Feb. 14, 1933. H. G. BEEDE 1,897,689

ACTUATING MECHANISM FOR GARMENT PRESSING MACHINES

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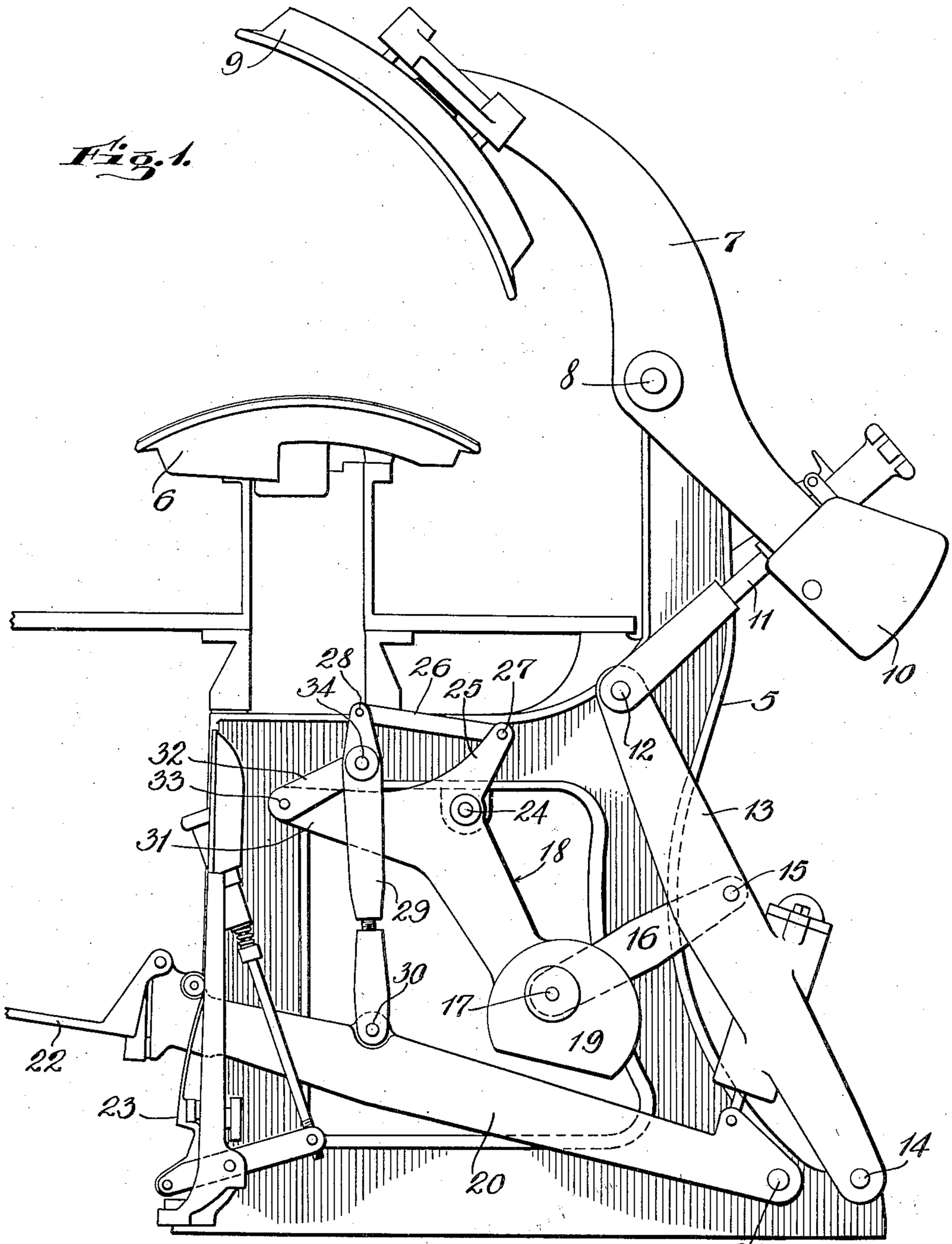
Fig. 1.



INVENTOR.
HERBERT G. BEEDE
BY
J. Granville Meyers
ATTORNEY

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Fig. 2.

