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S. ROSENTHAL

2,629,524

PRESSING MACHINE

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Fig. 1

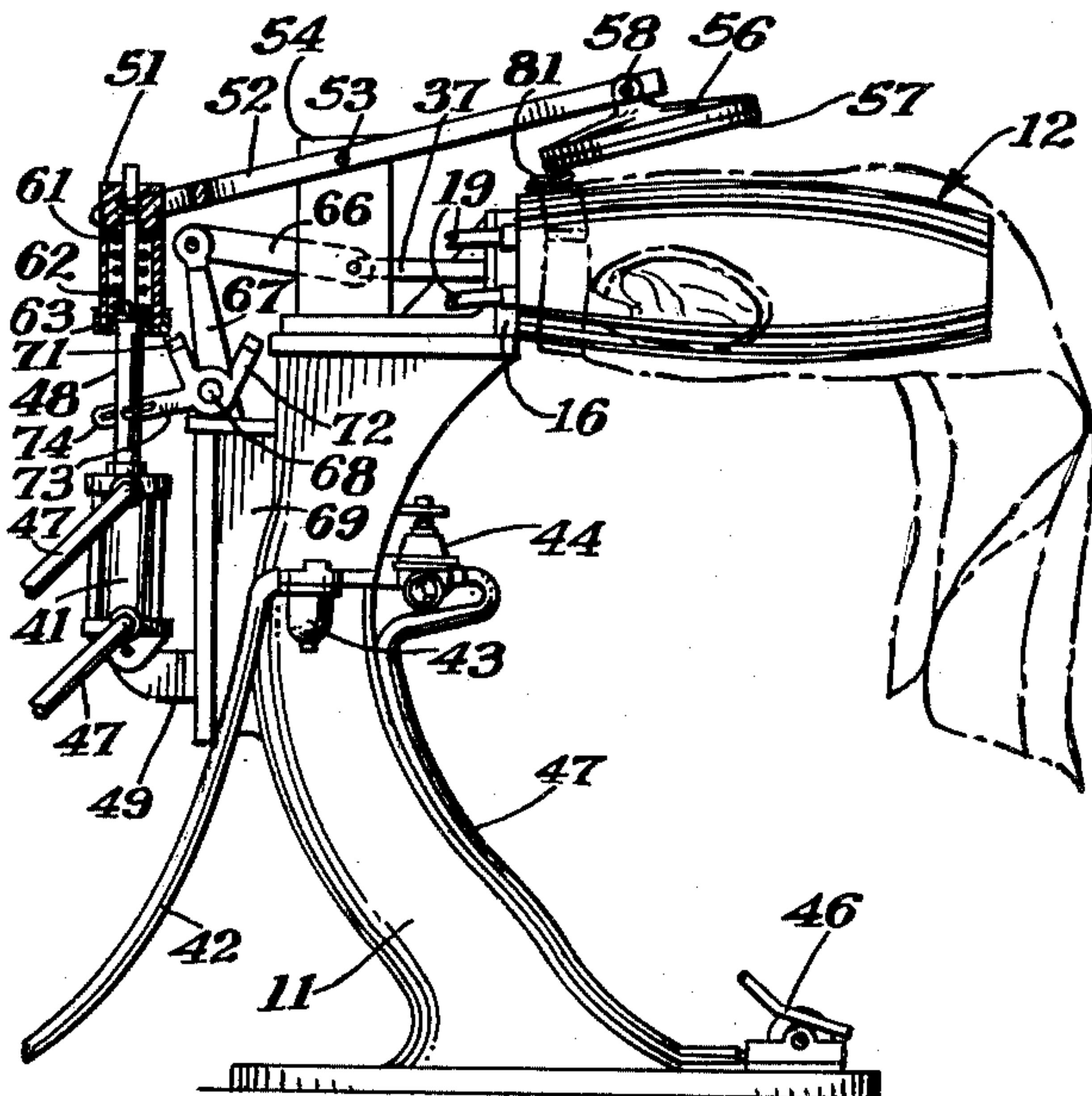


Fig. 2

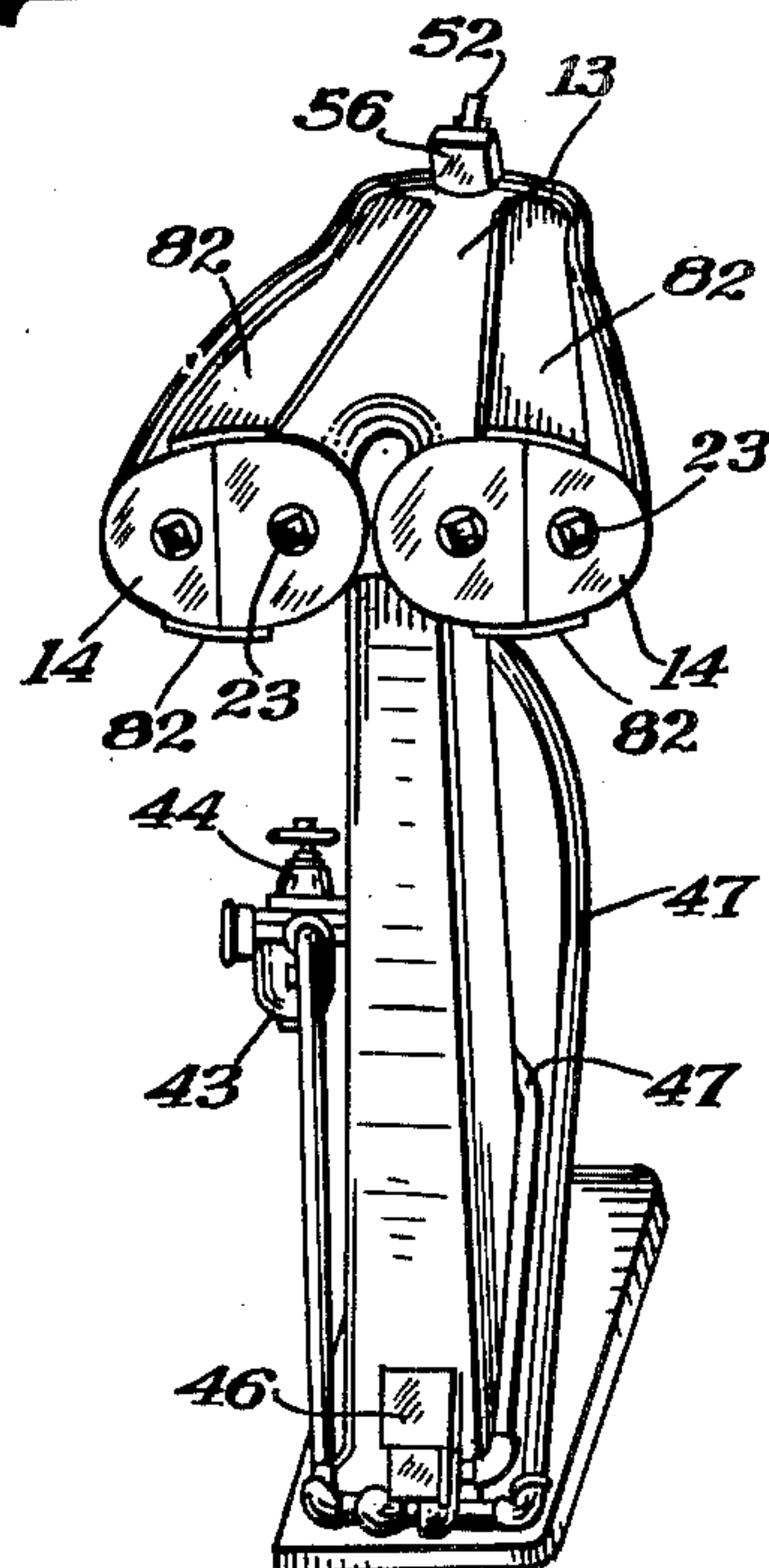


Fig. 3

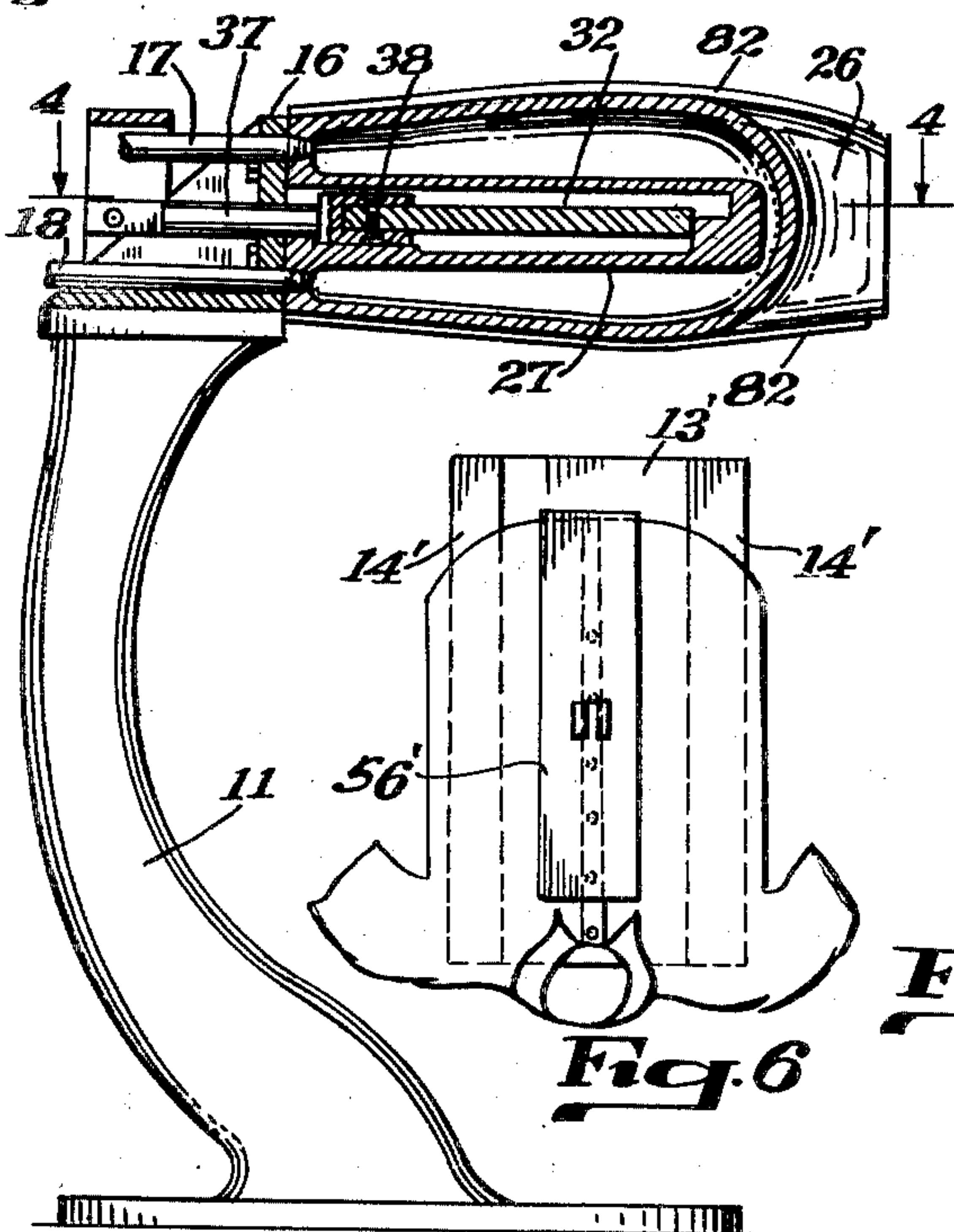


Fig. 6

Fig. 4

