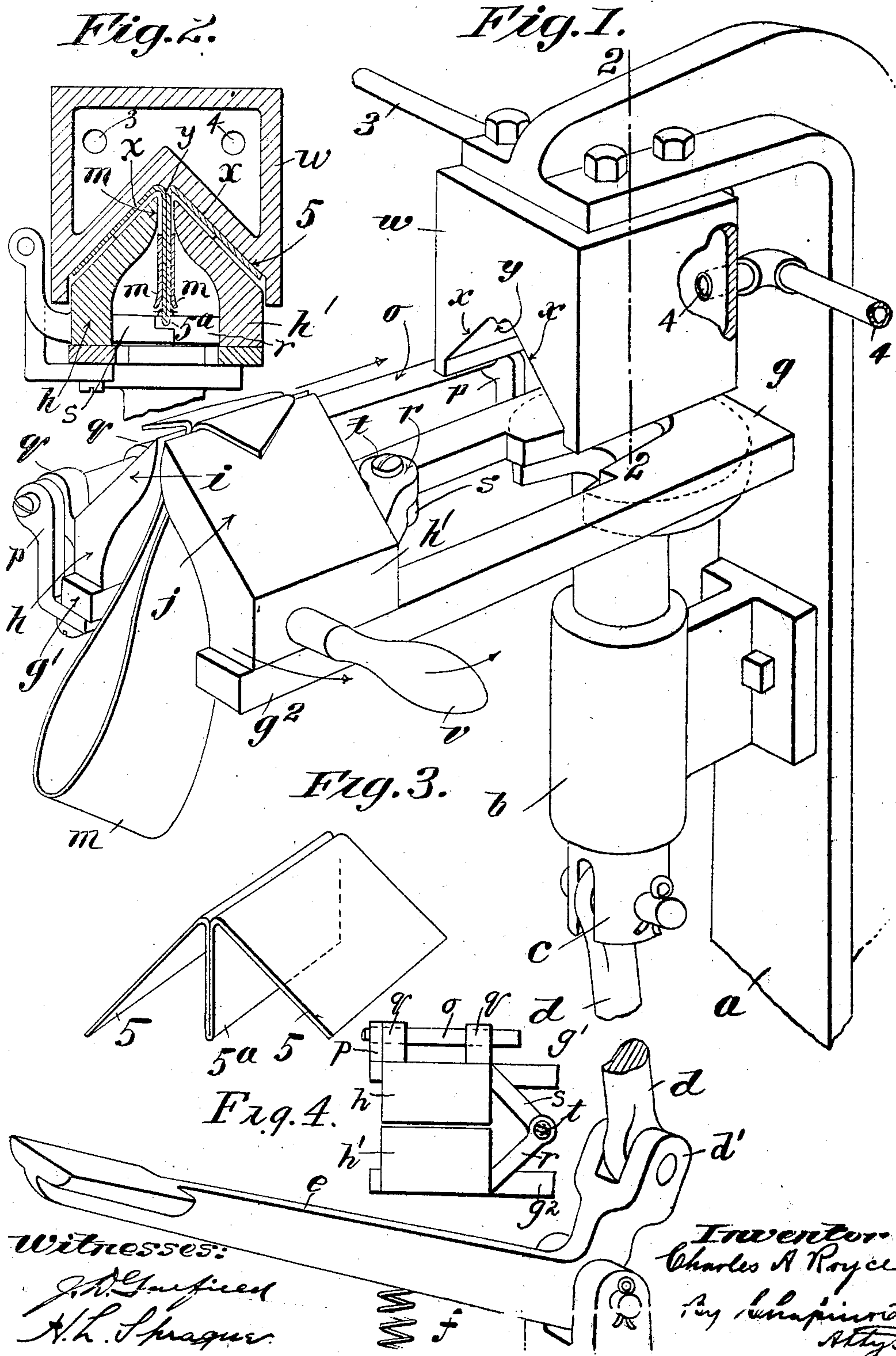


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C. A. ROYCE.
COLLAR TIPPING MACHINE.
APPLICATION FILED JULY 15, 1904.



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UNITED STATES PATENT OFFICE.

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COLLAR-TIPPING MACHINE.

No. 862,665.

Specification of Letters Patent.

Patented Aug. 6, 1907.

Application filed July 15, 1904. Serial No. 216,657.

To all whom it may concern:

Be it known that I, CHARLES A. ROYCE, a citizen of the United States of America, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Collar-Tipping Machines, of which the following is a specification.

This invention relates to laundry machinery, and specifically to a machine for tipping collars, this being the term applied in this art to the operation which consists in folding back the two upper corners of a flat standing collar.

The object of the present invention is to provide a machine for tipping these collars much more rapidly and perfectly than can be done by hand and without making such a sharp fold as to injure the material on the folding line. Furthermore, the machine is so organized as to fold over the corners and iron them at one operation without pressing the corners into the body of the collar, whereby it becomes outlined thereon.

