

(No Model.)

4 Sheets—Sheet 1.

G. E. NORRIS.

MACHINE FOR FOLDING COLLAR OR CUFF BLANKS.

No. 502,678.

Patented Aug. 1, 1893.

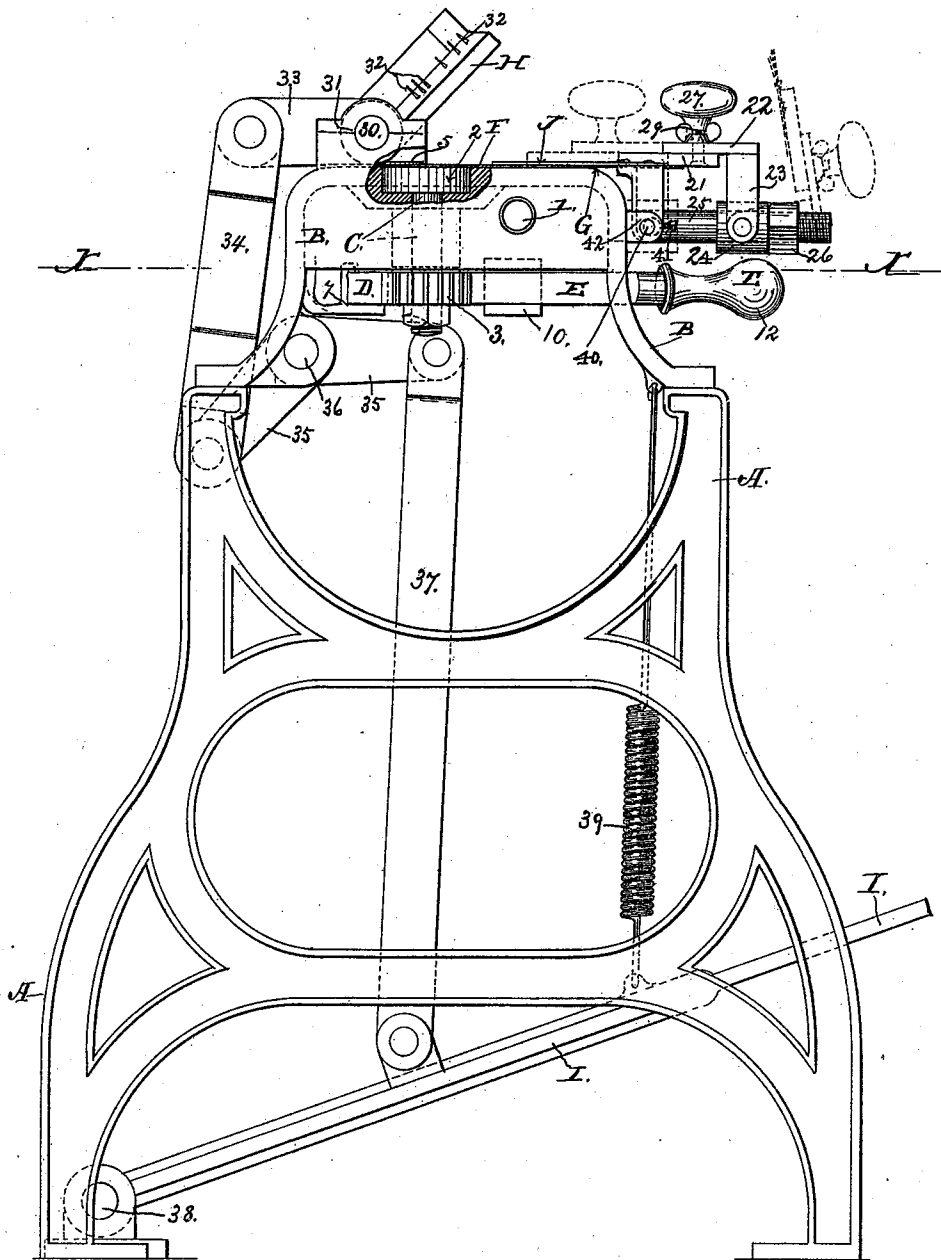


FIG. 1.

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INVENTOR:

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(No Model.)