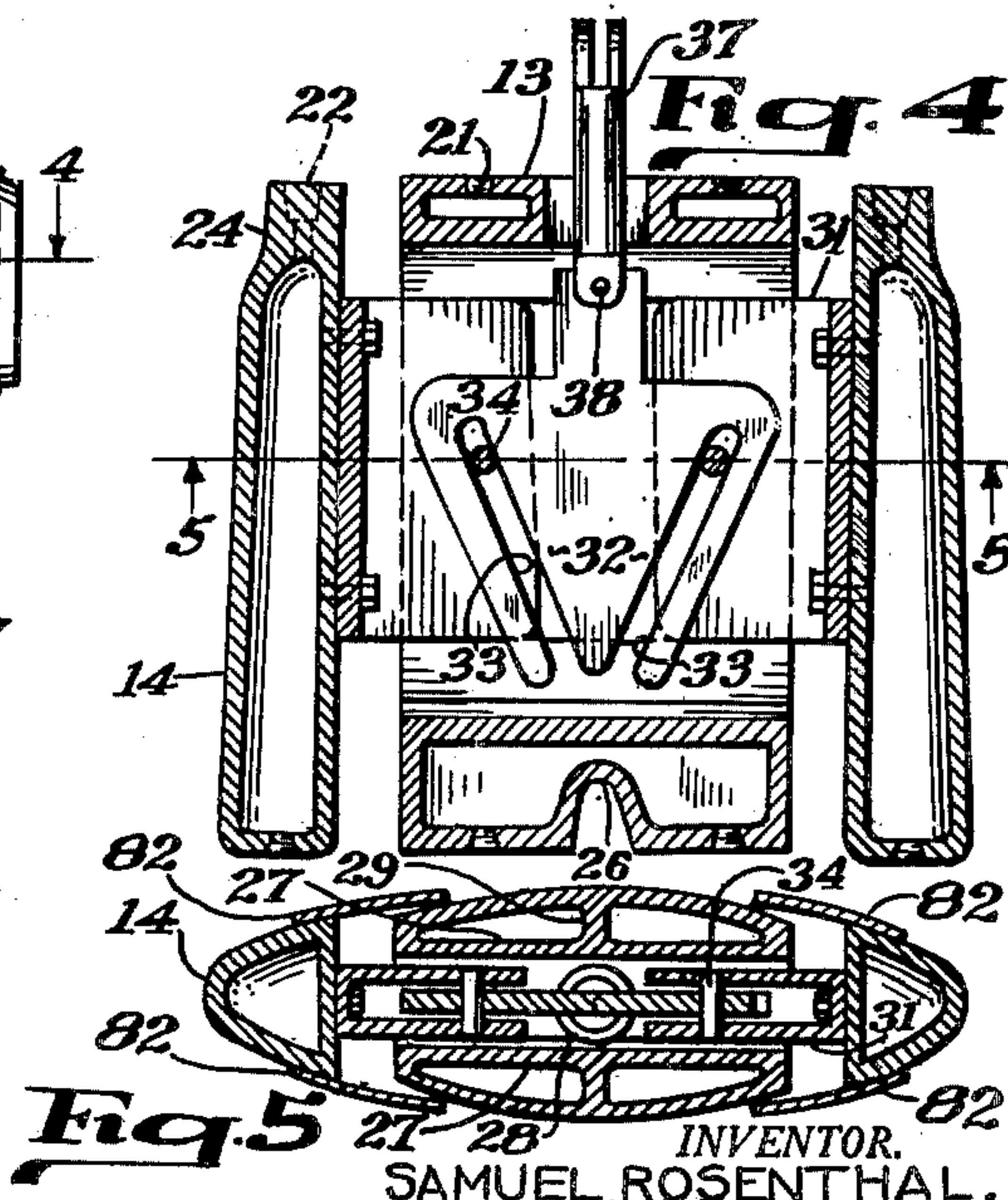


Fig. 5

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PRESSING MACHINE

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10 Claims. (Cl. 223—73)

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This invention relates to improvements in pressing wearing apparel, and is particularly concerned with a process and apparatus for pressing the top portion, that is, the waist and seat, of overalls, dungarees, and similar garments.

The invention contemplates a special purpose laundry machine which is designed to perform the pressing operations referred to above with greater economy and dispatch than other machines heretofore constructed. The invention further contemplates a machine which will remove the wrinkles from the cloth in portions of the garment which have heretofore been neglected in laundry and cleaning work of this type, due to the inadequacy of the pressing equipment in current use.

