

No. 678,962.

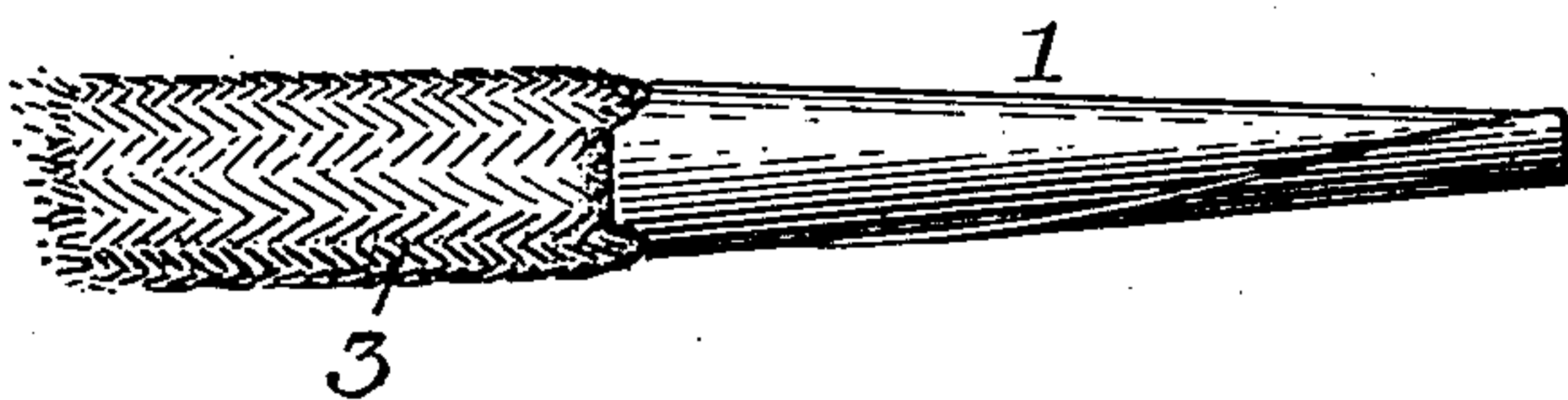
Patented July 23, 1901.

E. F. MADDEN.  
LACE.

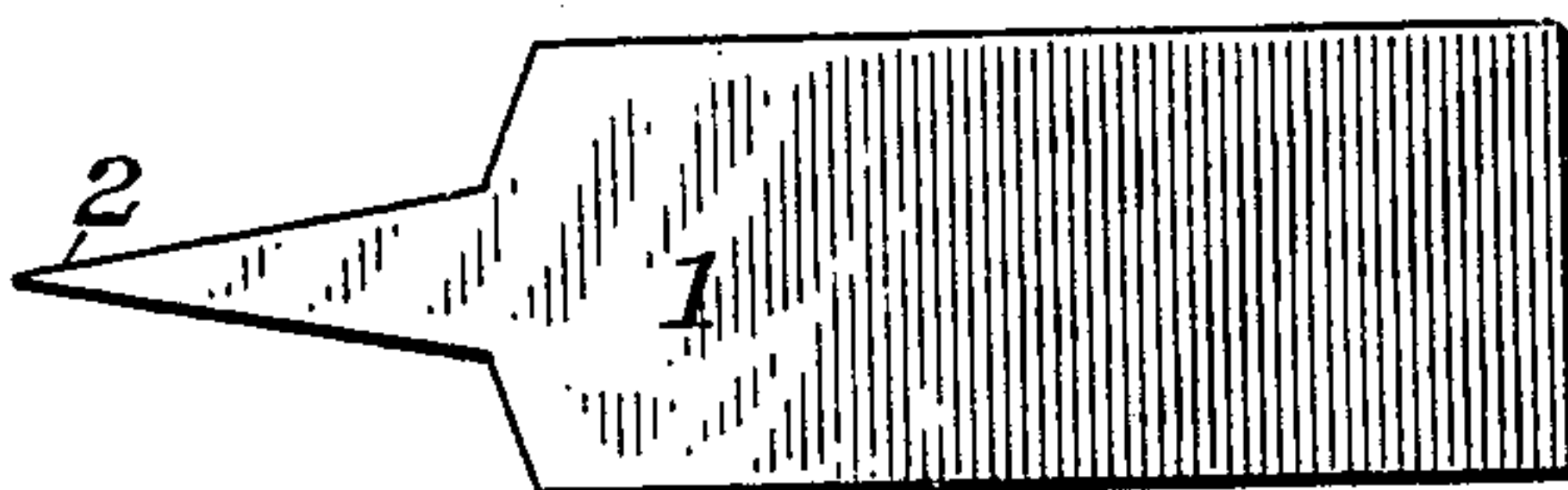
(Application filed May 31, 1901.)

(No Model.)