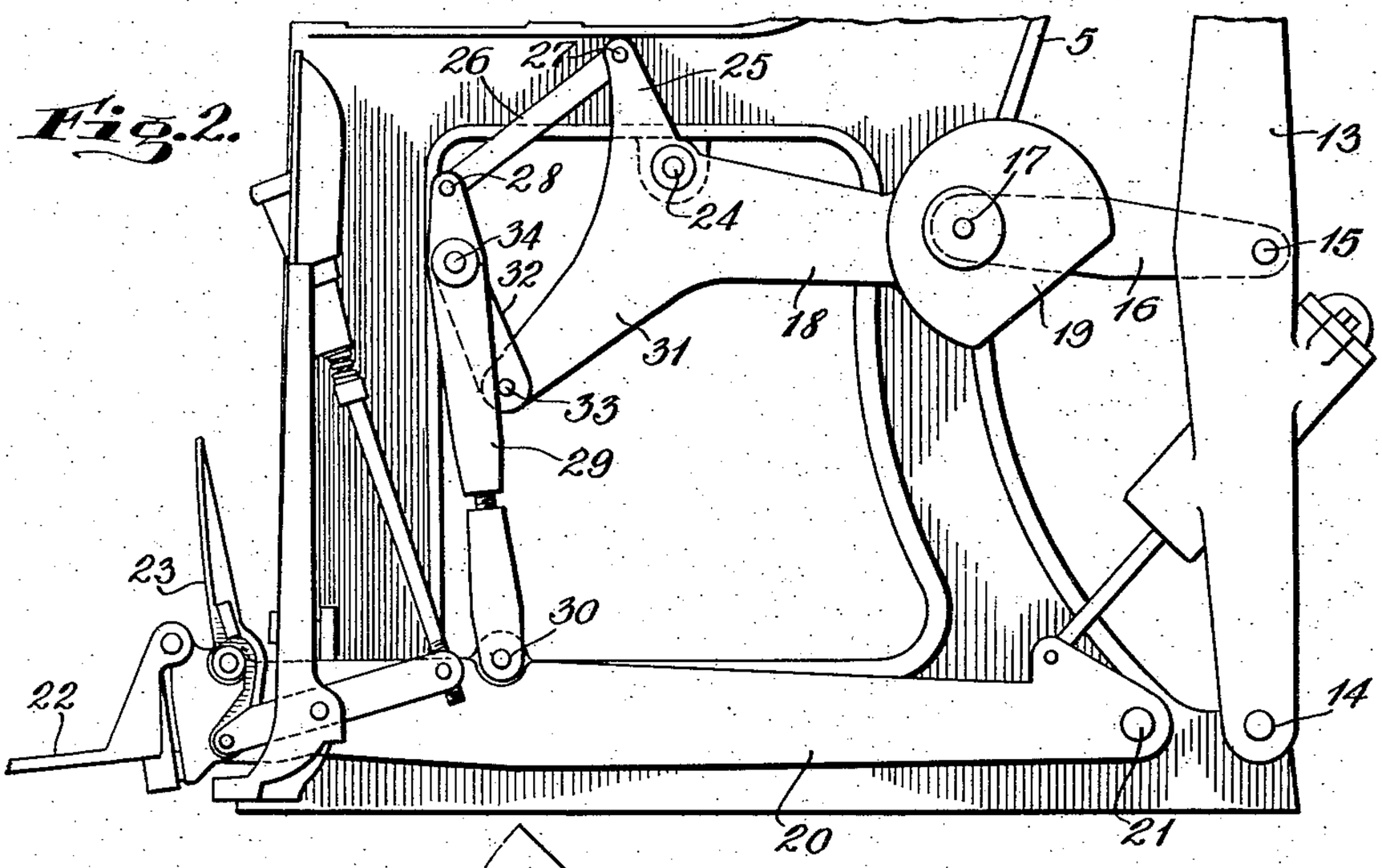

Fig. 3.

