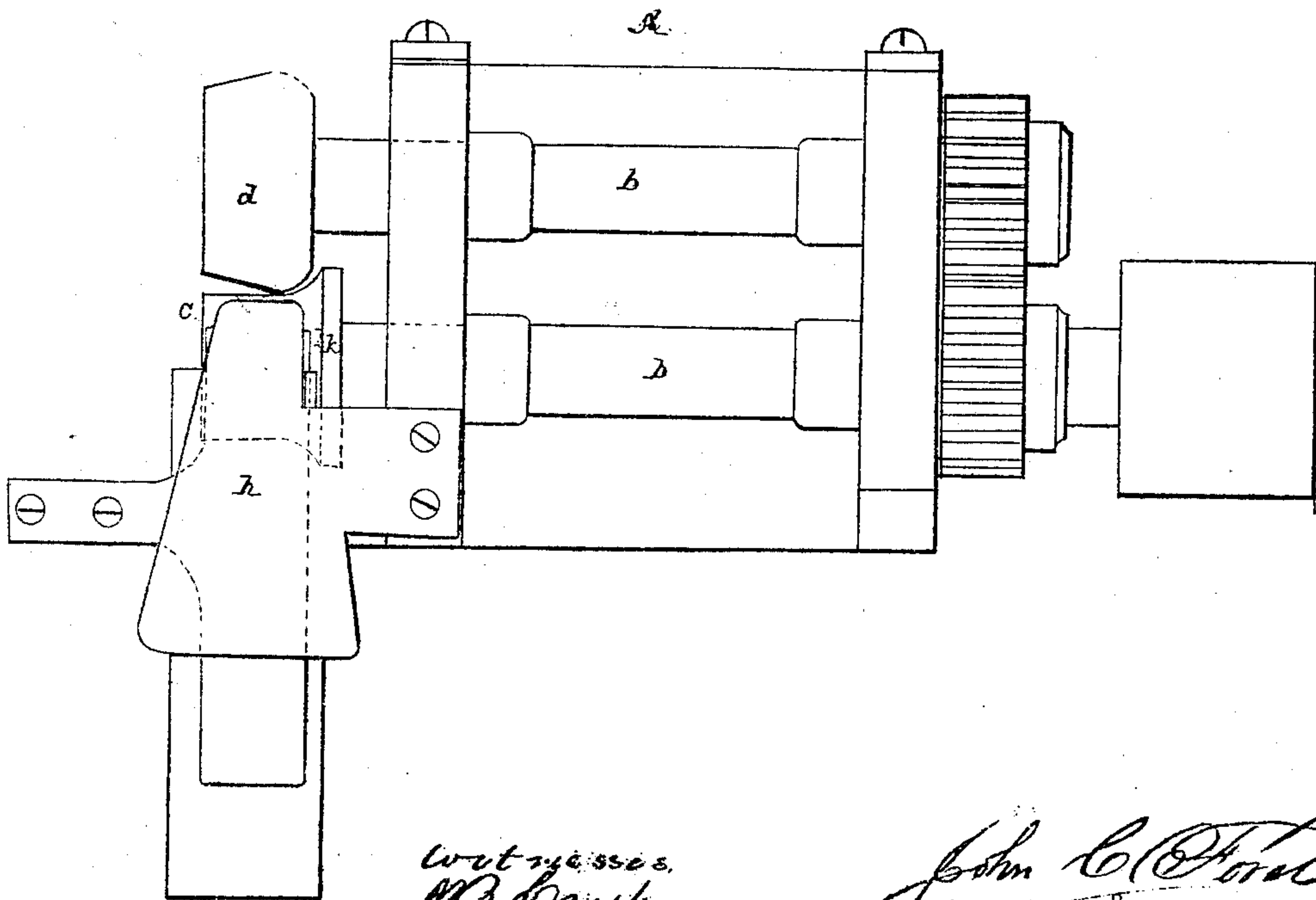
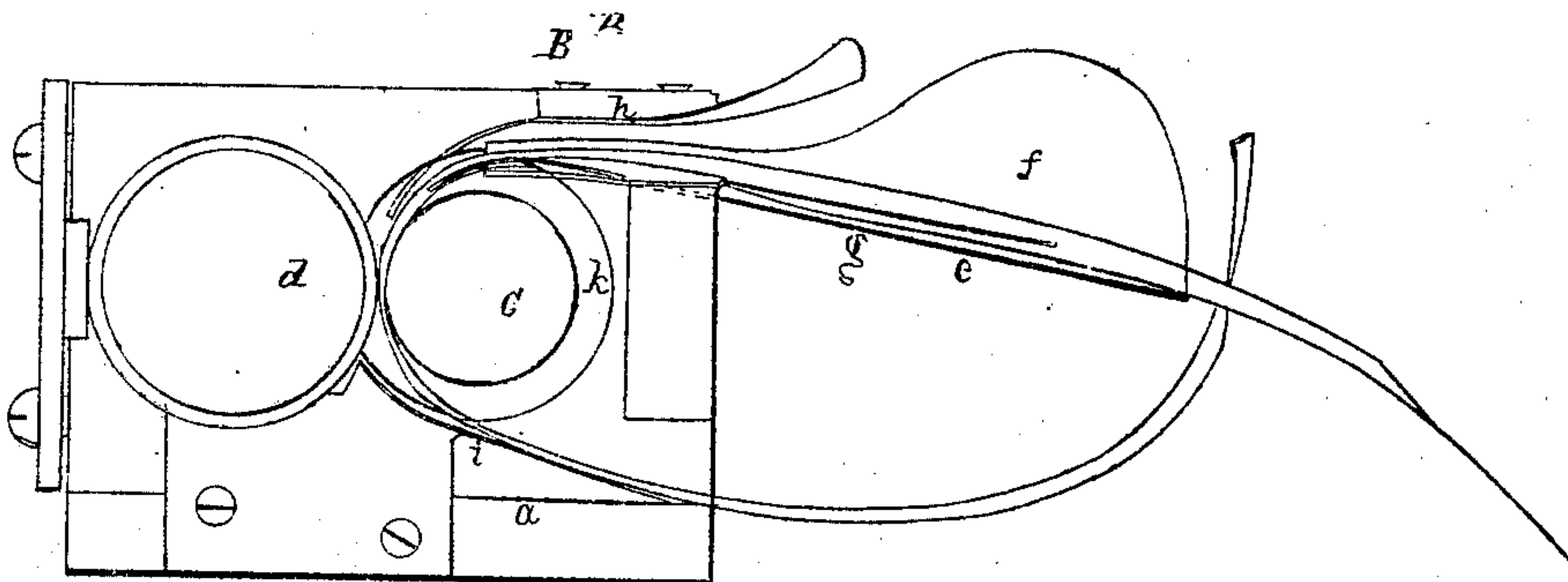
