(No Model.) 6 Sheets—Sheet 1.

J. K. P. PINE.

MACHINE FOR INFOLDING THE EDGES OF CUFF AND COLLAR BLANKS.

No. 456,906. Patented July 28, 1891.

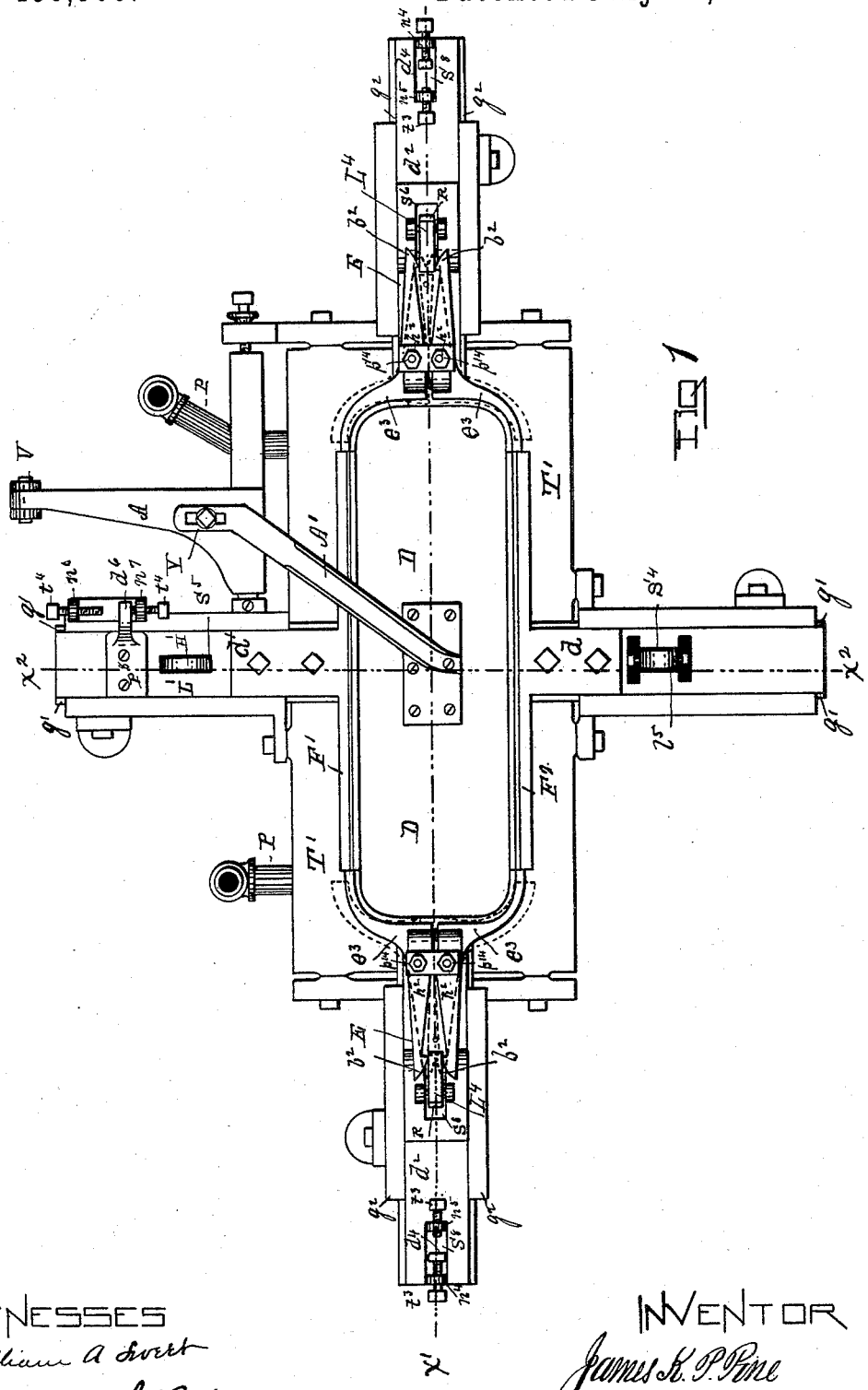

FIG 1

