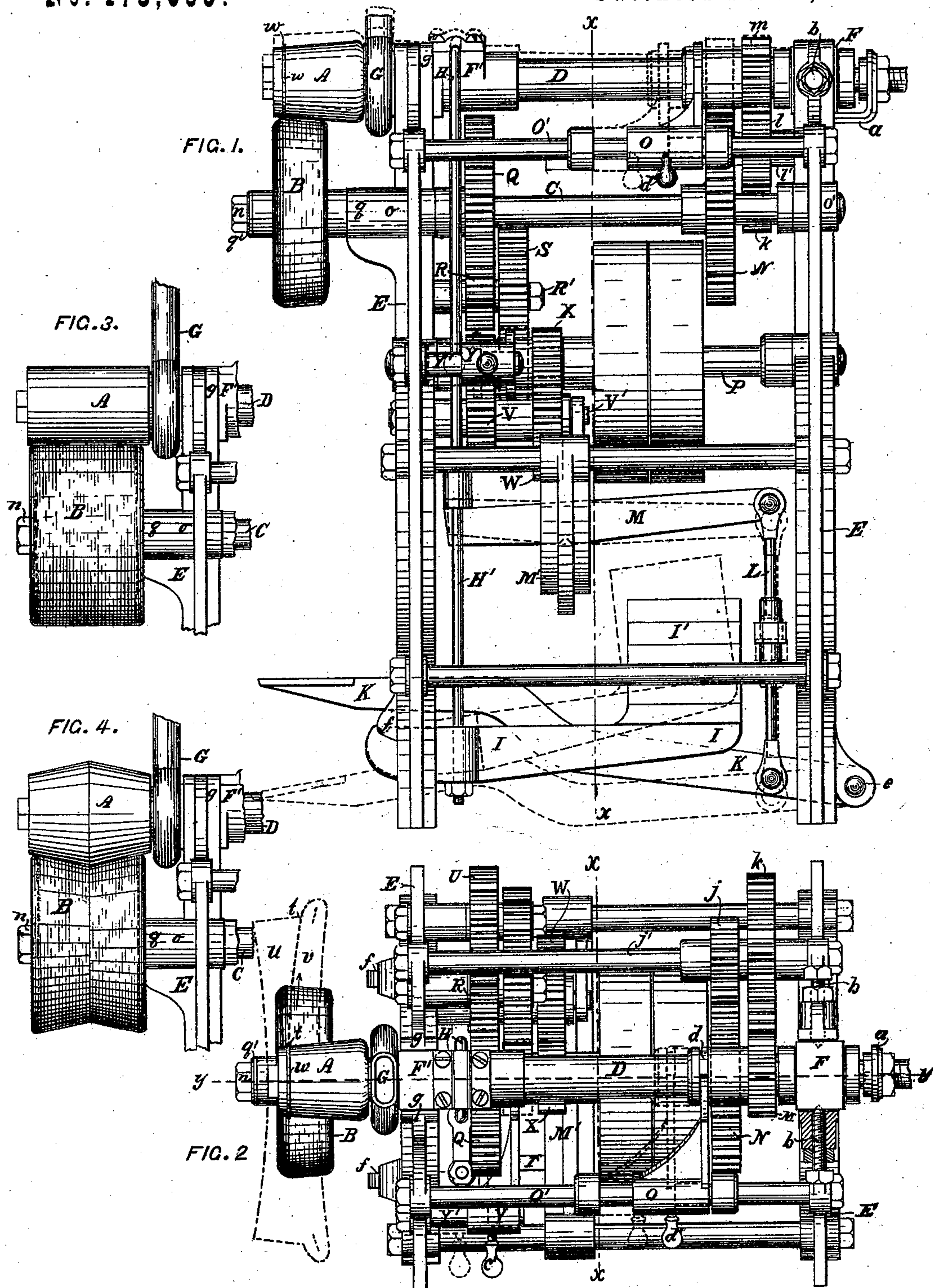


T. S. WILES & A. P. ADAMS.

IRONING APPARATUS.

No. 173,096.

Patented Feb. 1, 1876.



