2 Sheets--Sheet 1.

C. SPOFFORD.

Machine for Folding and Pasting Collar-Ends.

No. 161,833. Patented April 6, 1875.

Fig: 1.

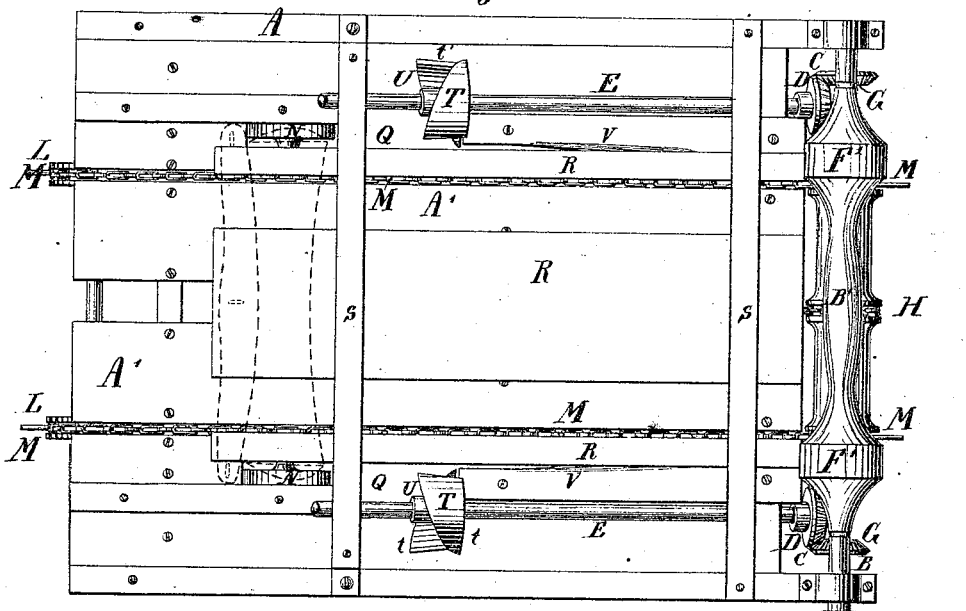
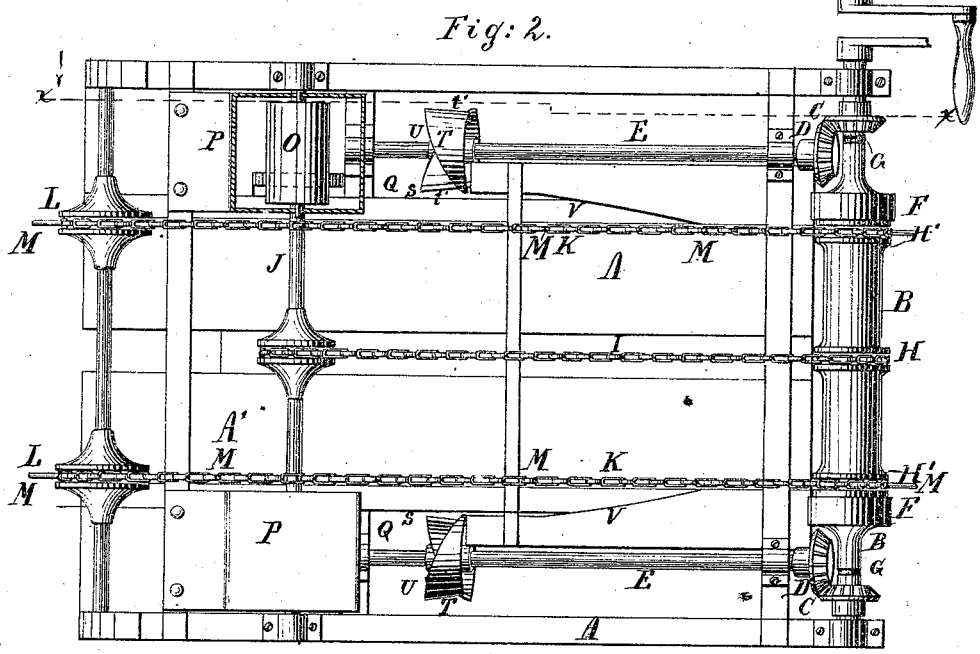


Fig: 2.



Witnesses:

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Henry Gentner

Inventor:

Charles Spofford

per Van Santvoord & Hauff

Attys

2 Sheets--Sheet 2.

C. SPOFFORD.

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No. 161,833. Patented April 6, 1875.

