

No. 37,792.

Patented Feb. 24, 1863.

A perspective view of a roof structure. It shows two rafters meeting at a peak. A horizontal ridge beam, labeled '3', runs along the top. Various parts are labeled with letters: 'P' at the top left corner, 'L' and 'A' on the left side, 'B' and 'C' on the right side, 'D' in the center of the roof slope, 'Y' near the peak, 'W' on the upper part of the rafters, and 'H' at the very top right corner. A dashed line indicates a hidden edge or joint.

Charles E. Foster.  
Charles Howard

Henry Howard  
Attest J. F. Schuyler

# UNITED STATES PATENT OFFICE.

JOHN F. SCHUYLER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO  
WM. E. LOCKWOOD, OF SAME PLACE.

## IMPROVEMENT IN APPARATUS FOR BENDING AND FOLDING PAPER COLLARS AND OTHER ARTICLES OF APPAREL.

Specification forming part of Letters Patent No. 37,792, dated February 24, 1863.

*To all whom it may concern:*

Be it known that I, JOHN F. SCHUYLER, of Philadelphia, Pennsylvania, have invented a new and Improved Machine for Folding Paper Collars; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention consists of machinery and apparatus, fully described hereinafter, for bending and folding collars and other articles of wearing-apparel made of paper, or paper and muslin combined, with greater rapidity and in such a manner that the folded edges shall be uniformly smooth.

In order to enable others to make and use my invention, I will now proceed to describe its construction and operation.

On reference to the accompanying drawings, which form a part of this specification, Figure 1 is a side view of my machine for bending paper collars; Fig. 2, a longitudinal section; Fig. 3, a ground plan, and Fig. 4, a transverse vertical section on the line 1 2, Fig. 3.

Similar letters refer to similar parts throughout the several views.

The frame-work of the machine is composed of the longitudinal beams A and A', uprights B, longitudinal pieces C and C', and any convenient number of transverse pieces D.

E is the driving-shaft, turning in plates e e, secured to the opposite beams A and A' of the frame, a pinion, a, on this shaft gearing into a wheel, b, secured to the spindle on one end of the upper roller, F, a similar wheel, b', being secured to the spindle at the opposite end of the same roller.

G is the lower roller, a wheel, d, on one end of which gears into the wheel b' of the roller F, the wheel b of the latter gearing into a wheel on the opposite end of the lower roller, G. The two lower rollers turn on the opposite side beams A and A' of the frame, as also does the shaft H, a wheel f, on which gears into the wheel b' of the roller F. A blade, J, is arranged to slide in oblong openings formed in the opposite side beams A and A', one end of this blade being connected by means of a rod, K, to a pin on the wheel d of the lower roller, G, and the opposite end of the blade be-

ing connected by a similar rod, K', to a pin on the wheel at the opposite end of the same roller. These pins are so situated in respect to the centers of the wheels as to form cranks by which a horizontal reciprocating motion is imparted to the blade. In order to steady the blade during its movements, one end is secured to a long bar, L, the rear end of which passes through and is guided by a staple, m, secured to the rear end of the frame. A spindle, M, is arranged to turn in the opposite beams A and A' of the frame, and on this spindle are the two arms N and N', which are connected together at the outer ends by a bar, n. The spindle has also a weighted arm, q, which tends to maintain the bar n in the elevated position shown in Fig. 1, and between the two arms N and N' the spindle has a fourth arm, t, the purpose of which will be explained hereinafter. A bar, P, is arranged to slide above the bar L and against the beam A' of the frame, the front end of this bar L being connected by a rod, Q, to a pin on the wheel f. On the top of this bar, and near the rear end of the same, is formed an inclined plane, u, for acting on a pin projecting from the end of the weighted arm R, the latter being secured to one end of a shaft, S, which is hung to the opposite side beams A and A'. Two arms, T, project from this shaft, the outer ends of the arms being bent, as seen in Fig. 2. The journals of a roller, V, are arranged to turn in the beams A and A' at the extreme rear end of the frame, a series of endless tapes or bands, x, passing round this roller and round pulleys on the shaft H. Between the beams A and A' is secured a shallow tray, Y, near the rear end of which is a pipe, w, communicating with the steam-space of any adjacent steam-boiler. The trough Y is covered by the shelving-roof W, which rests on the opposite beams A and A', and which is lined on the inside with oiled silk, y, for a purpose described hereinafter. Midway between the opposite ends of the trough Y is a pipe, z, for the escape of the waste water, and to the opposite edges of the trough is hung a roller, 3, which serves to prevent the upper portions of the endless tapes from sagging at the point where they would be most liable to yield.

