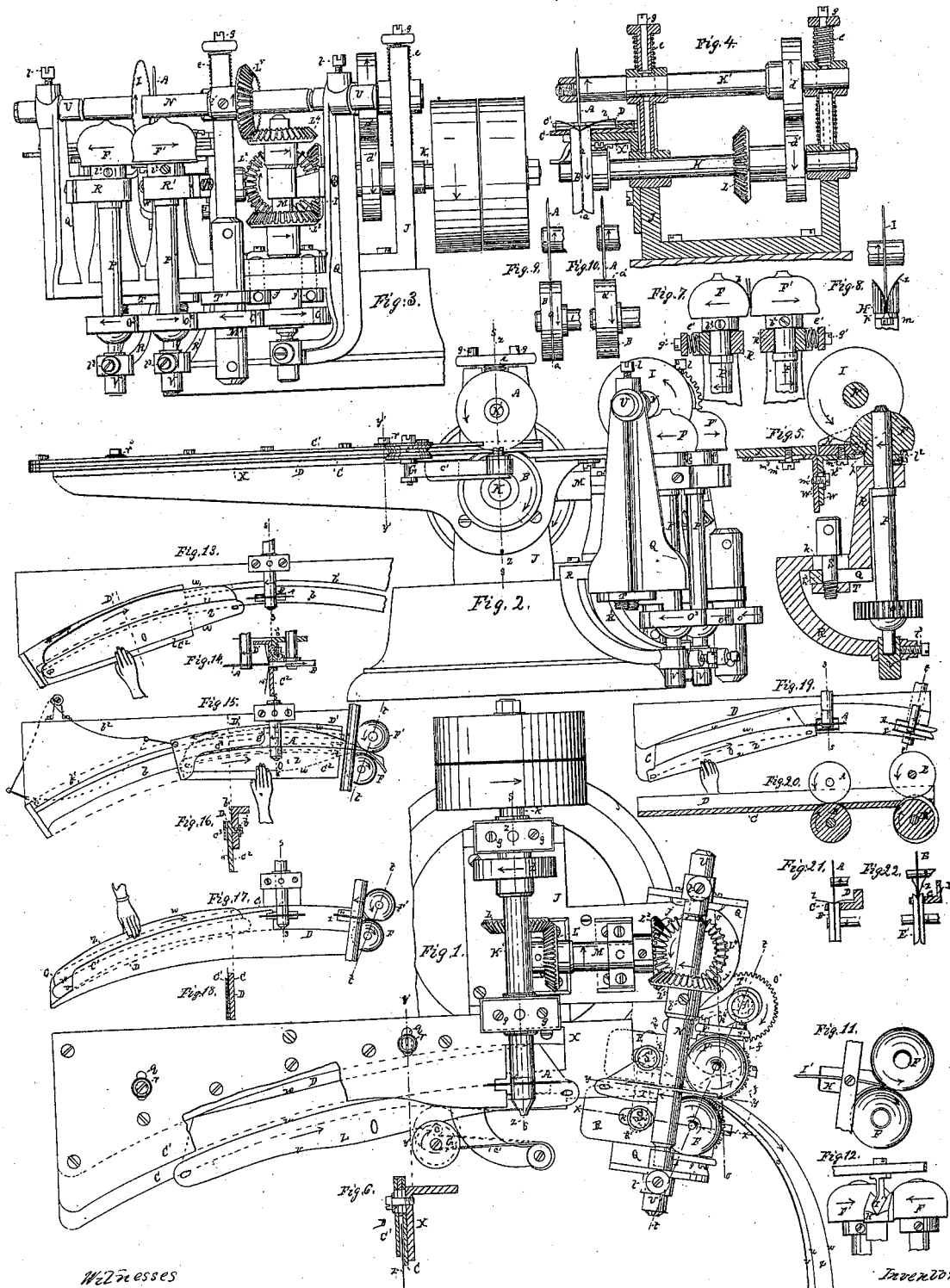


CK Brown & W Wright *Collar Machine.*

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N^o 54,244.



Witnesses

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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN PAPER-COLLAR MACHINES.

Specification forming part of Letters Patent No. 54,244, dated April 24, 1866.