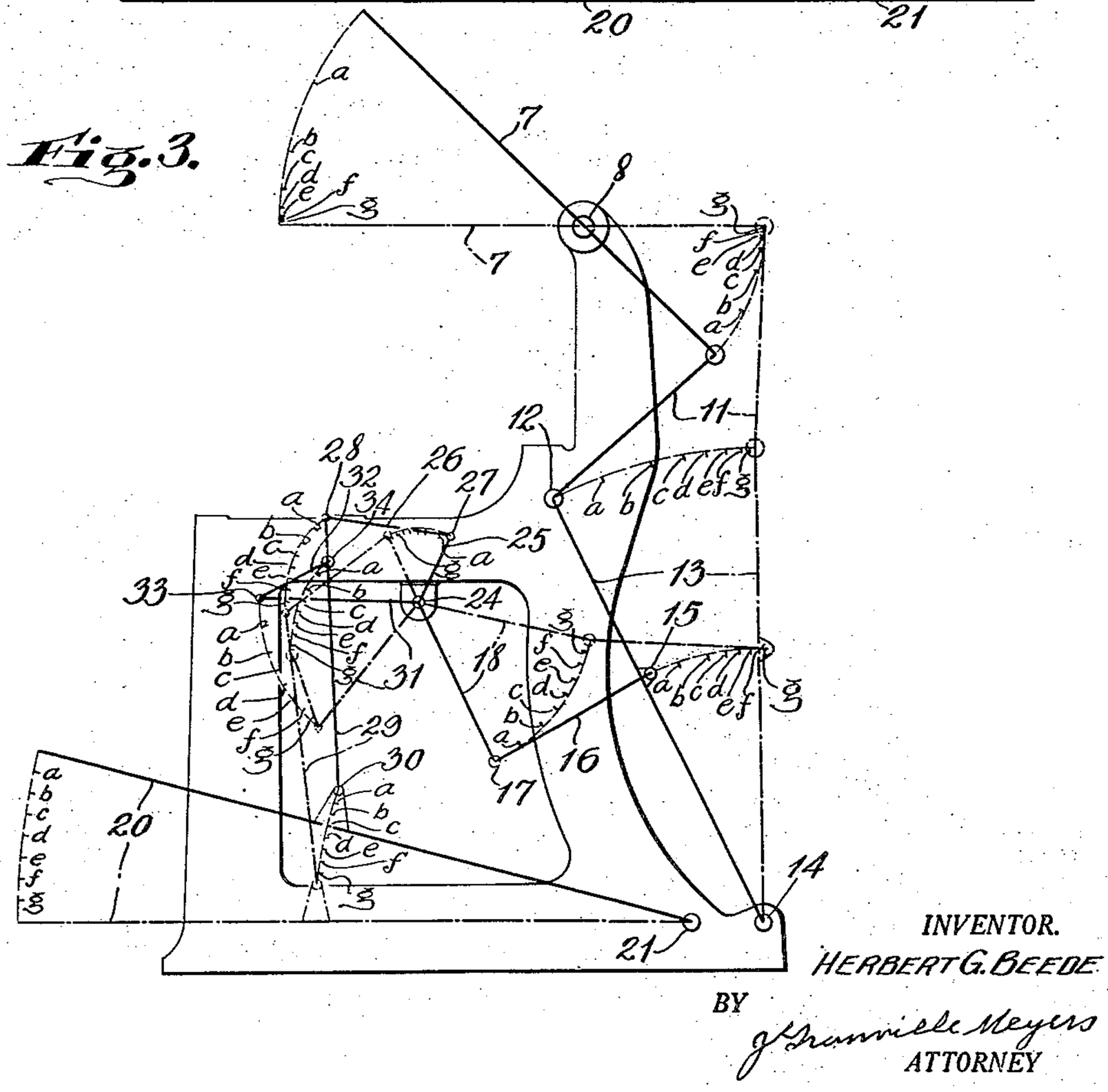

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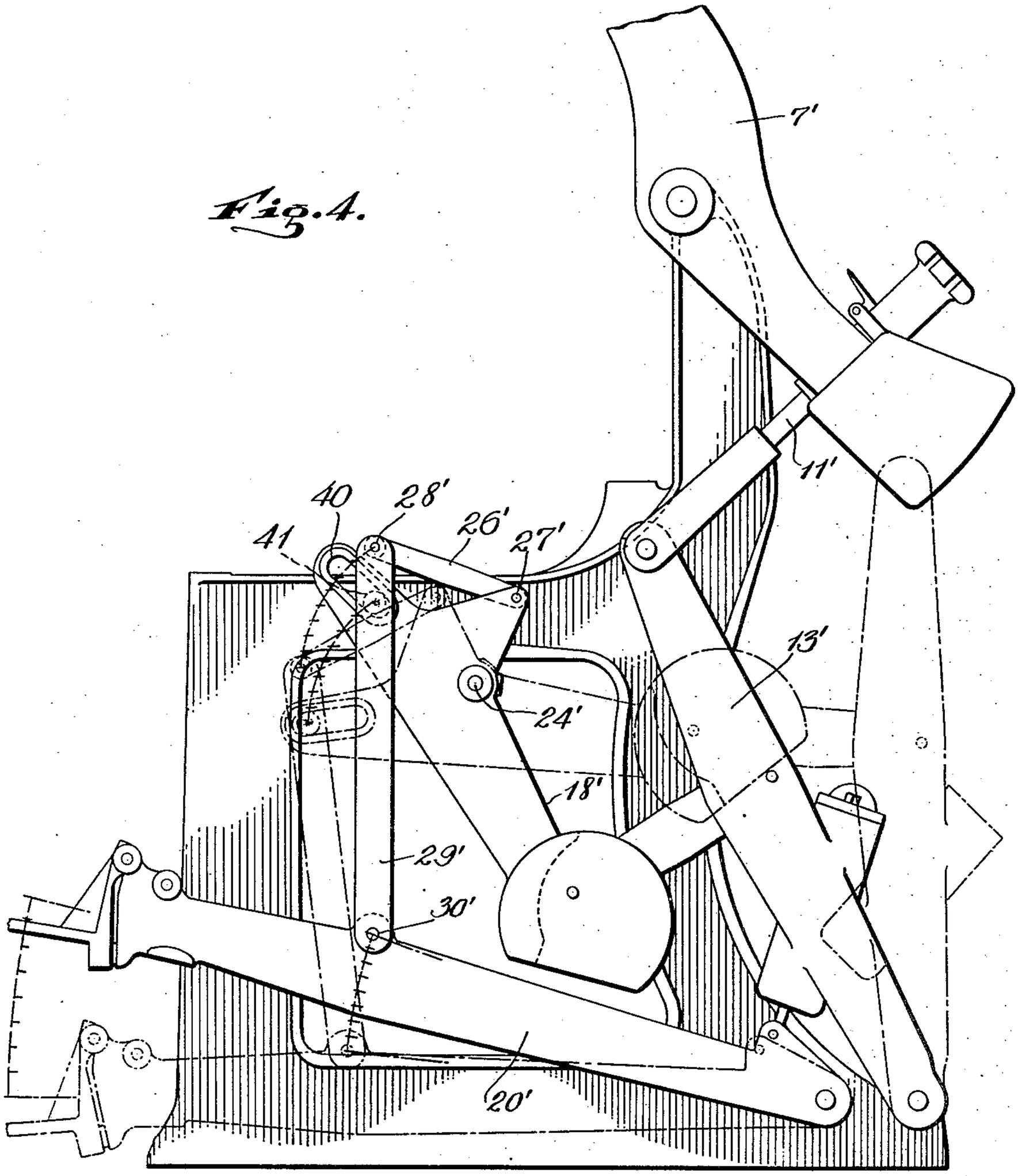
Fig. 4.



INVENTOR.
HERBERT G. BEEDE

BY
J. Granville Meyers
ATTORNEY.

Patented Feb. 14, 1933

1,897,689

UNITED STATES PATENT OFFICE

HERBERT G. BEEDE, OF PAWTUCKET, RHODE ISLAND

ACTUATING MECHANISM FOR GARMENT PRESSING MACHINES

Application filed April 30, 1932. Serial No. 608,506.

My invention relates generally to garment pressing machines such as are used in tailoring, dry cleaning, laundering, and clothing manufacturing establishments for pressing garments and fabrics, and the invention relates particularly to mechanism for actuating the movable pressing member of such machines.

Usually the movable pressing member or head is carried by a lever pivotally connected to the frame of the machine, and the lever is connected to a toggle which is operated to move the lever and head by actuating mechanism which in turn is connected to an operating lever. It is desirable in such machines to have the head in its open position quite remote from the fixed pressing member or buck on which the cloth or garments to be pressed are laid, so that the operator will have ample space for laying out the garments or cloth on the buck. Consequently the head must move considerable distance to and from the buck between its open position and closed position, and it is desirable that such movement of the head be accomplished with ease. It is also desirable that the actuating mechanism for moving the head to closed position be capable of applying heavy pressure when the head is in closed or pressing position.