The cleaning and laundry industry is highly developed and in industrial centers certain establishments specialize in handling work clothes; moreover, certain concerns rent working garments, including the laundry service thereon.

Garments such as overalls must be pressed after they are washed in order to be attractive and acceptable to the customers. Of course, standards in this line are not the same as those for dress and business clothes, but a reasonable degree of finish and neatness is required. However, laundry work of shop clothes is generally conducted on a contract basis, which is competitive as to price; hence, any economies that may be realized in the operative cycle of the washing and pressing are of great importance.

With the machines now in use the leg portions of a pair of trousers may be pressed in an economical and efficacious manner. The upper portion of the garment, however, is much more troublesome, and, with known pressing equipment, requires from five to seven separate operations, depending upon the favored technique.

The present invention stems from a different approach to the problem, the new principle comprising the method of stretching the top portion of the garments on an expansible heated form of the general contour of the garment.

The principal object of the invention is to press garments in a more satisfactory manner than has been possible heretofore, to provide a machine which will facilitate a high rate of production, to minimize handling of the garment, and to realize greater speed and economy. A further object of the invention is to provide a machine which will safeguard the buttoned, or otherwise attached, elements of the garment.

The manner in which these objects are real-

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ized, as well as certain ancillary objects, will be apparent to those skilled in the art from the description herein of the preferred embodiment of the invention and the accompanying drawings, in which:

Fig. 1 is a side view of the pressing machine;

Fig. 2 is a view in perspective of the same from the front;

Fig. 3 is a view of a fragmentary portion of the machine illustrating the pressing head in section;

Fig. 4 is a horizontal section of the pressing head, the section being taken on the plane indicated by the line 4—4 in Fig. 3;

Fig. 5 is a transverse view of the pressing head taken on a plane indicated by the line 5—5 in Fig. 4; and

Fig. 6 is a schematic plan view illustrating the pressing of a shirt.

Referring first to Fig. 1, the machine preferably includes a base or stand 11 having a pressing head 12 mounted thereon at a height which will afford the most convenient manipulation of the garment. The pressing head 12 comprises a central form 13 and side forms 14, which constitute a partial torso confined generally to the usual shape of a pair of trousers from the waistband to a point slightly beyond the crotch. The inner form 13 may be fixed to the base 11 in any suitable manner, as, for example, through the angle bracket 16 and cap screws or bolts therefor. The side forms 14 are disposed in contiguous relation with the side walls of the central form 13 and are mounted for lateral movement relative thereto in order to distend the form within the garment and thus eliminate the wrinkles in the engaged portion of the garment. The form sections are hollow, each being connected to a source of steam through which they are heated.

The exact shape of the forms may vary in accordance with the style of garment to be pressed, but it has been found that a torso block of the type illustrated herein is satisfactory for a wide variety of garments, since the flexible support of the parts of the form accommodates appreciable variation in the size and style of the garments. The inner form is provided with inlet and outlet steam pipes 17 and 18 (Fig. 3) and the outer forms are connected to the steam supply line through flexible hose sections 19 (Fig. 1), tapped openings 21 and 22 (Fig. 4) being provided in the castings for the fittings therefor. The forms are provided with pipe plugs 23 of the usual type for closing the core openings which,

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as shown, are preferably disposed in the forward end of the castings. The side walls of the outer forms 14 are rounded and taper toward the waistband, the inner end portion 24 thereof being of sufficient length to assure the support of the waistband of the garment. The inner form 13 is generally of the form of a rectangular parallelepiped, the upper and lower surfaces, however, being convex and the forward end being bifurcated to provide a vertical arcuate notch 26 for the reception of the crotch of the garment. The central form 13 is provided with inner walls 27 which define a transverse passage 28 for the reception of the operating mechanism for the side or outer forms 14. The walls 27 are united with the upper and lower walls of the form by longitudinal webs 29 which reinforce the structure against internal pressure.