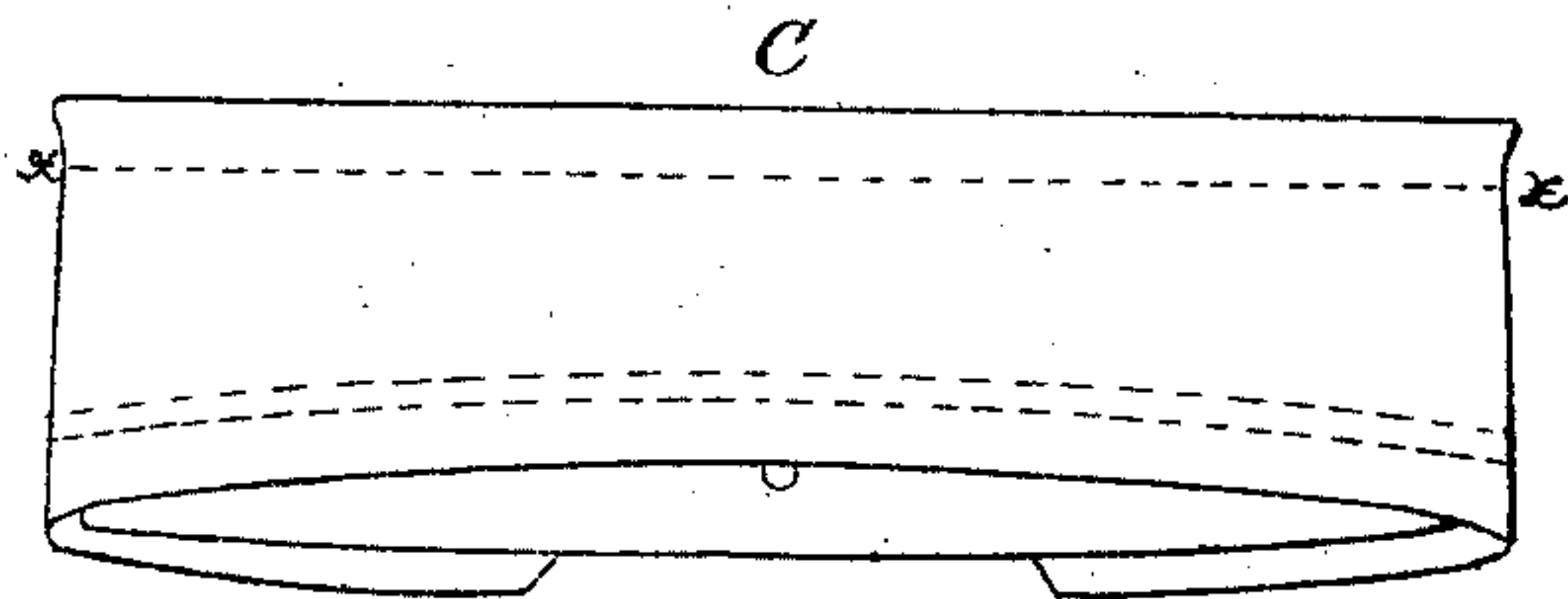