The principal general object of the present invention is the accomplishment of the foregoing desirable features by providing a conconstruction and arrangement of toggles for actuating the movable pressing element or head and its supporting lever, whereby a quick yet easy down motion of the head to closed position is had by relatively short movement of the operating lever, thereby devoting a substantial portion of the motion of the operating lever to applying pressure to the movable pressing element.

Another object of the invention is to provide a system of toggles for operating the head supporting lever in which the toggle connected to the head lever has a fixed pivot and is connected to a member of another toggle which is indirectly connected to the operating lever by a link having a plurality of movable pivotal connections to the member, so that the moment of leverage between the member and link is comparatively short when the head is open as compared with the moment of leverage between the link and member when the head is closed.

Another object of the invention is to provide mechanism of the character above specified in which the toggles between the head lever and operating lever are so disposed and connected that when the operating lever has traversed approximately half the distance it can move, the toggles are substantially straight and the head is substantially in pressing or closed relation with the buck, whereby the remainder of possible distance of movement of the operating lever is devoted to creating heavy pressure on the head relative to the buck, and with relatively light effort on the part of the operator.

The foregoing and other objects and advantages of the invention will become apparent and will be referred to during the course of the following detailed description of the embodiment of the invention under the construction and arrangement of parts as illustrated in the accompanying drawings, in which

Fig. 1 is a side elevation of a garment pressing machine with the movable pressing element and mechanism for actuating it shown in open position;

Fig. 2 is a view similar to Fig. 1 showing the movable pressing element or head in closed position;

Fig. 3 is a diagrammatic view with a scale indicating the relative movements of the parts, and

Fig. 4 is a side elevation similar to Fig. 1 showing a modification.

Referring to the drawings, the numeral 5 designates the frame of the machine which supports a fixed pressing member or buck 6, and to which the pressing head supporting lever 7 is pivoted at 8, the lever carrying the movable pressing element or head 9 at one end and having a counterbalancing weight 10 on its other end. The lever 7 is connected to a link 11 which is pivotally connected at 12 to another link 13 pivotally connected at 14 preferably to the supporting frame 5, the links 11 and 13 constituting the main head

lever operating toggle for swinging the lever 7 on its pivot 8 in known manner. This main toggle has pivotally connected thereto at 15 a link 16 also pivotally connected at 17 to one end of a bell crank lever 18 provided with a weight 19 which assists the weight 10 in returning the parts to open position.

Prior to my present invention it was quite usual to have the main toggle connected by a link to the bell crank lever in the manner described above and then to have the bell crank lever directly connected by a link to the operating or power lever such as indicated at 20 in the accompanying drawings pivotally connected at 21 to the frame and having a foot pedal 22 at its forward end. The latching mechanism indicated generally at 23 forms no part of the present invention and is not necessary for the accomplishment of the purposes of the invention, so that no detailed description thereof will be here given.

Under my present invention the bell crank lever 18 is pivoted to the frame at 24, the pivot being fixed so that the bell crank will rotate thereabout, and preferably above the pivot 24 there is provided an extension or arm 25 on the bell crank lever to the upper end of which a link 26 is pivotally connected at 27, the other end of the link 26 being pivotally connected at 28 to the upper end of the link 29 which is pivotally connected at 30 to the operating or power lever 20. The main purpose and function of the link 26 is to position the link 29 relative to the pivot 24 of the bell crank lever, and as shown in Fig. 1 the link 29 is positioned by the link 26 in a substantially vertical position and substantially parallel to a vertical plane through the longitudinal axis of the pivot 24 when the parts are in open position. The bell crank lever 18 also has a lateral extension or arm 31 extending forwardly and across the link 29, and a link 32 is pivotally connected at 33 to the end of the arm 31 and at 34 to the link 29 intermediate the pivotal connections 28 and 30.

