(No Model.)

E. A. LELAND.

ELASTIC FACED TYPE.

No. 407,670. Patented July 23, 1889.

Fig. 1.

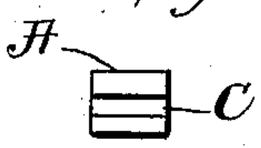


Fig. 2.

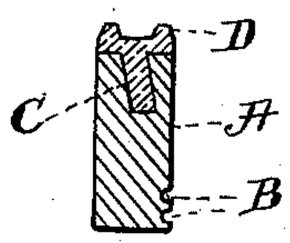
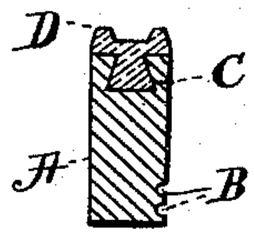


Fig. 3.



Witnesses.

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J. A. Rutherford.

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UNITED STATES PATENT OFFICE.

EDWIN A. LELAND, OF NEW YORK, ASSIGNOR TO LEONARD RICHARDSON, OF BROOKLYN, NEW YORK.

ELASTIC-FACED TYPE.

SPECIFICATION forming part of Letters Patent No. 407,670, dated July 23, 1889.

Application filed August 8, 1888. Serial No. 282,206. (No model.)

To all whom it may concern:

Be it known that I, EDWIN A. LELAND, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented new and useful Improvements in Elastic-Faced Type, of which the following is a specification.

This invention relates to a printing-type having a hard body and an elastic printing-face, ordinarily called "rubber-faced type," and adapted to be set up singly in any ordinary stamp, chase, or form to make up and print any desired matter either on a printing-press or in a hand-stamp.

My invention consists in a type body or base composed of vulcanized fiber which will not swell, split, or warp, said body being provided at one end with an undercut groove and a printing-face composed of rubber or equivalent elastic substance, which is molded and vulcanized onto the type-body and partly forced into said groove, as hereinafter more fully set forth.

In the annexed drawings, illustrating my invention, Figure 1 is a plan view of the grooved end of the type-body upon which the elastic printing-face is to be formed. Fig. 2 is a longitudinal central section through the body and the elastic face after the type is completed. Fig. 3 is a longitudinal central section through the body and the elastic face, showing a modified form of undercut groove in the end of the type-body upon which the elastic face is formed.

Heretofore elastic-faced type have been made with metallic bodies, upon one end of which a rubber type-face was attached, and also type have been made all of rubber, but having a wooden core or stiffening part inserted in the rubber to prevent the type from collapsing or flattening down under the pressure of printing from them; but both of these forms of type are objectionable, because of the weight and expense of the metal-bodied type and the difficulty of firmly fastening the elastic face to the metallic body, and the type stiffened with wood are open to a number of objections, especially the difficulty of separating the individual type from the continuous stick-like form in which they are made, the expense of their manufacture, and the liability of expansion and contraction of the wood due to moisture, &c.

In making my improved elastic-faced type I employ the substance known as "vulcanized fiber." This material is very strong, tough, slightly elastic, and will not swell, split, or warp, and is very light in comparison with metal, and also relatively inexpensive. Moreover, it may be sawed or cut into even smooth-edged strips, and does not chip or break during the forming process; also, it may be treated with suitable chemicals, so as to render the adhesion of the elastic printing-face very perfect, strong, and enduring, and it also acts well in combination with a suitable adhesive material—such as glue or rubber cement—with which the elastic type-face may be attached to it.

Although I prefer rubber as the material from which to make the elastic character-bearing printing-face of my improved type, I would have it understood that I do not limit myself thereto, since other elastic material may be used successfully.