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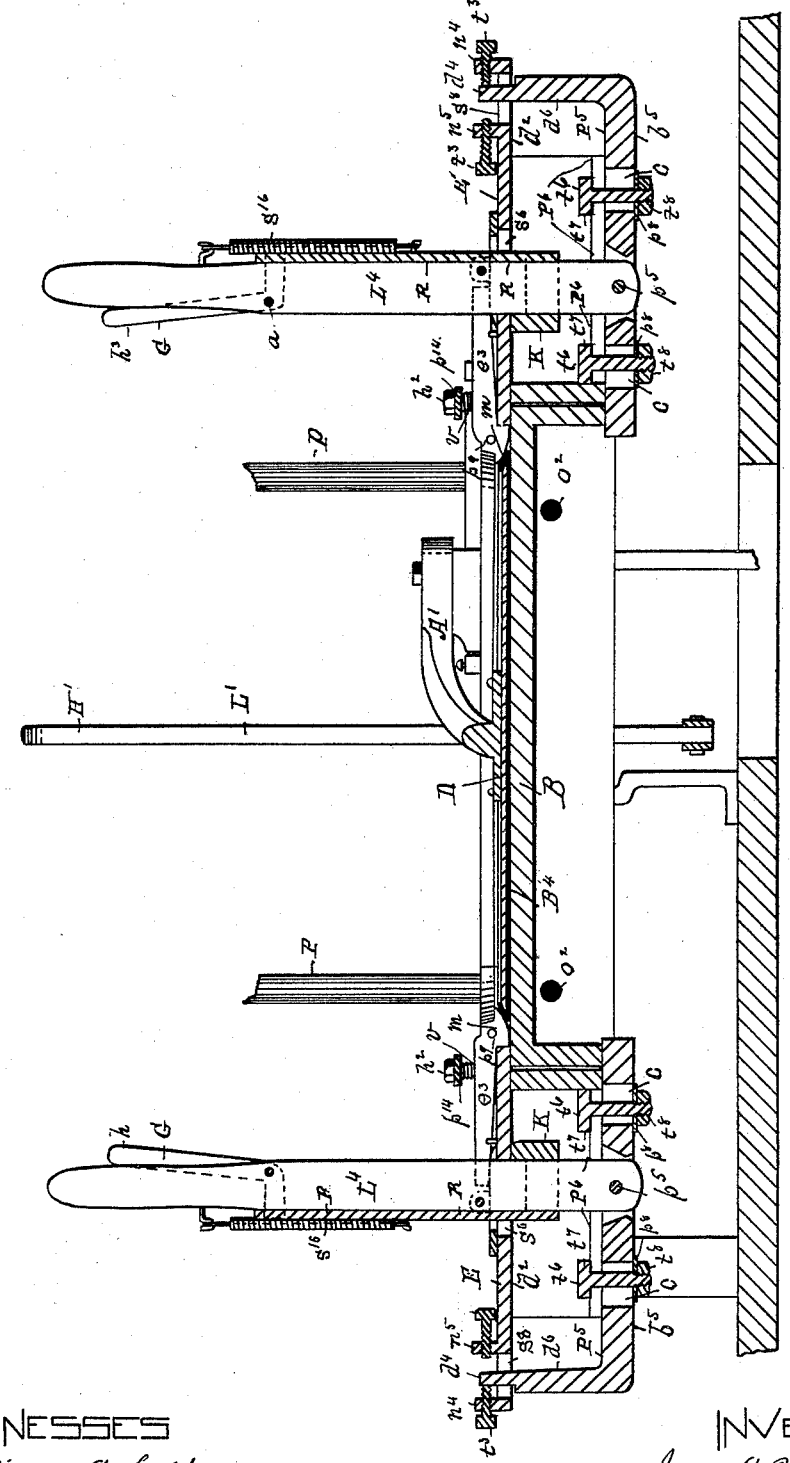

Fig. 2

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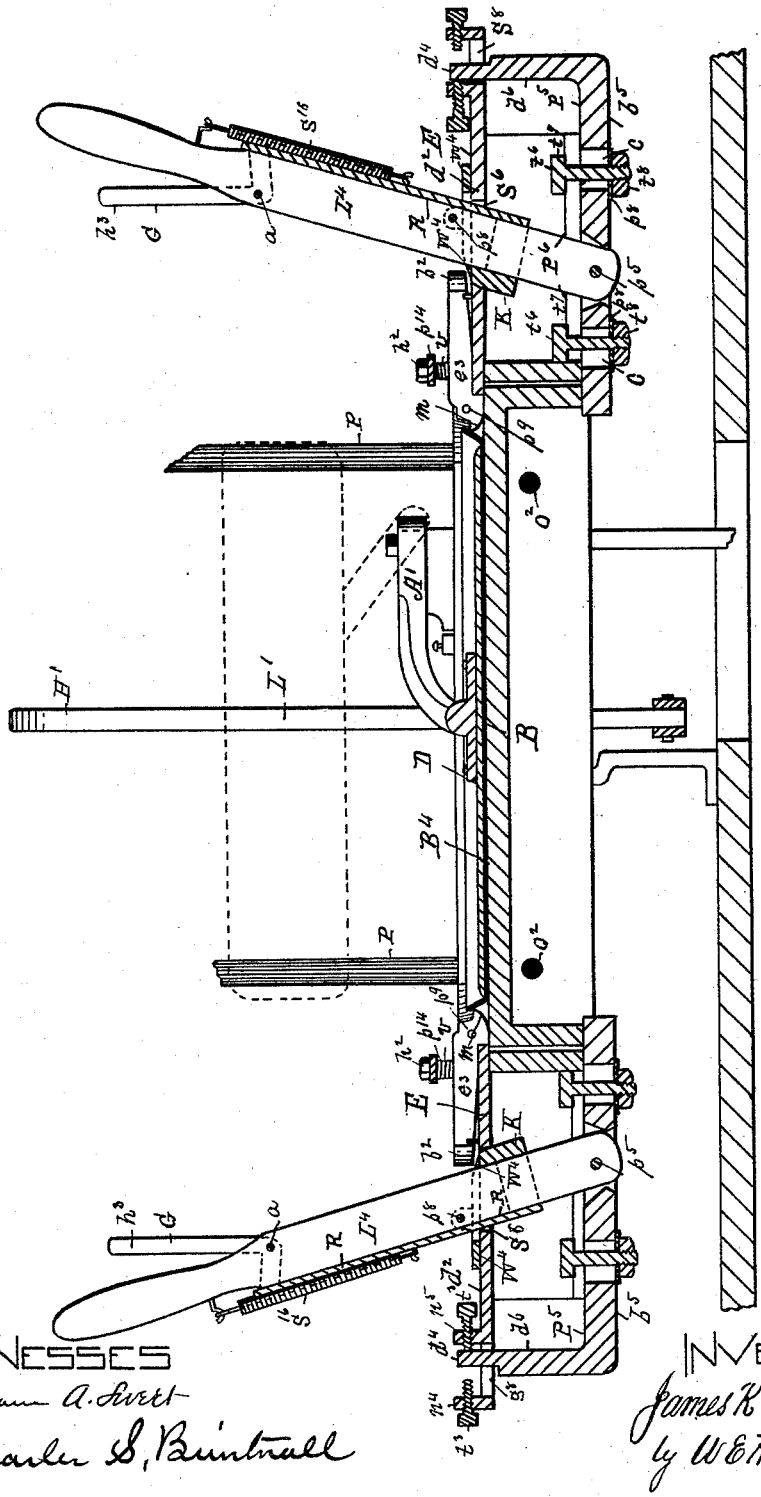

