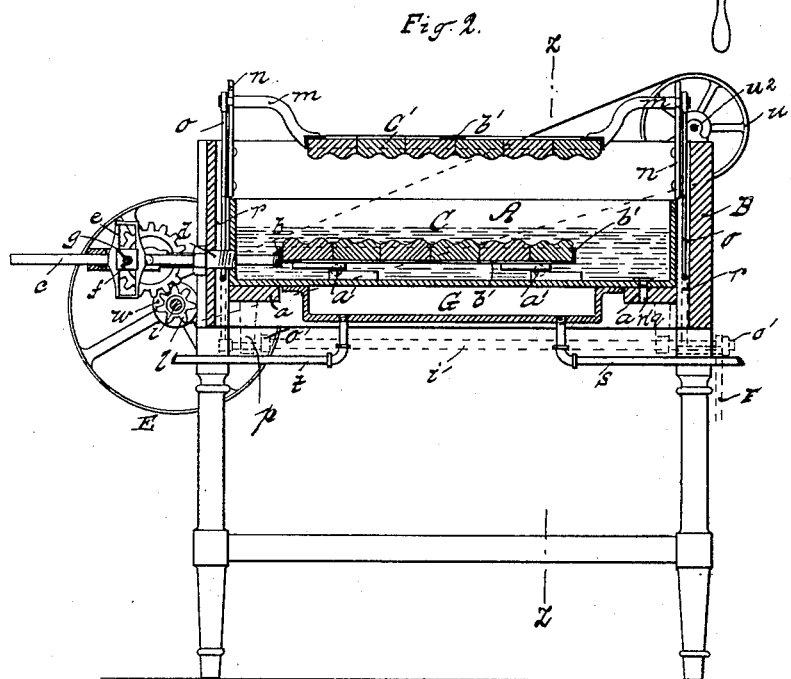
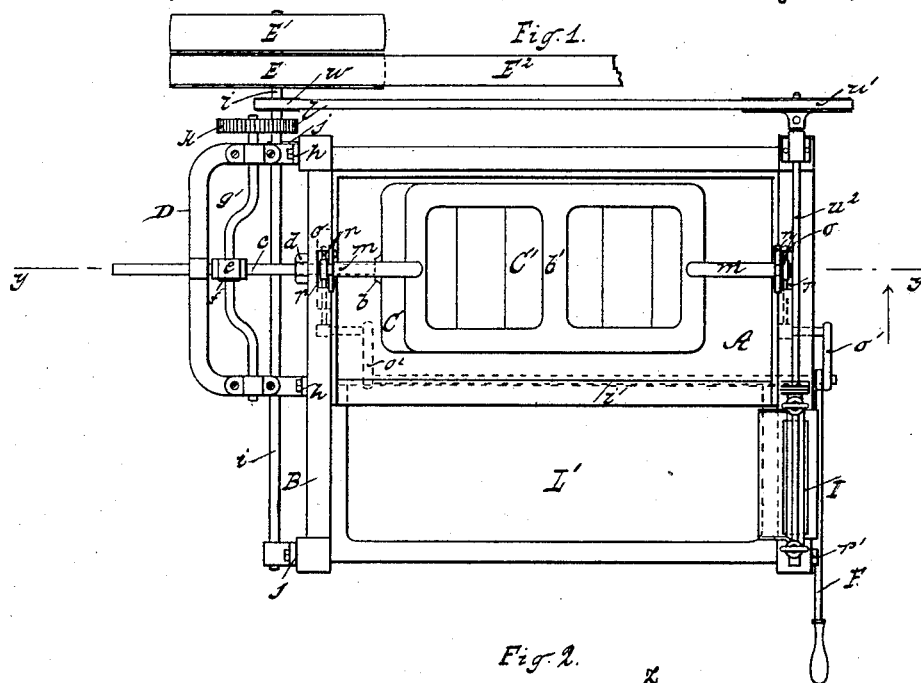


H. E. SMITH.  
STARCHING MACHINE.

No. 345,995.

Patented July 20, 1886.



WITNESSES:

Abner du Saurin  
William Miller

INVENTOR

Hamilton E. Smith

BY

Van Santvoort & Hunt

His ATTORNEYS

(No Model.)

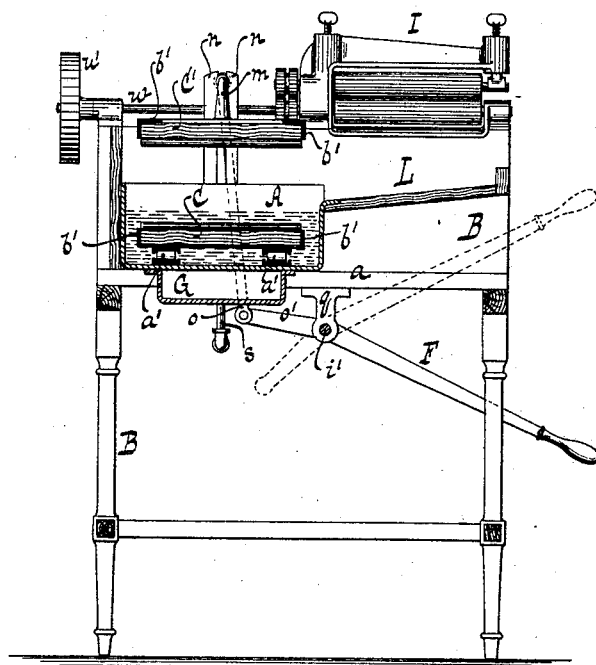
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Fig. 3.