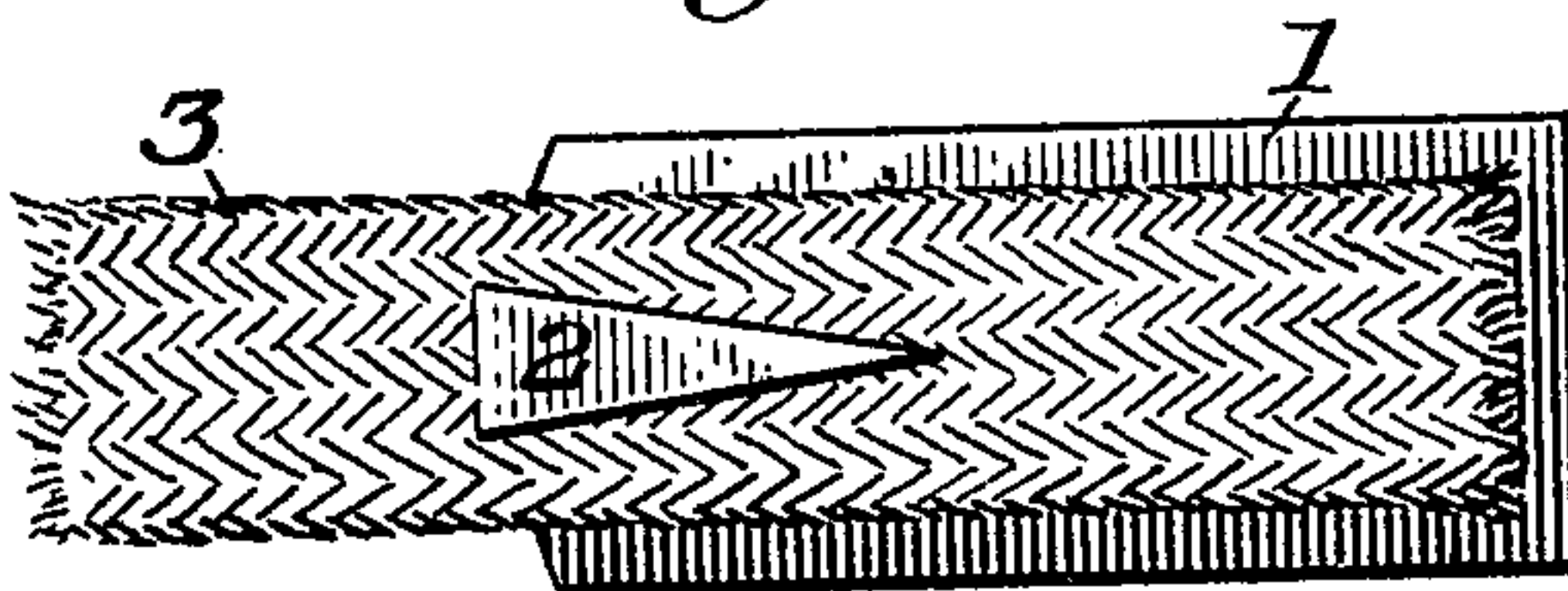
*Fig. 1.*



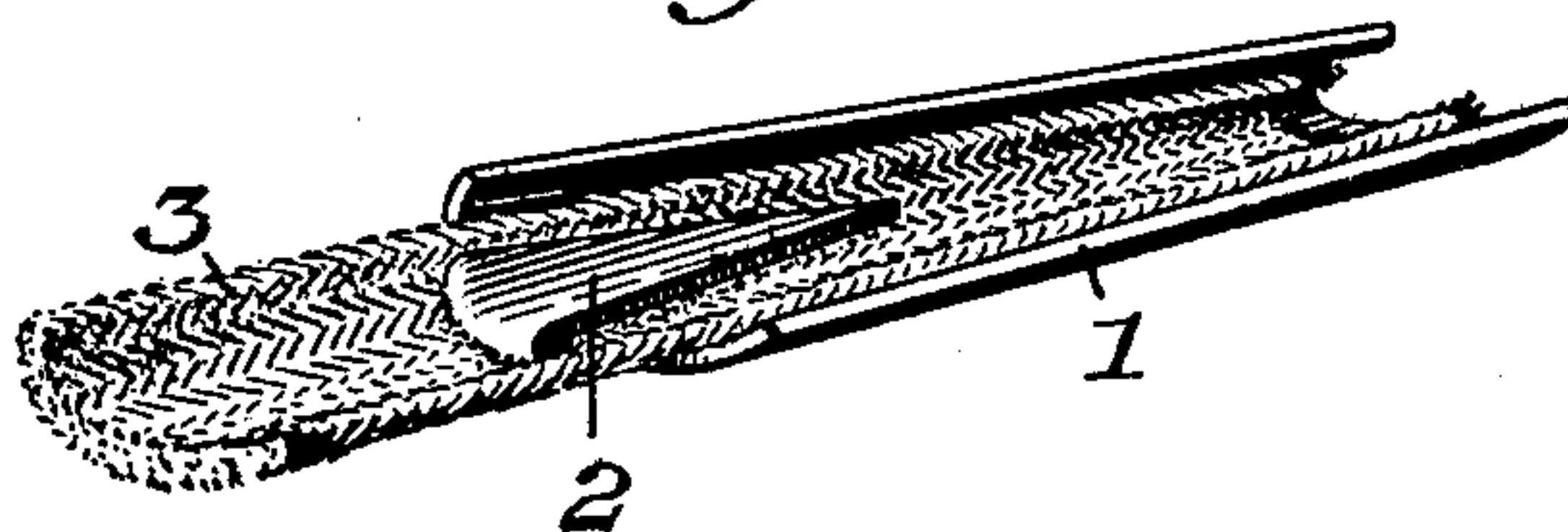
*Fig. 2.*



*Fig. 3.*



*Fig. 4.*



Witnesses:

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# UNITED STATES PATENT OFFICE.

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## LACE.

SPECIFICATION forming part of Letters Patent No. 678,962, dated July 23, 1901.

Application filed May 31, 1901. Serial No. 62,631. (No model.)

*To all whom it may concern:*

Be it known that I, EMMA F. MADDEN, a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Laces, of which the following is a specification.

My invention pertains to laces generally; and the object thereof is to provide a simple, inexpensive, and reliable tip for laces of all kinds, but more particularly applicable to shoe-laces. My tip belongs to that type which have a metallic sheet or strip rolled upon the ends of the lace as distinguished from tips formed of spirally-twisted wire, and the characteristic feature of my invention resides in means for securely attaching the lace to the sheet or tip before being rolled, whereby such tip is as positively affixed as if the parts were integral.

It is well known that tips of the class above described are objectionable, for the reason that they are liable to, and do, pull off or become detached, although efforts have been made to remedy the difficulty. When the tip is thus lost or becomes detached, the value of the lace or string is practically destroyed, especially when the lace is used in connection with eyelets as distinguished from hooks. To overcome the above objections and provide a tip which can be guaranteed by the dealer to the customer is the general object of my invention, which will be fully understood from the description hereinafter given.

In the accompanying drawings, Figure 1 is a perspective of one end of a lace with my tip applied thereto; Fig. 2, a plan view of the blank for the tip; Fig. 3, a plan view of the tip with the string attached thereto before the tip is rolled up or folded, and Fig. 4 a perspective of all the parts before rolling.

From suitable material, preferably thin sheet metal, a blank or strip is stamped or formed of the required dimensions and proportions, depending more particularly upon the size of the lace or string, as well as the desired length of the tip. As shown, this blank is provided at one end with a projecting tooth or pin 2, which in the process of manufacture is bent over at its base and toward the blank proper, substantially as shown in Figs. 3 and 4. This tooth is made substantially triangular, with a broad base at its