The side forms are fixed to supporting and actuating channel plates 31, the inner ends of which are disposed within the transverse passage 28 in the form 13. A V-shaped cam plate 32 formed with converging slots 33 in the face thereof is mounted between the arms of the channel plates on pins 34. As will be apparent, forward movement of the cam plate urges the forms 14 apart as illustrated in Fig. 4, and reverse movement thereof effectuates the retraction or closure of the form so that the garments may be readily fitted thereover or removed therefrom. The cam plate 32 is coupled with an actuating rod 37 by a pin or bolt 38 passing through a clevis in the end of the rod. The rod 37 is connected through linkage to a double-acting pneumatic cylinder 41 (Fig. 1). The units of the pneumatic system through which the cylinder is actuated and the cylinder itself may be of any commercial form, and therefore will not be described in detail herein. Preferably, the cylinder 41 is fed from a source of air under pressure through a line 42 which is provided with a water trap 43, a pressure-regulating valve 44, and a foot-operated reversing control valve 45. The valve 46 is connected to the cylinder through conduits 47 which are organized to effect the movement of the piston rod 48 in either direction and also effect the support of the piston in a raised or lowered position under the control of the operator. The cylinder 41 may be pivotally mounted on a bracket 49 fixed to the base 11, and the upper end of the piston rod is guided in a sleeve 51 which is pivotally connected to a clevis on the end of an arm 52. The arm 52 is fulcrumed intermediate its ends on a pin 53 supported in a bracket 54 extending upwardly from the base of the bracket 16. The outer end of the arm 52 supports a plate 56 provided with a pad 57 of felt or other yieldable material. The plate 56 is pivotally mounted on the arm through a pin 58.

The sleeve 51 supports a compression spring 61 which normally urges a shoulder 62 on the piston rod against a collar 63 secured to the lower end of the sleeve. The spring 61 is designed to outweigh the effort required to actuate the arm 52 but to yield when the plate 56 is firmly engaged with the form 13. Thus the initial distention of the piston rod 48 will move the pad into engaged relation with the face of the form and continued movement of the piston will be afforded by compression of the spring.

The piston rod 48 is also coupled to the cam plate 32 through a lost motion mechanism which is designed to effect the actuation of the cam plate 32 after the plate 56 is engaged with the form 13. The rod 37 for actuating the cam is piv-

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otally connected to a link 66 which in turn is pivoted upon an arm 67 rotatable on a horizontal shaft 68. The shaft 68 is supported in suitable brackets 69 mounted on the frame 11. The arm 67 is disposed between a pair of forks 71 and 72 formed in a bell crank 73 which is freely rotatable about the shaft 68. The free ends of the forks are provided with lugs or offset portions designed for abutting engagement with the arm 67. The outer arm of the bell crank is formed with a slot therein for the reception of a pin 74 mounted in the piston rod 48. Thus, as the piston rod is elevated from its lower position (Fig. 1) the cam plate 32 will not be actuated until the arm 71 is brought into engagement with the arm 67, which, as pointed out above, is subsequent to the engagement of the plate 56 with the garment on the pressing form. When the cylinder is reversed to accommodate the removal of the pressed garment, the arm 72 will abut the opposed side of the arm 67 and effect the retraction of the cam plate.

A spring clip or similar clamp 81 may be provided at the inner end of the form to retain the waistband of the garment until the plate 56 is engaged therewith and the side blocks of the form are distended.

Plates 82 of sheet metal may be disposed over the gap between the inner and outer forms and secured to the inner form, to prevent garments from sagging between the forms as they close and being thus caught.