WITNESSES:

*Otto Hufilaus*  
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Hamilton E. Smith.

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*Van Sanderford & Hauff*

ATTORNEYS

# UNITED STATES PATENT OFFICE.

HAMILTON E. SMITH, OF NEW YORK, N. Y.

## STARCHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 345,995, dated July 20, 1886.

Application filed April 16, 1885. Serial No. 162,480. (No model.)

*To all whom it may concern:*

Be it known that I, HAMILTON E. SMITH, a citizen of the United States, residing at New York, in the county and State of New York, have invented new and useful Improvements in Starching-Machines, of which the following is a specification.

This invention relates to machines for starching fabrics; and it consists in the combination of devices hereinafter described and claimed, reference being made to the accompanying drawings, illustrating my invention, in which—

Figure 1 is a plan view of my improved starching-machine. Fig. 2 is a vertical section of the same in the plane *yy*, Fig. 1. Fig. 3 is a vertical section taken on the line *zz* of Fig. 2.

Similar letters indicate corresponding parts.

In the drawings, the letter A designates the starch-reservoir, which is preferably made of copper lined with tin, which is secured to the inside of the table or frame B, and rests on suitable cross-pieces, *a*, Fig. 2. On the bottom of this reservoir is mounted on anti-friction rolls *a'* the rubber C, which has imparted to it a reciprocating motion in the direction of its length by means of a suitable crank. In the example shown in the drawings, the reciprocating rubber is connected at *b* with a rod, *c*, which passes through a stuffing-box, *d*, to prevent leakage, and has formed thereon a link, *e*, provided with a sliding block, *f*, which is connected with a crank, *g*, having suitable bearings in a yoke, D, secured to the table or frame at *h*. Motion is imparted to the crank *g* by means of the pulley E, secured to a shaft, *i*, having bearings at *j* on the table or frame, and the gear-wheels *k* *l*, mounted, respectively, on the shaft *i* and crank and meshing into each other. On the shaft *i* is also mounted a loose pulley, E', on which the belt E" may be shifted by any suitable means, when so desired.

C' is the upper rubber, which is free to be moved up and down, as the different thicknesses or quantities of goods operated upon may require. Said rubber is hung from the arms *m*, which slide in suitable standards, *n*, mounted on two opposite sides of the frame. Each of the arms *m* is connected by means of a rod, *o*, and arm *o'* to a rock-shaft, *i'*, which

is suspended from the table or frame at *p* *q*, and is turned by the hand-lever F, whereby the rubber is raised or lowered. The rods *o* pass through recesses *r*, formed in the frame or table, and the rod on the left-hand side is curved, to avoid the stuffing-box *d*. A stop, *r'*, keeps the lever in a position corresponding to the upper position of the rubber.

In order to keep the starch-solution which is poured in the starch-reservoir at a sufficiently high degree of temperature, I place and secure a steam-chamber, G, underneath the same, through which steam enters through the inlet-pipe *s*, and makes its exit through the pipe *t*, and, since the reservoir is made of comparatively thin metal plate, the heat is readily transmitted to the starch-solution in the reservoir.

In the operation of the machine, the articles to be starched are placed between the two rubbers, and the upper rubber is lowered by means of the hand-lever F, so as to bear upon the articles, and then a reciprocating motion is imparted to the lower rubber by the means described, whereby the articles are caused to be fully impregnated with the starch-solution.

In the bottom of the starch-reservoir is a plug, *u*, by means of which the starch-reservoir can be emptied. In order to evenly spread the starch over the fabric the same is passed between the rolls of a wringer, I, mounted on the table or frame, and, in the example shown in the drawings, motion is imparted to the same from the shaft *i* by means of two wheels, *w* *u'*, belted together, and mounted, respectively, on the shafts *i* and *u'*; but any other means can be employed. Both the rubbers C C' are best formed of wooden blocks suitably grooved, which are mounted in a metallic frame, *b'*, whereby a sinuous surface is produced, and all warping is prevented.

To facilitate the removal of the articles from the starch-reservoir, I provide a sloping surface, L, on the frame, upon which the articles can be laid and allowed to drain.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a starching-machine, of a starch-reservoir, a lower reciprocating rubber, an upper vertically-movable rubber having attached arms *m*, the rods *o*, connected

at their upper ends with said arms, the arms  
o', connected with the lower ends of the rods o,  
the rock-shaft i', connected with the arms o',  
and the lever F on the shaft, substantially as  
5 described.

2. In a starching-machine, the combination,  
with the starch-reservoir and the steam-cham-  
ber, of the rubbers C C', the rod c, the link  
and sliding block f, and the crank g, for im-  
10 parting a reciprocating motion to the rubber

C, the arms m, standards n, rods o, arms o',  
and the lever F, for adjusting the rubber C, sub-  
stantially as and for the purpose specified.

In testimony whereof I have hereunto set my  
hand and seal in the presence of two subscrib- 15  
ing witnesses.

HAMILTON E. SMITH. [L. S.]

Witnesses:

W. HAUFF,

E. F. KASTENTUBER.