No. 780,707. PATENTED JAN. 24, 1905.

F. W. COLLIER.

COLLAR FOLDER.

APPLICATION FILED JUNE 13, 1904.

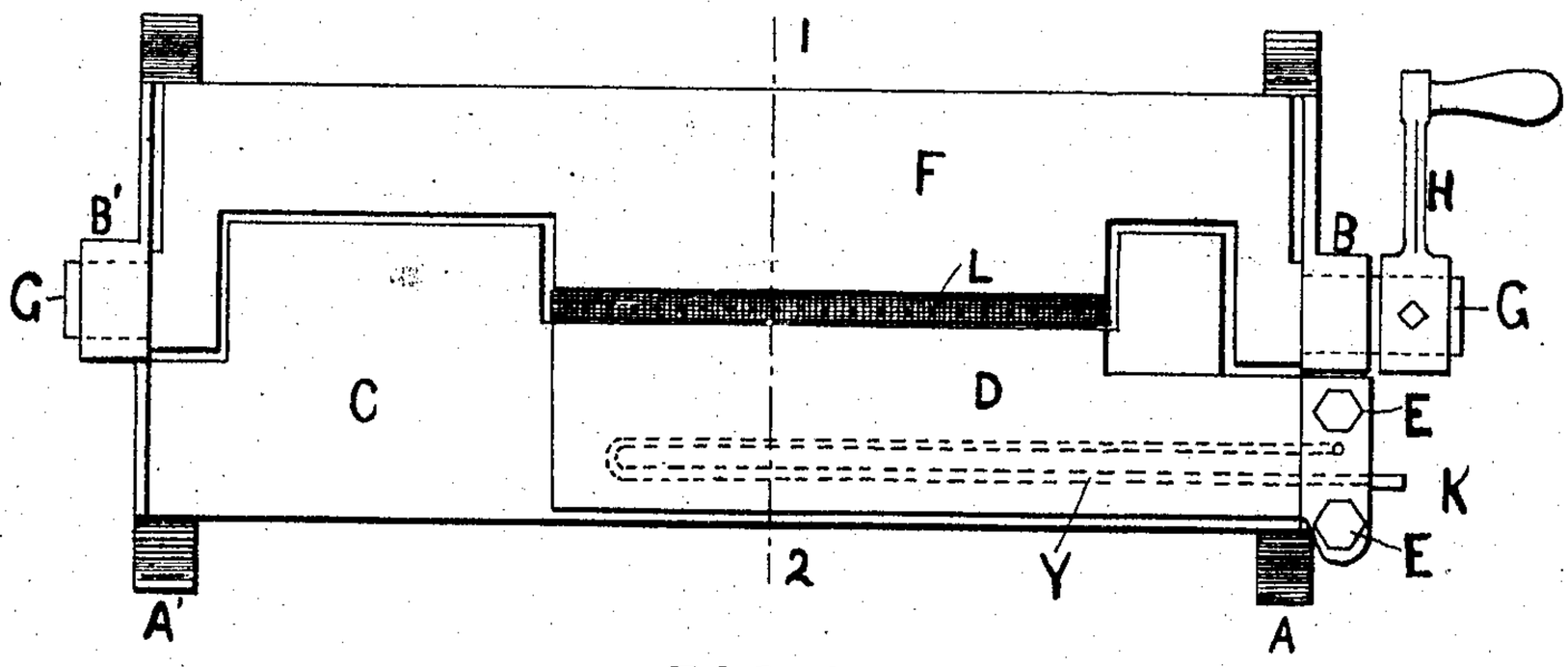

FIG. 1.

