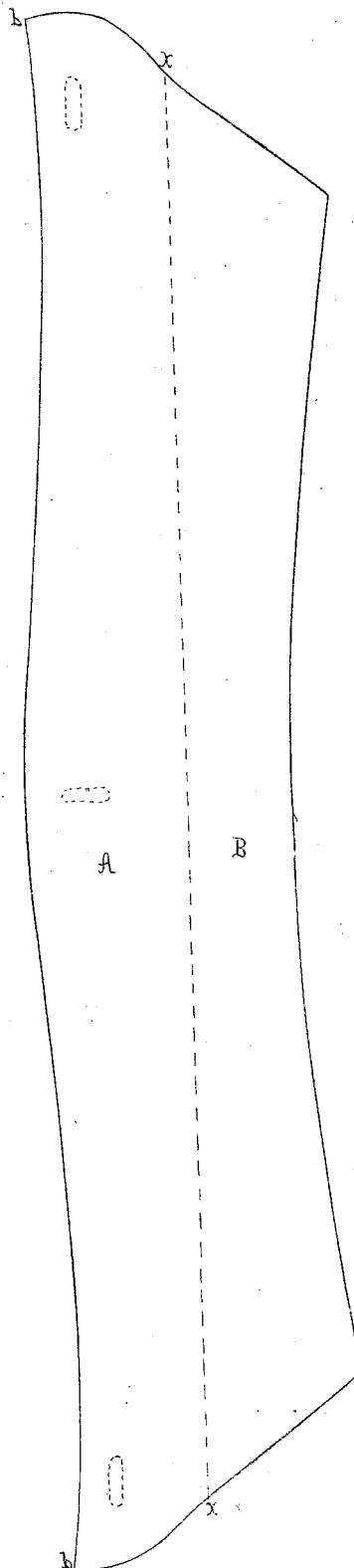


*A. F. Gray,*  
*Collar.*

*No. 44,948.*

*Patented. Nov. 8. 1864.*



Witnesses { *W. Gould*  
*Albert F. Hall.*

*Allen G. Gray*  
*My Atty.*  
*W. B. Brown*

# UNITED STATES PATENT OFFICE.

ALLEN F. GRAY, OF BOSTON, MASSACHUSETTS.

## IMPROVEMENT IN MAKING PAPER COLLARS.

Specification forming part of Letters Patent No. **44,948**, dated November 8, 1864.

*To all whom it may concern:*

Be it known that I, ALLEN F. GRAY, of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improved Paper Collar; and I do hereby declare that the following, taken in connection with the drawing which accompanies and forms part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

This invention relates to the construction of the well-known "turn over" paper collars, and has for its object the production from smooth paper sheets of collars having such form, when finished, that they can be worn or their ends brought around to meet upon the neck without wrinkling, puckering, or corrugating the inner portion or neckband.

The accompanying diagram represents the outlines of a collar in the flat shape it has when first cut or stamped out from the sheet. It may be called a "collar-blank."

The line *x x* denotes the division-line between the neckband A and dress portion B of the collar, upon which line the collar is doubled or turned over.

In one method of construction as now practiced the collar is simply turned on this line to finish it so far as relates to form; but it will be readily understood that this is objectionable, because when the collar is so turned and the two ends are brought together the neckband is either pressed out of shape or causes the outer portion to hug too closely against it, leaving no space for proper insertion of a necktie. The division-line *x x* has also been made on a curve, by which, when the collar is turned upon it, the two parts set out from each other in the form of conic frusta. This method, however, is difficult of practical application, and has been replaced by stretching the collar, sometimes by giving a considerable elongation to the upper portion and diminishing the same to the lower edge, which is not at all stretched, (this being effected with the collar unfolded,) and some-

times by stretching the collar at the division-line *x x*, after the same has been folded, leaving the edges *a a* and *b b* free from elongation.

My invention consists in producing the desired form by shrinking the neckband of the collar after the same has been turned. By this process the outer or dress portion, B, of the collar is preserved in or nearly in its normal condition, while the shrinking of the neckband A provides for the easy insertion of a necktie between the two portions of the collar. Various methods of producing this shrinkage may be employed. That which I prefer to practice and consider the best is as follows:

The collar-blank is first turned on the straight line *x x*. Then the neck-band is moistened by a sponge with water, and while in a damp condition the collar, turned or unturned, is drawn around a conical block, to which heat has been applied. The heat from the block dries and shrinks the neckband, such shrinkage being greatest at the lower edge of the band, and decreasing to the division-line *x x*. When removed, it will be found that while the outer portion has retained its flat form or a cylindrical form when the ends are brought together the neckband assumes the position of the fustum of a cone, so that when applied to the neck the upper portion stands away from the neck, and a necktie can be easily inserted between the parts A B. It will be observed that by this process there is no strain upon the collar, as when the parts are stretched or elongated, nor is there an irregularity produced in the upper line of the turned collar, as in the methods of construction referred to.

I claim—

A paper collar in which the finished form is given by treatment of the neckband, substantially as set forth.

ALLEN F. GRAY.

Witnesses:

J. B. CROSBY,  
F. GOULD.