In the drawings, A designates the body of the type, made of vulcanized fiber, as stated. It may be provided with notches B, as usual. The shape of the body A is preferably rectangular and of such width as necessary for the type desired. Its ends are both flat surfaces, and it is so much shorter than the desired height of the type as may be necessary to allow for the elastic type-face to fill out its proper height. I make these type-bodies A in the first instance in strips of any desired length, and I cut or otherwise produce a dovetailed groove C in that edge of the strip to which I propose to attach the elastic character-bearing type-face. This groove C may be dovetailed, as shown in Fig. 2, having a single under-cut, or, as shown in Fig. 3, having a double under-cut.

In preparing the elastic printing-face I take an impression in a suitable matrix of the desired character or letters from ordinary printers' type of a size to which the body-strips are adapted. This method is now well understood and need not be explained here. I then place such number of the strips of the type-body material as shall conform to the number of type-impressions in the matrix in a

suitable frame, and adjust them in such a manner that they shall exactly register with the matrix, and so that the grooved or undercut edges of the strips shall be adjacent to the matrix. I then, by means of suitable clamping-plates, or in any other preferred manner, press the matrix and the body-strips together. This forces the soft rubber D into the grooves C in the edges of the body-strips and also into the type-face impressions in the matrix, and the whole is then placed in a vulcanizing-pan or equivalent device and subjected to a vulcanizing process, whereby the body-strips are firmly united to the rubber type-face. After vulcanization the strips of vulcanized fiber composing the body portion of the type are all united to the sheet of rubber and held by the adhesion of the rubber to the edges of the strips and by the engagement of the rubber in the undercut grooves C, with which said strips are provided. I then separate the strips of the body material from the continuous rubber sheet by cutting the rubber between the several strips, and I separate each individual type from the others by sawing through the rubber and also through the body material with a very fine and rapidly-running saw; or the type may be cut apart with a knife or sharp shears or be separated in any other convenient manner.

Instead of applying the rubber face D to the type-bodies A while the body material is in the form of strips, the type-bodies may be separated from each other prior to the vulcanizing process, and set up in any suitable frame and arranged to register accurately with the matrix during the vulcanizing. When this method is employed, thin strips of any suitable material—such as printers' "space"—may be placed between the adjoining type-bodies to slightly separate them, if desired; but this is not essential.

The rubber type-face D will ordinarily be held to the type-body A with sufficient firmness by the interlocking of the rubber in the undercut groove C and by the adhesion consequent on vulcanization; but for additional strength I prefer to employ a suitable cementing material between the rubber and the body of the type, and for this purpose I employ glue or rubber cement or equivalent adhesive material, or I soften the edges of the strips just prior to applying the sheet of rubber between them and the matrix by dampening the edges with a solution of chloride of zinc. The pressure then of the clamping-plates and the heat of the vulcanizing process causes the rubber to adhere to the strips or type-bodies with very great tenacity, so that either by this method or by means of cement, in connection with the undercut groove, the adhesion is such that the type-body and its elastic face become practically one structure of great durability and efficiency for printing purposes.

I am aware that a metallic type-body has been provided with a rubber printing-face having projecting parts set in slots in the metallic body; but such does not constitute my invention.

I am also aware that a stereotype-plate has been composed of a metallic plate dovetailed into a wood backing; but neither does such constitute my invention.

I am further aware that a type has been molded with an inelastic printing-surface from a mixture of paper-pulp, paraffine-oil, and a water-proof liquid; but that is not claimed by me, nor is it in my invention.

What I claim is—

1. As a new article of manufacture, a printing-type the body of which is composed of vulcanized fiber having a printing-face, substantially as described.

2. A printing-type the body of which is composed of vulcanized fiber having a yielding printing-face, substantially as described.

3. As a new article of manufacture, an elastic-faced printing-type consisting of a body of vulcanized fiber having at one end an undercut groove and a separate elastic printing-face having a flexible tongue cemented into said groove of the vulcanized-fiber body, substantially as described.

In witness whereof I have hereunto set my hand this 26th day of July, 1888.

EDWIN A. LELAND.

Witnesses:
J. J. CARROLL,
IRA R. STEWARD.