UNITED STATES PATENT OFFICE.

HENRY TUBESING, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN FLEXIBLE FORMS FOR GRAINING, PRINTING, &c.

Specification forming part of Letters Patent No. **46,736**, dated March 7, 1865.

To all whom it may concern:

Be it known that I, HENRY TUBESING, of the city of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Composition for Flexible Forms for Printing; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention consists of a new composition or material for making elastic forms for printing or impressing letters, patterns, or devices of any kind on wood, paper, cloth, or other material.

It has been commonly practiced heretofore to make elastic forms for the purpose above stated of a mixture of glue and molasses—such as is ordinarily used for making printers' ink-rollers—by pouring the melted composition in a mold. The elastic forms thus made are, however, liable to serious objection. In the first place they are easily affected by dampness and heat, and therefore are injured by atmospheric changes, and they will neither receive nor impart as sharp and well-defined impressions as the forms made by my improved method. The forms made of printers' roller composition are very susceptible to injury on the surface, as that material tears easily.

My improved elastic forms are made with a face or cuticle of mixed india-rubber and gutta-percha, or of either of these articles alone, with a body or filling of printers' roller composition so prepared as to adhere closely to the cuticle of india-rubber and gutta-purcha, in the manner hereinafter described.

The advantages of my improved composition for elastic printing-forms are that they are much more durable than those made solely of glue and molasses, that the surface of the forms is not liable to be injured by moisture or change of temperature, and that the form will receive from the matrix in which it is cast a better defined and sharper outline.

To enable others skilled in the art to make use of my improvement, I will proceed to describe the articles employed in the manufacture of my improved elastic printing-forms and the manner in which they are made.

The first thing to be done is of course to prepare the mold in which the form is to be cast. The mold may be made of wood, metal, plaster, or other convenient and suitable material, and its surface should be slightly oiled. I then pour into this mold a fluid mixture of india-rubber and gutta-percha until the face of the mold is covered to about the one-fortieth part of an inch or more. The thicker that the facing or cuticle is made the better will be the form; but the thickness above stated is sufficient for ordinary printing-forms.

The mixture of india-rubber and gutta-percha I make as follows: First I dissolve the gutta-percha in benzine by cutting up the gutta-percha in pieces about the size of a bean—say one-fourth of an inch in length—and, adding to it benzine in the proportion of about four fluid ounces of benzine to one ounce, by weight, of gutta-percha, and dissolving the gutta-percha in the benzine over a slow fire in a water bed, I next take india-rubber cement and dissolve it in a water bed or sand bath in about ten times its weight of ether. I then take equal parts, by measure, of the gutta-percha solution and of the india-rubber solution, and mix them together in a water bed or sand bath until they are well-mixed, the vessel being closed loosely, so as to prevent explosion, and yet so as not to admit of the free evaporation of the ether. The same precaution as to closing the vessel is necessary in dissolving the india-rubber cement and the gutta-percha. The mixture of india-rubber and gutta-percha resulting from the operation last described is allowed to cool before being poured into the mold.

For fine work a larger proportion of the gutta-percha solution is used with the india-rubber solution, varying from the proportion above named—viz., equal parts of each—to that of three parts of gutta-percha solution to one part of india-rubber solution; or, if preferred, either of these solutions may be used without the ether for forming the cuticle or outer surface of the printing-form.

The mixture of india-rubber and gutta-percha, poured into the mold, as before stated, is permitted to stand in the mold until the benzine and ether have evaporated, which will generally take place in about twelve hours, leaving behind a thin cuticle of mixed india-rubber and gutta-percha, as before stated. The mold is now ready to receive the backing or body, which is prepared as follows: I take printers' roller composition, made in the usual manner of glue and molasses, and cut it up in

small pieces and place it in a closed vessel, with ether or absolute alcohol, in the proportion of about one fluid ounce of ether or alcohol to three ounces, by weight, of printers' roller composition, and dissolve over a slow fire in a water bed. When thoroughly dissolved I pour this solution, while it is fluid and as hot as possible, into the mold on top of the cuticle of gutta-percha and india-rubber, making the form as deep or thick as may be desired. So soon as the form is cold it is ready to be removed from the mold, and is ready for use without further preparation other than a thin coating of india-rubber and gutta-percha solution, prepared as above stated, diluted with ten parts of benzine or ether, which dilute solution is applied with a soft brush over all parts of the form—the face, back, and sides—the object of which is to protect it entirely from the atmosphere.

Having thus described my improvement, what I claim as my invention, and desire to secure by Letters Patent, is—

Making flexible and elastic forms for printing, graining, &c., of india-rubber or gutta-percha, or a mixture of india-rubber and gutta-percha with a body or backing of printers' roller composition, (glue and molasses,) substantially as hereinbefore described.

In testimony whereof I, the said HENRY TUBESING, have hereunto set my hand in presence of two witnesses.

HENRY TUBESING.

Witnesses:

W. D. LEWIS,

A. S. NICHOLSON.