No. 668,919. Patented Feb. 26, 1901.

W. G. HILL, JR. & J. B. RAY.

BLANKET FOR PRINTING PRESSES.

(No Model.) (Application filed July 5, 1900.)

Fig. 1.

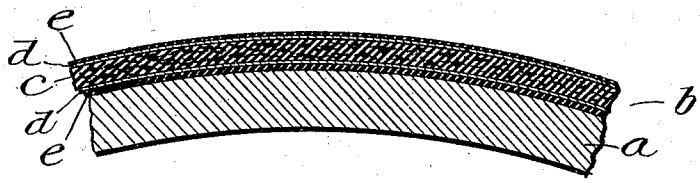
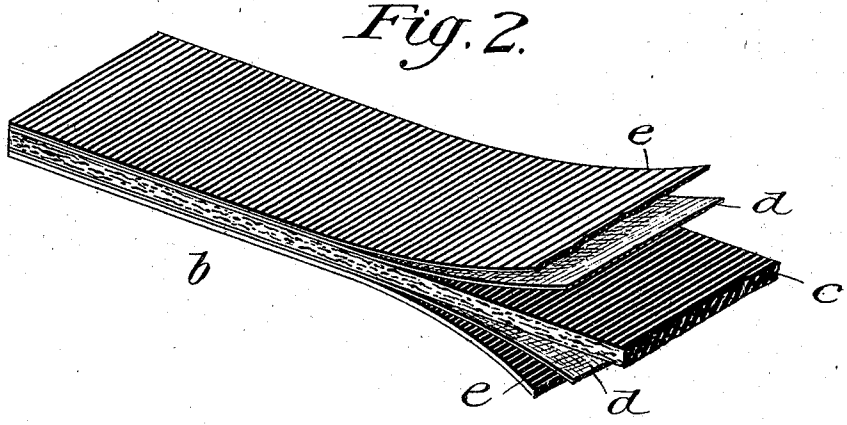


Fig. 2.



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UNITED STATES PATENT OFFICE.

WILLIAM GILBERT HILL, JR., AND JOSHUA BUREAN RAY, OF MALDEN, MASSACHUSETTS.

BLANKET FOR PRINTING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 668,919, dated February 26, 1901.

Application filed July 5, 1900. Serial No. 22,525. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM GILBERT HILL, Jr., and JOSHUA BUREAN RAY, citizens of the United States, residing at Malden, county of Middlesex, and State of Massachusetts, have invented certain new and useful Improvements in Blankets for Printing-Presses; and we 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.

In printing all sorts of pictures for newspapers, magazines, and other periodicals it is necessary in order to obtain the best results to vary the pressure on certain portions of the pictures, so as to insure the taking up of the proper amount of ink to produce such variations or uniformity in shade as are appropriate. This has heretofore been done by pasting thicknesses of paper over the weaker portions of the points, so as to raise the surface at these points, after which the necessary graduations of tone or shade are obtained by scraping the surface. This process is called "overlaying," and it is attended with many objections.

The object of our invention, generally speaking, is to do away entirely with this tedious and uncertain process by providing an improved blanket or surface upon which the paper lies when receiving the impression; and the particular object is to provide a surface or blanket made elastic, so as to take up the inequalities of the plate, block, or type, and wherein the elasticity is evenly distributed over the entire print.

Further objects are to prevent the creeping which has heretofore been an objection to the use of these blankets, to reduce the amount of pressure required, to prolong the life of the blanket, and to enhance the general efficiency of the article as a supporting-surface for the paper.

As heretofore constructed these blankets have usually been made of thin layers of solid rubber of fine close grain or of vulcanized rubber compounded with other substances or having metallic springs embedded in its surface, all having the same general object in view—viz., to produce a yielding support or surface for the paper. As thus constructed, these blankets are not only short-lived of themselves, but increase the wear on the paper, as well as the felt covering usually employed. Moreover, considerable pressure is required to obtain the best results, and the creeping of the blanket distorts the impression and necessitates frequent adjustment on the cylinder.

It is characteristic of our invention that the elasticity of the surface is peculiarly adapted to the requirements of the printers' art, that the structure of the center or body portion of the blanket is such as to quickly and easily adapt itself to the inequalities of the plate or type, and that the elasticity is evenly distributed throughout.