Fig 3.

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J. K. P. PINE.

MACHINE FOR INFOLDING THE EDGES OF CUFF AND COLLAR BLANKS.

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Fig 7

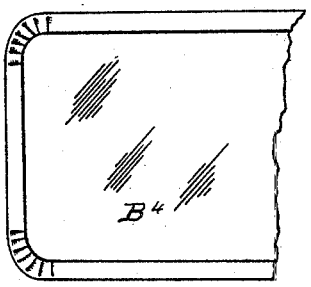


Fig 8

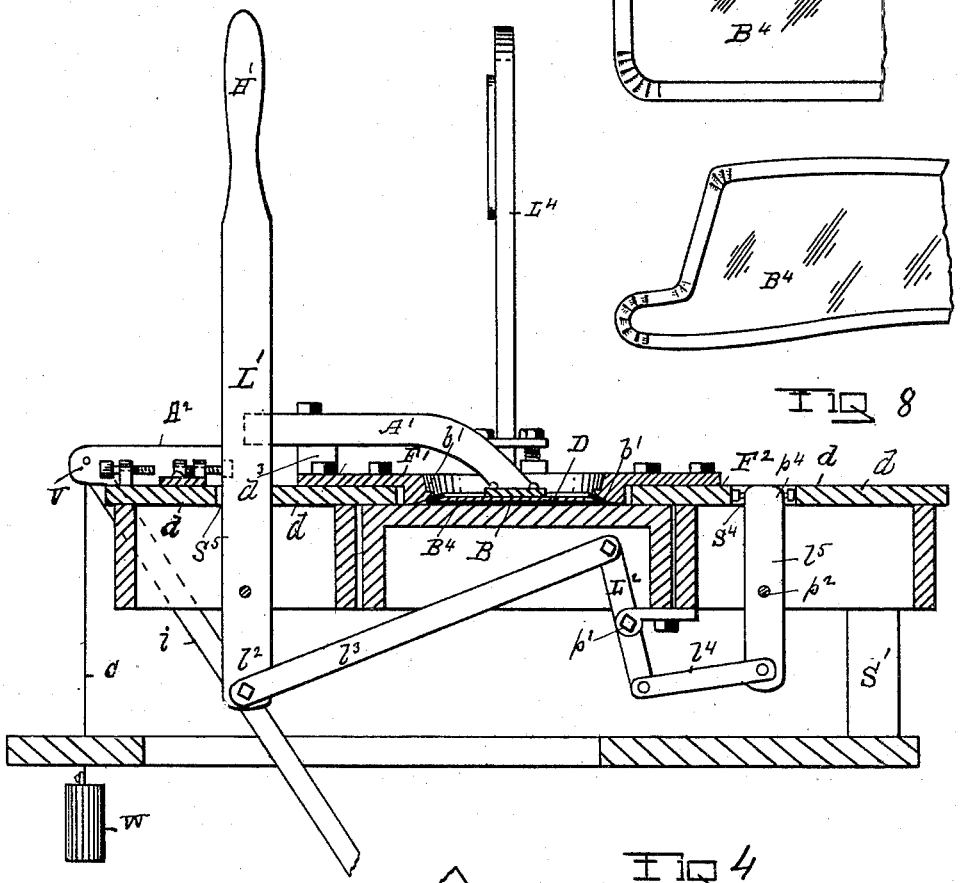
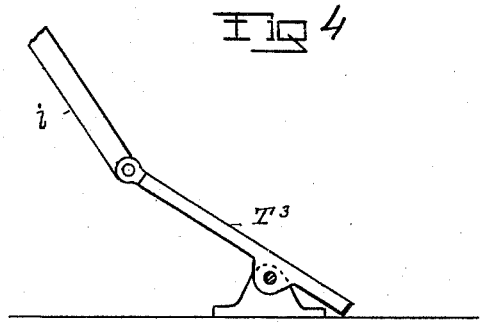