WITNESSES

Austin Ford Park,
James Thom. Goodfellow

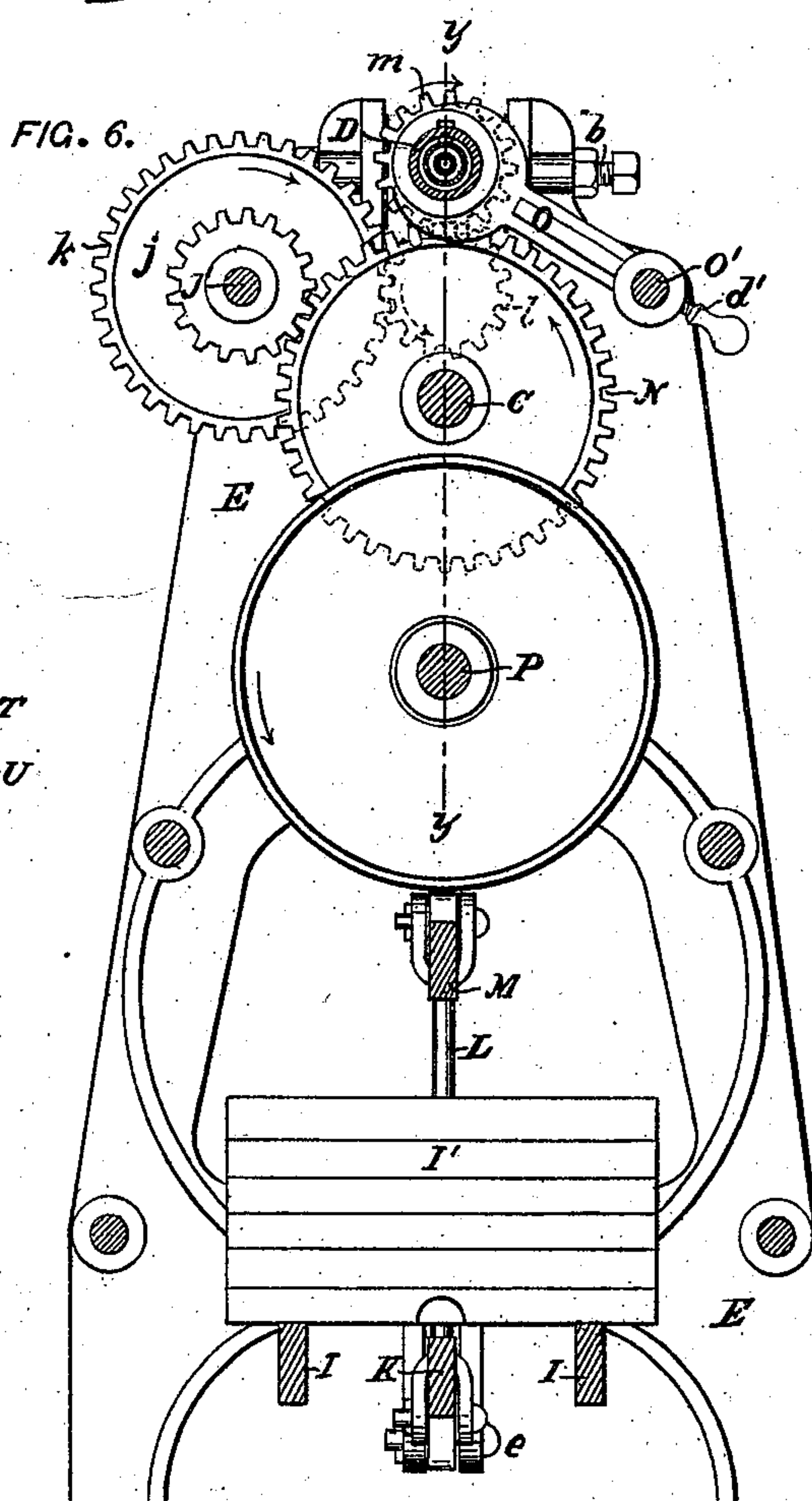
