APPARATUS FOR DRIVING CLOTHES PRESS IRONS AND CLOTHES PRESS FINISHING MACHINE USING THE SAME

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This invention relates to a driving device for the clothes press iron 4 or 14 for pressing a front side or rear side of the torso 3 for putting on the clothes 2 and press finish the clothes 2. The driving device of this invention is formed by the vertical-oriented cylinder device 5 oscillated in a forward or rearward direction of the torso 3 and the link device 6 fixed at the extremity end of the rod 5a of this cylinder device 5 to convert an extending or retracting operation of the rod 5a into an advancing or retracting operation of the clothes press iron 4 or 14. The main body 6a of the link device 6 is preferably set such that six link members 10 are connected in a substantial hexagonal shape as seen from the side of the torso 3 by the axle member 9 along a lateral direction of the torso 3. In accordance with this invention, it is possible to restrict a depth size of the finishing machine and a compact-sized finishing machine and its space saving can be attained.
Fig. 3
APPROPRIATE FOR DRIVING CLOTHES PRESS IRONS AND CLOTHES PRESS FINISHING MACHINE USING THE SAME

BACKGROUND OF INVENTION

[0001] 1. Field of the Invention

[0002] This invention relates to an apparatus for driving press irons for press finishing clothes such as shirts or jackets or the like while being put on a torso, and more particularly an apparatus for driving press irons and a press finishing machine for clothes using the same.

[0003] 2. Description of the Prior Art

[0004] This type of driving apparatus of the prior art is usually constructed in such a way that a rod is arranged to extend or retract in a forward or rearward direction of a torso (refer to U.S. Pat. No. 4,634,030, hereinafter called as "Patent Document 1", for example).

[0005] In addition, as this type of driving apparatus, it has already been known as well to provide a structure for extending or retracting press irons in response to an extending or retracting operation of a rod (refer to U.S. Pat. No. 6,758,377, hereinafter called as "Patent Document 2", for example).

[0006] Accordingly, in the case of the driving apparatus described in Patent Document 1, a minimum depth length of a finishing machine was required only by a length having a cylinder body length and a rod stroke length added to each other.

[0007] Thus, in accordance with this prior art, there was a certain restriction for reducing the depth length of the finishing machine, its installation space was required wide and there was a certain restriction about its small-sized formation or space saving and the like.

[0008] In addition, since the driving apparatus disclosed in Patent Document 1 was installed below the torso, equipment such as pipings could not be freely installed below the torso. Additionally, the press irons operated in this type of driving apparatus of the prior art are normally fixed to raised supporting arms. In this case, it is usual that the supporting arms are formed rigidly with thick iron plates because they are required to enable the press irons to be stably held.

[0009] Due to this fact, the prior art finishing machine had a problem that its increased weight and large-sized driving device cannot be avoided.

[0010] In addition, in accordance with the driving apparatus disclosed in Patent Document 2, it was necessary to prepare an expensive guide component so as to guide a member for converting an extending or retracting operation of the rod into an extending or retracting operation of the press irons in an upward or downward direction.

[0011] Accordingly, in accordance with this prior art, there occurred a problem that the component cost is increased and the product price becomes easily expensive. Further, in accordance with this prior art, there occurred a problem that the engaged location of the component parts is worn out and a stable operation of long period of time is hardly assured.

[0012] This invention is provided in reference to the prior art problems described above.

[0013] Accordingly, a technical problem to be solved by this invention consists in providing a driving apparatus for clothes press irons and clothes press finishing machine showing the same effects using the driving apparatus constructed in such a way that its depth size can be restricted to enable its size to be made compact and its space saving to be attained, driving of the press irons is enabled without being dependent on the heavy supporting arms and its weight can be made light, pipings or the like can be easily installed below a torso and at the same time its price can be made low and its stable operation can be attained for a long period of time.

SUMMARY OF INVENTION

[0014] In order to resolve the aforesaid problems, this invention employs such technical means as described below.

[0015] That is, as shown in FIG. 1 and the like, this invention is a driving apparatus 1 for a front side clothes press iron 14 or a rear side clothes press iron 4 for pressing a front part and a rear part of a torso 3 on which clothes 2 are put, wherein this invention is characterized in that the driving apparatus is formed by a vertical-oriented cylinder device 5 oscillated in a forward or rearward direction of the torso 3 and a link device 6 fixed to the extremity end of a rod 5a of this cylinder device 5 to covert an extending or retracting operation of the rod 5a into an advancing or retracting operation of the clothes press iron 4 or 14 (refer to claim 1).