In Fig. 2, the actuating members are shown in closed position, that is, the position they occupy when the toggles have been straightened to swing the lever 7 on its pivot 8 to bring the head 9 against the buck 6 and with pressure applied to the head. The parts have assumed the position of Fig. 2 after movements as follows: Starting with the head open and the power lever 20 in raised position, as shown in Fig. 1, as the lever 20 is depressed the pivots 30, 33, 28, and 27, move through arcs shown in Fig. 3, at the same time the pivot 34 connecting the links 32 and 29 swings from the position of Fig. 1 above the fixed pivot 24 to the position of Fig. 2 below the fixed pivot and of course the open toggle between links 29 and 32 in the position of Fig. 1 begins to straighten or to assume a closed position as soon as the link 29 begins to move downwardly with the lever 20, the pivot 33 of course swinging in toward the link 29. From the time at which the toggle 29—32 is straight, that is, when the center line of link 32 coincides with the center line of link 29, the motion of pivot 33 and link 32 is then away from the link 29 instead of toward the link 29. As long as the motion of the link 32 is toward the link 29, there is an added movement to the bell crank lever 18, due not only to the downward motion of the foot lever and link 29 but added to by the straightening out of the toggle 29—32. However, when the center line of the link 32 coincides with the center line of the link 29 and the movement is away from the link 29, the movement of the bell crank lever 18 is slowed down relatively to the movement of the link 29 and lever 20 so that the leverage is increased. This will be more apparent when it is understood that the relative arrangement of the links 29, 32, 26, and the arms 27 and 31 of the bell crank lever is such that when the operating lever 20 has been depressed approximately one-half its distance, that due to the rapidity of movement of the link 32 toward the center line of the link 29, the bell crank lever has been moved sufficiently to substantially straighten or close the toggle 11—15 to bring the head 9 substantially to closed or pressing position relative to the buck 6. As the link 32 moves away from the link 29 upon further downward movement of the lever 20, the movement of the lever 20 is then greater than the movement of the bell crank lever 18 so that the remaining movement of the lever 20 is devoted entirely to exerting pressure through the toggles and bell crank lever at the head 9 against the buck 6 or fabrics interposed therebetween.

The foregoing description of the relative movements of the several parts may be better understood by reference to Fig. 3, which diagrammatically illustrates the same by full and dash lines for open and closed positions respectively. By referring to Fig. 3, it will be noted that when the operating lever 20 has moved to the point *a*, that the head lever 7 has moved to approximately one-third of the distance between its normal open position and its closed position, and that when the operating lever 20 has moved to the point *d* or approximately one-half the distance it can move, that the head lever 7 is nearly closed. It will also be noted that the pivots 33 and 12 have relatively great initial movement as when the operating lever 20 has reached the point *d* the pivots 33 and 12 have moved more than one-half of the distance that they travel during closing of the press. Under this arrangement, and as previously mentioned, approximately one-half of the movement of the operating lever is devoted largely to apply-

ing pressure between the pressing head and buck.

In Fig. 4 I have shown a modification, wherein the head lever 7′ is mounted and connected to the main toggle 11′—13′ in the same manner as disclosed in Fig. 1. The link 13′ of the main toggle is also connected to the bell crank lever 18′ in the same manner as in Fig. 1 but the connection between the operating lever 20′ and bell crank lever is modified. The link 29′ is pivotally connected at 30′ to the operating lever and at its upper end is connected at 28′ to the link 26′ which in turn is connected to the bell crank lever at 27′ in the same manner as in Fig. 1. However, the bell crank lever 18′ is provided in its upper end with a cam slot 40 and the link 29′ carries a lug or roller 41 disposed in the cam slot 40. It is possible to provide a pair of parallel links 29′ straddling the bell crank 18′ with the roller or lug 41 connected therebetween or to have a single link 29′ with the lug or roller 41 extending laterally therefrom within the cam slot 40.

Under the arrangement of Fig. 4, the pivots 27′ and 28′ are floating pivots just as in Fig. 1, and as the operating lever 20′ is depressed the head lever is moved substantially the same as in the structure of Fig. 1, that is, as the link 29′ moves downwardly, the lug or roller 41 moves across the slot 40, and, in connection with the link 26′ swings the bell crank lever on its pivot 24′. The structure and arrangement of Fig. 4 gives substantially the same result as that of Fig. 1 as it starts with a short leverage and a quick down speed of the head and ends with a long leverage and slow speed of the head, whereby a great portion of the force exerted on the operating lever is devoted to applying pressure.

Referring to Fig. 1, where the parts are shown in open position, it will be noted that the moment of leverage, that is, the distance along a line at right angles to the center line of the link 29 and intersecting the pivot 24, is short as compared with the distance along the same line when the parts are in closed position shown in Fig. 2.