This invention consists in the construction described in the following specification and clearly pointed out in the claims annexed thereto.

In the drawings forming part of this application,—
Figure 1 is a perspective view of a machine embodying the invention. Fig. 2 is a vertical section taken upon the line 2—2, of Fig. 1. Fig. 3 is a perspective view of the guard plate which is accessory to the machine, and Fig. 4 is a detail plan of the clamping device.

Referring to these drawings, *a* indicates the frame of the machine which is in the form of a vertical standard, the upper end of which overhangs horizontally the standard. On the latter is bolted, or otherwise secured, a bearing-box *b*, the axis of which is vertical, and in which is a sliding stem *c*, to the lower end of which is pivotally secured a connecting-rod *d*, the lower extremity of which is properly connected with a foot-operated treadle *e*. Under this treadle a suitable spring, as *f*, may be located, whereby when the treadle is depressed to raise the stem *c*, said spring may aid in effecting the quick return of said stem downwardly. On the upper end of the stem *c* there is secured thereto in a horizontal position a forked frame *g*, on the two parallel arms *g*¹ and *g*² of which a slidable collar-clamping device is supported. This device consists of two clamping jaws *h* and *h*¹, the upper ends of which are beveled off from their meeting edges downwardly toward the outside of each jaw, said beveled off portions being lettered respectively *i* and *j*, and it is between the meeting edges of these jaws that the collar *m* is clamped in such position that a triangular section of each end thereof will extend above this meeting edge. The upper edges of the jaws should be slightly rounded off.

The collar clamp slides back and forth toward and away from the standard *a* on the frame *g*, the jaw *h* being confined in its movements to a direction parallel to the side of said arm by means of a guide-rod *o* supported in arms *p* one of which is located at each end of the arm *g*¹ of the frame *g*, two ears *q* on said jaw having a sliding engagement on said rod *o*. The jaws *h* and *h*¹ are hinged together by two arms *r* and *s* extending from that side of the jaws next to the frame *a* obliquely toward one another, their free ends being united by a screw *t*.

By means of this construction the jaw *h*¹ may be swung away from the jaw *h* by means of a suitable handle *v*, in the direction of the arrows in Fig. 1, to open the jaws for the introduction of the collar *m*. Secured to the overhanging upper end of the frame *a* is a hollow head *w*, preferably rectangular in form, the under surface of which has inwardly beveled sides *x*, whose angle conforms to the bevel of the jaws *h*, *h*¹, of the collar clamp. The beveled surfaces of the jaws and of this head are smoothly polished and the apex of the beveled sides of the head *w* may either be finished off, as shown in Figs. 1 and 2, with a depending V-shaped rib *y* parallel with the beveled sides *x* of said head, or it may be constructed in any desired manner.

The hollow head *w* is in communication with the feed and discharge pipes 3 and 4 by which steam may be conveyed through the head to keep the latter at any desired temperature, which may be determined by the pressure of the steam admitted thereto.

The merging of the surfaces of the rib *y* and the beveled sides *x* is on a curve which represents the curve on which it is desired to form the fold on the collar.

While steam is the preferred heating medium for the head *w*, any other means may be substituted therefor, but steam is by far the most convenient for the reason that a given pressure will insure a given temperature in the head. This is important in that it insures uniformity of product, as this head not only constitutes means to press the corners of the collar against the beveled edges of the jaws of the collar-clamp, but it is also the ironing device whereby the surface of the back-folded ends of the collar are ironed out smooth.

In operating this device, the clamp is opened by swinging the jaw *h*¹ away from the jaw *h*, and inserting therebetween the ends of a flat collar which have been matched together, the collar being inserted between the jaws in a slightly oblique position as shown in Fig. 1, whereby a triangular portion of each corner will be left upstanding therebetween the jaws are then closed. These corners, which have been previously moistened, are then bent down by the fingers against the beveled surface of the jaws, about as shown in Fig. 1, and the closed jaws are then slid forward under the head *w*, whereupon the operation of the treadle *e* by the foot

will carry the collar-clamp upward into the V-shaped under surface of the head and hold it there for a moment long enough for the stiffening material in the collar to become set.

- 5 The preferred construction of this machine embodies a number of these heads and clamps in one frame, the treadle and connecting rod for each head being pivoted together at d' to form a toggle joint. When the treadle is depressed the rod is moved into a vertical plane and
- 10 after a collar has been inserted in one clamp and forced up into the V of the head w , it may be left there under pressure while one or more other collars are being inserted in other clamps and placed under pressure in a similar manner.
- 15 If desired, the plates 5, such as are shown in Fig. 3, may be used in connection with the above described machine: and while the machine is perfectly operative without these plates, the use thereof permits a more rapid operation of the machine for the reason that with
- 20 the plate interposed between the collar and the head w the material can not, under any circumstances, be injured, however quickly the jaws of the collar-clamps may be forced upward to the seating position under the head.
- 25 When the plates 5 are used, the central depending portion 5^a thereof is inserted between the ends of the collar in the jaws of the clamp after the collar is placed therein, and while the jaws are held slightly apart, the plate being then pressed down by the operator, to con-
- 30 fine the corners of the collar between the under surface of the beveled sides of the plate, and the similarly beveled sides of the jaws h and h' . The machine is then operated as described to subject the corners of the collar to pressure.
- 35 Having thus described my invention, what I claim and desire to secure by Letters Patent of the United States, is:—

- 40 1. In a machine of the character described, means to hold a collar to leave the corners thereof exposed, a suitable head to fold said corners backward simultaneously toward the body of the collar, means to heat said head, and means to bring the collar holding means and head into engagement with the collar.