Fig 4



WITNESSES

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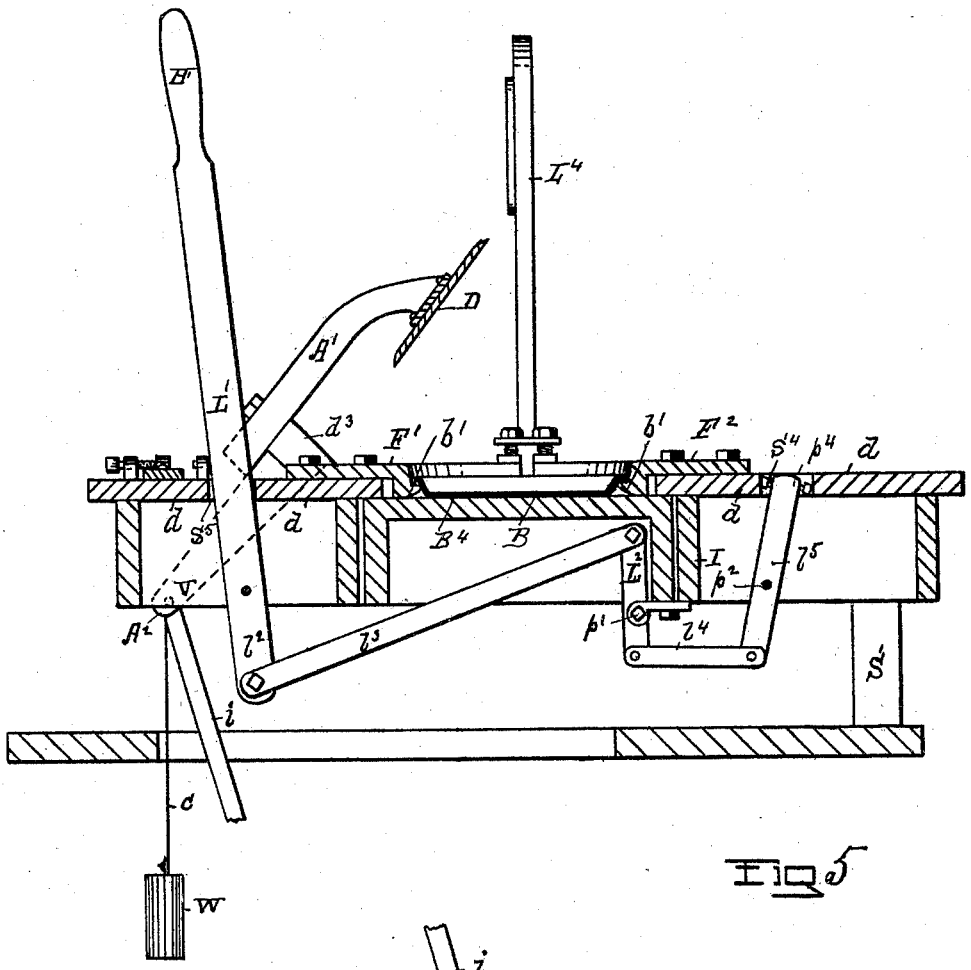
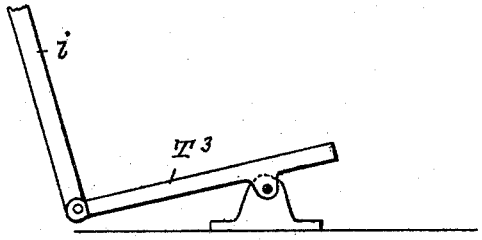