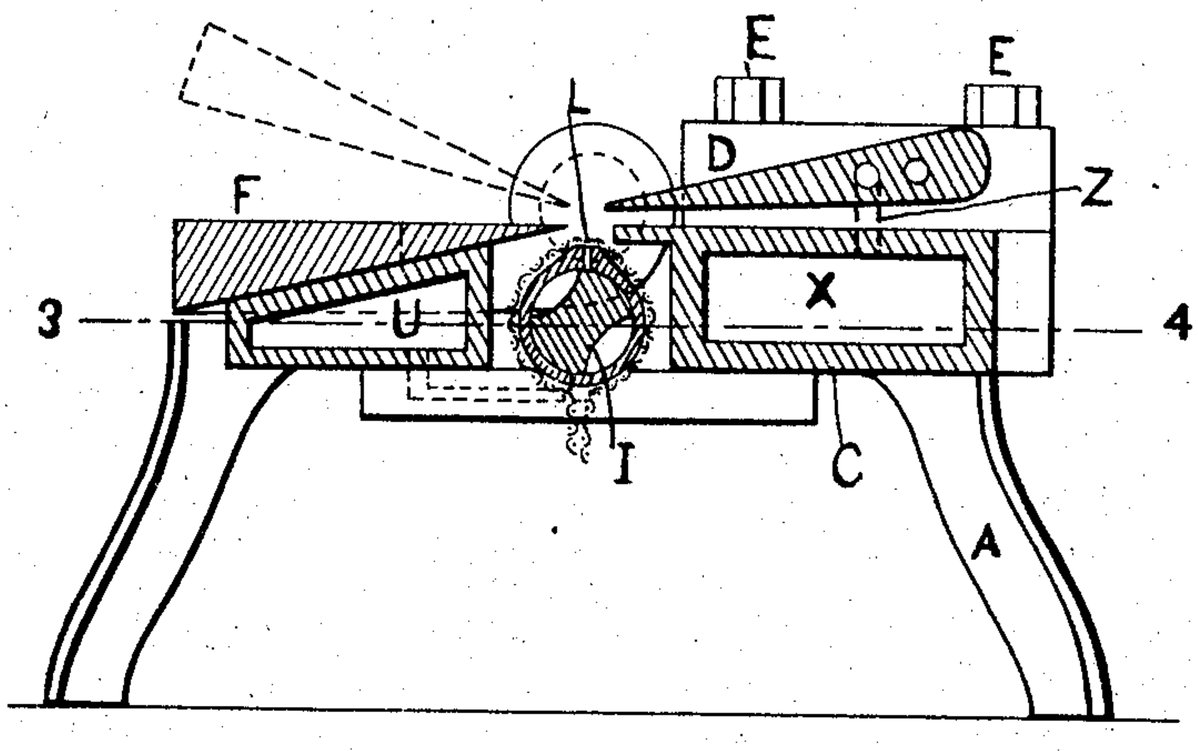

FIG. 2.

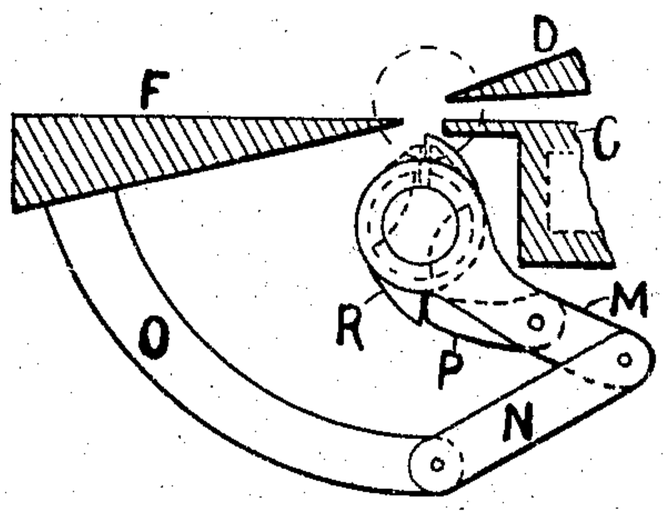

FIG. 3.

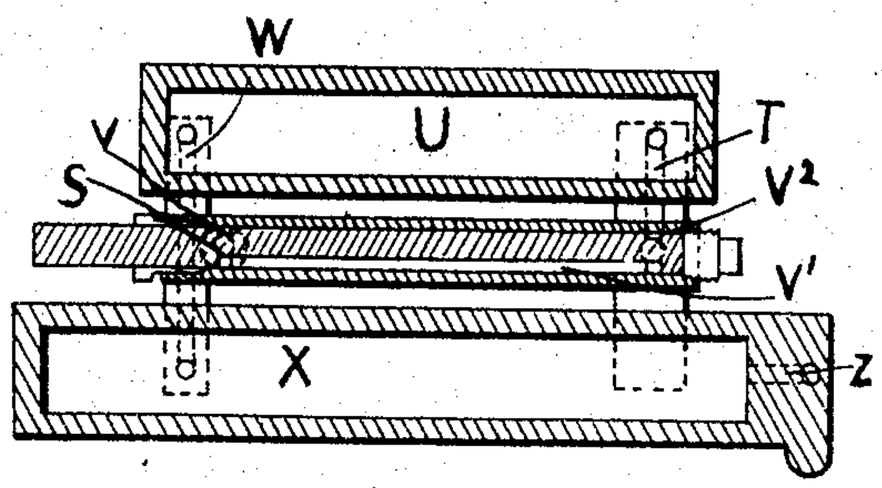

FIG. 4.

WITNESSES-

E. Howarth.

Edmund V. Newton

INVENTOR-

Frederick William Collier

PHOTO-LITHOGRAPHED BY SACHETT & WILHELMS LITHO. & PTG. CO. NEW YORK.

No. 780,707. Patented January 24, 1905.

UNITED STATES PATENT OFFICE.

FREDERICK WILLIAM COLLIER, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO GEORGE L. HOOPER & SON, OF SALEM, MASSACHUSETTS.

COLLAR-FOLDER.