In operation, the machine is prepared for use by first heating the forms, preferably by circulating steam therethrough, although other forms of heating may be employed. A pair of trousers or a similar garment having a divided tubular portion therein is next slipped over the forms in the position indicated by the broken lines in Fig. 1. The garment is arranged on the form with the front uppermost, and with the divided sections thereof buttoned or held together by a slide fastener or so-called zipper. The garment is advanced on the form until the waistband is brought to the inner end of the form. This operation merely entails slipping the garment over the forms, and may be accomplished with ease and dispatch. The valve 46 may then be opened by actuation of the foot treadle associated therewith, this operation causing the plate 56 to descend against the closure of the garment, over the buttons or slide fastener, and thereafter effecting the lateral distension of the blocks 14. The pressure exerted by the clamping plate 56 will prevent mutilation of the slide fasteners, tearing of the garment, or strain upon the buttons or buttonholes. If the edges of the divided portion of the garment are arranged in parallel relation to each other and within the area covered by the plate, the pressing operation may be performed without the necessity of buttoning or otherwise closing the opening. The pressure and heat of the form against the garment dries and presses the material, and when this operation is concluded the operator may actuate valve 46 to collapse the form and elevate the clamp in order to accommodate the removal of the garment from the form.

The valve 46 may be provided with a catch (not shown) to hold the valve open during the drying and pressing period.

Since the operation of applying and removing the trousers requires but very little time, a single operator can easily operate a battery of machines by assembling a garment on a first ma-

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chine, operating the valve and setting the catch, turning to a second or third machine and repeating the operation, and finally returning to the first machine where he may release the valve catch and renew the cycle of operation.

Although reference is made in the foregoing description to pressing operations on the upper portion of trousers, it will be recognized that the principle of the invention may be utilized in pressing any divided tubular portion of a garment such, for example, as the body of a shirt, jacket, or jumper, the cuff of a sleeve or underwear of the type that is fashioned with buttoned edge portions.

In the application of the invention to such wearing apparel, the plate 56 may, if necessary, be modified as to length, and the forms 13 and 14 configured to conform to the style and size of the garment. This is illustrated in Fig. 6, in which the forms 13' and 14' press the shirt body and the pad 56' is long enough to hold down the edges of the shirt, which may be buttoned or unbuttoned. The actuation of the forms and pad may be as described above.

The pivotal connections between the outer forms and the cam are relatively free, and liberal clearance is provided between the channel plates 31 and the passage 23 so the outer forms may rock or float to a limited degree and thus conform to the pattern of the garment.

The embodiment of the invention herein described is to be regarded as illustrative and as susceptible of numerous modifications within the scope of the invention. For example, it is by no means essential that a power-operated device be provided to lower the plate 56 and expand the element 14 of the pressing form, since these operations could be effected manually by the operator. The separate operations of the machine could also be performed independently, although it is obviously advantageous to effect both elements of the machine through a common actuator. The particular arrangement illustrated, by which the clamping device 56 and the cam plate 32 are operated in sequence, is to be particularly regarded as merely illustrative, since separate cylinders or other mechanical systems may be substituted therefor to obtain the same result.

The scope of the invention is not therefore to be inferred from the illustrative embodiment herein disclosed, but is defined by the appended claims.

I claim:

1. A machine for pressing the top portion of trousers and the like comprising a frame, a center heated form on the frame configured to shape the central part of the top portion of the trousers, and outer heated forms carried by the center form adapted to shape the right and left parts of said top portion of the trousers, motor actuated means on the frame adapted to move the outer forms laterally to tighten them against the trousers and to retract the outer forms, and a pad pivotally mounted on the frame for holding the closure portion of the trousers against the center form as said trousers are being pressed.

2. A machine for pressing the top portion of trousers and the like comprising a frame, a center heated form on the frame configured to shape the central part of the top portion of the trousers, and outer heated forms carried by the center form adapted to shape the right and left parts of said top portion of the trousers, the center form having a transverse passage formed therethrough, a member extending laterally from

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each outer form into the passage and loosely received therein, a pin constituting a cam follower on each member, and a cam movable in the transverse passage in engagement with said pin for moving the side forms laterally to tighten them against the trousers and to retract the outer forms.

3. A machine for pressing the top portion of trousers and the like comprising a frame, a center heated form on the frame configured to shape the central part of the top portion of the trousers, and outer heated forms carried by the center form adapted to shape the right and left parts of said top portion of the trousers, the center form having a transverse passage formed therethrough, a member extending laterally from each outer form into the passage and loosely received therein, a pin constituting a cam follower on each member, a cam movable in the transverse passage in engagement with said pin for moving the side forms laterally to tighten them against the trousers and to retract the outer forms, and a clamp pivotally mounted on the frame for holding the closure portion of the trousers against the center form as said trousers are being pressed.

