C. Spofford & W. S. Bell Jr.

Collar Machine.

No. 46,400 Patented Feb 14. 1865.

Fig. 2.

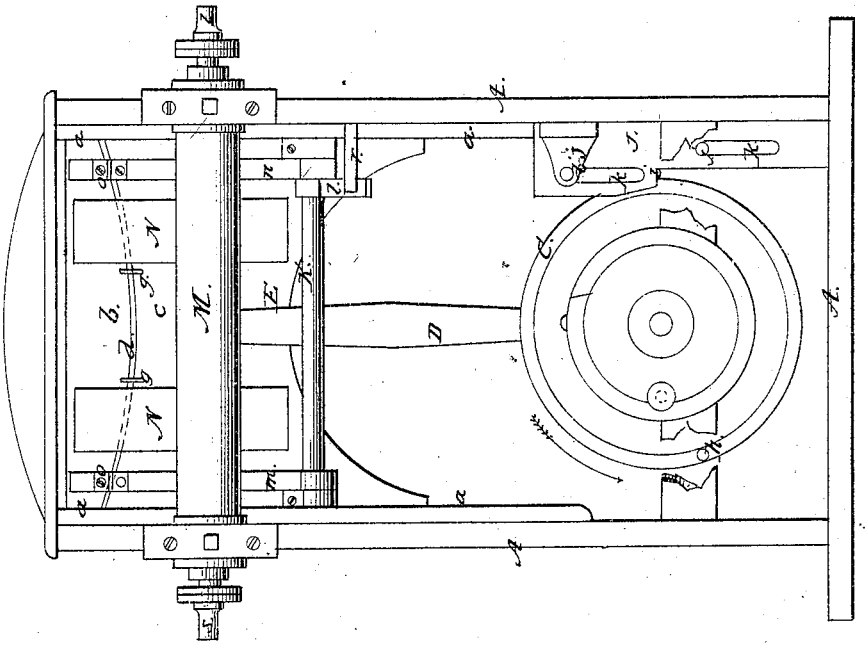
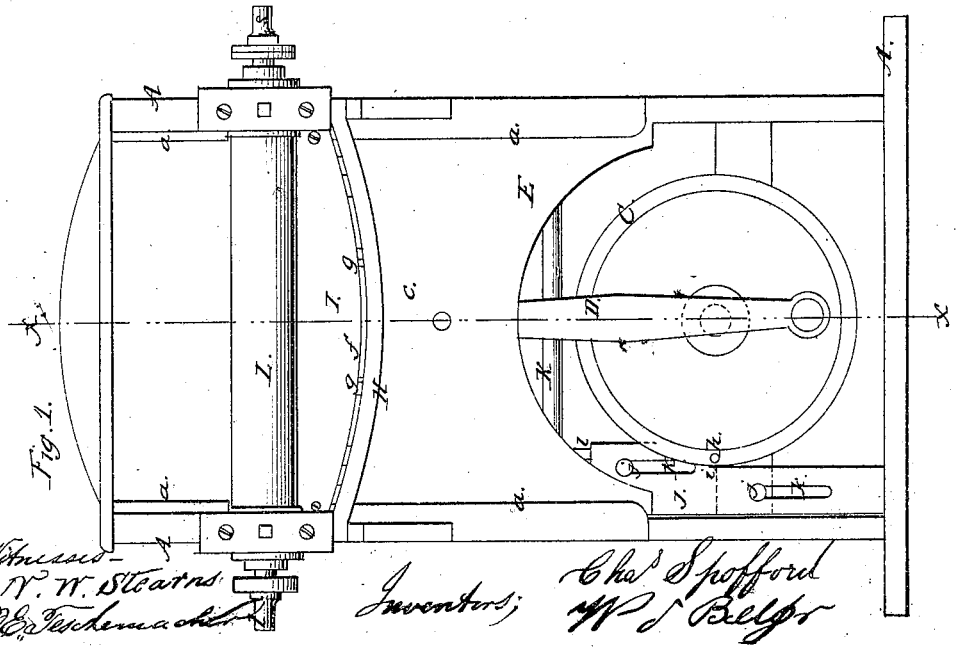


Fig. 1.