The best form of the invention at present known to us is illustrated in the accompanying drawings, forming part of this specification, wherein—

Figure 1 is a fragment of a drum or cylinder with our blanket applied thereto, all being in section on an enlarged scale for clearer illustration. Fig. 2 is a perspective of a portion of the blanket removed from the cylinder and having its component parts separated, so as to more clearly indicate the particular construction.

In the views, *a* denotes the drum or cylinder, and *b* indicates the blanket as a whole. The central portion or body of the blanket consists of a layer or sheet *c* of some elastic material having a porous, cellular, or honeycomb construction forming little air-cells within the blanket, lightening up the construction, and imparting a peculiar quality of elasticity or resilience not obtainable in the prior structures. On either side of this layer there is a thin covering *d* of rubber-frictioned textile material—that is, textile material to which a rubber coating is applied by the "friction-calender" process—and outside of this there is a skin or film *e* of rubber of a close fine non-porous texture. This rubber skin is essentially a coating on the cloth covering *d* and is preferably applied by what is known as the "even-motion" process, so as to secure a perfectly smooth surface. On the cloth that goes next the cylinder or drum it is preferably somewhat thicker than on the side

with which the paper contacts, as best shown in Fig. 1, the object of this arrangement being to allow for working it down, so as to fit cylinders of different sizes.

The best material for making the inner layer *c* of the blanket is what is known on the market as "sponge-rubber," and incidentally we have devised a peculiar composition and method of making this kind of rubber which has been found in actual practice to give excellent results.

We prefer to make up the rubber as follows: Para rubber, 44.4; litharge, 22.2; sulfur, 2.8; whiting, 11.1; ammonium carbonate, 13.9; tar, 5.6; total, one hundred. This is preferably compounded on cool rolls and calendered cool. The textile strips *d* are coated with the film or coating of even-motion hard or soft, but close, fine non-porous rubber *e*. These strips *d e* should be applied to the sponge layer with slight pressure and put on a press the plates of which are about five one-thousandths (.005) of an inch farther apart than the thickness of the blanket, so as to allow for expansion of the mass in the process of giving to the rubber the cellular or sponge-like structure already described. The whole is then vulcanized at the usual temperature—viz., about 300° Fahrenheit.

In the above mixture the carbonate should be dry and in a finely-powdered condition, and in the process of curing or vulcanization the ammonium carbonate forms the gases NH_3, CO_2, and H_2O, which act on the rubber in a manner analogous to the well-known action of baking-powders in making bread—viz., they puff it up and fill it with little cells, where infinitesimal particles of the gases are imprisoned.

Such being the construction and manner of making our improved blanket it is to be noted that it has a spongy interior surface, with a coating of fine close-grained rubber, offering a perfectly smooth surface. This outer coating may be of hard or soft rubber; but of whatever material it is made the blanket gets its resilience from the inner layer of elastic sponge. It is further to be noted that this sponge layer is of a thickness to accommodate itself to the various inequalities of the impression and to distribute the pressure laterally throughout the surface, thereby obviating uneven and warped places in the prints.

Although we have illustrated our blankets as having cloth coverings on both sides, there are some kind of work—magazines, for example—where one of these coverings may be omitted, and we desire and intend our claims to cover the blanket whether coated on one or both sides.

It must be distinctly understood that the "elastic material having a porous structure," as specified in the claims, embraces all materials possessing inherent or acquired resiliency and having a cellular, sponge-like, honeycomb, or foraminous structure to provide a multipliaity of air-spaces throughout the body of the material.

Having thus described our invention, what we claim is—

1. A blanket for printing-presses comprising a layer of sponge-rubber, and a layer of rubber-frictioned textile material secured to the respective faces of said first layer.

2. A blanket for printing-presses comprising a layer of sponge-rubber, a layer of rubber-frictioned textile material secured to respective faces of said first layer one of said textile layers having a coating of non-porous rubber.

3. A blanket for printing-presses, comprising a layer of sponge-rubber, a layer of rubber-frictioned textile material secured to the respective faces of said first layer, said textile layers each having a coating of non-porous rubber, said coatings being of different thicknesses.

4. A blanket for printing-presses, comprised of three layers, first a layer of rubber-frictioned textile, second a layer of sponge-rubber of uniform thickness, third a rubber-frictioned textile, said layers being vulcanized into a compact structure.

In testimony whereof we affix our signatures in presence of two witnesses.

WILLIAM GILBERT HILL, JR.
JOSHUA BUREAN RAY.

Witnesses:
GARDNER BEALS,
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