J. C. Ford.
Collar Machine.

No. 57308.

Patented Aug. 21. 1866.



Witnesses,
W. B. Crosby
H. Gould

John C. Ford

UNITED STATES PATENT OFFICE.

JOHN C. FORD, OF CAMBRIDGE, MASSACHUSETTS, ASSIGNOR TO D. L. RICE
AND W. M. RICE.

IMPROVEMENT IN PAPER-COLLAR MACHINES.

Specification forming part of Letters Patent No. 57,308, dated August 21, 1866.

To all whom it may concern:

Be it known that I, JOHN C. FORD, of Cambridge, in the county of Middlesex and State of Massachusetts, have invented an Improvement in the Manufacture of Paper Collars; and I do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

In the manufacture of folded paper collars various methods have been employed to shape or mold the collar into form so as to fit the neck of the wearer without drawing or puckering the inner surface, and also to cause the upper edge of the collar to stand away from the neck.

To effect these objects the collar is sometimes turned over or folded upon a curved line, and sometimes upon a straight line, the collar being subsequently stretched or elongated at the fold, this elongation and the molding into form being generally produced by a frusto-conical plunger pressed into the inner surface of the collar at the top, the ends of the collar being clamped together to accomplish this molding.

My invention relates to this formation or molding into shape of folded paper collars, the object of the same being to facilitate this part of the manufacture by the employment of a more practical mechanism than that heretofore used, and by a process which leaves the stock of the collar in better condition to wear or free from injurious strain upon the fibers of the paper at or near the fold.

The invention consists in the new process by which this is effected—that is to say, by passing the folded collar from guide-plates between a convex and a concave surface-pressure roll and partially around the surface of the concave roll, the form of the rolls being such that the collar is curved laterally to throw out the upper edge equally along the whole length of the collar.

A machine in which collars are so treated is represented in the drawings, A being a plan, and B an end view of the same. C shows the collar formed into shape.

a denotes a bed supporting two rotary shafts, *b*, geared together at one end and carrying at

the opposite end two rolls, *c d*. The roll *c* has a concave surface, in connection with which the convex surface of the roll *d* operates. A series of guide-plates is fixed in a plane above the upper surfaces of the rolls. The lower plate, *e*, has a guide-wall, *f*, against which the edge of the collar-fold is held. The next plate, *g*, extends into the fold and holds the band down to the surface of the plate *e*, while the upper plate, *h*, holds the outer portion of the collar down to the plate *g* and is extended over the roll *c*, and guides the entering end of the collar down into contact with and so as to be caught by the forming-surfaces of the rolls *c d*. The collar, upon being caught by the rolls, passes around the roll *c*, as seen by the red line, until it reaches a plate, *i*, beneath the roll, by which, after being formed, it is guided from the machine.

The wall *f* of the guide *e* is in or nearly in line with the edge of the roll *d*, and from this edge the roll curves up abruptly, so as to form a projection around the same, from which to its outer edge the roll tapers gradually. The concavity in the roll *c*, opposite the projection on the roll *d*, extends in beyond the edge of the roll *d*, ending in a projecting edge, *k*, which aids in keeping the collar properly in line as it is passed through the rolls. The most prominent surface of the roll *d* approaches the nearest to the surface of the roll *c*, and so that the part of the collar coming against the same is pinched between the surfaces of the two rolls, thereby feeding the collar, but leaving the edge at the fold free from pressure, the curvatures in the rolls producing the lateral curve in the same as it is fed and while it is curved around the surface of the concave roll. From the shape of the rolls it will be obvious that this lateral curvature is produced near the fold of the collar, or from the line *xx* at C to the fold.

In molding a collar to form, by stretching the edge at the fold the fibers of the paper are unduly strained and weakened at the fold; but in this process it will be observed that the collar is not stretched or extended upon this line, but is simply curved laterally near the edge.

By passing the collar partially around the roll *c* it is bent into, or so as to easily acquire,

the circular shape necessary for packing and for wear, while by having the collar so bent while the rollers are acting upon it the effect is to turn out the upper edge without rupture or injurious displacement of the fibers.

A third roll may be used in connection with the rolls *c d*, or a series of greater number, so as to gradually form the lateral curvature; but generally I prefer the arrangement shown and described.

I claim—

The combination of the convex and concave rolls *c* and *d* and the guides or guiding-surfaces *e, f, g*, and *h*, when arranged to operate substantially as described.

In witness whereof I have hereunto set my hand this 12th day of August, A. D. 1865.

JOHN C. FORD.

Witnesses:

J. B. CROSBY,
FRANCIS GOULD.