

UNITED STATES PATENT OFFICE.

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N. Y., ASSIGNORS TO THE J. J. CROOKE COMPANY, OF SAME PLACE.

PROCESS OF ORNAMENTING PAPER.

SPECIFICATION forming part of Letters Patent No. 242,604, dated June 7, 1881.

Application filed April 15, 1881. (No specimens.)

To all whom it may concern:

Be it known that we, HENRY S. CROOKE, LEWIS CROOKE, and JOHN J. CROOKE, citizens of the United States, residing in the city of New York, county of New York, and State of New York, have invented certain new and useful Improvements in Process of Ornamenting Paper, and in the article of manufacture produced thereby, fully described in the following specification.

For a long period of time it has been desirable in packing articles of commerce for storage, handling, and sale to envelop the same in paper wrappers having highly ornamental external surfaces. To provide this ornamental effect, and at the same time comply with the requisite that such wrappers shall be water-proof and to a considerable degree impervious to air, it has been common to use an exterior layer or covering of metal foil. In such a wrapper, consisting of a sheet of paper over which a sheet of metal foil is laid, the ornamentation, durability, and imperviousness are secured by the metal foil, while the paper not only adds strength, but protects the material inclosed by the wrapper from the deleterious effects which would result to it from contact with the metal foil. Such a wrapper, made from sheets of rolled tin-foil and sheets of paper, have long since become a universal article of commerce, the same affording a highly ornamental wrapper, which may be bent or folded into any desired form and retain the position given to its parts by reason of the great strength and ductility of the rolled foil. For many years attempts have been made to unite this rolled foil to the paper, in order that the combined foil and paper might be produced and furnished as a single article of trade; but unceasing experiment has failed to practically accomplish the union of the rolled foil and paper until the discovery was made which constitutes the subject of this application.

Heretofore all attempts to unite the rolled foil and paper, in which a variety of gums and pastes were used as the uniting-cement, have resulted in a product which, after the material used to unite the two materials is dry, will readily separate, and which united product would, therefore, not stand the handling

necessary to cut it up or package it, much less the manipulation of using it as a wrapper. This faulty union could not be remedied by pressing the materials together or by corrugating the united layers of paper and foil by the embossing process, for the reason that the smooth and bright surfaces possessed by the commercial rolled foil, which obstructed the permanent adherence of the cementing material to the foil, still exist in the embossed foil and cause the cementing material to readily peel therefrom when dry, and thus to separate the paper from the foil. As a means of destroying this bright surface of the foil, dilute acid was introduced into the paste used to unite the paper and foil, and while this acid attacked the surface of the foil and rendered it rough enough to obtain a hold for the paste or cement, its corroding effect continued until it destroyed the entire body of the foil.

We have discovered that the rolled tin-foil of commerce, whether embossed or printed, frosted, rendered dead white, or otherwise ornamented, may be united with paper so as to closely adhere thereto and form a combined product merchantable in character, and capable of handling and manipulation in use without separation, by using for the uniting or adhesive material a paste or cement that has the peculiar characteristic of retaining, after it is set to cause the two materials to adhere together, a moist or tacky character, which renders it flexible, so that while said paste or cement will sufficiently set or harden to successfully unite the paper and rolled foil, it will yet retain the softened condition which will permit the combined product to be bent, doubled, folded, handled, or manipulated without causing the paste or cement to lose its hold upon the foil, and therefore to secure the union of the two materials. The adhesive or uniting material may be Venice turpentine, a solution of gum-shellac with which an essential oil is combined, common starch or flour paste with glycerine, glue and glycerine with or without paste, flour or starch paste with honey. By using any one of these materials, or any material having like characteristics as the adhesive material, one may unite paper and foil so as to form a combined product the layers of

which will not separate in use, by subjecting the same to a suitable pressure.

In practically carrying out this invention the following process of operation is adopted:
 5 The metal is rolled out in long lengths in the usual manner, and is prepared by drawing the same beneath a vat containing the adhesive material, which is deposited upon the foil drop by drop, and then spread over the entire surface thereof in a thin film by a spreading device, against which the upper surface of the foil is drawn, said foil thus coated being moved
 10 onward over a heating-table, whereby the adhesive material is sufficiently dried to leave it in a tacky condition, and the end of such a coated length of foil has the end of a long length of paper laid upon it, and the two lengths of material are entered between pressing-rollers, either heated or not, as may be desired,
 20 which rollers impart to the material as great a pressure as can be obtained without destroying the material. In passing through these rollers, which, if the product is to be plain, will be plain rollers, or, if the product is to be embossed, will be suitably constructed to impart such finish, the two layers of material will be united together, and may be reeled up or cut into sheets and packed for use. By this process a continuous progressive operation ac-
 30 complishes the application of the adhesive material, the partial drying of the same, and the uniting of the two materials together, and may be carried on with great economy of time, and without danger of injuring the foil, which from its nature is difficult to handle, said process at the same time admitting of such a regulation

in the speed of the pressing-rollers as to bring the two materials together at the period of time when the adhesive material has attained through the drying process the exact tacky condition best suited to adapt it to this purpose.

What is claimed is—

1. As a new article of manufacture, an ornamental compounded material consisting of a layer of paper and a layer of rolled tin-foil, plain or embossed, united by adhesive material, all substantially as described.

2. The method of producing the within-described ornamental material by depositing the adhesive material upon the surface of a length of foil, and spreading the same thereon, drying said length of foil over a drying apparatus, and leading the foil, together with a length of paper, between a pair of rollers under pressure, substantially as described.

In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses.

HENRY S. CROOKE.
 LEWIS CROOKE.

Witnesses:

T. H. PALMER,
 WALTER BETTS.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOHN J. CROOKE.

Witnesses:

T. H. PALMER,
 CHAS. DUCROW.