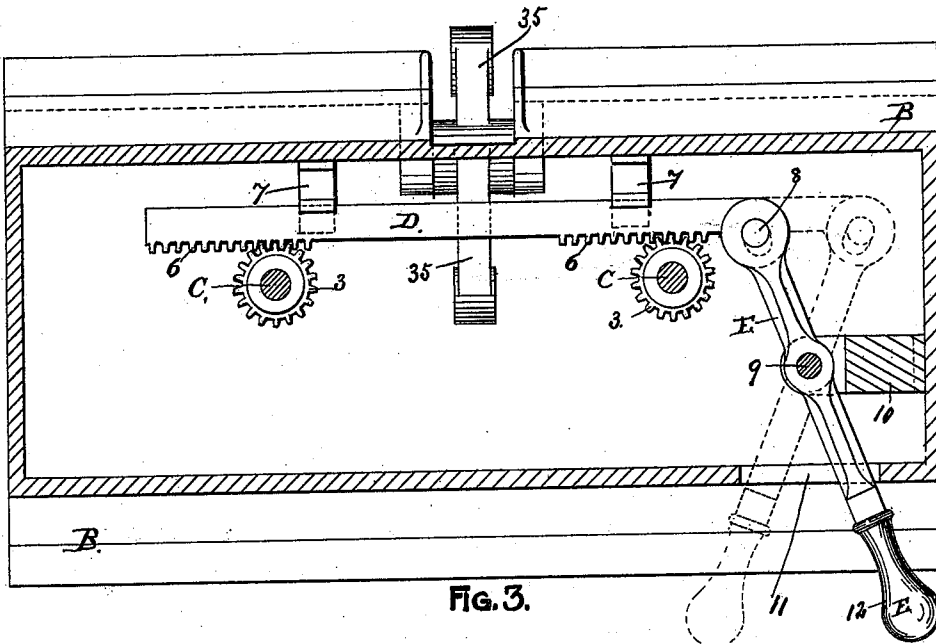
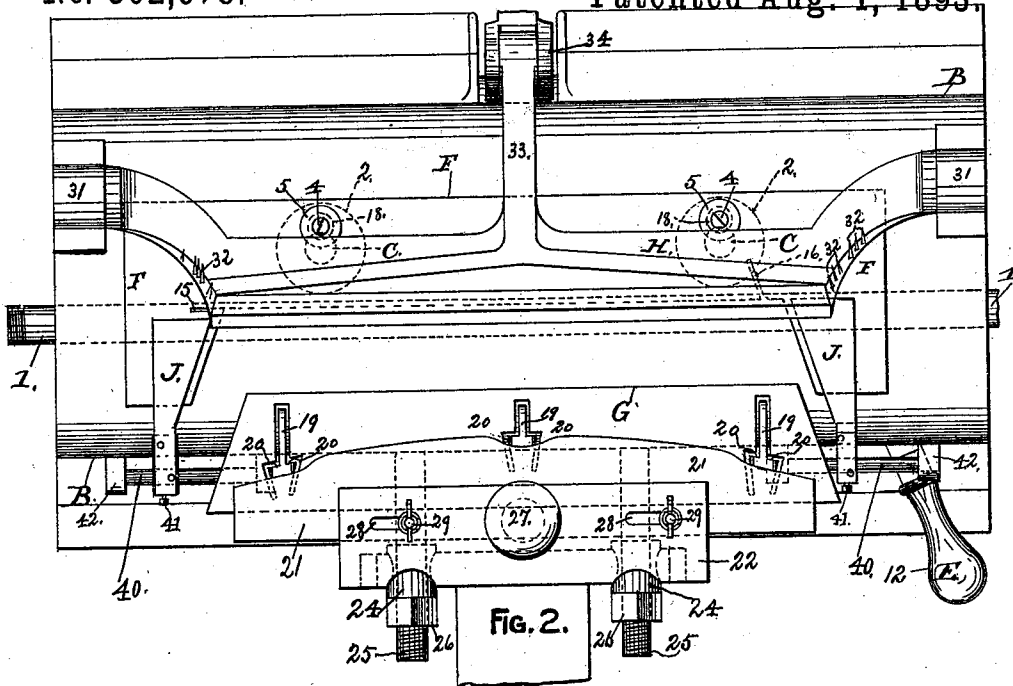
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