[0016] In this case, as the clothes 2, some coats such as a shirts and a jacket can be applied. In the case of this invention, the rod 5a of the cylinder device 5 may be faced downward or upward. The finishing machine having the driving apparatus 1 of this invention fixed thereto may be formed of the torso 3 for putting on the clothes 2 and a system for pressing the front part and the rear part of the torso 3 to press finish the clothes 2. Accordingly, a front side clothes press iron 14, for example, may be of a system in which it is moved in a lateral direction of the torso 3 or of a system. In addition, the driving device 1 of this invention may be of one realized at either side of the forward side clothes press iron 14 or the rear side clothes press iron 4 or may be realized at both sides.

[0017] Additionally, in the case of this invention, it is preferable that a main body 6a of the link device 6 is formed in such a way that six link members 10 are connected in a substantial hexagonal shape as seen from the side part of the torso 3 by axle members 9 along the lateral direction of the torso 3 (refer to claim 2).

[0018] A reason why this system is applied consists in the fact that a parallel motion can be easily attained because the main body 6a has six articulations.

[0019] In addition, in this case, it is preferable that the link device 6 is formed while being provided with a control member 6b for restricting a motion of the main body 6a and for making a parallel motion of the clothes press iron 4 or 14 fixed to the opposite side to the torso 3 of the main body 6a (refer to claim 3).

[0020] A reason why this system is preferable consists in the fact that the clothes press iron 4 or 14 can be connected to opposite side of the main body 6a at two upper and lower locations and the fixed state can be made rigid and stabilized.

[0021] In addition, as the press finishing machine for the clothes 2 for accomplishing the problem of this invention, as shown in FIGS. 1 and 2 or the like, the machine comprises the torso 3 for putting on the clothes 2 and the clothes press iron 4 and 14 for press finishing the clothes 2 while pressing the front part and the rear part of the torso 3 and the clothes press iron 14 at the front part of the torso 3 is formed at the side part of the torso 3 in such a way that it can be retracted toward the side of the torso 3, the driving apparatus 1 of the clothes press iron 4 at the rear side of the torso 3 is characterized in that the same is formed by a vertical-oriented cylinder device 5 sliding in a forward or rearward direction of the torso 3 and a link device 6 for converting the extending or retracting operation...
of the rod 5a fixed to the extremity end of the rod 5a of this cylinder device 5 into an advancing or retracting operation of the clothes press iron 4 at the rear side (refer to claim 4).

[0022] In the case of this press finishing machine, if the cylinder device 5 is arranged in a vertical-oriented state, the rod 5a may be directed downward or upward.

[0023] In addition, in the case of this finishing machine, it is preferable that the main body 6a of the link device 6 is made in such a way that six link members 10 are connected in a substantial hexagonal shape as seen from the side part of the torso 3 along the lateral direction of the torso 3 (refer to claim 5).

[0024] A reason why this is preferable consists in the fact that in accordance with this system, the main body 6a has six articulations and a parallel motion can be easily realized.

[0025] Additionally, in this case, it is preferable that the link device 6 is formed to be provided with the control member 6b for restricting a motion of the main body 6a and for making a parallel motion of the clothes press iron 4 or 14 fixed to the opposite side against the torso 3 of the main body 6a (refer to claim 6).

[0026] In accordance with this system, a reason why this is preferable consists in the fact that the clothes press iron 4 or 14 can be connected at one side of the main body 6a at the two upper and lower locations and its fixed state can be rigidly stabilized.

[0027] In addition, the finishing machine of this invention is preferably constructed such that, as shown in FIG. 1 and the like, the driving device 15 of the front side clothes press iron 14 at the front side of the torso 3 is formed by a separating member 16 for arranging the front side clothes press iron 14 at the front side of the torso 3 after pressing the clothes 2 and by a cylinder 18 for turning the front side clothes press iron 14 toward the torso 3 around an axle 17 extending along a lateral direction of the torso 3 against a force of the aforesaid separating member 16 when the front side clothes press iron 14 is moved from the retracted position and arranged in front of the torso 3 and pushing the iron 14 against the torso 3, the aforesaid separating member 16 is arranged at the lower part of the supporting arm 21 of the front side clothes press iron 14 and the aforesaid cylinder 18 is arranged at the lower part of the rear side of the torso 3 under a state in which the rod 18a is extended or retracted in a forward or rearward direction (refer to claim 7).

[0028] In accordance with this system, a reason why this state is applied consists in the fact that since it is not necessary to arrange the cylinder for use in pushing the front side clothes press iron 14 against the torso 3, the supporting arm 21 can be made light in its weight and the front side press iron 14 for clothes can be easily moved with a light force.