junction with the blank proper and with a sharpened outer edge or apex, for reasons hereinafter specified. The lace or string 3 is laid upon the blank and hooked securely to said pin, so that such lace is firmly fastened to the blank and will remain so as long as the lace does not break. It is obvious that the length and width of the tooth or pin may be varied as found expedient to prevent undue weakening of the string or for any other reason; but it remains essential that the base of the tooth shall be of such width as to become curved in the rolling operation and also to provide a sufficiently broad bearing-surface for the string.

After the blank is attached to the lace or string in the manner above described, and illustrated in Figs. 3 and 4, the blank is rolled up in the usual manner understood by those skilled in the art, and the resulting lace will be as shown in Fig. 1, with preferably a smooth surface, inasmuch as the fastening device is entirely within the tip. The tip now becomes still more firmly affixed, inasmuch as the parts are all rolled or folded together and as the rolling or folding operation holds the pin down firmly to the blank. Furthermore, the base part of the tooth being comparatively wide is also rolled, so as to partake partially of a cylindrical form, so that the same cannot be pulled out from the rolled-up blank and effectually binds the lace between itself and the inner sides of the blank.

By the use of my invention a tip is provided which is absolutely impossible of detachment and one which can be guaranteed in this respect. Beyond the desirable features of reliability and efficiency my device or tip is also distinguished by being extremely simple and inexpensive.

Although I have described more or less precise forms and details of construction, I do not intend to be understood as limiting myself thereto, as I contemplate changes in form, the proportion of parts, and the substitution of equivalents as circumstance may suggest or render expedient and without departing from the spirit of my invention.

I claim—

1. In combination with a lace, a tip provided with an integral tooth passing through

and confining the lace by a return-bend; said tooth being of such width at its junction with the body of the tip as to be bent or curved transversely of its length when the tip is  
5 rolled upon the lace.

2. In combination with a lace, a tip provided at one end with a tooth passing through and bent upon the lace; said tooth being ta-

pered and of a width at its junction with the body of the tip as to be bent or curved transversely of its length when the tip is rolled upon the lace. 10

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