What I claim is:

1. In a garment pressing machine including a frame and a fixed pressing element, a movable pressing element, a lever pivotally connected to the frame and supporting said movable pressing element, a toggle connected to said lever, a second lever pivotally connected to the frame, a connection between said second lever and toggle, an operating lever, a link pivotally connected to the operating lever and extending toward the said second lever, and a plurality of connections between said link and said second lever.

2. The structure of claim 1 wherein one of said connections comprises a second link pivotally connected to said second lever and to said first link and forming a toggle with said first link.

3. The structure of claim 1 wherein one of said connections comprises a cam slot in the second lever and another comprises a second link pivotally connecting said first link and said second lever.

4. In a garment pressing machine including a frame having a fixed pressing element supported thereon, a movable pressing element, a lever pivotally connected to said frame and supporting said movable pressing element, a toggle connected to said lever, a bell crank lever pivotally connected to the frame, a connection between the bell crank lever and toggle, an operating lever, and a plurality of links connecting said operating lever and bell crank lever with two of said links forming a toggle.

5. The structure of claim 4 wherein two links are pivotally connected to the bell crank lever at separate points and are pivotally connected to another link, said third link being connected to the operating lever.

6. Actuating mechanism for garment pressing machines comprising an operating lever, a bell crank lever, each of said levers having fixed pivots, a link connected to the operating lever, a second link connecting said first link and bell crank lever, said links constituting a toggle for actuating the bell crank lever, and a third link connecting said first link and bell crank lever and positioning said first link relative to the pivot of the bell crank lever.

7. The structure of claim 6 wherein the center line of the second link and the point at which said link is pivoted to the bell crank lever swings toward and across the center line of the first link as the toggle is closed.

8. In a garment pressing machine including a frame, a movable pressing element supported on the frame, a toggle to move said pressing element, a lever pivoted to the frame to actuate said toggle, an operating lever, and a second toggle having a link pivotally connected to said operating lever and its other link pivotally connected to the actuating lever for the first toggle.

9. In a garment pressing machine including a frame, a movable pressing element supported on the frame, a toggle to move said pressing element, a lever pivoted to the frame to actuate said toggle, an operating lever, a link connected to the operating lever, a second link connected to said toggle actuating lever and to said first link and forming therewith a toggle to actuate the operating lever, and means positioning said first link substantially parallel to a vertical plane through the pivot of the operating lever when the pressing element is in open position.

10. In a garment pressing machine including cooperating pressing elements one of which is movable to open and closed position

relative to the other, an operating lever, an actuating lever having a fixed pivot, a toggle for moving said actuating lever comprising a pair of links pivotally connected to each other and to said operating and actuating levers respectively, the pivotal connection between said links being movable away from the fixed pivot of the actuating lever and the pivotal connection between the actuating lever and link connected thereto being movable toward the other link as the pressing element approaches closed position.

11. In a garment pressing machine including a frame, a movable pressing element and mechanism for supporting and moving said pressing element on the frame, an actuating lever connected to said mechanism and having a fixed pivot, an operating lever, a link connected to said operating lever, a link pivotally connected to said actuating lever and said first link, said links forming a toggle for moving said actuating lever responsive to movements of said operating lever, and a connection between said first link and actuating lever locating the pivot connecting said links at a predetermined point relative to the fixed pivot of the actuating lever.

12. In a garment pressing machine including a frame, a movable pressing element and mechanism for supporting and moving said pressing element on the frame, an actuating lever connected to said mechanism, an operating lever, a link connected to said operating lever, a second link pivotally connected to said actuating lever and said link, said links forming a toggle for moving said actuating lever in response to movements of said operating lever, the pivotal connection between said second link and actuating lever being disposed to swing toward and across the center line of said first link when the head is moved to closed position.

13. In a garment pressing machine including a frame, a movable pressing element and mechanism for supporting and moving said pressing element on the frame, an actuating lever connected to said mechanism and having a fixed pivot, an operating lever, a link connected to said operating lever, a link pivotally connected to said actuating lever and said first link, said links forming a toggle for moving said actuating lever responsive to movements of said operating lever, and a third link pivotally connected to said first link and the actuating lever for maintaining the pivotal connection between said first and second links at a predetermined position relative to the fixed pivot of the actuating lever when the pressing head is in open position.

Signed at New York city in the county of New York and State of New York this 28th day of April, A. D. 1932.

HERBERT G. BEEDE.