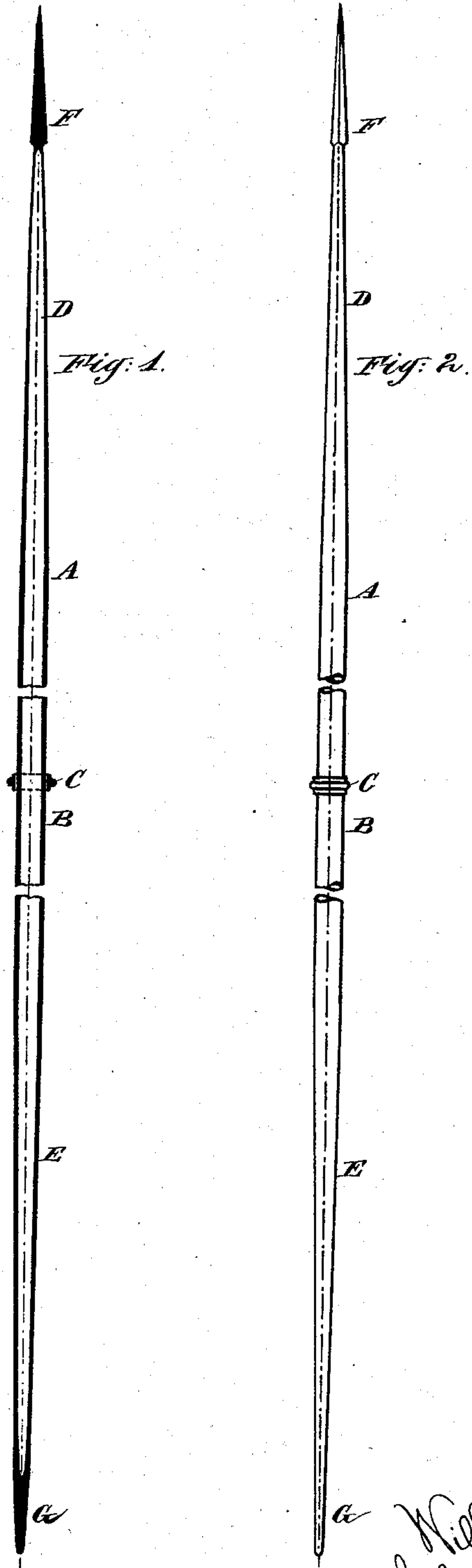


(No Model.)

W. LORENZ.
TUBULAR LANCE.

No. 406,526.

Patented July 9, 1889.



Witnesses:

H. A. Johnston
Charles R. Searle

Inventor:

Wilhelm Lorenz
by his attorney
Thomas Drew Nelson

UNITED STATES PATENT OFFICE.

WILHELM LORENZ, OF CARLSRUHE, BADEN, GERMANY.

TUBULAR LANCE.

SPECIFICATION forming part of Letters Patent No. 406,526, dated July 9, 1889.

Application filed February 6, 1889. Serial No. 298,801. (No model.)

To all whom it may concern:

Be it known that I, WILHELM LORENZ, residing at Carlsruhe, Grand Duchy of Baden, in the Empire of Germany, have invented a certain new and useful Improvement in Tubular Lances, of which the following is a specification.

Tubular lances such as heretofore known all have a cylindrical shaft the wall of which is of uniform strength. Such tubular lances are too heavy both toward the tip as also toward the foot, and offer too much surface to the air—that is, they meet with too much resistance from the air and do not allow of lateral movements or swinging of the lance with such ease, force, and rapidity as are required for an effective manipulation of the weapon for attack or defense.

By means of this invention these objections are avoided, since the shaft of the tubular lance tapers from the center to the tip, or also to the foot, the center portion being left cylindrical to offer a convenient grasping-surface for the hand, and the taper being formed uniformly or not uniformly by means of rolling, drawing, or in any other suitable manner. According to the manner of forming the taper the strength of the tube-wall remains uniform, or it can be made weaker toward one end or another or toward both ends; or, if desired, it can be made stronger toward the ends. Both in the case of uniform strength of the walls of the cones, and especially in the case of the strength of the wall, decreasing or increasing toward the tip, or also toward the foot, the capacity of the lance to resist blows or bending is considerably increased, since the power of resistance in cross-section increases with the increase of diameter from one end or the other, as also with the strength of the wall in cross-section. At the same time such conical tubular lances can be provided at the center with a somewhat larger diameter than ordinary—for example, thirty to thirty-five millimeters, (about 1.18 to 1.37 inch)—for more convenient grasping by a normal hand, without thereby increasing the weight of the tubular lance, and under certain circumstances such weight can be diminished.

The accompanying drawings form a part of this specification.

Figure 1 is a longitudinal section, and Fig. 2 is an elevation, of a lance constructed in accordance with my invention.

Similar letters of reference indicate corresponding parts in both the figures.

A designates the lance-shaft, which is tubular, as shown, and has a central portion B, which is cylindrical or of uniform diameter, so as to be easily grasped by the hand, and which may, if so desired, be provided with a ring or annular flange C, to protect the hand and to facilitate the convenient grasping of the lance. This ring or flange, however, is not an essential feature of my invention.

From the ends of the central cylindrical portion B the shaft of the lance is tapered; and while I have shown it as tapered toward the tip, and also toward the foot, as at D and E, it will be readily understood that it may be of uniform diameter toward the foot without departing from the principle of my invention or sacrificing any of the advantages thereof.

The tip F and foot G of the lance can be united to the shaft in any desired way or be formed in one piece with the shaft, and may be of any desired form.

The shaft can be made of one piece, or it may be composed of two or more parts.

The advantages of my device will be apparent from the foregoing description, and further enlargement thereon is unnecessary.

I claim as my invention—

1. A tubular lance having its shaft tapering toward one end, which terminates in a lance-head, substantially as set forth.

2. A tubular lance provided with a shaft tapering from near its center both toward the tip and toward the foot, as set forth.

3. A tubular lance provided with a shaft tapering toward each end and having the thickness of its tube-wall varied from the center to the ends, as set forth.

4. A tubular lance-shaft provided with a cylindrical portion substantially midway its length, and tapering from said cylindrical portion toward each end, as set forth.

5. A tubular lance having a shaft provided

with a central cylindrical portion, and taper-
ing from said portion to the end, the said cen-
tral cylindrical portion having an annular
flange to facilitate the grasping of the lance,
5 as set forth.

In testimony whereof I have hereunto set
my hand at Karlsruhe, this 11th day of De-

cember, 1888, in the presence of two subscrib-
ing witnesses.

WILHELM LORENZ.

Witnesses:

FRIEDRICH LORCH,
ADOLF LEHNE.