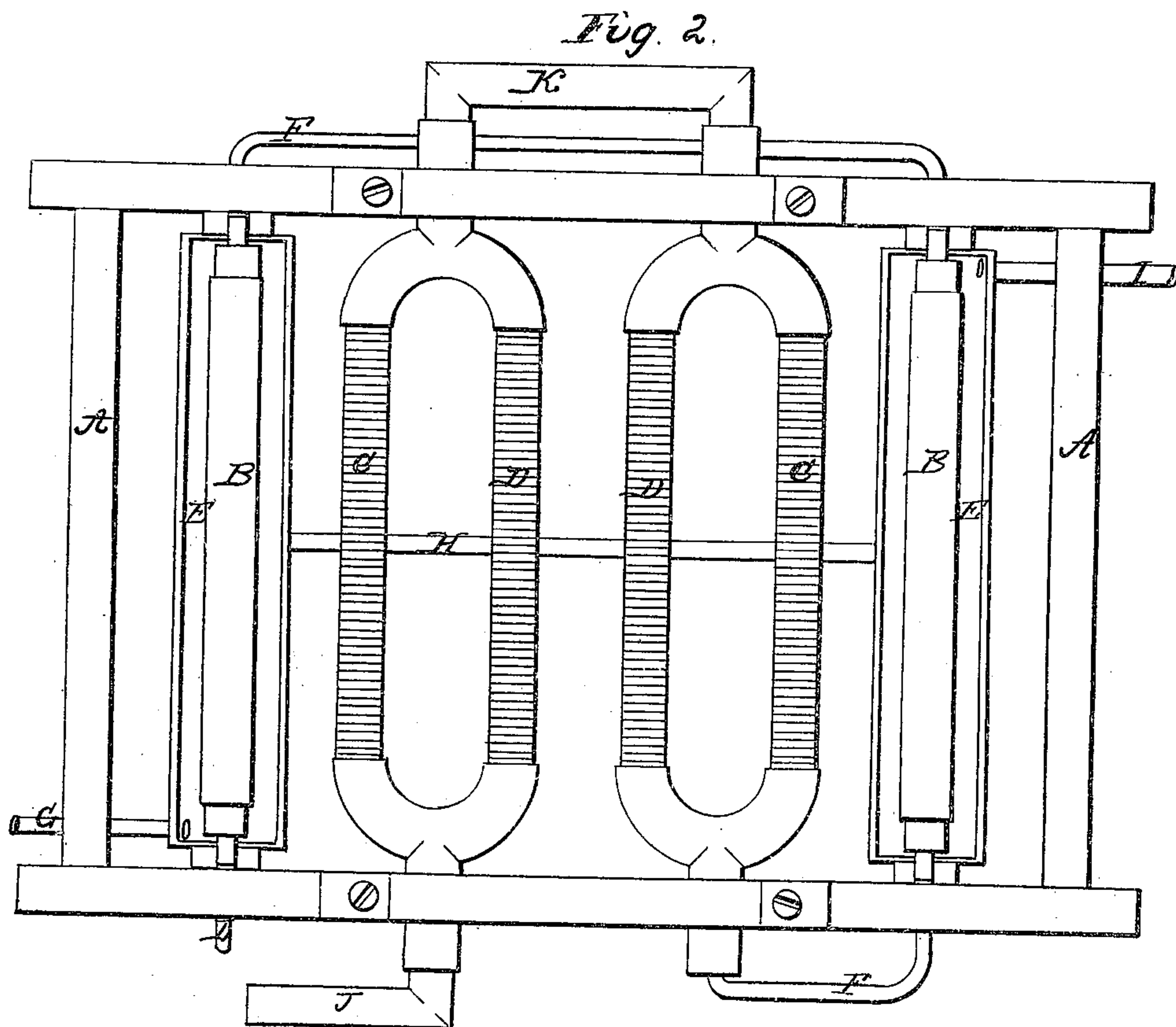
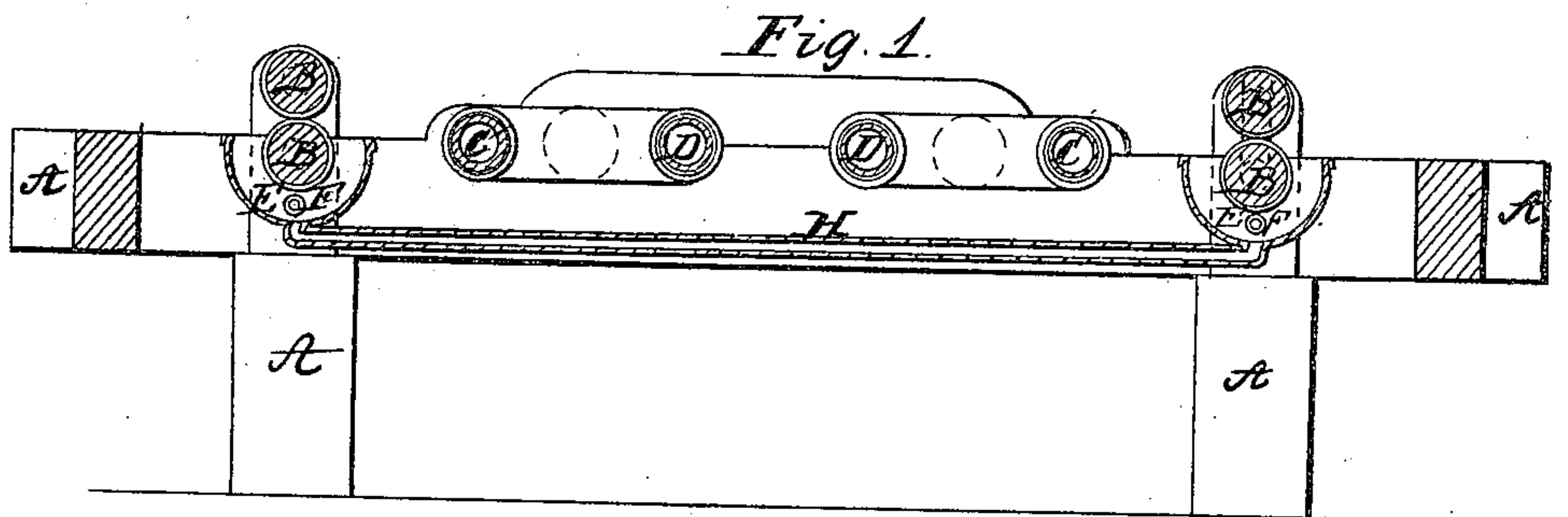