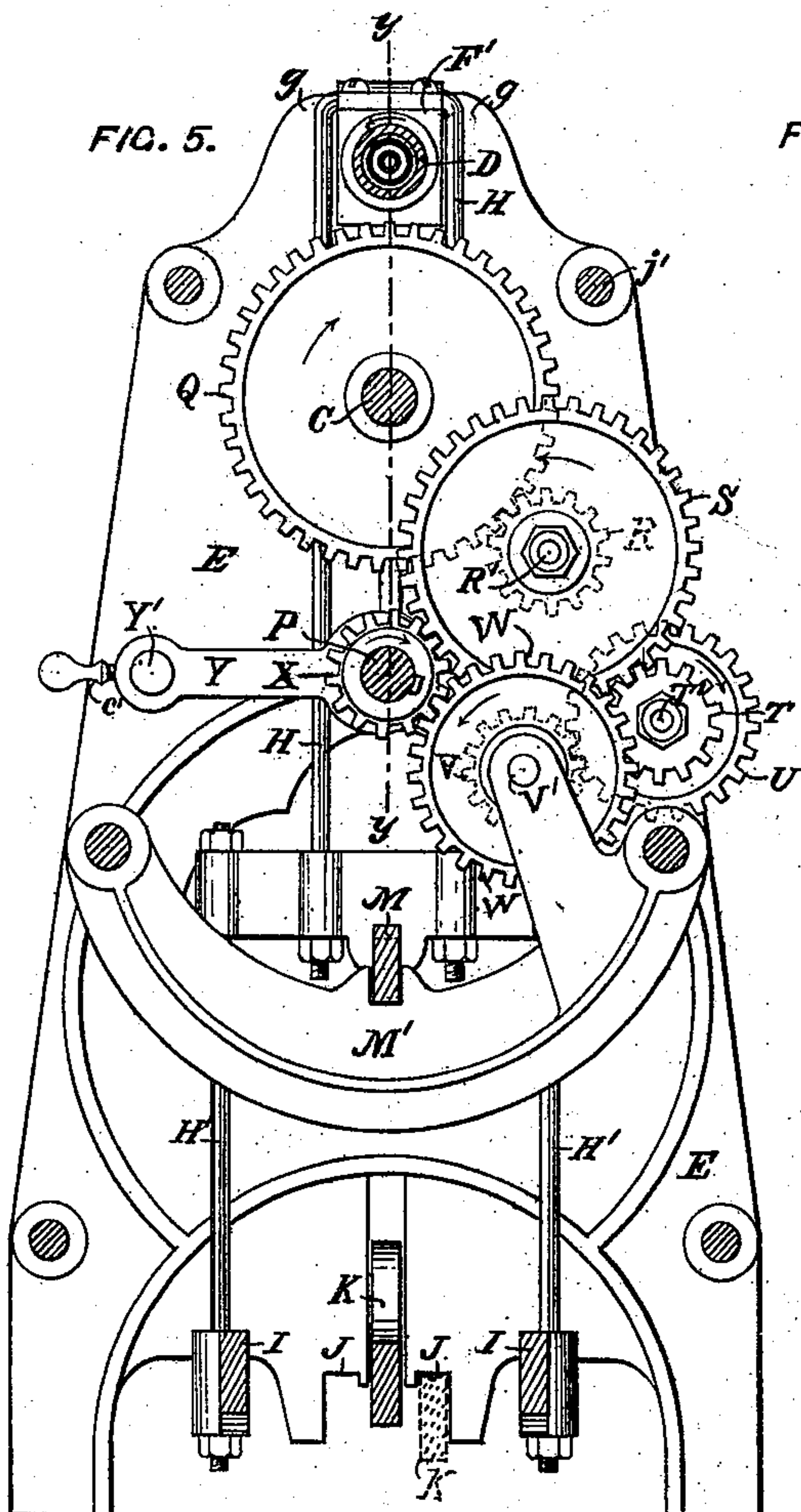
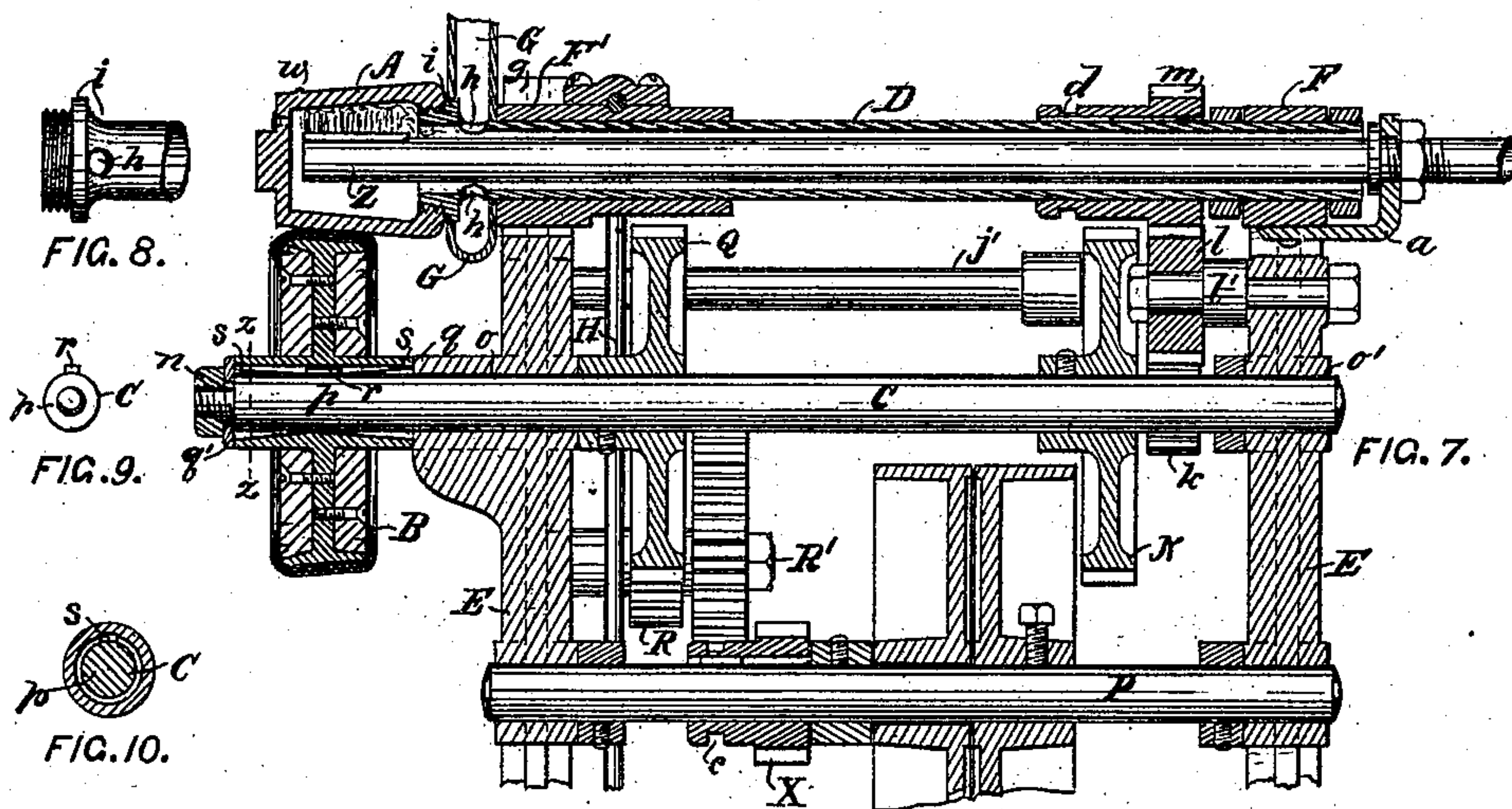
INVENTORS.