Fig 5



WITNESSES

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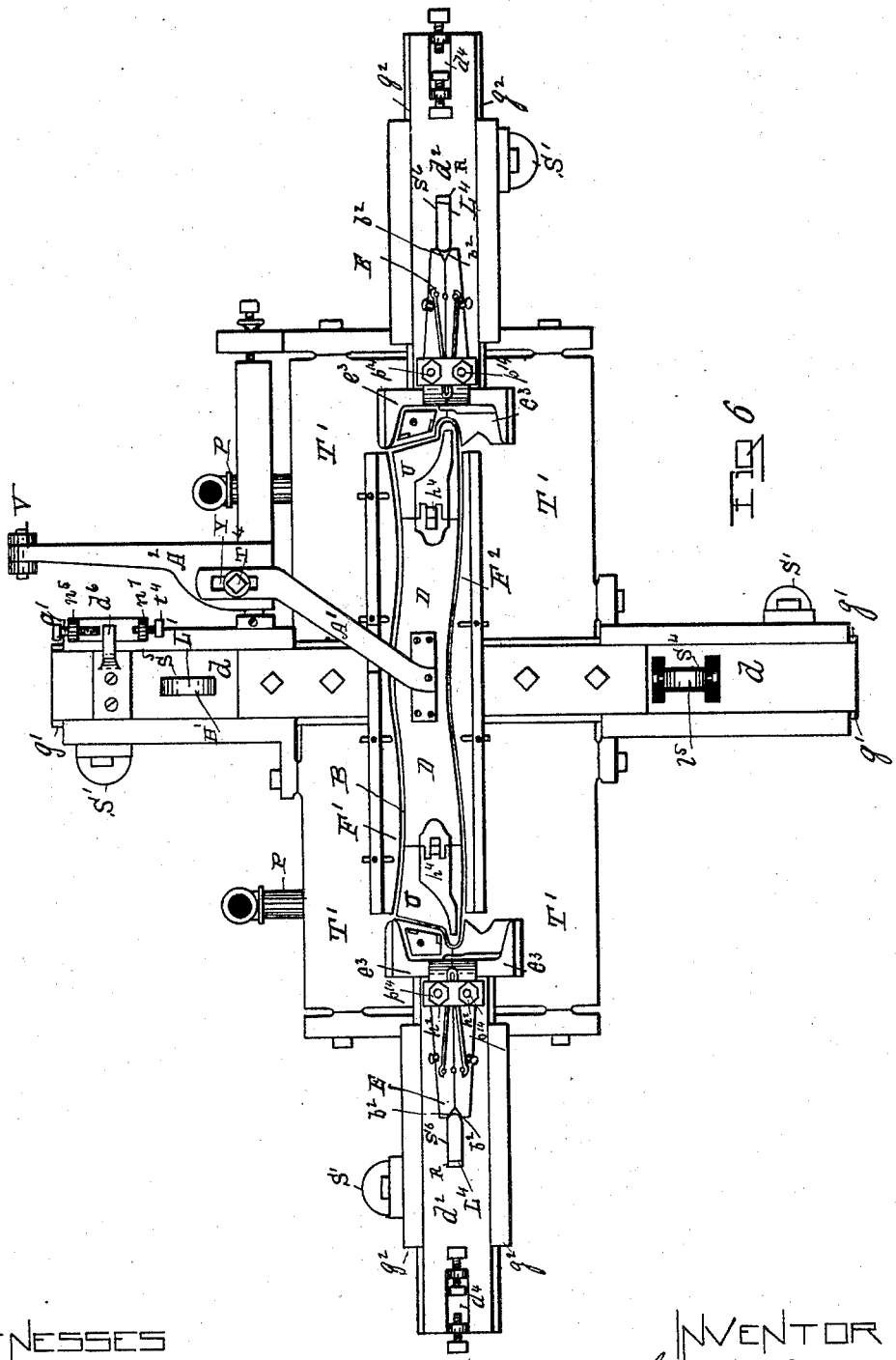

Fig 6

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UNITED STATES PATENT OFFICE.

JAMES K. P. PINE, OF LANSINGBURG, ASSIGNOR TO THE UNITED SHIRT AND COLLAR COMPANY, OF TROY, NEW YORK.

MACHINE FOR INFOLDING THE EDGES OF CUFF AND COLLAR BLANKS.

SPECIFICATION forming part of Letters Patent No. 456,906, dated July 28, 1891.

Application filed September 18, 1890. Serial No. 365,342. (No model.)

To all whom it may concern:

Be it known that I, JAMES K. P. PINE, of the village of Lansingburg, county of Rensselaer, and State of New York, have invented a new and useful Improvement in Machines for Infolding the Edges of Cuff and Collar Blanks, of which the following is a specification.

My invention relates to improvements upon that class of machines that are used to turn in the edges of the fabric blanks of cuffs and collars before united them; and the object and purpose of my invention and improvement are to adapt this class of devices to infold and gather the rounded end and corner edges, as well as to infold the straight side and end edges of the blanks, so that the collars or cuffs when finished will have a uniform appearance.

Accompanying this specification, to form a part of it, there are six sheets of drawings containing eight figures illustrating my invention, with the same designation of parts by letter reference used in all of them.

Of the illustrations, Figure 1 is a top view of a mechanism containing my invention and shown as adapted to infold the straight side and end edges of cuff-blanks and to gather and infold the rounded corner edges thereof. Fig. 2 is a central longitudinal section taken on the line x' x' of Fig. 1, and with the end infolders shown as moved inwardly to form the end infolds in a cuff-blank. Fig. 3 is another section of the same parts shown at Fig. 2 and also taken on the line x' x' of Fig. 1, with the end-infolding parts shown as moved outwardly for the insertion of a cuff fabric blank. Fig. 4 is a section taken on the line x^2 x^2 of Fig. 1, with the collar or cuff holder plate shown as down on the bed. Fig. 5 is another section of the same parts that are shown at Fig. 4, taken on the line x^2 x^2 of Fig. 1, with the cuff or collar holder plate shown as raised from off the bed for the insertion of a fabric blank. Fig. 6 is a top view of the same mechanism that is shown in the other figures, adapted to infold the edges of collar-blanks and illustrating a modified form of holder-plate. Fig. 7 is a plan view of a part of a cuff fabric blank which has had its side and end edges turned in by the mechanism illustrated at Figs. 1, 2, 3, 4, and 5; and Fig. 8 is a plan view of a part of a collar fabric blank which has had its side and end edges infolded by the mechanism shown at Fig. 6.

