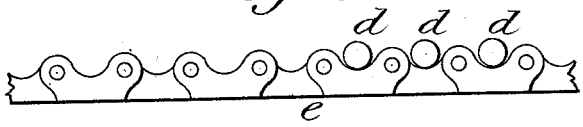
2 Sheets—Sheet 1.

J. SMITH.

Apparatus for Steaming Printed Fabrics.

No. 215,173. **Patented May 6, 1879.**

Fig. 4.



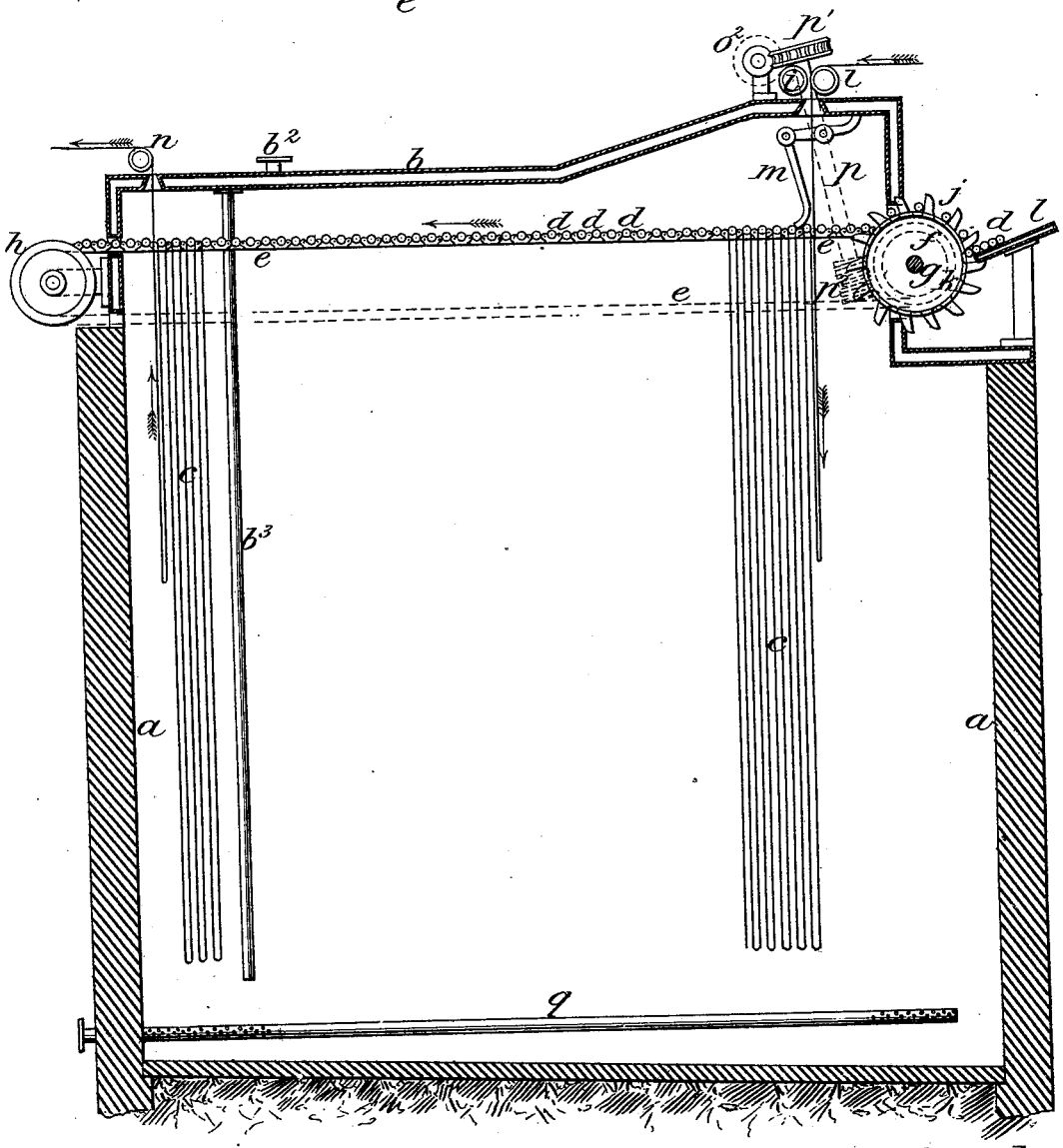


Fig. 1.