Witnesses—
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P. E. Teschemacher

Inventors;
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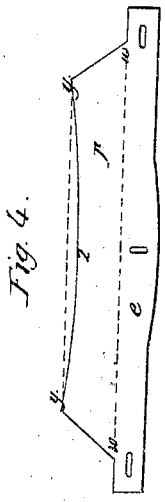

Fig. 4.

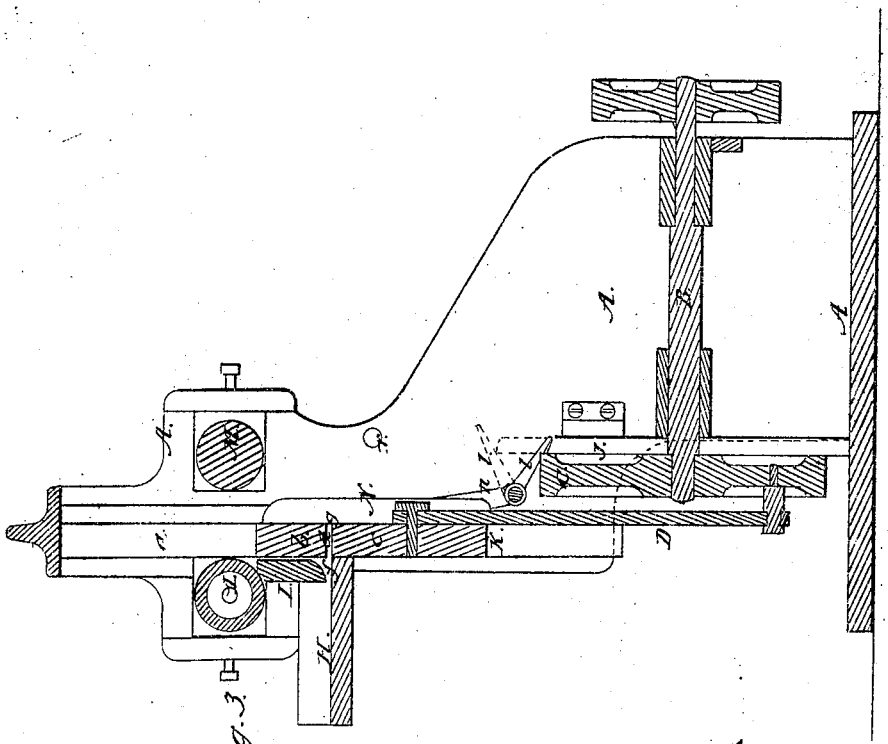

Fig. 3.

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UNITED STATES PATENT OFFICE.

CHARLES SPOFFORD AND W. S. BELL, JR., OF BOSTON, MASS.

IMPROVEMENT IN MACHINES FOR STRETCHING PAPER COLLARS.

Specification forming part of Letters Patent No. **46,400**, dated February 14, 1865.

To all whom it may concern:

Be it known that we, CHARLES SPOFFORD and WILLIAM S. BELL, Jr., of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improved Machine for Stretching Paper Collars; and we hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a front view of our improved machine. Fig. 2 is a rear elevation of the same. Fig. 3 is a vertical transverse section through the machine on the line *x x* of Fig. 1. Fig. 4 represents a collar before it is turned over, the straight line upon which it is turned being shown in red.

The ordinary collar cut from a strip of paper and turned over on a straight line is objectionable, for the reason that the outer fold or portion which is turned over when bent around the neck binds closely against the inner fold, leaving no space between the two for the cravat or necktie, and causing the inner fold to wrinkle vertically, and preventing it from neatly fitting the neck. These difficulties have been obviated by turning over the outer fold of the collar on a curved or angular line instead of a straight line, thereby leaving sufficient space between the folds for the necktie, as described in the Letters Patent of the United States granted to S. S. Gray on the 23d of June, A. D. 1863; and in the Letters Patent of the United States granted to us on the 30th of August, A. D. 1864, we set forth the manner by which we overcame the aforesaid difficulties by stretching or elongating the outer fold, the edge on which the collar was turned being a straight line, by which means we were also enabled to produce the required "spring" or "set off" to admit the necktie without creasing or wrinkling the inner fold when bent around the neck.

