near Düren, Germany, have invented certain new and useful Improvements in the Process of Manufacturing Very Extensible Paper; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The subject-matter of my invention is an improved process of manufacturing very extensible paper, such as *e. g.* sack or cable paper or the like.

According to my invention the material is first worked up into very thin webs which are united either individually in succession, or in groups and then in these groups in succession, on a long wire-cloth paper-making machine, whereby it is possible to manufacture heavy paper of very greasy material, the fibers being well felted and a very high degree of extensibility being obtained by working up the material in individual layers.

A particularly suitable form of apparatus for carrying my improved process into practice comprises several superposed sets of wire-cloth, in which the end guide rolls of the top machine are located in front of and behind the first press-roll of the lower machine and in this manner admits of an optional number of webs of paper being brought together in long wire-cloth paper-making machines.

The material employed for manufacturing sack and cable paper is very greasy and therefore can only with difficulty be freed from water on the long wire-cloth paper-making machine in the case of heavy paper. Consequently the individual fibers of the paper are not felted so readily as in the case of so-called harshly (*rösch*) ground material. Now in order to enable thoroughly good felting, according to my invention the material is worked up on several sets of wire-cloths into individual, very thin webs of paper within which the fibers can felt much more readily on the sets of wire-cloths, and these individual webs are subsequently united on the lower paper-making machine to form a thick web, and in this manner a specially great degree of strength is given to the product. It is to be emphasized as essential that when bringing together such webs of paper a very great degree of extensibility is obtained both in the transverse direction and in the longitudinal direction of the strip of paper, which is a principal requirement of the product, in order that the filled sacks can yield during transit and consequently not tear.

In a modified, very advantageous mode of carrying my invention into practice an insertion of textile material, wire or other suitable material is introduced between two or more webs; this insertion comes from a stock reel, is guided by a guide roll and so placed between the webs that it runs in at a very acute angle to one of the same and consequently is not in a position to exercise an injurious pressure against any of the webs.

One form of apparatus suitable for carrying my process into practice is represented by way of example in the accompanying drawing, five long wire-cloth paper-making machines being shown superposed in three stories.

Referring to the drawing, the paper web coming with the wire-cloth a^1 from the long wire-cloth paper-making machine A is brought, after it has passed the couching-roll b^1, by means of the end guide roll c onto the web of wire-cloth a^2 of the machine B, this end guide roll c being located in front of the first press-roll d of the machine B. Simultaneously, the web of paper coming from the machine I over the wire-cloth 2 is supplied, after it has passed the couching-roll b, with the aid of the end guide roll 3 to the wire-cloth a^2 of the machine B, the end guide roll 3 being located in the direction of working immediately behind the first press-roll d of the machine B. Consequently there is produced on the machine B a strip of paper which is composed of three webs, and after these three webs have passed the couching-roll b^2 they are supplied by the wire-cloth a^2 and the end guide roll c^1 to the wire-cloth a of the machine B^1. The end guide roll c^1 is located in front of the first press-roll d^1 of the machine B^1. The web of paper coming from the machine II is, however, simultaneously supplied behind this first press-roll d^1 by the end guide roll 3 so that on the machine B^1 a strip of paper consisting of five webs is brought under the couching-roll b.

It is obvious that the manufacturer can

optionally vary the mode of bringing together the individual webs. For example, an optional number of paper-making machines of the type described and shown may be erected in groups, the webs of paper produced by them being united on the lowest paper-making machine.

In the form of apparatus represented by way of example, insertions E and E^1 of textile material are inserted at two places between the webs, the former on the machine B and the latter on the machine B^1. These insertions coming from the stock reels R and R^1 are inserted with the aid of guide rolls W and W^1, respectively, which are so close to the web of the paper-making machine in question that the insertion, which is at a very acute angle to the web, arrives between the webs of paper without exercising an injurious pressure against the one or the other.

The guide rolls W and W^1 may be mounted adjustable in order to be able to regulate the manner in which the insertions enter at any time.

I claim:—

1. The herein described process of manufacturing extensible paper which consists in first couching two webs of paper; uniting one of said couched webs to an uncouched web of paper by a pressing operation; uniting the other couched web to said united couched and uncouched webs of paper; and then couching all of said webs into a single web, substantially as described.

2. The herein described process of manufacturing extensible paper which consists in first couching two webs of paper; uniting one of said couched webs to an uncouched web of paper by a pressing operation; inserting a wire fabric between said couched and uncouched webs during said pressing operation; uniting the other couched web to said united couched and uncouched webs of paper; and then couching all of said webs into a single web, substantially as described.

3. The herein described process of manufacturing extensible paper which consists in first couching two webs of paper; uniting one of said couched webs to an uncouched web of paper by a pressing operation; inserting a wire fabric between said couched and uncouched webs and pressing the same into the uncouched web by said pressing operation; uniting the other couched web to said united couched and uncouched webs of paper; and then couching all of said webs into a single web, substantially as described.

4. The herein described process of manufacturing extensible paper which consists in couching two webs of paper; uniting one of said couched webs to an uncouched web of paper by a pressing operation; inserting a wire fabric between said couched and uncouched webs and pressing the same into the uncouched web by said pressing operation; applying the other of said couched webs to said united webs and fabric and uniting the whole by a couching operation; uniting said united webs to an uncouched web of paper by a pressing operation; inserting a second wire fabric between said couched and uncouched webs and pressing the same into the uncouched web by said pressing operation; then applying another couched web to said couched and uncouched webs; and finally couching the whole into a unitary fabric, substantially as described.

Signed at Aix-la-Chapelle, Germany, this 10 day of March 1910.

ADALBERT GEISSLER.

Witnesses:

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