SPECIFICATION forming part of Letters Patent No. 780,707, dated January 24, 1905.

Application filed June 13, 1904. Serial No. 212,445.

To all whom it may concern:

Be it known that I, FREDERICK WILLIAM COLLIER, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented new and useful Improvements in Collar-Folders; and I do hereby declare the following description, with the accompanying drawings, to be a specification of the same.

My invention has for its object the simultaneous dampening and folding of collars after they are ironed, particularly stand-up collars with the corners folded back, which are called "wing-point" collars, for the purpose of making the breaking of the collar at the fold impossible.

To better describe my invention, reference will be had to the accompanying drawings, of which—

Figure 1 is a plan of a machine embodying my invention. Fig. 2 is a transverse sectional elevation on line 1 2, Fig. 1. Fig. 3 is a diagram showing the working of the valve. Fig. 4 is a lateral section on the line 3 4, on a reduced scale, Fig. 2.

The main frames A A′, Fig. 1, of suitable shape, are provided with bearings B B′, which support and in which turns the part F. The part C is secured to the frames A A′ and the part D is bolted to the part C by the bolts E. At each end of part F are journals G, upon one of which as it projects through the bearing B is made fast the crank H. The foregoing parts constitute the folder proper, the part D being wedge-shaped, with the thin edge thereof close to the axis of the journals G. The collar being inserted between the parts C and D and overlapping the part F is folded over the part D by the operation of turning the crank H after the well-known manner of sheet-metal-folding apparatus; but in the case of collars it is necessary that the line upon which they are folded should be dampened, and I have found steam to be the best medium for thus dampening the collar, provided it be applied simultaneously with the folding operation, and it is in the following combination of a steam-dampening device with a collar-folder that my improvements consist.

I am aware that steam-dampeners for collars have been used; but they have applied the steam to the inside of the fold, whereas by my improvement the steam is applied to the outside of the folded portion for the purpose of softening the outside the more, so that it will stretch as the fold is made instead of forcing the inside to wrinkle.

In carrying out this invention steam is introduced through the valve I, which when it is open allows the steam to issue through the small holes L, the separate jets uniting and forming a single jet, which plays directly against the under surface of the collar, which becomes the outside of the fold after the collar is folded about the part D. By means hereinafter described this valve is made to open as soon as the folder is turned from its initial position and to close when the said folder F has completed a quarter-revolution. This is to allow the collar to receive just the right amount of dampness. The operation of the valve is in the following manner: The valve is bisegmental, having a groove in each side thereof. The crank M is made to swing loosely upon the valve-stem, except when the pawl P engages one of the teeth in the ratchet R, in which case the valve rotates with the forward movement of the crank, the ratchet being fast upon the valve-stem. Now the crank M being connected by the connecting-link N with the arm O, which is rigid with the folder F, is made to revolve through one hundred and eighty degrees about the valve-axis by the movement of the folder through its proper arc, and upon the return of the folder F and the crank M to their initial positions the pawl P engages the opposite tooth of the ratchet R, and thus the valve completes a cycle for every two operations of the folder. The relative sizes of the grooves in the valve to the circular portions of the same are such as to make the valve close and shut off the dampening steam when the folder has completed a quarter-turn. This is to prevent the excessive dampening of the collar. Now to prevent the condensation of the escaping steam upon the parts of the folder and consequent injury to the collar I have provided a system of steam circulation through

the parts of the machine to keep them heated. The exact course of this circulation is not important; but I have found it convenient to conduct the steam in the following manner: The inlet to the valve is at S, Fig. 4, whence the steam passes into the annular groove V, and thence through the groove V′ to the annular groove V″ and through the passage T to the cored chamber U in the part C, thence through the passage W at the other end of the chamber U to the cored chamber X, and thence upward through the passage Z, Fig. 2, to the part D, and thence through the U-shaped passage Y, Fig. 1, to the outlet K. The part F is heated by resting when in its initial position upon the shell of the chamber U, which shell is rigidly supported by the frame of the machine. I have further found that for the successful operation of this method of dampening it is necessary to strain or screen the escaping steam with coarse fabric to eliminate any particles of water or dirt therein. This is done by wrapping the fabric, which is preferably scrim or cheese cloth, around the outside of the valve.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an apparatus of the class described, the combination of a folder for collars, and a suitable steam-dampening device, operating automatically with the operation of the folder and dampening the outside surface of the folded portion of the collar, substantially as, and for the purposes set forth.

2. In an apparatus of the class described, the combination of a folder for collars, constructed to be heated by steam passing internally through the parts thereof, and a suitable steam-dampening device operating automatically and simultaneously with the operation of the folder, and dampening the outer surface of the folded portion of the collar, substantially as, and for the purposes set forth.

In witness whereof I have hereunto set my hand.

FREDERICK WILLIAM COLLIER.

Witnesses:

A. F. HOWARTH,

EDMUND V. NEWTON.