To all whom it may concern:

Be it known that we, CHARLES K. BROWN and WILLIAM WRIGHT, each of the city of Troy, in the county of Rensselaer and State of New York, have jointly invented certain new and useful Improvements in Machines for Folding Ladies' and Gentlemen's Collars and other Articles, of which invention the following is a full and exact description, reference being had to the accompanying drawings, in which—

Figure 1 is a plan, Fig. 2 a side elevation, Fig. 3 an end elevation, Fig. 4 a section at the line $z z$ in Figs. 1 and 2, Fig. 5 sections at the lines $y y$ and $x x$ in Fig. 1, Fig. 6 a section at the line $y' y'$ in Figs. 1 and 2, and Figs. 7 and 8 views of detached parts, all of one of our improved machines; and Figs. 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, and 22 represent modifications thereof, like parts being marked by the same letters in all the figures, and the arrows therein being indicative of the directions in which the parts move.

Turn-over collars for ladies and gentlemen are commonly folded in a curved line and have their longitudinal edges of various shapes in respect to the line in which the collar is folded, as illustrated by Figs. 1, 19, 17, 15, and 13, wherein Z is a collar, w and v its longitudinal edges, and u its line of fold.

One part of our invention consists in so combining a set of rotary creasing or folding wheels and a suitable device for supporting and guiding a lady's or gentleman's collar, cuff, or wristband or a similar article in a curved course while being passed endwise through between the said creasing or folding wheels that the collar or other article will be creased, folded, or partly folded progressively from end to end in a curved line, not necessarily parallel, or nearly so, to either longitudinal edge of the collar or other article, as commonly required in turn-over collars, by moving the collar or other article along against or with the said supporting and guiding device in passing the collar or other article through between the said creasing or folding wheels when the latter are in rotary motion.

A second part of our invention consists in so combining a set of rotary creasing or folding wheels, a suitable device for supporting and guiding a lady's or gentleman's collar or a similar article in a curved course while being

passed endwise between the said creasing or folding wheels, and an additional folding or pressing mechanism that the collar or other article will have a crease, fold, or partial fold made therein progressively from end to end in a curved line, not necessarily parallel, or nearly so, to either longitudinal edge of the collar or other article, as commonly required in turn-over collars, and will also have such crease, fold, or partial fold deepened, increased, pressed, or completed progressively from one end to the other, all at a continuous operation, by being moved along against or with the said supporting and guiding device while being passed through between the said creasing or folding wheels when the latter are in rotary motion.

In carrying the two aforesaid parts of our invention into operation we make the creasing or folding wheels (marked $A B$ in the drawings) of any suitable shape and material. Thus, for example, we commonly make the inside wheel, A , with a thin rounded edge, and the face of the outside wheel, B , with a groove, a , Figs. 4 and 9, of greater or less depth, according to the depth or degree of the crease or fold desired to be made by those wheels; and we commonly make such wheels of some hard material, such as iron, steel, brass, or glass, but contemplate making the outer wheel with an elastic grooved or flat face, a' , Fig. 10, as of india-rubber.

In carrying the two aforesaid parts of our invention into operation we construct the device for supporting and guiding the collar or other similar article in a curved course while being passed endwise between the creasing or folding wheels in any suitable manner. Thus, in case the end portions of either longitudinal edge, w or v , of the collar or other article extend as far as or farther than the intervening portion from the line of fold u , as shown in Figs. 1, 17, and 19, we then commonly make the said supporting and guiding device to consist essentially of a bed or side-support, C , or side-supports C and C' and a curved edge-guide, D , Figs. 1, 2, 4, 6, 17, 18, 19, 20, 21, the said edge-guide D being either concave, as in Figs. 1 and 19, or convex, as in Fig. 17, according as the end portions of the edge w on the convex side of the line of fold u , or of the edge v on the concave side of that line, pro-

ject farther than the intervening or middle portion from such line of fold. When, as illustrated in Figs. 13 and 15, the middle portion of both longitudinal edges w and v of the collar or other article projects farther than the end portions from the curved line of fold u , we in such cases make the device for supporting and guiding the collar or other article in a curved course while being passed endwise between the creasing or folding wheels to consist essentially of a movable carrier of any suitable construction, in, upon, or by which the collar or other article is held or to be held and moved to and fro in a curved course corresponding to the curve of the line in which the collar or other article is to be folded. For example, in Figs. 13, 14, 15, and 16 the said carrier consists, essentially, of a bed or side-support, C^2 , or side-supports C^2 C^3 and an edge-guide, D' , for the collar or other article, Z , all united together and fitted to slide to and fro past the creasing or folding wheels A B on a table, b , along a curved slot, b' , therein. In Fig. 15, b^2 is a spring for drawing the carrier back from the wheels A B .

