Marland & Crockett.
Corn Tubes.

No. 17,164. Patented Apr. 28, 1857.

Fig. 3

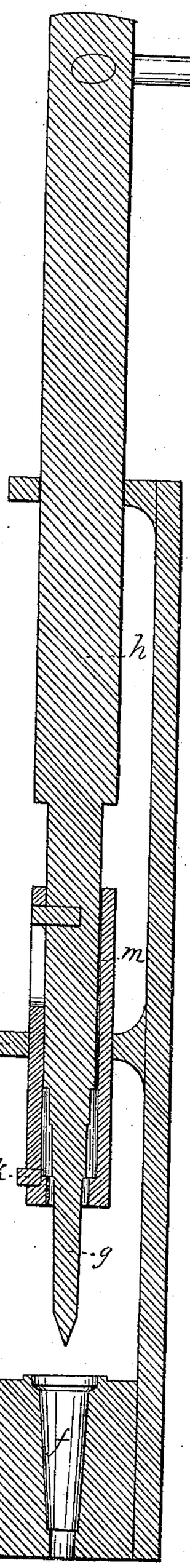


Fig. 1

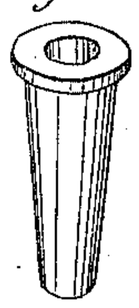


Fig. 2.

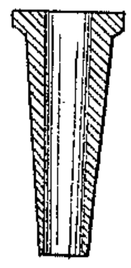
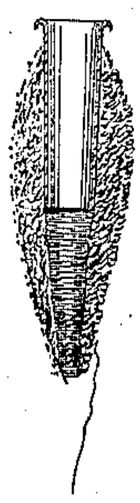


Fig. 4



UNITED STATES PATENT OFFICE.

J. MARLAND AND E. CROCKETT, OF LAWRENCE, MASSACHUSETTS.

COP-TUBE.

Specification of Letters Patent No. 17,164, dated April 28, 1857.

To all whom it may concern:

Be it known that we, JOHN MARLAND and EARLSWORTH CROCKETT, both of Lawrence, in the county of Essex and State of Massachusetts, have invented a new and Improved Cop-Tube for Mule and other Spindles, of which the following is a full, clear, and exact description, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is an improved tube, Fig. 2 a section through the same, Fig. 3 a section through the machine upon which they are made, Fig. 4 a section through the metallic tube with an outline of the waste which is often made when this tube is used.

For the purpose of preserving the bottoms of cops as they are drawn off the spindles and of preventing the ends from becoming unwound, small tubes are employed which are passed over the spindles and upon which the cop is commenced. Heretofore small cylindrical paper tubes, and also short metallic tubes very nearly cylindrical have been employed for this purpose. In order that the yarn may render freely from the tube it is necessary that the latter should have a conical form upon which to commence to build the cop. This conical form cannot readily be given either to the paper or the metallic tube, and it is therefore necessary first to form a foundation upon the tube with the yarn itself in order to give the cone upon which to build the cop, Fig. 4 of the accompanying drawings. The formation of this cone which is represented at *a* in the accompanying drawings is the most difficult part of the duty of the mule, while the yarn of which it is composed is frequently all wasted as the thread in a great majority of cases breaks before this portion of the cop can be drawn off, and the result is a loss amounting to from 1 to 2½ per cent. of all the yarn spun. The required form could be given to the tubes by turning them out of wood, but wooden tubes cannot be made of sufficient strength and durability for light cops, as they would be originally expensive and would be crushed if trodden upon and would be otherwise easily destroyed.

To economize this waste, is a great desideratum, and we have succeeded in accomplishing this end by means of our present invention which consists in the employment of a tube made of suitably prepared gutta percha or a compound in which this substance predominates. The tube thus formed possesses in an eminent degree all the qualities of a perfect cop tube. 1st, the exact conical form required to deliver all the yarn may be given to it, thus avoiding the necessity of making this foundation upon which to build the cop out of the yarn itself, and effecting an almost entire saving of the loss heretofore sustained in the "cop waste." 2nd, there is no longitudinal joint in the tube to catch and break the thread as in the metallic tube. 3rd, if trodden upon it recovers its form on being again placed upon the spindle. Both the metallic and wooden tubes would be thereby destroyed. 4th, the thread clings to its surface so that it is not liable to drop out and destroy the cop. 5th, when worn entirely up the material of the old tubes may again be worked up into new ones. 6th, the elasticity of the tube enables it to cling to the spindle and adapt itself to any slight variation of its size produced by wear or other cause. 7th, its lightness relieves the spindle of unnecessary weight.

To enable others skilled in the art to understand our invention we will proceed to describe the manner in which we have carried it out.

Gutta percha in its crude state may under certain circumstances be employed, but this for general use is liable to objection owing to the low degree of heat necessary to soften it, the temperature of a very hot room being sufficient to take from it that rigidity necessary to its perfect operation. To remedy this we employ a compound formed by incorporating with the gutta percha a portion of powdered charcoal the softening temperature of which compound is materially above that of the crude gutta percha. The tubes when formed of this compound possess peculiar rigidity and hardness of surface. By experiment we have found that a mixture of two parts by weight of charcoal with three parts of gutta percha is best suited to the purpose, the materials being intimately mixed at a temperature sufficient to soften the latter. The gutta percha thus prepared is cut into fragments of the requisite size, is softened by heat and the tube is formed in the machine represented in Fig. 3, of the accompanying drawings in which *f* is the mold; *g* the spindle which forms the inside of the

tube and which is forced into the mold by the descent of the plunger *h* after the gutta percha has been placed thereon. As the plunger rises the finished tube is detached from the spindle by the sleeve *m* the pin *k* striking against the bearing *l* and retaining the sleeve while the piston continues to rise.

Heretofore we have spoken only of the manufacture of cop tubes, it is evident however that the longer tubes known as bobbins may with equal advantage be made of the same material.

We do not intend to limit ourselves to the precise method above described of forming the tubes but intend to make them in any way that we may find best suited to the purpose; we therefore lay no claim to the machine upon which the tubes are made as that forms no part of our present invention.

What we claim as our invention and desire to secure by Letters Patent is—

A cop tube formed of gutta percha prepared in the manner substantially as herein set forth for the purpose specified.

JOHN MARLAND.
EARLSWORTH CROCKETT.

Witnesses:
SAML. C. OLIVER,
I. C. BOWKER.