Thomas Shires Wiles,
Alonzo P. Adams.

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UNITED STATES PATENT OFFICE.

THOMAS S. WILES AND ALONZO P. ADAMS, OF ALBANY, NEW YORK.

IMPROVEMENT IN IRONING APPARATUS.

Specification forming part of Letters Patent No. **173,096**, dated February 1, 1876; application filed November 19, 1875.

To all whom it may concern:

Be it known that we, THOMAS SHIRES WILES and ALONZO PELTON ADAMS, both of the city of Albany, in the county of Albany and State of New York, have jointly invented certain new and useful Improvements in Ironing-Machines, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation, and Fig. 2 is a plan, of an ironing-machine which embodies our invention. Figs. 3 and 4 show different forms of ironing and clothed rollers, that may be used in the place of those shown in Figs. 1 and 2. Fig. 5 is a transverse section of the same machine at the line *x x* in Figs. 1 and 2, and elevation of the parts in front of that line; and Fig. 6 is a section at the same line and elevation of parts in rear thereof. Fig. 7 is a longitudinal section of a portion of the same machine at the line *y y* in Figs. 2, 5, and 6. Fig. 8 is a side view of the part of a tubular shaft to which the ironing-roller is secured. Fig. 9 is an end view of the part of the shaft on which the clothes-roller is mounted; and Fig. 10 is a section of the same and of the hub of the clothed roller thereon, at the line *z z* in Fig. 7.

Like letters of reference indicate like parts in the different figures.

In the aforesaid drawings, A is an ironing-roller, which has a smooth hard surface of cast-iron or other suitable metal or material, and is hollow, so that it can be heated internally. This ironing-roller is arranged to turn in surface-contact with a clothed roller, B, which has an elastic covering of felt, flannel, cloth, or other suitable fabric or fabrics, with an outer surface of muslin or other suitable cloth or fabric which will absorb and discharge moisture, and will not slip as easily as the heated ironing-roller against damp articles of cloth passing between the two rollers in being thereby ironed, and which covering, by its elasticity, will temporarily yield to hems, seams, and other thick parts of the passing articles, so as to thereby materially prevent injury thereto, and tend to equalize the pressure and ironing action of the ironing-

roller against the thinner and thicker parts of the articles in passing between the two rollers.

For ironing articles that are straight and flat, we generally prefer to make the clothed roller B in the form of a true cylinder, as shown in Fig. 3, and the ironing-roller A of corresponding shape.

For use in ironing ladies' and gentlemen's collars, or the bands thereof, and other articles curved in an arc of a circle, or nearly so, we make the clothed roller B tapering, or in the form of a truncated cone, as shown in Figs. 1, 2, and 7, or in the shape of two truncated cones united at their smallest circumferences, as shown in Fig. 4, and make the ironing-roller A of any suitable corresponding shape.

By thus having the clothed roller B of tapering form, it will feed and present curved collars and other articles to the ironing-roller, and cause them to be ironed in a curved course, corresponding more or less nearly to their curved shape. The clothed and ironing-rollers B A shown in Fig. 4 will iron at one operation the whole of one side surface of gentlemen's flaring collars and similar articles, each having two circularly-curved parts united along their edges of shortest curvature.