In carrying the aforesaid second part of our invention into operation we employ an additional folding or pressing mechanism of any suitable kind. Thus we most commonly prefer to have such mechanism consist essentially of two rotary folding or pressing rollers, F F' , Figs. 1, 2, 3, 7, 11, 12, 15, 17, furnished with a set of inner and outer guides, I H or I' H , or othersuitable means for receiving and properly directing into or between the said rollers the creased, folded, or partly-folded collar or other similar article as it comes from and before it entirely leaves the creasing or folding wheels A B ; but we sometimes use a set of male and female folding-wheels, E E' , substantially as shown by Figs. 19, 20, and 22, to increase or deepen the crease or fold or partial fold progressively from end to end as it is made in a curved line in a collar or a similar article by the primary creasing or folding wheels A B . In either case we commonly make the rollers F F' or the wheels E E' of such shape, Figs. 7 and 22, that they will act or press hardest mostly on that part of the collar or other article, Z , which is along or near the crease or fold therein, and we so combine the rollers F F' or wheels E E' with the wheels A B that the working-surfaces of all shall turn with the same or about the same surface speed; and in either case we generally arrange the rollers F F' or the wheels E E' with their axes in a plane, t t , Figs. 1, 15, 17, 19, which is inclined to the plane s s , in or nearly in which the axes of the creasing or folding wheels A B are arranged, in order that the creased, folded, or partly-folded collar or other article may pass from the wheels A B and enter between the said rollers F F' or wheels E E' without being materially or injuriously bent or turned out of the curved course in which it leaves the said primary creasing or folding wheels.

In using either of the two aforesaid parts of

our invention, as shown by the aforesaid drawings, a person places by hand the collar or other article, Z , sidewise against the support C or C^2 , or between the supports C and C' , or C^2 and C^3 , and with one edge of the collar or other article against the edge-guide D or D' , as indicated in Figs. 19, 17, and 13, and then moves by hand the collar or other article along against the edge-guide D and side-support C or side-supports C C' , or with the guide D' and side-supports C^2 or side-supports C^2 and C^3 , and through between the aforesaid wheels A B when the latter are in rotary motion. By so doing the wheels A B will make a crease, fold, or partial fold in the collar or other article progressively from end to end in a curved line corresponding to the curve of the course in which the collar or other article is thus passed through between those wheels. And in case the additional folding or pressing wheels or rollers, F F' or E E' , are combined with the wheels A B , as aforesaid, the curved crease, fold, or partial fold made by the wheels A B , as aforesaid, will at the same time be deepened, increased, compressed, or completed progressively from one end to the other by the said additional folding or pressing wheels or rollers. And in some cases the pressing-rollers F F' , in combination with the creasing or folding wheels A B , may cause the collar or other article to continue its endwise movement in the proper curved course between the wheels A B after the forward end of the moving collar or other article shall have been caught by and between the said rollers F F' , as indicated in Fig. 15, without further assistance from the aforesaid supporting and guiding device.

Another part of our invention consists in combining a springing or yielding edge-presser, G , Figs. 1 and 2, with the hereinbefore-described combination of a side-support, C , or side-supports C C' , a curved pattern edge-guide, D , and two creasing or folding wheels, A B , either with or without an additional folding or pressing mechanism, substantially such as hereinbefore described, in such a manner that when a suitable collar or other article shall be placed flatwise against the side-support C or between the side-supports C C' , and edgewise between the said yielding edge-presser G and curved pattern edge-guide D , with one end of the collar or other article just inserted between the rotary wheels A B , as indicated in Fig. 1, the yielding edge-presser G will then keep the rear part of the edge w , Fig. 1, of the collar or other article close against the curved pattern edge-guide D while the collar or other article is being drawn through by and between the wheels A B , whether the edge v , Fig. 1, of the collar or other article against which the yielding presser directly bears is of a regular or irregular shape, and will thereby insure the passage of the collar or other article in the proper curved course between the wheels A B , and also secure the passage of the collar or other article from the

wheels A B in the proper curved course to enter and be drawn through by the aforesaid additional folding or pressing mechanism in case the latter shall be combined with the wheels A B, as hereinbefore described.