[0029] In addition, in this case, since it is not necessary to arrange the cylinder at the lower part of the supporting arm 21, the lower part of the supporting arm 21 can be made small. Accordingly, in accordance with this arrangement, when a work is carried out at the front side of the torso 3, it shows an advantage that a trouble in which the lower part of the supporting arm 21 becomes an obstruction for the work can be prevented.

[0030] The driving device of this invention is constructed as described above.

[0031] Accordingly, in accordance with the driving device of this invention, a depth size of the finishing machine can be restricted and a small-sized formation of the finishing machine and its space saving can be attained.

[0032] In addition, the driving device of this invention is not installed below the torso, so that pipings or the like may easily be arranged below the torso.

[0033] Additionally, this invention enables the press iron to be driven without applying a heavy supporting arm, so that it is possible to make a light weight finishing machine.

[0034] Further, this invention can eliminate expensive guide component parts and does not accompany with any sliding structure. Accordingly, in accordance with this invention, it has some advantages that its price can be made less expensive and a stable operation can be easily maintained.

[0035] In addition, the finishing machine of this invention is constructed in such a way that the driving device of the clothes press machine at the rear side is formed by the vertical-oriented cylinder device and the link device as described above.

[0036] Accordingly, in accordance with this invention, it is possible to restrict a depth size of the finishing machine and further to make a size of the finishing machine compact and provide a space saving.

[0037] Additionally, the finishing machine of this invention can eliminate completely the driving cylinder for the rear side press machine from below the torso and the driving cylinder for the front side press machine merely has a rod passed below the torso. Accordingly, in accordance with this invention, pipings and the like can be easily installed below the torso.

[0038] In addition, in the case of the finishing machine of this invention, the clothes press iron at the rear side can be driven without any heavy supporting arm, so that this finishing machine can be made light in its weight.

[0039] Additionally, the finishing machine of this invention can eliminate an expensive guide component and does not accompany with any sliding structure. Accordingly, in accordance with this invention, its price can be made less-expensive and a stable operation can be easily maintained for a long period of time.

BRIEF DESCRIPTION OF DRAWINGS

[0040] FIG. 1 is a side elevational view for showing one preferred embodiment of this invention.

[0041] FIG. 2 is a front elevational view for showing the finishing machine of this invention.

[0042] FIG. 3 is a substantial exploded perspective view for illustrating the driving device.

[0043] FIG. 4 is a substantial perspective view for illustrating the driving device.

[0044] FIG. 5 is a substantial perspective view for illustrating the driving device.

[0045] FIG. 6 is a side elevational view for illustrating the driving device.

[0046] FIG. 7 is a side elevational view for illustrating the driving device.

[0047] FIG. 8 is a side elevational view for illustrating the finishing machine of this invention.

[0048] FIG. 9 is a substantial enlarged side elevational view for illustrating the finishing machine of this invention shown in FIG. 8.

[0049] FIG. 10 is a substantial side elevational view for illustrating the finishing machine of this invention.

[0050] FIG. 11 is a substantial enlarged side elevational view for illustrating the finishing machine of this invention shown in FIG. 10.
DESCRIPTION OF PREFERRED EMBODIMENTS

[0051] The best mode for carrying out this invention will be described as follows.

[0052] As shown in FIG. 1 and the like, the driving device 1 of this invention in its preferred embodiment is realized by a clothes press iron 4 at a rear side for pressing the rear side of a torso 3 for putting on clothes 2 and press finishing the rear surface of clothes 2.

[0053] Thus, the driving device 1 of this invention is formed by a vertical-oriented cylinder device 5 oscillating in a forward or rearward direction of a torso 3 and a cylinder device 6 fixed to the extremity end of a rod 5a of this cylinder device 5 to convert an extending or retracting operation of the rod 5a into an advancing or retracting operation of the clothes press iron 4 at the rear side.

[0054] The aforesaid cylinder device 5 is fixed in the upper part of a supporting column 7 upright just at a rear side of the torso 3 in this preferred embodiment with the rod 5a being faced downward. Reference numeral 8 denotes a fixing member for fixing the cylinder device 5. The cylinder device 5 is fixed to the supporting column 7 in such a way that it can be freely oscillated in a forward or rearward direction of the torso 3 around a fixing axle 8a of a fixing member 8.

[0055] In addition, as shown in FIG. 1, FIG. 3 and FIG. 4 and the like, the main body 6a of the link device 6 is constructed in such a way that six link members 10 are connected in a substantial hexagonal shape as seen from the side of the torso 3 by an axle member 9 extending along a lateral direction of the torso 3. In addition, the link device 6 is formed to be provided with a control member 65 for restricting a motion of the main body 6a and for making a parallel motion of the clothes press iron 4 fixed to the side of the main body 6a opposite side against the torso 3.