In order to make a groove-like crease in one side of articles of cloth, for ornamentation or preparatory to folding, and to iron the articles on the same side at the same operation, we construct the ironing-roller A with a projecting rib, *w*, on and around its ironing-surface, so that, by once passing the articles between that roller, suitably heated, and the roller B, the rib *w*, in connection with the elastic covering of the latter roller, will crease or continuously indent the articles without material injury thereto, on the side next to the ironing-roller, which will, at the same time, iron the article on the same side. That result could not be produced by a groove in and around the ironing-roller, and a corresponding raised rib on and around the clothed roller, for such a construction would make a raised rib instead of a groove-like crease on the inner surface of a collar or other article in ironing

that surface preparatory to folding, and a raised rib on that surface of the article which is to be folded inward would prevent the proper folding of the article along and over the raised rib.

We have the annular rib *w* on the roller A, whatever may be the shape of that roller, or of the clothed roller B, whenever the articles require to be creased and simultaneously ironed on one and the same side, by passing once between the two rollers.

In order to iron turn-over collars and other articles on one side, and simultaneously crease the same on the same side, and in a curved course, preparatory to folding, or for ornamentation, we make the ironing-roller A with a rib, *w*, arranged on and around any suitable part thereof, and combine the same with a clothed roller, B, of any suitable tapering form.

A turn-over collar is represented by dotted lines in Fig. 2. In order to crease such collars in a curved course, and at the same operation iron only the band part *v*, after the turn-over part *u* has been completely ironed, we arrange the creasing-rib *w* around and upon one end part of the ironing-roller A, and opposite to the largest end portion of a suitably-tapered clothed roller, B, substantially as shown in Figs. 1 and 2, so that the rollers in creasing the collar in a curved line or course, *t t*, and ironing the band part *v*, shall not act upon or materially injure the finish of the turn-over part *u*. We make the hub of the clothed roller B tubular, with an internal longitudinal groove, *s*, Figs. 7 and 10, and fit it freely upon the part *p* of a rotary shaft, C, and upon a stud, *r*, Fig. 9, thereon, and between end bearings *q q'*, and we make the bore of the roller B largest at its ends, and tapered to its middle, where it is smallest, so that the roller B, while being revolved by the shaft C, can rock lengthwise on the part *p* of that shaft, so as to thereby insure the proper accurate bearing of the clothed surface of the roller B against the ironing-surface of the roller A, although the surface of the roller B shall be somewhat uneven and eccentric, and whatever shall be the ordinary variations in the shape, size, and thickness of articles passing between the rollers.

Instead of making the bore of the roller B tapering from both ends to the middle, it may be cylindrical, when the inclosed part *p* of the shaft shall be largest in or about its middle, and tapered thence to its ends, so that the roller B can rock lengthwise thereon; or both the bore of the roller B and the inclosed part *p* of the shaft C may be tapered, so as to let that roller rock on its driving-shaft.

We arrange the clothed roller B on the overhanging end part *p* of the shaft C, that is supported by journal-bearings *o o'* in the frame E, at one end only of the roller B, and detachably secure that roller thereon by means of a removable screw-nut, *n*, Fig. 7,

and washer *q'*, or any equivalent device, in order that wristbands on the sleeves and collars on the bodies of the shirts may be passed between that roller and the ironing-roller A, and thereby ironed while the sleeves and bodies of the shirts shall extend and pass outside of the unsupported and unobstructed end of the clothed roller, and so that the clothed roller B can be readily removed from the shaft C without displacing the latter or removing it from its bearings in the frame E, to permit the covering of that roller to be conveniently removed and renewed in whole or in part whenever the covering shall become soiled or scorched by the ironing-roller, or worn out, and to allow another similar roller to be quickly secured upon the overhanging end part *p* of the shaft C, and thereby used in combination with the ironing-roller while making such repairs.

We arrange the hollow ironing-roller A on, and so as to be turned with and by, the overhanging end part *i* of a tubular shaft, D, that is mounted to turn in journal-bearings in the frame E at one end only of the ironing-roller, and detachably secure that roller to the part *i* of the tubular shaft by male and female screws, as indicated in Figs. 7 and 8, or by equivalent means, in order that, while that roller may be suitably heated internally by any suitable burner, Z, supported within the roller, and supplied by extensions through the tubular shaft D, parts of very large articles may be conveniently passed between and ironed by the rollers A and B, while the main portion of the articles may extend and pass outside of the unobstructed end of the ironing-roller, and so that without disturbing the burner, and without removing the shaft D from its bearings in the frame E, the ironing-roller A can be readily separated and removed from the shaft D, to permit the burner to be inspected and cleaned, and to allow any other suitable ironing-roller, with or without a creasing rib or ribs, or ribbing groove or grooves, in its ironing-surface, to be secured upon the tubular shaft D, and heated and used thereon in combination with the same clothed roller, as is of much importance in ironing various collars and other articles with and without creases or ribs in the ironed surface.