The several parts of the mechanism thus illustrated are designated by letter reference and the function of the parts is described as follows:

The letter T′ designates the table of the machine, forming at its center a bed B, on which the fabric blanks to be infolded on their edges rest. This table rests on supports S′ S′, as shown at Figs. 4 and 5.

The letters F′ and F² designate side-edge infolders, each of which is connected to and arranged upon the inner end of a slide-plate d, adapted to move reciprocatingly in guides g'. Each of these side-edge infolders F′ and F² on its inner edge and lower side of the latter is made with a rounded surface b', as shown at Figs. 4 and 5, and each of these side-edge infolders F′ and F² is operated to move toward the other or outwardly on the bed B by means of a hand-lever L′, that is pivoted to the slide-plate d of the side-edge infolder F′, and which lever L′ at its lower end l^2 is pivoted to a link l^3, that at the end opposite to that which is pivoted to the lever L′ is pivoted to the long arm of the lever L^2, which latter has a fulcrum-pivot p', connected to the stud I, and at its lower end is pivoted to the link l^4, with the latter pivoted to the lever l^5 for a fulcrum at p^2, and at its upper end p^4 is pivoted to the slide-plate d of the side-edge infolder F² within a slot S^4, made in said slide-plate, as shown at Figs. 4 and 5, so that when the lever L′, by means of its handle H′, that is projected up through the slot S^5, made in the slide-plate d of the side-edge infolder F′ and thereat pivoted, is moved inwardly the two side-edge infolders F′ and F² are moved toward each other.

The letter D designates a holder-plate, and its function is to descend onto fabric blanks B^4, placed upon the bed B, and to hold the same in place while the edges of the blank are subtending the holder-plate infolded on the edges of the latter, and this holder-plate is operated as follows:

The letter A′ designates a curved arm that at its inner end is attached to the top surface

of the holder-plate D, and which arm A′ connects with a stud d^3 and the latter with an arm A^2, that is at its outer end V pivoted to the upper end of the link i, which latter at its lower end is pivoted to the foot-treadle T^3, as shown at Figs. 4 and 5, so that when the foot-treadle is pressed down by the operator the holder-plate D descends onto the bed B.

The letter W designates a weight, and C a cord connecting said weight with the outer end of the arm A^2, and the function of this weight and connected cord is to raise the holder D from off the bed B when the foot-pressure of the operator is moved from the treadle T^3.

The letter Y designates a slot, made in the arm A^2, and T^4 a set-screw for adjustably connecting the arms A′ and A^2 thereat.

The letters E designate the end-edge infolders, which are adapted to be moved toward each other, and also, after being thus operated, to swing in at their sides on a pivot to gather in and infold the rounded corners or edges and to then move outward, and to thus operate these end-edge infolders. They are preferably constructed as follows: Their inner edges are made to correspond in concavity to the rounded edges of the holder-plate and their inner edges are each rounded off on their under sides, as designated at m, Figs. 3 and 4. Each of these infolders E is constructed with a slide-plate or tongue d^2, adapted to move in guides q^2, formed in the table T′, and each of them is divided in two parts e^3 e^3, and each of which latter is vertically and loosely pivoted to one of the slide-plates or tongues d^2 by the pivot-bolt designated at p^{14}, Figs. 1, 2, 3, and 6. The rear ends of these parts e^3 e^3 back of where pivoted are made with bevels b^2.

The letter L^4 designates levers, of which there is one for operating each of the end-infolders E. Each of these levers L^4 is passed down through a slot S^6, made in one of the slide-plates or tongues d^2 at its lower end, and at p^5 is pivoted to one of the table-braces b^5 for a fulcrum, as shown at Figs. 2 and 3. The pivot-bolts p^{14} are provided with an encircling spring v, arranged between the heads h^2 and each of the parts e^3, as shown at Figs. 2 and 3.

The letter R designates a bar arranged on the side of each of the levers L^4, and the letter S^{16} designates a spiral spring, one end of which connects with the upper end of each of the said levers and the lower end of which connects with one of said bars at each end of the machine. This bar R extends down through the slot S^6, made in the slide-plate or tongue d^2 of each of the end-edge infolders, and the letter K designates a sleeve arranged to encircle each of said levers L^4, so as to slide thereon as actuated by the bar R, and constructed so that said sleeve will, as the levers L^4 are moved inwardly at their upper ends, engage with the inner end of the slot S^6, made in each of the slide-plates or tongues d^2, and to move the latter and the parts e^3 e^3 connectedly and inwardly.

The letter G designates a grip-lever that is arranged on each of the levers L^4, and each of these grip-levers has a handle end h^3 projected upwardly, so that it may be grasped in connection with the handle ends of each of the levers L^4. These grip-levers are each of them pivoted at their angle a to the lever L^4 and at their short arm to each of the bars R. When these grip-levers are grasped and each drawn in toward the handle of the adjacent lever L^4, the sleeve K on each of the latter is forced downwardly, so as to be away from its engagement with the slide-plate or tongue d^2, and as the inward movement of the upper end of each of the levers L^4 is continued the front edge of each of the levers L^4, above the sleeve K enters between the bevels b^2, forcing the outer ends of each of the end-infolders e^3 apart, and thus causing their inner ends to approach each other. Each of the end-infolder parts e^3 e^3 are adapted to rise on the pivot-bolts p^{14} against the force of the spring v, encircling said bolts, on which they fit loosely, and they are each transversely hinged or pivoted at p^9, as shown at Figs. 2 and 3.