4. A machine for pressing the top portion of trousers and the like comprising a frame, a center heated form on the frame configured to shape the central part of the top portion of the trousers, and outer heated forms carried by the center form adapted to shape the right and left parts of said top portion of the trousers, the center form having a transverse passage formed therethrough, a member extending laterally from each outer form into the passage and loosely received therein, a pin constituting a cam follower on each member, a cam movable in the transverse passage in engagement with said pin for moving the side forms laterally to tighten them against the trousers and to retract the outer forms, a clamp pivotally mounted on the frame for holding the closure portion of the trousers against the center form as said trousers are being pressed, and power means on said frame for actuating the clamp and the cam.

5. A device for pressing the waist and seat portion of trousers comprising a center heated form and two side heated forms carried by the center form shaped externally to conform to said portion of the trousers, the side forms being reciprocable outwardly from the center form to tighten the side forms against the trousers, said center form having a transverse passageway therethrough, cam means between the side forms disposed in said passageway for moving the side forms laterally relative to the center form, and means for guiding the side forms in said passageway, the cam and guide means being constructed to provide a pivotal movement of limited extent of the forms.

6. A device for pressing the waist and seat portion of trousers comprising a center heated form and two side heated forms carried by the center form shaped externally to conform to said portion of the trousers, the side forms being reciprocable outwardly from the center form to tighten the side forms against the trousers, said center form having a transverse passageway therethrough, cam means between the side forms disposed in said passageway for moving the side forms laterally relative to the center form, means for guiding the side forms in said passageway, the cam and guide means being constructed to provide a pivotal movement of limited extent of the forms, and a clamp pivotally mounted on the

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center form for movement toward and away from the center form for holding the closure portion of the trousers against the center form.

7. A device for pressing the waist and seat portion of trousers comprising a center heated form and two side heated forms carried by the center form shaped externally to conform to said portion of the trousers, the side forms being reciprocable outwardly from the center form to tighten the side forms against the trousers, said center form having a transverse passageway therethrough, cam means between the side forms disposed in said passageway for moving the side forms laterally relative to the center form, means for guiding the side forms in said passageway, the cam and guide means being constructed to provide a pivotal movement of limited extent of the forms, a clamp pivotally mounted on the center form for movement toward and away from the center form for holding the closure portion of the trousers against the center form, and power means carried by the center form for actuating the cam means and the clamp in timed relation.

8. A device for pressing the waist and seat portion of trousers comprising a center heated form and two side heated forms carried by the center form shaped externally to conform to said portion of the trousers, the side forms being reciprocable outwardly from the center form to tighten the side forms against the trousers, said center form having a transverse passageway therethrough, cam means between the side forms disposed in said passageway for moving the side forms laterally relative to the center form, means for guiding the side forms in said passageway, the cam and guide means being constructed to provide a pivotal movement of limited extent of the forms, a clamp pivotally mounted on the center form for movement toward and away from the center form for holding the closure portion of the trousers against the center form, power means carried by the center form for actuating

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the cam means and clamp, and connections between the power means and the devices actuated thereby such that the clamp is actuated before the said forms are moved.

9. A machine for pressing the portion of trousers and the like comprising a frame, a center heated form on said frame configured to shape the central part of the trousers and having a transverse passage therethrough, outer heated forms carried by the center form adapted to shape the right and left parts of the top portion of the trousers, and cam means connecting said outer forms and disposed in said passageway for shifting said outer forms transversely with respect to the center form into engagement with the trousers.

10. A machine for pressing the top portion of trousers and the like comprising a frame, a center heated form on said frame configured to shape the central part of the trousers and having a transverse passage therethrough, outer heated forms carried by the center form adapted to shape the right and left parts of the top portion of the trousers, cam means connecting said outer forms and disposed in said passageway for shifting said outer forms transversely with respect to the center form into engagement with the trousers, and a clamp means pivotally mounted on said frame for holding the closure portion of the trousers against the center form.

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