We secure the hollow ironing-roller A upon the overhanging end part of the tubular shaft D, and secure the clothed roller B upon the overhanging end part of the rotary shaft C, each in the detachable way above specified, so that the two rollers can be quickly removed from those shafts to permit any other suitable hollow ironing-roller and clothed roller of very different shape to be secured in the same places and by like means on the shafts C and D, as indicated by Figs. 3 and 4, without removing either of those shafts from their bearings in the frame E, whereby the machine is made capable of ironing collars, cuffs, and other articles of very different shapes and con-

structions, either separate or attached to shirts or other large articles which will have free passage-way outside of the uncovered ends of the two rollers.

It has been heretofore proposed to have an internally-heated ironing-roller and a bed-roller mounted on the overhanging ends of two rotary shafts supported in journal bearings in a frame at one end only of the two rollers, but without having the ironing-roller and bed-roller readily detachable from their supporting-shafts by means of fastening devices, substantially such as are hereinbefore described for such purposes.

Fluting-machines have been heretofore devised with two rolls, each composed of a hollow heating-mandrel and one or more removable corrugated sleeves, secured together by being clamped between an annular shoulder and a screw-nut on the hollow overhanging end portion of the mandrel. Such mechanisms, however, are not capable of being used so as to accomplish the above-specified objects that can be secured by means of the ironing-roller A and clothed roller B, detachably fastened upon the overhanging end portions of the rotary shafts C and D, as hereinbefore set forth.

We construct the tubular shaft of the ironing-roller with a lateral opening or openings, *h*, Figs. 7 and 8, between the ironing-surface of that roller and the adjacent journal-bearing of that shaft, and with a flue or conductor, G, (shown mostly broken off around the said shaft,) and lateral opening or openings *h*, and extended away therefrom, so that when gas or vapor shall be burned in the ironing-roller to heat the latter the highly-heated gaseous products of such combustion shall pass off through and be conducted away by the said lateral opening or openings *h* and flue G, and thereby avoid passing through and overheating the journal or journals and bearing or bearings of the ironing-roller shaft, and also avoid escaping into the open air at either end of the roller, where such highly-heated gases would be liable to scorch and injure projecting portions of passing articles in being ironed. As shown by the drawings, the ironing-roller A can be removed from the tubular shaft D and replaced thereon, or another secured in its place, without removing or disturbing either the lateral apertures *h* or the conductor G for the discharge of the gaseous products of combustion from the ironing-roller.

We mount the tubular shaft D of the ironing-roller in a journal-box, F, pivoted to the frame E at the end of that shaft farthest from the ironing-roller, and in a journal-box, F', movable between guides *g g* adjacent to the ironing-roller, in order that the hollow shaft D and ironing-roller A thereon can, while revolving, be moved or vibrated on and with the pivoted journal-box F as an axis, so as to thereby move the ironing-roller away from contact with the clothed roller B, to prevent burning

the latter when the rollers are at rest, and so as to replace the ironing-roller against the clothed roller, all by means of any suitable mechanical device properly applied to only the one journal-box F' adjacent to the ironing-roller, and without disengaging the two shafts C and D when geared together by toothed wheels adjacent to the pivoted journal-box, and so that a gas-burner and supply-pipes may extend from the outside through the tubular shaft D and into the ironing-roller to heat the latter, and be fastened to the said pivoted journal-box F, so that the burner will be thereby constantly supported in the same position within the ironing-roller, and vibrated with that roller and the shaft D without turning therewith.

We pivot the journal-box F to the frame E by means of set-screws *b b*, Fig. 2, having journal-like ends or points, in corresponding sockets in the journal-box, or by means of trunnions projecting from the journal-box into corresponding sockets in the frame, or by any other suitable means or construction.

We generally prefer to heat the hollow ironing-roller by a burner of the kind described in United States Letters Patent No. 165,775, dated July 20, 1875. Such a burner can be secured within the ironing-roller, and to the pivoted journal-box F, by means of a bracket, *a*, fast on that box, as shown in Fig. 7; but any suitable burner or heater may be used to heat the hollow ironing-roller in carrying out our present invention.

For convenience in lighting the burner and viewing the state of its combustion within the roller A, we commonly have in the outer unsupported end of that roller an opening with or without a movable cover of mica, metal, or other suitable material.

In order to force the ironing-roller A against the clothed roller B with the proper yielding pressure, we connect the journal-box F' by united rods H H' to levers I, fulcrumed or pivoted to the frame E at *f f*, and furnished with detachable weights I'.