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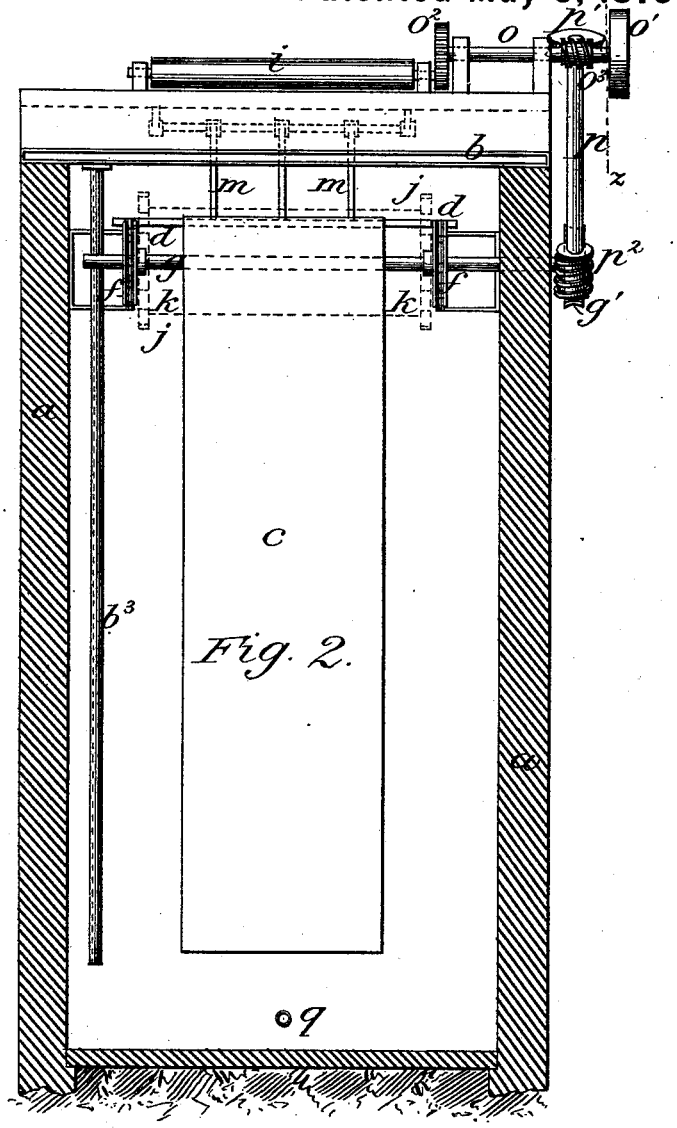

Fig. 2.

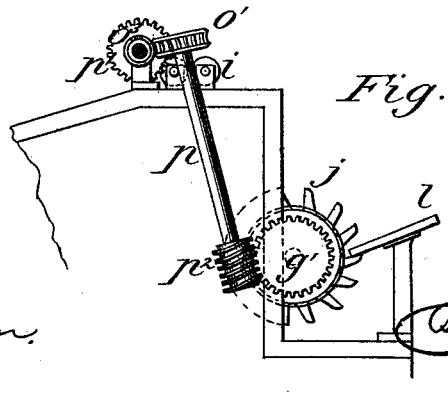

Fig. 3.

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UNITED STATES PATENT OFFICE.

JAMES SMITH, OF THORNLIEBANK, COUNTY OF RENFREW, NORTH BRITAIN.

IMPROVEMENT IN APPARATUS FOR STEAMING PRINTED FABRICS.

Specification forming part of Letters Patent No. **215,173**, dated May 6, 1879; application filed November 19, 1878; patented in England, October 8, 1875.

To all whom it may concern:

Be it known that I, JAMES SMITH, engineer to Messrs. Walter Crum & Co., of Thornliebank, in the county of Renfrew, North Britain, have invented certain new and useful Improvements in Apparatus for Subjecting Printed or other Fabrics to the Action of Steam; and I hereby declare the following to be a full, clear, and exact description thereof, reference being had to the annexed drawings, forming part of this specification.