Fig: 3.

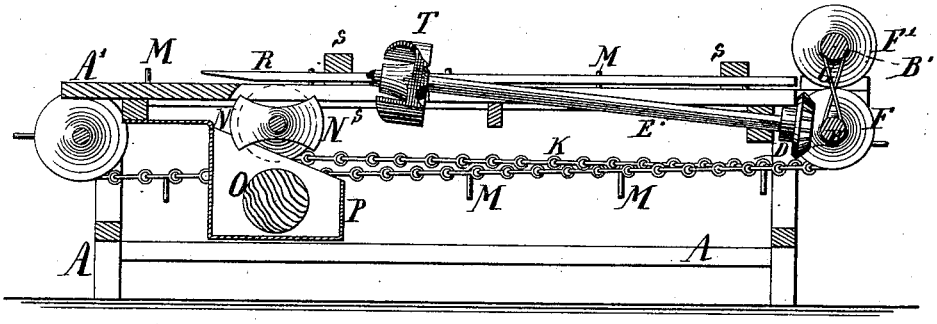
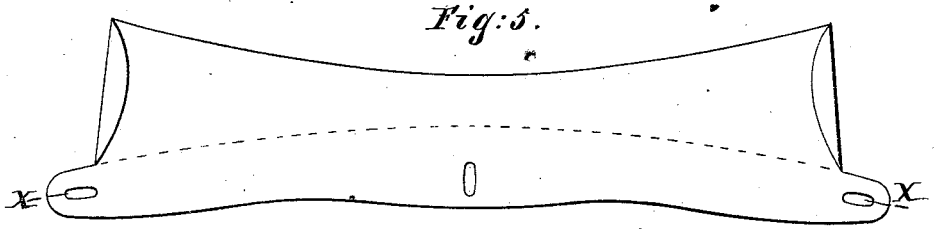


Fig: 4.

Fig: 5.



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UNITED STATES PATENT OFFICE.

CHARLES SPOFFORD, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO JAMES H. HOFFMAN, OF NEW YORK CITY.

IMPROVEMENT IN MACHINES FOR FOLDING AND PASTING COLLAR ENDS.

Specification forming part of Letters Patent No. **161,833**, dated April 6, 1875; application filed December 5, 1874.

To all whom it may concern:

Be it known that I, CHARLES SPOFFORD, of Boston, in the county of Suffolk and State of Massachusetts, have invented a certain new and useful Improvement in Machinery for Folding and Pasting the Ends of Collars or other articles, of which the following is a specification:

This invention is illustrated in the accompanying drawing, in which—

Figure 1 is a plan view of a machine containing my invention. Fig. 2 is an inverted view thereof. Fig. 3 is a vertical section in the plane of the line *x x* of Fig. 2. Fig. 4 is an end view, detached, of one of the folders T *t*. Fig. 5 represents a collar which has passed through the machine, its ends *w* being folded and secured to the inner side of the body of the collar.

Similar letters indicate corresponding parts.

The object of this invention is to fold and paste the ends of collars made of paper, or paper and cloth combined; and it consists in a carrying device which carries the collars, separately, over a suitable supporting-table to a pasting device or devices, which apply a proper quantity of paste or suitable adhesive substance to the inside of the collar, at the place where it is to be folded and fastened down, and then to a folding device or devices, which folds or bends the ends at a right angle to the plane of the collar, and next to a folding device which completes the fold and brings the bent ends up to or parallel with the body of the collar, after which the collar is carried along to compressing-rollers, which compress the bent parts against the collars, and discharge the collars from the machine.

The letter A designates a frame, which supports the table A′, over which the collars are carried, and also the other parts of the machine. The letter B designates a driving-shaft, having bearings in the rear end of the frame, which shaft is provided with bevel-gears C C, that engage bevel-gears D D, which are secured on the adjacent ends of shafts E E, which carry the revolving folding devices that act on the collars. Upon the shaft B are also arranged compressing rollers or surfaces F F, which act in conjunction with like rollers or surfaces F′ F′, on an upper counter-shaft, B′, to receive the folded collars from the carriers and compress the bent and pasted parts against the body of the collar.

The rollers or surfaces F and F′ are arranged upon their shafts, so that they only act on that part of the collar where the bent parts are folded against it, and the upper shaft B′ is journaled in sliding bearings in the frame directly over the main shaft B, and is held down upon that shaft by spring-pressure, or by gravity, so that its roller-surfaces F′ will be pressed against the roller-surfaces F of the the lower shaft with sufficient yielding pressure to unite the folded ends to the body of the collar, the shaft B′ rising in its bearings to allow a collar to pass.