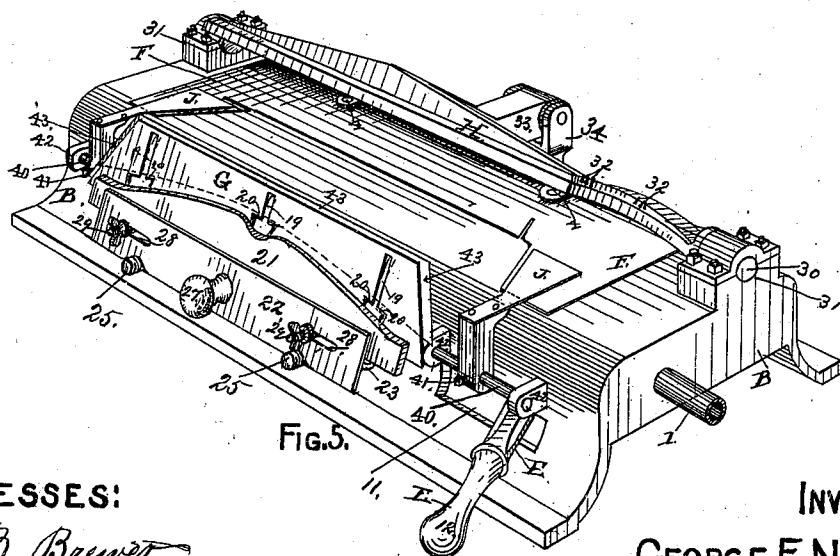
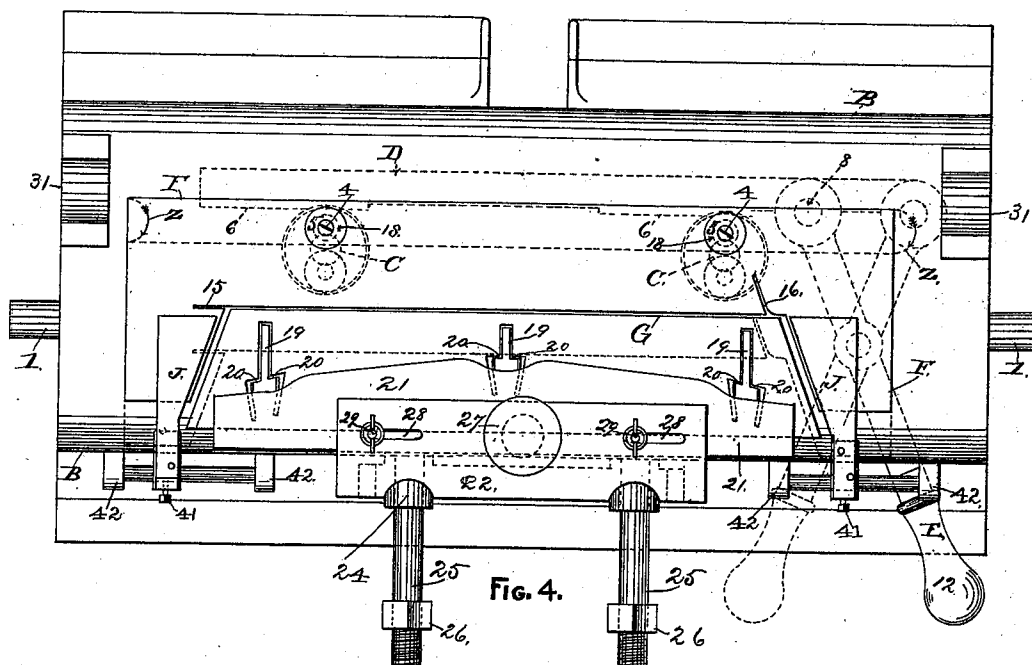
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Patented Aug. 1, 1893.



