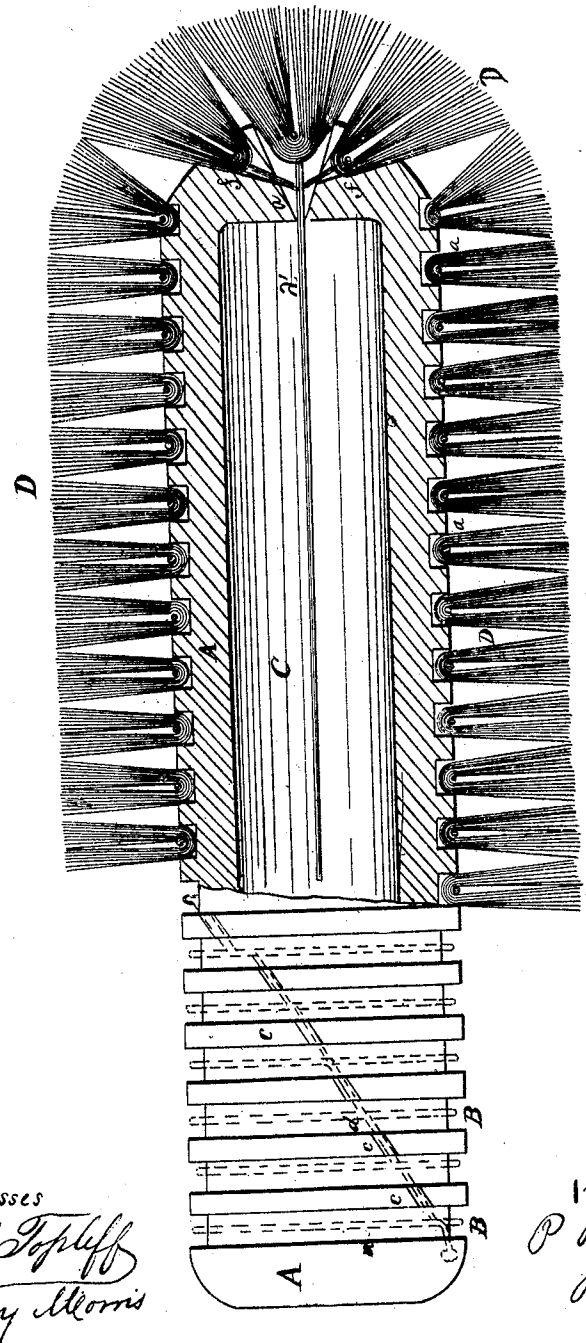
P. BERCHMEYER.

Brush for Cannon.

No. 46,441. Patented Feb. 21, 1865.



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UNITED STATES PATENT OFFICE.

PAUL BIRCHMEYER, OF SYRACUSE, NEW YORK.

IMPROVEMENT IN BRUSHES FOR CANNON.

Specification forming part of Letters Patent No. **46,441**, dated February 21, 1865.

To all whom it may concern:

Be it known that I, PAUL BIRCHMEYER, of Syracuse, in the county of Onondaga and State of New York, have invented a new and useful Improvement in Sponges for Artillery; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to fully understand and use the same, reference being had to the accompanying drawing, forming a part of this specification, said drawing representing an example of a sponge constructed upon the plan of my improvement, the part which shows the bristles D being in section, while the part which is bare is a view of a portion of the exterior of the stock.

The sponges now furnished for artillery service are made of sheep-skin or wool. They are very perishable, so that an active use of several hours makes one unfit for further service, when its place must be supplied by a fresh one. They are therefore supplied to batteries in large numbers.

My invention consists in making a sponge in the following manner:

I prepare a stock or head, A, which ought to be of wood or other light material, bored out, as at C, to a point near its head, so as to receive the end of the rammer-stave. I cut grooves around the exterior of the stock, either in a spiral course or else parallel to each other. If parallel, then they are to be connected to each other by oblique grooves *c*, cut in the rings which separate the grooves B, and which should be cut in lines such that if projected they will not coincide with each other, but will each pass beyond the line of the preceding oblique groove *c*. The solid end of the stock is perforated at its center with a conical hole, *d*, into which other conical holes, *f*, (six to twelve in number,) run, as shown in the drawing. I take a copper wire of suitable strength, and having secured one end in the wood at or near the hole *d*, run the wire in the form of a loop through each hole *f* from the interior of the stock to its outside, which may be done by bending the wire in the form of a loop and passing it through the hole, or else by passing a hook through one of the holes *f* from the outside and seizing the wire and drawing a loop of it through the hole. A bunch of hair or other suitable material is to be then laid across the hole and within the loop, and the wire is to be drawn down through the hole far enough to wedge the bunch of hair or other material tightly and immovably in the hole. The long end of the wire is to be then drawn in the form of a loop through the adjacent hole *f* and another bunch of the material used drawn down into that hole, and so on till all are filled, when the central conical hole is filled in like manner, and the wire is secured within the hollow C of the stock, so as not to interfere with the rammer-stave. The grooves B are then filled with the material to be used by first securing the end of a piece of wire, *a*, at any point in the groove nearest the solid end of the stock, and then placing a layer of hair or other material used across the groove under the wire and pulling the wire tightly down into the groove, thereby bringing the bight of the hair or other material within the groove, and causing its ends to upset, as shown in the drawing. If the groove B is to run spirally around the stock, it should begin and end in a circular groove at each end of the stock. If grooves B are cut parallel to each other, they should be deep enough to allow the wire and the bight of the material used to sink well beneath the surface of the stock, so as to upset the material and bring the outer ends well together and near enough to allow the material of adjacent grooves to hide and cover the outer surface of the stock. When the course of the grooves is filled with the material, the end of the wire is to be fastened securely to the stock in any safe manner.

In practice I make the grooves deeper than the proportions shown in the drawing.

For material I use the hair of the horse or horned cattle, and it must be of sufficient length—not less than three inches—to make an outer surface of sufficient strength and elasticity to serve the purpose of a swab. Many other materials may be used instead of the hair of these animals, but I have found these to answer a good purpose, having at the battle of Kinston, December 12, 1862, used a sponge constructed as above of hair, for one hundred and twenty rounds, and again at Whitehall, North Carolina, December 14, 1862, one hundred and sixty rounds, and which was afterward brought to South Carolina and used at the seige on Folly and Morris Islands, and is yet in good condition.

The wire prevents the bursting of the sponge-head, and the expansion of the head has no effect on the wire, as it has been proved by placing a finished sponge in the water for twenty-four hours.

For rifled guns a sponge of my construction is superior to the woolen sponge in durability and in cleaning the grooves of the bore, and is not liable to get on fire and be injured by burning. The wire ought to be twisted two or three strands together to make a rope of sufficient strength.

Another, mode which I shall probably adopt, of securing the hairs in the grooves is to spin or secure the hair or other material to be used between strands of fine copper wire twisted together, thus making a rope of hair which can be laid in the grooves more expeditiously than by the other method. The hair is to be laid between the wire strands when they are being twisted, the hair of course being secured midway of its length, so that ends of sufficient length shall extend each side of the line of wire. The hair can be trimmed to the right length and to an even state after the rope is made, and more fully sheared and finished after the sponge is completed.

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

As an article of manufacture, an artillery-sponge constructed as described—that is to say, by laying a mat of horse or horned-cattle hair around a central hollow stock or head and fastening it by a wrapping-wire into the spiral groove, the semi-globular end being made by looping in a portion of the mat, as described.

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Witnesses:
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