As a convenient means for removing the ironing-roller A from the clothed roller B and reapplying the same thereto, we pivot a treadle-lever, K, Fig. 1, at *e*, to the frame E, and connect that lever to the united rods H H' by an adjustable rod, L, and a lever, M, fulcrumed upon a cross-bar, M', so that while the lever K is left free, as shown in full lines in Fig. 1, the weighted levers I will press the ironing-roller against the clothed roller; and so that by depressing the lever K, as indicated by dotted lines in Fig. 1, the pressure of the weighted levers I will be overcome, and the roller A, with the shaft D, will be raised away from the roller B and about the pivoted journal-box F, as an axis. When the treadle-lever K is thus depressed it may be turned to one side, under a stop, J, as indicated by dotted lines in Fig. 5, so as to thereby keep the

ironing-roller away from the clothed roller until the lever K shall be turned back from under the stop.

United States Letters Patent No. 145,034, dated November 25, 1873, describes an internally-heated ironing-roller, turning in surface-contact with a cloth-covered roller, and at a faster surface-speed than the latter, so as to give a polished ironed surface to the articles passed between those two rollers. That patent also describes another internally-heated ironing-roller turning in contact with another cloth-covered roller, and at substantially the same surface-speed as the latter, so as to give a lusterless finish to the ironed surface of the goods passed between them.

To make the same ironing-roller A and clothed roller B produce either a polished ironed surface or a lusterless one on articles of cloth passed between those two rollers, we combine with the driving-shafts C and D thereof any suitable combination of gear-wheels, whereby the same ironing-roller A can be turned by one and the same driving-shaft, either at a faster or different surface-speed than the clothed roller B, or at substantially the same surface-speed as the latter. A good combination of gear-wheels for that purpose consists of the toothed wheel N, fast on the shaft C, and gearing into a pinion, *j*, that is mounted to turn on a fixed stud-bar, *j'*, and is fast to a spur-wheel, *k*, which gears into a pinion, *l*, that is mounted to turn on a stud, *l'*, and a pinion, *m*, which is secured upon the shaft D by a groove and feather or equivalent means, so that the pinion *m* can be slid on the shaft D and adjusted thereon, so as to engage either with the wheel N or the pinion *l*. When the pinion *m* is engaged with the pinion *l*, as shown in full lines in Figs. 1, 2, and 7, the shaft D will then receive rotary motion from the shaft C through and by the wheels and pinions N, *j*, *k*, *l*, and *m*, so that the roller A will turn at a much faster surface-speed than the roller B, and will thereby polish the surface that it irons. When the pinion *m* is engaged with the wheel N, as indicated by dotted lines in Fig. 1, that wheel and pinion will make the shaft C turn the shaft D, so that the surface-speed of the ironing-roller A will be about the same as that of the clothed roller B, so that the roller A will leave a lusterless or "domestic" finish on the surface that it irons. A shifter, O, extending into a groove, *d*, in the hub of the pinion *m*, and mounted to slide on a fixed bar, *o'*, and furnished with a set-screw, *d'*, may be used in adjusting and securing the pinion *m* in engagement with either the wheel N or the pinion *l*.

In ironing collars and other articles of three, four, or more layers of linen or cotton cloth, by passing the same between a heated ironing-roller and a clothed roller, those rollers require to be turned very much slower than when ironing articles of only one or two lay-

ers of like cloth. Consequently, to give from one and the same shaft, turning at a constant rate of speed, very different rates of speed to the ironing and clothed rollers at different times without altering the rate of speed of one of those rollers in respect to the other, we combine with the shaft C and a driving-shaft, P, a gear-wheel, Q, fast on the shaft C, and gearing into a pinion, R, mounted to turn on a stud, R', and fastened to a wheel, S, that engages with a pinion, T, mounted to turn on a stud, T', and secured to a wheel, U, that gears with a pinion, V, mounted to turn on a stud, V', and fastened to a wheel, W, and a pinion, X, which is secured upon the shaft P by a groove and feather, or equivalent means, so that the pinion X can be slid on the shaft P and adjusted thereon, so as to engage either with the wheel S or the wheel W. When the pinion X is engaged with the wheel S, the shaft P will give rotary motion to the shaft C through the pinion X, wheel S, pinion R, and wheel Q, and will give much faster rotary motion to the rollers A and B, as required to iron articles of only one or two layers of cloth than when the pinion X is engaged with the wheel W, as shown in full lines in Figs. 1 and 2, so that the shaft P will turn the shaft C through and by the pinion X, wheel W, pinion V, wheel U, pinion T, wheel S, pinion R, and wheel Q, and thereby give to the rollers A and B suitable speed for ironing articles of three, four, or more layers of cloth.

A shifter, Y, fitted to slide on a stud, Y', and extended into a groove, *c*, Fig. 7, in the hub of the pinion X, and furnished with a set-screw, *c'*, may be used in adjusting and securing the pinion X in engagement with either of the wheels W and S.