We construct the edge-presser in any suitable manner. Thus in Figs. 1 and 2 it consists of a light grooved roller; *c*, on a spring, *c'*.

Another part of our invention consists in combining two rotary creasing or folding wheels, A B, substantially such as hereinbefore described, and two rotary folding or pressing rollers, F F', arranged so as to revolve in a plane perpendicular, or nearly so, to that in which the said creasing-wheels turn, and furnished with inner and outer guides, I H or I' H, between the said wheels and rollers, in such a manner that a lady's or gentleman's collar, cuff, or wristband, or other similar article, of paper, stiffened cloth, paper and cloth combined, or other similar material, will have a crease, fold, or partial fold made therein progressively from end to end by the said creasing or folding wheels A B, and will also have such crease, fold, or partial fold increased, pressed, or completed progressively from one end to the other by the said folding or pressing rollers F F', all at one continuous operation, upon merely passing the collar or other article freely endwise through between the said creasing or folding wheels A B in a uniform course, whether such course be determined by the directive action of the said rotary creasing or folding wheels themselves, either alone or aided by a guide or guides, or by a person either with or without mechanical aids, or by any suitable self-acting feeding mechanism.

In carrying this part of our invention into operation we make the said rollers F F' of any suitable shape and arrange them with their axes in a plane or planes either inclined or parallel, or nearly parallel, to the plane in which the axis of the said creasing or folding-wheels are arranged, according as the combination is intended for use in folding the collars or other articles in a curved line or in a straight one. Thus in Figs. 1, 15, 17 the rollers F F' are shown with their axes in a plane, *t t*, which is inclined to the plane *s s*, in which the axes of the said wheels A B are arranged, as is proper when the collars or other articles are to be fed through between the wheels A B in a curved course; and in Fig. 1 the dotted lines *ff* indicate the position of the two folding or pressing rollers with their axes in a plane, *o o*, which is parallel, or nearly so, to the plane in which the axes of the wheels A B are placed, as is proper when the article to be folded is passed in a straight course between the wheels A B; and we make either one or both of the said inner and outer guides, I H or I' H, either rotary or stationary, and of any form and arrangement which will secure the proper introduction into the rollers F F' of the creased, folded, or partly-folded collar or other article

as it leaves the creasing or folding wheels, as, for example, in Figs. 11 and 12 the guides I' H are both fixed, and in Figs. 1, 2, 3, 5, and 8 the guide I is circular and rotary and the guide H stationary, while in Figs. 5 and 8 the lines *p* indicate a loose friction-roller in the guide H.

And another part of our invention consists in combining a rotary guide, I, and a grooved or flaring guide, H, with two rotary rollers, F F', in such a manner that when a creased, folded, or partly-folded collar or other similar article in its naturally open or expanded condition shall have one end introduced into, with its crease, fold, or partial fold between, the said guides I H, either by hand or by any suitable mechanical means, the said guides themselves will then press toward each other the parts of the end portion of the collar or other article on each side of the line of fold therein, and by means of the revolving guide I also tend to properly introduce the end of the collar or other article between the rotary rollers F F', and thereby insure the proper completion of the fold by such rollers without requiring the end portion of the creased or partly-folded collar or other article to be pressed together by hand preparatory to being introduced between the rollers.

In carrying the aforesaid parts of our invention into operation we mount the aforesaid elements thereof in any suitable frame, and in either permanently fixed or adjustable working positions, in any suitable manner, and revolve the aforesaid creasing or folding wheels, rotary guide, and additional folding or pressing wheels or rollers by any suitable means. Thus, for example, in the machine shown by Figs. 1, 2, 3, 4, 5, 6, 7, and 8 of the aforesaid drawings, J is the main supporting-frame. K is the main driving-shaft, on which the wheel B is fastened, and from which the wheel A, fast on the shaft K', is revolved by friction-wheels *d d*, respectively fast on the shafts K K', the wheel A being pressed toward the wheel B and the wheel *d* against the wheel *d'* with an adjustable yielding force by springs *e e*, compressed by adjusting-screws *g g*. The circular guide I receives rotary motion from the shaft K through the bevel-wheels L L', shaft M, bevel-gears L² L³, shaft M', bevel-gears L⁴ L⁵, and shaft N.