Our present invention consists in an improved machine for stretching paper collars, in which the portion of the strip which forms the inner fold is held within a curved recess, while that portion which forms the outer fold is pressed down by contact with a block or cylinder, or both combined, thereby stretching and elongating the outer fold and causing it to set off from the inner fold, as required.

To enable others skilled in the art to understand and use our invention, we will now proceed to describe the manner in which we have carried it out.

In the said drawings, A is the frame work of the machine, in suitable bearings, in which runs the driving shaft B, which carries at one end the crank-wheel C, which is connected by the pitman D to the sliding carriage E, which moves up and down in ways *a* in the frame-work. This carriage is formed in two pieces, *b c*, and the lower surface of the former and the upper surface of the latter are curved, as seen in Figs. 1 and 2, leaving a narrow slit or recess, *d*, between them for the purpose of receiving that portion, *e*, Fig. 4, of the collar which forms the inner fold.

H is a table, which is curved to correspond to the form of the recess *d*, and upon which the collar is placed before being fed into the machine. A stationary block, I, secured to the sides of the frame-work, is placed a short distance above the table H, leaving a narrow opening, *f*, through which the collar is fed into the curved recess *d* against the gages *g*—that portion, *e*, only of the collar which forms the inner fold lying within this recess *d*. The upper part, *b*, of the carriage E is brought down so as to grasp the portion *e* of the collar and hold it tightly in the recess *d* in the following manner: As the wheel C revolves, a pin, *h*, projecting from its inner face, strikes against a shoulder, *i*, formed on one side of a slide, J, and raises it into the position seen in red, Fig. 3, the slide being connected to the frame-work by means of the pin *j*, passing through slots *k*. As the slide J is raised, its upper end strikes against a tappet, *l*, on a shaft, K, having its bearings in the lower portion, *b*, of the carriage E, by which the shaft K is vibrated.

m n are two rods, the lower ends of which are secured to eccentrics on the shaft K, and their upper ends are attached to the portion *b* of the carriage E by means of the hinges *o*, and thus, as the shaft K is vibrated by means of the tappet *l*, as before explained, the upper portion, *b*, of the carriage E is brought down by the rods *m n* onto the collar, holding it firmly in the recess *d*. This closing of the recess *d* takes place while the lower portion, *c*, of the carriage E is stationary and just before it commences to rise. As the wheel C continues to revolve, the pin *h* passes off the shoulder *i* and allows the slide J to drop into

its original position. The carriage E, with the collar confined in the recess *d*, now commences to rise, pressing the portion *p*, Fig. 4, which forms the outer fold, against the inner face of the stationary block I, the lower edge of which is rounded, as seen in Fig. 3, by which operation the curved edge *q*, Fig. 4, is stretched or drawn out into a straight line, as indicated by the blue line *y y*, and the whole of the outer fold is stretched throughout, the degree of stretching being increased gradually from the red line *w w* to the edge *q*. As the carriage continues to rise, the portion *p* of the collar is brought in contact with a hollow metallic cylinder, L, through which steam is made to circulate, by which means it is still further pressed and made to retain permanently its shape. The required spring or set off from the inner fold is thus given to the collar when bent around the neck, so as to admit the neck-tie without wrinkling.

The carriage C, as it rises, is pressed firmly against the block I and cylinder L by means of the roll M, which bears against the blocks N, attached to the back side of the lower portion, *c*, of the carriage E. The roll M and cylinder L revolve in suitable boxes in the frame-work A.

As the carriage C is raised into the position seen in Fig. 2, the tappet *l* strikes against a pin, *r*, projecting from the frame-work, and vibrates the shaft K, thus raising the portion *b* of the carriage by means of the rods *m n* and eccentrics, as before described, when the collar is free to be removed. The carriage now descends, when a fresh collar is inserted, and the operation continues as before.

The hollow cylinder L revolves independently of the connections *s t*, through which the steam passes, the joints being packed steam-tight.

What we claim as our invention, and desire to secure by Letters Patent, is—

The sliding carriage E, with its curved recess *d*, in combination with the stationary block I and cylinder L, operating substantially as set forth, for the purpose specified.

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Witnesses:
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