The letter W^4 designates a wedge that is pivoted at p^8 to each of the levers L^4 and extended inwardly, so that as each of the levers L^4 is operated, as before described, to spread apart the rear ends of each of the end-infolder parts e^3 said wedge underruns their outer ends so as to depress their inner ends and make the infold better defined by forcing their inner ends down on the edge of the holder-plate.

The letter P designates gas-pipes made to enter the holes O^2, (shown at Figs. 2 and 3,) by which gas may be burned beneath the bed to heat the same, and thus make more permanent the infolds in the blanks B^4.

In the apparatus shown at Fig. 6 the holder-plate D is made with its ends U connected to the body part of the plate by means of a hinge h^4, and this so made to facilitate the removal of the infolded blank from the holder-plate.

Each of the slide-plates or tongues d^2 d^2 is constructed with stops d^4 to regulate the distance at which they shall move. These stops are made operative by means of a slot S^8, formed in the slide-plate or tongue, and an arm d^6, upwardly projected through said slot from a plate P^5, arranged on the under side of the slide-plate or tongue d^2 and table T, and set-screws t^3 t^3, arranged in projections n^4 and n^5 on the table at each end of said slots. The slide-plate or tongue d' of the side-edge infolder F′ has a stop d^6 arranged at one side of the slide, the latter being constructed to move with the stop between two projections n^6 and n^7, which are offset from the guide-plate P^8, with each of the projections n^6 and n^7 provided with a set-screw t^4 t^4.

The letters c designate slots made in the

supplemental plate P^5, and t^6 designates bolts having heads t^7 and nuts t^8, said bolts being arranged in said slots with the heads resting on the plate P^6 and the nuts t^8 on plates p^8 below the slot, the function of these bolts thus constructed and arranged being to adjust the plate P^6 and the lever L^4, pivoted thereto, relatively to the bed when using differing sizes of the holder-plates D.

As thus made and arranged when a cuff-blank is placed on the bed B of the mechanism shown at Figs. 1, 2, 3, 4, and 5 or a collar-blank of the bed B of the apparatus shown at Fig. 6 (after the holder D in either instance has been raised by the foot-lever) and the latter is operated to press down the holder-plate to hold in place the blank with its edges projecting beyond the edge of the holder-plate, in which condition the side lever L′ is operated to move in the side-edge infolders F′ and F^2, so as to have their curved under edges carry the edges of the blank where lapping past the holder-plate up over the edge of the latter and thereat press down the edges of the blank on the holder-plate. When this has been done, the end-edge infolders E are operated by their levers L^4 to move inwardly, so that their under edges will carry the lapping part of the blank edge over the ends of the holder-plate and by continuing the movement of these levers L^4 and operating the grip-lever G, as before described, the parts e^3 e^3 of the end-infolders are caused to swing in toward each other, so as to gather and infold the lapping parts of the blank at the rounded corners, and by the raising of the rear ends and depressing of the front ends of the parts e^3 e^3 the infolds are impressed into the blank, the heated bed B facilitating and insuring a well-defined infold. This infold is formed by the edge of the fabric blank where lapping over the edge of the holder-plate, and the pressure applied thereto by the infolders aided by the heated bed. When the infolders are moved back and from off the holder-plate, the latter is raised from off the bed and the blanks are removed from the holder-plate and are ready to be joined with their edges in line with the infolds turned in, and thus the edges of the articles will be uniform when sewed.

While I have shown the divided parts e^3 e^3 of the end-infolders as being adapted to be depressed at the front, yet, if desired, this part of the construction may be omitted, it being merely an adjunct means to more thoroughly impress the infolds into the blank.

The manner of operating the end-edge infolders to gather in the infolds upon rounded edges may be varied so long as they are connectedly operated to move inwardly toward each other, and then in sequence to each on their divided connection swing in toward each other to gather up the laps in the rounded portion of the infolds. The form of the end-edge infolders E may be varied, so as to make a regular curve at the ends of the collar-tab, as shown at Fig. 6, or a curve at the corners with an intermediate straight infold, as shown at Figs. 1, 2, 3, 4, and 5. As thus made and arranged one of the end infolders may be used without the other, and without the side-edge infolders, particularly when the blanks to be infolded are of a rounded form, such as are used on collar-tabs or the capes of women's collars in which the infolds to be made are gathered in by the swinging in toward each other of the divided parts e^3 e^3 of the infolders.

While I have described my invention as adapted to infold the edges of cuffs or collars, it may be used to infold the edges of other articles where like infolds are required.