WITNESSES:

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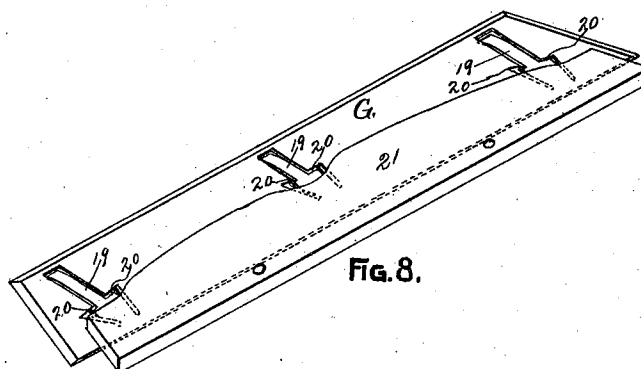
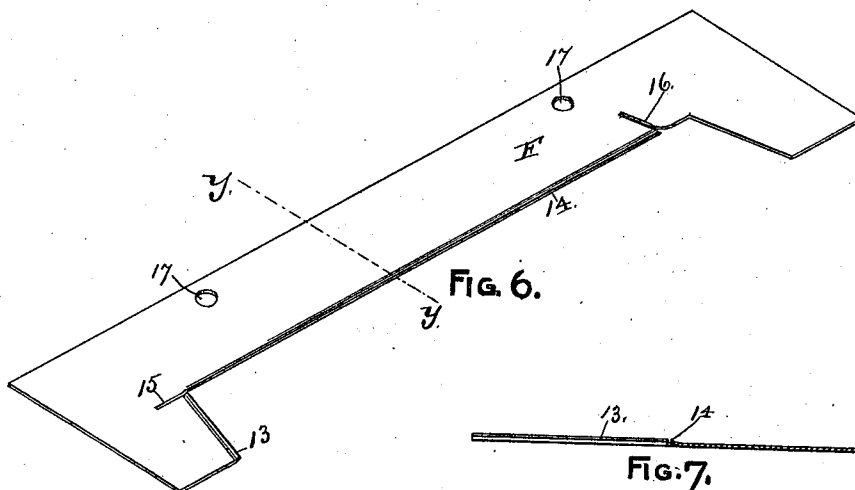
4 Sheets—Sheet 4.

G. E. NORRIS.

MACHINE FOR FOLDING COLLAR OR CUFF BLANKS.

No. 502,678.

Patented Aug. 1, 1893.



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UNITED STATES PATENT OFFICE.

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MACHINE FOR FOLDING COLLAR OR CUFF BLANKS.

SPECIFICATION forming part of Letters Patent No. 502,678, dated August 1, 1893.

Application filed December 29, 1891. Serial No. 416,446. (No model.)

To all whom it may concern:

Be it known that I, GEORGE E. NORRIS, a citizen of the United States, residing at Berlin, in the county of Waterloo and Province of Ontario, Canada, have invented new and useful Improvements in Collar-Folding Machines, of which the following is a specification.

This invention relates to certain improvements on the collar-folding machine for which Letters Patent of the United States, No. 341,044, were granted to me on the 4th day of May, 1886, and the object of this invention is to simplify the construction so as to render the machine operative by manual power without affecting its efficiency. I attain this object by the mechanism illustrated in the accompanying drawings which, being herein referred to, form part of this specification.

In said drawings Figure 1 is an end elevation of my improved collar-folding machine mounted upon a supporting-frame or table. Fig. 2 is a plan view of the machine separated from the supporting-frame. Fig. 3 is a horizontal section of said machine at the line X X on Fig. 1. Fig. 4 is a plan view of said machine after the presser-head is removed therefrom. Fig. 5 is a perspective view of my collar-folding machine dismounted from the supporting-frame and showing a collar blank held in the blank-feeding plate. Fig. 6 is a detached perspective view of the folding-plate. Fig. 7 is an enlarged transverse section of said folding-plate at the line Y Y on Fig. 6; and Fig. 8 is a perspective view of the blank-feeding plate.

As represented in the drawings, A designates the supporting-frame for my collar-folding machine, which may be made in the form shown or in any other form that is suited to the purpose.

B designates the base-piece of my collar-folding machine. The upper surface of said base-piece forms a folding-bed upon which the folding of the collar-blanks is effected; preferably said folding-bed is heated, either by means of a series of gas-jets, supplied by a gas-pipe, 1, by steam or other well-known means for effecting such heating.

C designates a pair of vertical shafts which are journaled in the up-plate of the base-piece B, and the upper extremity of each of said shafts is provided with a disk, 2, which is fit-

ted to rotate in a recess formed in the top of said base-piece so that the upper surface of said disks will be flush with the adjacent face 55 of the base-piece; the lower extremity of each of the shafts C is provided with a gear-wheel, 3, for a purpose hereinafter explained. Each of said disks is provided with a screw-stud, 4, which is arranged eccentrically to the center 60 of the disk to which it is attached. Each of said screw-studs is fitted to secure a button or washer, 5, to the disk to which it is applied, and said buttons operate as crank-pins for effecting movements of the folding mechanism. 65

D designates a sliding rack having sections of gear-teeth, 6, which are fitted to mesh into the teeth of the gear-wheels 3; said rack is fitted to slide in guides, 7, on the under side of the base-piece B. The rack D is engaged 70 in the gear-wheels 3 in such manner that both of the buttons 5 will be in corresponding positions during all phases of their movements. A hand-lever, E, is jointed, as at 8, to one end of the sliding-rack D, and is fulcrumed, as at 75 9, to a lug, 10, of the base-piece B; said lever protrudes through a slotted opening, 11, in said base-piece, which opening limits the movement of said lever in either direction, and a handle, 12, is fixed on the outer end of 80 said lever.