*H. N. Gambrell.*

*Preparing Cotton Yarn.*

*N<sup>o</sup> 9,021.*

*Patented Jun. 15, 1852.*





# UNITED STATES PATENT OFFICE.

HORATIO N. GAMBRILL, OF BALTIMORE, MARYLAND.

## PREPARING COTTON YARN FOR THE MANUFACTURE OF DUCK AND OTHER COARSE FABRICS.

Specification of Letters Patent No. 9,021, dated June 15, 1852.

*To all whom it may concern:*

Be it known that I, HORATIO N. GAMBRILL, of Baltimore, State of Maryland, have invented or discovered a new and useful  
5 Process for Preparing Coarse Cotton Yarns, particularly those used in the weaving of cotton duck or said cloth; and I do hereby declare the following to be a full and exact description of the method of applying the  
10 same, and for a more clear elucidation thereof I refer to the accompanying drawings, showing one plan of practically applying my said process, in which—

Figure 1, represents a longitudinal vertical section, and Fig. 2, a top plan of the apparatus.

The nature of my invention consists in passing the yarns either single or in warps, and which are to be used without sizing, between, over, and around rollers or heated  
20 pipes, which supply moisture, heat, and friction, for the purpose of softening, removing the elasticity of the threads, and condensing it, so as not to be chafed in the weaving,  
25 and so as to give the cloth the requisite body, and pliability, to be more readily sewn, and prevent its shrinking or stretching afterward.

To enable others skilled in the art to use  
30 my process, I will proceed to describe the same, with reference to such an apparatus as I have represented in the drawings, and presuming the process to be applied while the yarn is being beamed, although it may be  
35 done in any other stage of the manufacture.

I arrange the bobbins at each end of the frame A, and pass them first around an ordinary roller, so as to have sufficient friction to properly strain them up, I then pass them  
40 between the rollers B, B, which should be covered with cloth, felt, or any other suitable material. They are then passed over the top of one of the branches C, of the steam pipes, and underneath the other branch  
45 D, and thence to the yarn beam, which is placed above the apparatus. The lower one of the rollers B, is placed in a tank or trough E, of water, so that it may touch or wade through the water, and the upper roller  
50 rests upon the lower one. The steam pipes may have grooves cut therein, one for each thread to travel in, but I do not confine the operation to such grooved pipes alone, as smooth ones answer a good purpose. The

water in the troughs E may be of any desired  
55 temperature, from common well water to that of boiling, and a steam pipe F may pass through the troughs for heating the water, if it is desirable to use it heated. In order to keep the water in the tanks clean, there  
60 may be a regular current of water let in through the pipe G, which fills the trough sufficiently full, and then flows through the pipe H, into the second trough or tank, the excess passing off through the pipe I. 65

The operation is as follows: The yarn beam is set in motion, which draws the thread from the bobbins; the series of rollers or pipes make sufficient resistance to strain up  
70 the threads or warp to a proper degree of tension, which may be regulated in any well known manner. As it passes between the rollers B B, the friction is sufficient to rotate said rollers, and as the lower one is partly immersed in water, it carries up on its  
75 felt or other covering, water enough to wet the yarn, it is then passed over one, and under the other of the heated pipes C, D, in the grooves or otherwise, which dries, condenses, and sets the yarn, and is then wound on the  
80 yarn beam.

In weaving coarse cotton goods and particularly cotton duck or sail cloth, where the nature of the fabric will not admit of the sizing of the yarns, it has been found  
85 that the chafing of the yarns produces great waste; besides, the fabric when woven is liable to stretch and shrink, by different exposures. By my method of preparing the yarns, I have to a very great extent, if not  
90 entirely overcome these serious objections, by setting and condensing the yarns.

It is obvious that various modifications of this general principle may be devised, for instance: instead of water hot or cold, steam  
95 may be used, for wetting or moistening the yarns; the steam pipes may have a rotary motion like calender rollers; the strain may be put upon the yarns or warp by weights; the whole process may be done at any other  
100 time, than when beaming the yarn; the moistening and heating can be done at various stages of the progress of manufacturing, by transposing the means, or the machine may be duplicated, as may be found expedi- 105  
ent or useful, but all these I consider mere modifications of the plans herein proposed.

Having thus fully described my invention,

what I claim therein as new and desire to secure by Letters Patent, is.—

The process herein described of preparing yarns for coarse cotton goods but more particularly for cotton duck, by passing them  
5 through between moistening rollers, or otherwise wetting them, and then passing them over or around grooved or plain, heated

steam pipes or rollers, for removing their elasticity, smoothing, and condensing them, 10 while in a state of proper tension, substantially as herein described.

HORATIO N. GAMBRILL.

Witnesses:

A. B. STOUGHTON,

B. K. MORSELL.