The rollers F F' receive rotary motion from the shaft M' through spur-gears O O' O² O³ and spindles P P', and are pressed toward each other with an adjustable yielding force by springs *e' e'*, Fig. 7, compressed by adjusting-screws *g' g'*. The rollers F F' and rotary guide I are in a sub-frame, Q, adjustable about the axis of the wheels L⁴ and O as a center by screw-bolts *j j*, Fig. 3. The rollers F F' are carried by holders R R', adjustable crosswise to and lengthwise of the shaft N, and in circular directions about screw-bolts S S', Figs. 1 and 5, by those bolts extending through slots *k k'* and *k² k³* in the parts Q and R R', and

screwing into a connecting-bar, T, the spur-wheel O' being adjustable with its stud M² in a slot, k⁴, Fig. 1, in an arm, T', on the frame Q.

The guide I is adjustable by having its spindle N turn in endwise-movable sockets U U, held in the frame Q by set-screws l l, with the wheel L², movable and fastened by a set-screw, l'; and the guide H is also adjustable by being fastened by a screw-bolt, m, Fig. 5, to a bracket, W, which is held by a screw, m', to an arm, W', which is secured to the frame J by a screw-bolt, m², through a slot, m³, in that arm. The guide H is adjustable toward the guide I by the screw-bolt m', extending through a slot, k⁵, in the bracket W; and the rollers F F' are adjustable endwise by set-screws l' l', and by sliding spindle-sockets V V, secured by set-screws l' l'.

The edge-guide D and side-supports C C' are adjustable on a bed-plate, X, of frame J by screw-bolts r r extending through slots q q into the plate X, and by unscrewing those bolts the edge-guide and side supports can be removed and others substituted of different shape.

By thus making the parts adjustable one and the same machine can be used for making a crease, fold, or partial fold, and simultaneously completing the same in ladies' or gentlemen's collars, cuffs, or wristbands, or similar articles, of various sizes, shapes, and thickness, and in lines either straight or of different degrees of curvature, by using different suitably-shaped pattern edge-guides D with side guides or supports, or other suitable devices for supporting and guiding the collars or other articles in the proper course while being passed through between the aforesaid creasing or folding wheels and pressing or finishing rollers.

When the collar or other article to be pressed or finished by rollers F F' is folded in a curved line, or when the folded collar or other article is to be somewhat bent around one of those rollers in passing between them, as indicated in Fig. 1, we in such cases commonly revolve the outer roller, F', with a greater surface speed than the inner roller, F, to correspond to the greater distance that the outer side of the folded article has to move; and in finishing such articles by rollers we sometimes prefer to have the inner roller, F, of a convex

shape and the outer one, F', of a corresponding concave form, as indicated in Fig. 7, so as to thereby somewhat mold the folded edge of the article in its passage between the rollers.

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

1. A combination of two rotary creasing or folding wheels and a device, substantially such as herein described, for supporting and guiding a collar or a similar article in a curved course while being passed endwise between the said creasing or folding wheels, whereby collars or similar articles can be creased, folded, or partly folded progressively from end to end in a curved line, substantially as herein described.

2. A combination of two rotary creasing or folding wheels, a device for supporting and guiding a collar or a similar article in a curved course while being passed endwise between the said creasing or folding wheels, and an additional folding or pressing mechanism, whereby collars or similar articles can have a crease, fold, or partial fold made therein progressively from end to end in a curved line, and also have such crease, fold, or partial fold increased, pressed, or finished progressively from one end to the other, all at a continuous operation, substantially as herein described.

3. The combination of a yielding edge-presser, G, curved pattern edge-guide D, side-supports C, or side-supports C C', and creasing or folding wheels A B, either with or without an additional folding or pressing mechanism, substantially as herein described.

4. The combination of two creasing or folding wheels, A B, and two folding or pressing rollers, F F', arranged so as to revolve in a plane perpendicular, or nearly so, to that in which the said creasing or folding wheels turn, and furnished with inner and outer guides between the said wheels and rollers, substantially as herein described.

5. The combination of a rotary guide, I, and a grooved or flaring guide, H, with two rotary rollers, F F', substantially as herein described.

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