The counter-shaft B′ is driven from the shaft B by elastic belts G G, or other devices which will permit it to rise in its bearings. The driving-shaft B is provided with a pulley, H, that receives a chain or belt, I, which drives the paster-shaft J, which is arranged under the table of the machine, as is shown in Fig. 2. The shaft B is also provided with pulleys H′ H′, arranged near to and inside of the roller-surfaces F, which pulleys receive the carrier chains or belts K K, that are carried around pulleys L L, fixed upon a counter-shaft arranged in the front part of the machine. The chains or belts K are provided with horns M, which project outward therefrom, and are arranged about the width of a collar apart from each other. The paster-shaft J is provided toward its ends with double segments N N, which are fixed on that shaft, and which, in their revolution, work against and are charged with paste from paste-rollers O O, that are mounted loosely in paste-troughs P P, arranged in proper positions under the table.

The paste-rollers O are caused to revolve in their troughs by the contact of the segments N, whose peripheries work through slots Q in the table A′, and apply the paste or other adhesive substance which adheres to them to the under side of the collar, at the parts which are to be folded, the direction of their revolution coinciding with the direction of motion of the collars. The table A is surmounted by a

confining-frame, R, which is suspended over it at a sufficient height to allow a collar to pass flatwise between them. The frame R is suspended from cross-bars S S, one of which provides bearings for the front ends of the folder-shafts E E, before mentioned. The frame R serves to keep the collars extended and flat upon the table while they are passing through the machine. After the collars have passed over the pasting-segments N, they are carried to the revolving folders T, which bend down the ends of the collars in the slots Q. The folders T are mounted in such a manner as to intersect the slots Q, and they revolve in a plane perpendicular, or nearly so, to the path of the collars, and they consist of segmental blades *t t*, of triangular form, whose front edges *t'* come down upon the ends of the collar and bend them over the edges S of the slots Q, the inclined sides U of the folders (which sides answer to the hypotenuse of the triangle) retiring, as it were, and allowing the ends of the band of the collar to advance without striking the folder, so that the folders are free to operate on the ends of the collar without touching the band. After the collar has passed the folders T it is carried to folding-guides V V, which consist of spiral channels formed in the table A', commencing at the rear end of the slots Q, and terminating at the rear end of the table, in front of the revolving compressing-surfaces F F'. The folders V are so formed that they receive the bent ends of the collars from the slots Q, and gradually turn them toward the plane of the body of the collar, so that when the collars emerge from the folders V the bent ends are flat and parallel with the rest of the collar, and they then pass between the compressors F F', which press the bent ends against the body of the collar, and enable the paste or adhesive substance which had been applied, as before stated, to cement and secure the folded ends fast to the body of the collar. The horns of the carrying-chains are so spaced, and the pasters N and the revolving folders T are so made and arranged, that the ends or parts of the collar to be pasted and folded will be presented to the pasters and folders at the proper times.

In this illustration of my invention it is intended that the collar be laid with its inner side down, so that the inner side of the ends shall receive the adhesive substance.

In Fig. 5 I have represented a collar having its ends folded and pasted to the body of the collar. The ends of the bands X X, Fig. 5, extend over the slots Q and over the table of the machine, while the collar is passing through the machine, and when they are opposite the revolving folders T the bands pass through the curved openings Y, between the segments *t t*, and avoid contact with the folders, the openings Y occurring between the pointed end of one segment and the front edge of the next.

My improvement is applicable to other articles which are capable of being folded or cemented, and is not confined in its application to collars only.

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

1. The combination, in a machine for folding and pasting the ends of collars or other articles, of a carrying-table, A, carrying-chains K, pasters N, revolving folders T, folding-guides V, and compressing rollers, substantially asdescribed.

2. The combination of the table A', confining-frame R, revolving folders T, and pasters N, and carrying-chains, substantially as described.

3. The revolving folder T, provided with a folding device, *t*, one or more, having an angular or retiring side, U, arranged substantially as set forth, so that the folders can operate without touching the band ends of the advancing collar.

4. The revolving folder T, constructed with one or more folding devices, *t*, in combination with the table, having a slot, Q, and a folding-guide, substantially as and for the purpose specified.

5. The combination of the pasting device N and folding devices T *t* V, with the roller compressing devices F F', substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 18th day of November, 1874.

CHAS. SPOFFORD. [L. S.]

Witnesses:

W. HAUFF,

JAMES L. NORRIS.