For the fixation of the colors on printed goods, such as calico, it is necessary they should be subjected to the action of steam.

My invention pertains to an improved apparatus for carrying such fabric into and through a steam-filled chamber, as hereinafter described.

Referring to the drawings, Figure 1 is a longitudinal vertical section, and Fig. 2 is a transverse section, of my improved apparatus. Fig. 3 is a detail view of part of the mechanism for moving the chains, and Fig. 4 is a detail view of one of the chains.

The steaming-chamber *a* is constructed of a rectangular form, and may be of any required or convenient length and height, the dimensions being determined by the rate of progressive motion of the fabric, so that while it is continuously passing into and out of the chamber each part of it may, in progressing from one end to the other, occupy the time considered necessary for obtaining the proper and complete action of the steam.

The chamber *a* is represented as constructed with brick or stone walls, and with a steam-chest, *b*, forming the ceiling; but the requisite space may be inclosed by any other suitable construction.

The fabric is indicated by the lines *c*, and while in the chamber it is suspended in long vertical loops or loose folds on transverse horizontal rods *d*, and the ends of these rods rest on two parallel endless chains, *e*, placed horizontally, and the links of which are formed with cavities or seats for the rods, and for keeping them at regular distances apart. The endless chains are at one end passed round a pair of polygonal pulleys, *f*, on a transverse horizontal shaft, *g*, which is driven slowly, as hereinafter explained, and at the other end the chains pass round pulleys *h* on a shaft, the bearings of which are adjustable by screws, by which the chains can always be properly distended. The chains *e* slide along guide-rails carried by brackets fixed to the side walls, as shown in Fig. 2.

In the entering arrangement, (shown in Fig. 1,) the fabric is drawn forward by the rollers *i*, and it drops in a fold between two of the rods *d*, which are carried into the chamber *a* by the large ratchet-wheels *j*, fixed to the ends of the drum *k*. The rods *d* are placed on the inclined steam-chest *l*, ready to be taken up by the ratchet-wheels *j*. The rollers *i* are driven at such a speed relatively to that of the chains *e* as to supply the extent of fabric required for forming a loop or fold of the desired depth between each rod *e* and the one next to it. The drop-pawls *m* hold the fabric against the rod while the fold is being made.

At or near the farther end of the chamber *a* the fabric is drawn off by the roller *n*, and the rods *d* drop off the endless chains *e* as the chains turn round the pulleys *h* into a trough or other receptacle.

The motion is given to the rollers *i* and to the chains *e* by a strap passing around the pulley o^1 on the driving-shaft *o*, and by the spur-wheel o^2, gearing into a pinion on the first roller *i*, the second roller *i* being driven by the first. On the shaft *o* is also the worm o^3, gearing into the wheel p^1 on the diagonal shaft *p*, near the lower end of which is the worm p^2, gearing into the wheel g' of the shaft *g*.

I have described the driving-gear as shown in the drawings; but it may be arranged in any other convenient way.

The steam is admitted into the chamber *a*, by preference, by the horizontal pipe *q*, near the bottom of the chamber, and the pipe is perforated at the sides, so that the issuing jets of steam may not blow drops of water against the fabric. The steam-chest *b* is provided with steam through the branch b^2, and the surplus steam from the steam-chest passes down the pipe b^3 into the chamber.

The fabric, on entering and leaving the chamber *a*, passes through slots in the steam-chest. By this means all drops due to condensation are prevented from falling on the fabric in the chamber. Said steam-chest also

prevents condensation along the top of the chamber, so that no drops of water of condensation are deposited thereon, and hence none can fall on the fabric while passing through the chamber.

I do not claim the endless traveling chains, nor the mechanism for presenting the rods to said chains, nor the steam-chamber provided with a steam-chest in its upper portion; but

What I do claim is—

In an apparatus for steaming fabrics, the combination of the rollers *i i*, for introducing the fabric into the steaming-chamber, said rollers being located as described, the chains for carrying the rods, pulleys *f* and *h*, mechanism for feeding the rods to the chains, the worm-shaft, and the gearing for connecting the feed-rolls and the pulley *f*, all substantially as shown and described.

In testimony whereof I have hereto set my hand before two subscribing witnesses.

JAMES SMITH.

Witnesses:
SAMUEL F. COOPER,
PETER MOIR.