F designates a folding-plate whereby the two ends and one edge of the collar blank are folded over; said folding-plate is preferably made of thin sheet steel of an oblong form, 85 from which is cut out a portion corresponding to the shape of the folded collar-blank, so as to leave an opening of the same form in one of the longitudinal edges of said plate; one edge of said opening, as at 13, and one edge of 90 the same, as at 14, are given a slight upward turn, as shown in Figs. 6 and 7. A longitudinal slot, 15, is formed at one end of said opening to correspond to the longitudinal edge of the latter, and a transverse slot, 16, is formed 95 in said plate at the longitudinal edge of said opening; the last named slot may be either perpendicular or oblique in respect to said longitudinal edge according to the form of the collar-blank to be folded thereby. Circular 100 openings, 17, are formed in said folding-plate to engage on the necks of the buttons 5, said necks being indicated by dotted lines, 18, on Figs. 2 and 4.

G designates the blank-feeding plate, by which the collar-blanks are fed into the folding mechanism; said feeding-plate is preferably made of thin sheet-steel, having its inner portion shaped substantially to the form of a folded collar blank, and provided with a series of tongues, 19, which are preferably formed from the body of said plate; each of said tongues has at its base shoulders, 20, which form a suitable guide for the lower edge of the collar blank. Each of said folding-plates is preferably secured to a back-board, 21, for the purpose of giving rigidity to said plate, and the outer edges of said plate are chamfered on the upper side to facilitate the folding over of the blank thereon.

The feeding-plate G and its backboard 21 are secured to a holder, 22, provided with lugs, 23, by which said holder is jointed to a pair of sleeves, 24, fitted to slide on guides, 25, protruding from the base-piece B; said holder when turned down—as shown by the full lines of Fig. 1—should bring the feeding-plate G into contact with the upper face of the base-piece B so that said feeding-plate will bear fairly on said base-piece. Each of the guides 25 has an adjusting-nut, 26, whereby the outward movement of the sleeves 24 may be limited to a distance required for each style of collar-blank. The holder 22 is provided with a handle, 27, for manipulating the feeding-plate G, and it is also provided with openings, 28, through which binding-bolts, 29, are inserted to secure the folding-plate to said holder; the latter is fitted to tilt into a nearly erect position, as indicated by dotted lines in Fig. 1, to facilitate the insertion of a collar blank between the body of the feeding-plate and its tongues 19.

H designates a presser-plate provided with trunnions, 30, which are journaled in bearings, 31, on the base-piece B; said presser-plate is provided with spurs, 32, for attaching blanketing thereto, so that the body of the blanket will be against the lower face of said presser-plate. An arm, 33, extends from the after side of the presser-plate H and is connected, by a link 34, to one end of a bell-crank, 35, that is pivoted, as at 36, to the base-piece B; the opposite arm of said bell-crank is connected, by a rod 37, to a treadle, I, which is pivoted, as at 38, to, or adjacently to, the frame A. The treadle I is normally held in a raised position by a spring, 39, attached to said treadle as shown in the drawings or in any manner suitable for the purpose.

J designates fingers which are arranged at opposite ends of the folding-plate F for the purpose of holding the latter down upon the upper surface of the bed-piece B; said fingers are adjustably secured on bars, 40, by means of set-bolts, 41; the bars 40 are held in position at the front part of the bed-piece B, by means of lugs, 42, formed on said bed-piece, and one of said fingers—preferably the one at the right hand side of the machine—should

be arranged to retain the fold at the corresponding end of a collar blank in a vertical position until said fold enters the transverse slot 16, of said folding-plate; the preliminary step for forming said fold being made by edges of the opening in the folding-plate F at the time the blank-feeding plate G is turned down into the opening of said folding-plate.