The fabric on which the above-described

machine has to operate is cut into pieces of the form required for turn-down shirt-collars, and a number of these pieces are placed within the reach of the operator, who is seated at the rear end of the machine, another operator being seated near the table or platform 4, at the front end of the machine. When the machine is set in motion, the following movements of the different parts will take place, namely: a continuous rotary motion of the rollers F and G in the direction of the arrows, a continuous rotary motion of the shaft H causing a continuous movement of the endless tapes *x* in the direction of the arrows, the sudden downward and as sudden upward movement of the bar *n*, the continuous reciprocating motion of the blade J, and the vibrating motion of the bent arms T, caused by the inclined plane *u* on the reciprocating bar P. When the bent ends of the arms T project above the tapes *x*, the attendant places one of the paper collars in the position shown in Fig. 3, the front edge of the collar bearing against the projecting arms. In this position the collar will remain stationary until the inclined plane *u* on the reciprocating rod P raises the lever R, and consequently depresses the arms T, when the collar is released, and resting on the endless tapes, is permitted to take the course pursued by the latter. The receding of the inclined plane *u* from the pin on the arm R permits a weight, 5, to raise the arms T, against which the operator places the edge of a second collar, the latter remaining stationary until the arms T are again depressed, when it follows the course taken by the tapes. It will be seen that the arms T are what may be termed "registering-arms," as they are the means of determining the distance of the collars apart from each other on the tapes. It is upon the uniformity of this distance that the proper accomplishment of other duties by other parts of the machine depends. As a continuous row of collars traverses with the tapes above the trough Y, the steam passing through the pipe *w* impinges against the plate *h*, and by the latter is spread and disseminated throughout the space inclosed or partially inclosed by the roof W. The collars have thus to traverse through the steam, which reduces them to the desired flaccid state, preparatory to being bent and folded. It is important that no water should drop on the collars as they are passing beneath the roof W. This is avoided by lining the interior of the roof with oiled silk, *y*, to which the condensed steam adheres and down which it flows into the trough without dropping to the collars. When one of the collars on the endless tapes has reached a position above the shaft H, the blade J is approaching the limit of its backward movement, and its projection 6 comes in contact with the short arm *t* on the spindle M, thereby causing the bar *n* to suddenly descend to strike the collar which is overhanging the pulleys on the shaft H and cause it to fall to the position shown

by a red line to the ledge 7. The blade *n* now begins to move forward, thereby permitting the weighted arm *q* to elevate the bar J and leave the collar at liberty to be struck by the sharp teeth on the front edge of the blade J, which pushes the collar between the rollers F and G, which complete the fold commenced by the blade. As the bent collars pass from between the rollers to the table 4, they are removed from the latter by the attendant seated at the front of the machine. It will be observed that the point where the collars are bent and folded is determined by the position of the ledge 7 in respect to the blade, for the sharp teeth penetrate the fabric to a limited extent, so that it cannot slip while the blade conveys the collar to the rollers. The position of the fold of the collar may be altered at pleasure by means of the set screws 8, by turning which the ledge 7 may be raised or lowered.

The fabric of which what are known as paper or enameled collars are composed is of such a nature that if bent without any preparation the folded edge will be so rough and ragged as to be a source of annoyance to the wearer; hence the importance of reducing the collars to such a flaccid condition as will permit the necessary fold to be made without any danger of the folded edge being partially broken, and consequently rough, and without impairing the enameled surface which has been previously imparted to the collar.

I claim as my invention and desire to secure by Letters Patent—

1. A trough, Y, to which steam is admitted, in combination with the endless traversing tapes *x x*, the whole being arranged and operating substantially as set forth, for the purpose specified.

2. The roof W, with its lining *y* of oiled silk, or its equivalent, when arranged in respect to the trough Y and endless tapes *x*, substantially as and for the purpose set forth.

3. The registering-arms T, or their equivalents, when arranged in respect to and operating in conjunction with the endless tapes, substantially as set forth, for the purpose specified.

4. The combination of the bar *n*, shaft H, with its pulleys, the endless tapes *x x*, and adjustable ledge 7, the whole being arranged and operating substantially as set forth, for the purpose specified.

5. The reciprocating blade J, adjustable ledge 7, folding-rolls F and G, and table 4, the whole being arranged and operating as and for the purpose herein set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN F. SCHUYLER.

Witnesses:

JOHN WHITE,  
WM. A. FARR.