By securing the wheel U in the place of the pinion V, and the pinion V in the place of the wheel U, and by changing the wheel U and pinion V for others of suitable different sizes, still further differences will be made in the rate of speed which the rollers A and B will receive from the driving-shaft P, as may be desirable in ironing collars and other articles of various different thicknesses and qualities of cloth.

By combining with the driving-shaft P and shafts D and C of the ironing and clothed rollers the adjustable pinion X on the shaft P, the wheels and pinions W V U T S R Q N *j k l*, and adjustable pinion *m* on the shaft D, the ironing-roller A can be thereby made to turn either at about the same surface-speed as the clothed roller B, or at a much faster surface-speed than the latter, to produce either a lusterless or a polished ironed surface, and at the same time the speed of those two rollers can be increased and lessened together, as required, for ironing articles of different thicknesses without altering the speed of the said driving-shaft.

What we claim as our invention is—

1. The combination of an ironing-roller adapted to be heated internally, and a tapering roller having an elastic covering with a surface of cloth or equivalent fabric, whereby articles of cloth may be passed between and ironed by those rollers in an arc of a circle or curved course, substantially as described.

2. The combination of a roller having an elastic covering with a surface of cloth or equivalent fabric, and an ironing-roller constructed to be heated internally, and with a creasing-rib, *w*, on and around the ironing-roller, whereby articles of cloth will be ironed on one side only, and will at the same time have a groove-like crease made in the same side, substantially as set forth.

3. The combination of an ironing-roller, constructed and mounted so that it can be heated internally, and a roller covered with cloth or equivalent fabric, and constructed and mounted on a supporting and driving shaft, so as to rock thereon, substantially as described.

4. The combination of a roller, B, covered with cloth or equivalent fabric, and a hollow ironing-roller, A, open to and detachably secured upon the overhanging end part of a rotary tubular shaft, D, by means of male and female screws, and end bearings in and upon the said tubular shaft and hollow ironing-roller, substantially as described.

5. The combination of a hollow ironing-roller, A, open to and detachably secured upon the overhanging end part of a rotary tubular shaft, D, supported by journal-bearings at one end only of the ironing-roller, and a roller, B, having a surface of cloth or equivalent fabric, and detachably secured upon the overhanging part of a rotary shaft, C, supported by journal-bearings at one end only of the said clothed roller, substantially as described.

6. In combination with a roller, B, having an outer covering of cloth or equivalent fabric, a hollow ironing-roller, A, upon and open to the interior of a tubular shaft, D, having a lateral aperture, *h*, surrounded by a flue, G, between the ironing-roller and the adjacent journal-bearing of its tubular shaft, substantially as set forth.

7. The combination of a roller, B, having a covering of cloth or equivalent fabric, and mounted on a shaft turning in stationary bearings, and a hollow ironing-roller, A, on and open to a tubular shaft, D, mounted to turn in a pivoted journal-box, F, at the end farthest from the ironing-roller, and in a sliding jour-

nal-box, F', adjacent to that roller, substantially as shown and described.

8. The combination of the clothed roller B on a shaft, C, mounted to turn in a constant position, the ironing-roller A on a shaft, D, mounted to turn in the pivoted journal-box F and sliding journal-box F', and the weighted levers I, connected with the said sliding journal-box by rods H H', arranged to operate substantially as described.

9. The combination of the clothed roller B on the shaft C, the ironing-roller A on the shaft D, mounted in the pivoted box F, and the sliding box F', the weighted levers I, connecting-rods H H', lever M, rod L, and treadle-lever K, substantially as described.

10. The combination of a hollow ironing-roller capable of being heated internally, a roller having a surface covering of cloth, and adjustable gearing, by which the ironing-roller can be made to turn either at a faster surface-speed than the clothed roller, so as to produce a polished ironed surface, or at substantially the same surface-speed as the clothed roller, so as to produce a lusterless ironed surface, substantially as described.

11. In combination with an ironing-roller adapted to be heated internally, and a roller covered with cloth or equivalent fabric, and geared to turn in surface-contact with the ironing-roller, the rotary driving-shaft P connected with the said geared rollers by adjustable gearing, substantially as described, whereby the said driving-shaft can be made to turn the ironing and clothed rollers at different rates of speed suitable for ironing articles of different thicknesses.

12. In combination with an ironing-roller, A, on the shaft D, and a clothed roller, B, on the shaft C, the driving-shaft P, having the adjustable pinion X thereon, the sets of wheels and pinions W V, U T, S R, the wheels Q and N on the shaft C, the wheels and pinions *j k l*, and the sliding adjustable pinion *m* on the shaft D of the ironing-roller, substantially as shown and described.

In testimony whereof we hereunto set our hands in the presence of two subscribing witnesses this 9th day of August, 1875.

THOMAS SHIRES WILES.
ALONZO P. ADAMS.

Witnesses:

AUSTIN FORD PARK,
JAMES T. GOODFELLOW.