The operation of my folding machine is as follows: While the blank-feeding plate G is in the erect position indicated by dotted lines in Fig. 1, a collar blank, 43, as shown on Fig. 5, is attached to said folding-plate by inserting said blank between the face of said plate and the tongue 19. The holder 22 is then turned downward into the horizontal position shown by the full lines in Fig. 1, whereby said blank will be carried into contact with the upper surface of the bed-piece B. Said holder is then pushed inwardly—as indicated by corresponding dotted lines in Fig. 1—and thereby the collar blank is moved so as to bring its inner edges overlapping onto the edges of the cut-out portion of the folding-plate F, and the edges of said blank will be slightly raised by striking upon the edges of said cut-out portion of the folding-plate. While the collar blank is still held by the feeding-plate G, the hand-lever E is moved, on its fulcrum 9, to impart a sliding movement to the rack D, whereby a half revolution is imparted to the shafts C to produce a corresponding movement of the disks 2. The buttons 5 of the latter cause the folding-plate F to move in a curved path, as indicated by the dotted line Z on Fig. 4. By this movement the folding-plate F is carried toward the right hand end of the machine, forward toward the front of the machine, and toward the left hand end of the machine. By this movement of the folding-plate the fold at the left hand end of the collar blank is first turned down, then the longitudinal fold, and finally the fold at the right hand end of the blank. In effecting these foldings the operations are materially assisted by the slots 15 and 16, the first effecting the overlapping of the longitudinal fold on the left hand end fold, and the other performing the same function in overlapping the longitudinal fold on the right hand end fold. The presser-plate H is next swung downward by a foot-pressure of the operative upon the treadle I, whereby the collar blank is held in contact with the heated face of the folding-bed while the blank-feeding plate G is retracted from the blank; the pressure of the presser-plate is continued on the folded blank after the feeding plate is withdrawn from the folded blank and while said feeding plate is being turned into an erect position and having a succeeding blank inserted therein. Then the pressure is removed from the treadle I, to allow the spring 93 to swing the treadle I upwardly, and, through the intermediate mechanism hereinbefore described, effect the upward movement of the presser-plate H; after which the folded

and pressed collar blank is removed by hand and the machine is in condition for a repetition of the operation just described.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a machine for folding collar-blanks, the combination of a pair of vertical shafts having a semi-rotative movement and each being provided with a crank-disk at its upper extremity, a folding-plate connected to said crank-disks; whereby said folding-plate is moved in a semi-circular path, and a feeding-plate arranged to deliver a blank into the opening of the folding-plate as and for the purpose herein specified.

2. In a machine for folding collar-blanks, the combination of a pair of vertical shafts, C, each having a gear-wheel, 3, secured thereto and having at its upper end a crank-disk, 2, having an eccentrically-arranged stud, 4, a sliding-rack, D, provided with gear-teeth fitted to mesh into said gear-wheels, a hand-lever, E, fulcrumed to said machine and jointed to said rack, a folding-plate, F, connected to said studs, and a feeding plate G the said parts being constructed and arranged to operate substantially as and for the purpose herein specified.

3. In a machine for folding collar-blanks, the combination of a folding mechanism—consisting of a folding-plate moving in a semi-circular path while its front edge is maintained in parallelism in respect to the front of the machine, and a feeding-plate provided with tongues which are integral therewith; said feeding-plate having an outline-form which corresponds to the form of a folded-collar-blank, and being hinged to bosses fitted to slide on guides on the base-piece of the machine so as to operate substantially in the manner and for the purpose herein specified.

4. In a machine for folding collar-blanks, the combination of a blank-feeding mechanism, a blank-folding mechanism; both of the latter being constructed and arranged to operate substantially as herein described, a presser-plate journaled on the base-piece of the machine, and a treadle connected to said presser-plate, said parts being constructed and arranged to operate substantially as and for the purpose herein specified.

5. In a machine for folding collar-blanks, the combination of a pair of crank-disks having a semi-rotative movement on their axes in unison; each of said disks being provided with a stud or wrist-pin arranged eccentrically to the axis of the disk, a folding-plate provided with openings fitted to engage on said wrist-pins, and a feeding-plate arranged to deliver blanks into said folding plate as and for the purpose herein specified.

6. In a machine for folding collar-blanks, a feeding-plate having the outline of the folded collar-blank and provided with tongues, 19, having shoulders, 20, said tongues and shoulders being integral with said feeding-plate, and the said shoulders forming guides for the lower edge of the collar blank as and for the purpose herein specified.

7. In a machine for folding collar-blanks, the combination of a folding-plate, F, and fingers, J, fitted to retain said folding-plate in position on the base-piece of the machine; one of said fingers being fitted to preliminarily retain the fold at one end of the collar-blank in an approximately erect position, as and for the purpose herein specified.

GEORGE E. NORRIS.

Witnesses:

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