- 45 2. In a machine of the character described, an endwise movable stem, a horizontally disposed frame on the end thereof, a standard, a head on the standard, and means to heat the head, the latter having an inwardly and upwardly beveled under surface; a collar-clamp supported on said stem, said clamp having jaws beveled to correspond with
- 50 the beveled portion of said head, and a suitable device to move said stem endwise.

- 55 3. In a collar-tipping machine, a head supported on a suitable frame provided with an inverted V-shaped under surface, a collar-clamp to hold a flat collar with its corners extending beyond the jaws of the clamp, said clamp having beveled upper surfaces to correspond with the under surface of said head, and means to press the clamp and the head together to fold back the corners of the collar one against each side of the clamp.

- 60 4. In a machine for tipping collars, a clamp between the jaws of which a collar may be held to leave its corners extending beyond the meeting edges of said jaws, the latter being downwardly beveled, together with means to press said corners backwardly toward the body of the collar.

- 65 5. In a machine for tipping collars, a suitable head having an inverted V-shaped under surface, there being a depending rib located at the point of convergence of the inclined planes of said surface, a collar-clamp consisting of two jaws slidable transversely of the head in a substan-

tially horizontally plane, vertically movable means of support for said clamp, and means to heat the head.

- 70 6. In a machine for tipping collars, a clamp between the jaws of which a collar may be held to leave its corners extending beyond the meeting edges of said jaws, the latter being downwardly beveled from said meeting edges; a V-shaped plate having a flange depending from the apex thereof and located in the clamp between the two sides of the collar, the beveled sides of said plate serving to press down the points of the collar against the sides of the clamp, together with means to press said plate towards the
- 75 80 clamp.

7. In a machine for tipping collars, means having oppositely inclined faces for simultaneously supporting the tips and bending them at an angle to the body at opposite ends of a collar, in combination with means for exerting
- 85 pressure upon said tips against said faces.

8. In a machine for tipping collars, the combination with a heated member and a supporting device, one of which is formed of two parts arranged to contact simultaneously with both tips of a collar and between which the
- 90 body of the collar is interposed.

9. In a machine for tipping collars, a heated member having oppositely inclined faces arranged to simultaneously receive and bend both tips of a collar in combination with a device having cooperating faces, one of said
- 95 parts being movable relative to the other.

10. In a machine for tipping collars, a heated member having oppositely inclined faces arranged to simultaneously receive and bend both tips of a collar in combination with a movable device having cooperating adjacent
- 100 beveled faces to support the tips without reversing or twisting the collar body and means for moving said device toward and from the heated member.

11. In a collar tipping machine, a heated member having oppositely inclined faces to receive simultaneously both
- 105 tips of a collar, and a pressure device composed of separable members one thereof being movable toward and from the other said pressure device being adapted to engage the tips of a collar.

12. In a collar tipping machine, a support provided with a receiving opening and oppositely beveled walls at each side thereof, and means to press portions of a collar into contact with said walls.
- 110

13. In a machine for tipping collars, a support provided with oppositely beveled walls to receive simultaneously both tips of a collar and bend them at an angle to the body thereof, a press member, and means for causing
- 115 said member and support to contact with said tips.

14. In a machine for tipping collars, a support provided with oppositely beveled walls to receive the tips of
- 120 a collar, a press member, means for moving said press member and support relative to each other in a vertical plane, and means for moving said support in a horizontal plane below said press member.

15. In a collar tipping machine, a collar support having
- 125 oppositely inclined faces to receive the tips of a collar, and a guard plate having a flange to be interposed between the ends of the collar body, and inclined end portions to rest upon the tips of the collar in contact with said support.

16. In a collar tipping machine, the combination with a
- 130 heated member, of a supporting member, and supporting and pressing faces upon said members constructed and arranged to simultaneously bend outward both tips of a collar, whereby a reversal or twisting of the collar body is avoided.
- 135

17. In a collar tipping machine, the combination with an iron having ironing surfaces thereon extending in planes corresponding substantially to the relative angle to be given the collar wings when ironed, of pressing mem-
- 140 bers for pressing the collar wings against the ironing surfaces for ironing the wings and setting them at the proper angle relatively to each other and to the body of the collar.

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