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

1. In a mechanism for infolding the rounded edges of collar and cuff blanks, the combination, with a bed adapted to receive the blanks, of a holder-plate having rounded edges and constructed and operated to retain the blanks in place while being infolded, and a two-part infolder mounted on a slide-plate or tongue and having each of its parts rounded on their inside edges coincidently with the adjacent edge of the holder-plate, and each of said infolder parts being vertically and separately pivoted to said slide-plate or tongue and operated to move connectedly and together over the adjacent edge of the holder-plate and in connected sequence to separately swing in toward each other over the adjacent edges of the holder-plate, substantially in the manner as and for the purposes set forth.

2. The combination, with the bed B, of the holder-plate D, made with a rounded edge or corner, and an infolder E, constructed with a rounded interior edge corresponding in form to the rounded edges of the holder-plate thereat, said infolder being mounted on a slide-plate or tongue and divided longitudinally in two parts e^3 e^3, each of which is separately pivoted to said slide-plate or tongue, and a lever L^4, constructed to move said infolder E in over the adjacent edge of the holder-plate and in sequence to cause said parts e^3 e^3 to swing in toward each other and over the adjacent edges of the holder-plate, substantially as and for the purposes set forth.

3. In a mechanism for infolding the rounded ends, corners, and straight sides of collar and cuff blanks, the combination, with a bed adapted to have collar or cuff blanks placed thereon, of a holder-plate that is made smaller than the blanks, so that the edges of the latter will subtend the former to reduce the infold, said holder-plate being operated to descend onto the blanks placed on the bed and to ascend from off them, side-edge infolders operated to pass in over the side edges of said holder-plate and to turn up the infold thereon, and end-infolders at each end of the

holder-plate, each horizontally divided in two parts, each of which latter is separately pivoted to a slide-plate or tongue and is made with its inner edges to curve coincidently with the ends of the holder-plate, and which parts of the infolders are operated to move inwardly over the ends and corners of the holder-plate and the intermediate infold connectedly and together and in sequence to each swing in on their pivots toward each other and over the holder-plate and the infold in the blanks, substantially as and for the purposes set forth.

4. The combination, with the bed B, of the holder-plate D, constructed and arranged to operate in connection with said bed, substantially as described, the side-edge infolders F′ and F², each mounted on a slide-plate *d* and having their inner edges rounded off and each operated to move inwardly and over the adjacent edge of the holder-plate and to carry the subtending edge of the blank over the latter, the end-edge infolders E E, each mounted on a slide-plate or tongue d^2 and each having on its inner side a rounded form corresponding to the form of the holder-plate thereat, with each of said end-edge infolders divided longitudinally in two parts that are each separately pivoted to one of the slide-plates or tongues d^2, and the levers L^4 L^4, each constructed to move one of said end-edge infolders E toward the other over the edge of the holder-plate and to turn up over the latter the subtending edge of the blank thereat and in sequence to swing the parts e^3 e^3 of each of the end-infolders in toward each other over the holder-plate and the intermediate turned-in edge of the blank thereat, substantially as and for the purposes set forth.

5. The combination, with the bed B, of the holder D, constructed and arranged to operate in connection with said bed, substantially as described, of the side-edge infolders F′ F², each connected to a slide-plate and operated to move inwardly and over the side edges of the holder-plate, substantially as described, the end-edge infolders E E, each connected to slide-plates or tongues d^2 and each made in two parts e^3 e^3, that are separately pivoted to said slide-plates or tongues d^2, and the levers L^4 L^4, each constructed and arranged to operate one of said end-edge infolders, substantially in the manner as and for the purposes set forth.

6. In a machine for infolding the rounded edges of collar and cuff blanks, the combination of the bed B, the holder-plate D, having rounded edges, the infolders E E, each mounted upon a slide-plate or tongue d^2 and divided longitudinally in two parts e^3 e^3, that are each curved coincidently to correspond with the adjacent edges of the holder-plate and are each separately pivoted to said slide-plate or tongue, so as to be moved vertically on their pivots thereat against the force of a spring, and each laterally pivoted, so as to be raised at their outer ends and depressed on their inner ends, the pivoted lever L^4, arranged at the outer end of each of said two-part infolders, and the wedge W^4, pivoted to each of said levers, constructed and arranged to operate substantially in the manner as and for the purposes set forth.

7. In a machine for infolding the rounded edges of collar and cuff blanks, said machine having a bed for receiving the blanks and a holder-plate adapted to retain blanks on said bed while being infolded, the combination of an infolder mounted on a slide-plate or tongue and having its inner edges curved to coincide with the adjacently-curved edges of the holder-plate, said infolder being longitudinally divided in two parts, with each of the latter separately pivoted to the said slide-plate or tongue and where extended outwardly made with oppositely and outwardly projected bevels, a pivoted lever provided with a sleeve adapted to be moved thereon, which when opposite the beveled ends of the two-part infolder will engage with both of them to move them connectedly in over the holder-plate, and a grip-lever connecting with said sleeve, adapted to move said sleeve below the two infolder parts for the entrance of the pivoted lever between the bevels of said infolder parts, substantially as and for the purposes set forth.

Signed at Troy, New York, this 21st day of May, 1890, and in the presence of the two witnesses whose names are hereto written.

JAMES K. P. PINE.

Witnesses:
W. E. HAGAN,
CHARLES S. BRINTNALL.