[0056] As shown in FIG. 1 and the like, the extremity end of the rod 5a of the cylinder device 5 is rotatably attached to the axle members 9 at an apex point position connecting the upper right and left link members 10 as seen from the right side of the torso 3. Reference numeral 11 (refer to FIG. 5) denotes a dampering coil spring. As shown in FIGS. 1 and 5 or the like, the link device 6 is stored in the supporting column 7 in this preferred embodiment.

[0057] As shown in FIG. 3, FIG. 4 and the like, the link member 10 is formed with a lateral plate 10b being bridged between the parallel plates 10a. The control members 6b are formed into an elongated plate and as shown in FIG. 1, the control members are arranged at the right and left sides of the main body 6a as seen from the right side of the torso 3. More practically, the control members 6b are bridged in a vertical direction at the desired positions of the end portions of the upper and lower link members 10, and as shown in FIG. 3, they are connected to the link members 10 with bolt-like fixing members 12. In this case, as shown in FIG. 5 and the like, the fixing members 12 are fixed to the side plates of the supporting column 7 and the control members 6b are fixed to the supporting column 7 with the fixing members 12. Then, the link members 10 are connected in such a way that they can be turned around the fixing members 12.

[0058] As shown in FIG. 4 and FIG. 6, the clothes press iron 4 at the rear side as described above is provided with parallel vertical plates 13 at the back surface. The main body 6a is attached at the upper and lower positions of the vertical plates 13 in such a way that the main body can be turned around the fixing members 12 while the predetermined positions of the end portions of the right side upper and lower link members 10 being set at the bolt-like fixing members 12.

[0059] Then, the finishing machine of this invention will be described.

[0060] As shown in FIG. 1, the finishing machine of this invention comprises the torso 3 for putting on the clothes 2, the clothes press iron 4 at the rear side for pushing against the rear side of the torso 3 to press finish the clothes 2, and the driving device 1 for advancing or retracting the press iron 4. As described above, the driving device 1 is formed by the cylinder device 5 and the link device 6. Since the configuration of the driving device 1 is set as described above, its detailed description will be eliminated.

[0061] In addition, as shown in FIG. 2, the finishing machine of this invention is constructed in such a way that the clothes press iron 14 at the front side of the torso 3 can be retracted at the side part of the torso 3.

[0062] In addition, as shown in FIG. 1 and FIG. 8 and the like, the driving device 15 of the clothes press iron 14 at the front side is formed by a separating member 16 for arranging the clothes press iron 14 at the front side after pressing the clothes 2 at the front side of the torso 3, and a cylinder 18 for turning the clothes press iron 14 at the front side toward the torso 3 around the axle 17 arranged along a lateral direction of the torso 3 against a force of the separating member 16 and pushing it against the torso 3 when the clothes press iron 14 at the front side is moved from its retracted position and arranged in front of the torso 3.

[0063] In FIG. 2, reference numeral 19 denotes a guide member for use in guiding the clothes press iron 14 at the front side. In addition, reference numeral 20 denotes a lateral-directed cylinder for use in moving the clothes press iron 14 at the front side along this guide member 19.

[0064] As shown in FIG. 1 and the like, the clothes press iron 14 at the front side is arranged at the upper part of the supporting arm 21. The supporting arm 21 is attached to a frame 22 moved in a lateral direction by the aforesaid lateral-directed cylinder 20 (refer to FIG. 2) in such a way that it can be turned around the axle 17 in a forward or rearward direction of the torso 3.

[0065] The aforesaid separating member 16 is arranged below the supporting arm 21. As shown in FIG. 8 and the like, the separating member 16 is formed more practically by a round rod 23 having a rear end 23a fixed to the frame 22 and arranged under a forward and downward inclination state, and a spring 24 fitted and inserted into the round rod 23. The round rod 23 is passed through the lateral-oriented bar 25 below the supporting arm 21, and the spring 24 is arranged between this bar 25 and a plate 26 to which a front end 23b of the round rod 23 is fixed.

[0066] The aforesaid cylinder 18 is arranged below the rear side of the torso 3 under a state in which the rod 18a is extended or retracted in a forward or rearward direction. The extremity end of the rod 18a of this cylinder 18 is oppositely arranged at the lower end of the aforesaid supporting arm 21. When the clothes press iron 14 at the front side is arranged in front of the torso 3, this cylinder 18 is driven and the rod 18a pushes against the lower end of the supporting arm 21 and presses against it.

[0067] Referring now to FIGS. 6 to 11 and the like, an action of this invention will be described as follows.

[0068] When the rod 5a of the cylinder device 5 in the driving device 1 of this invention is extended under a state shown in FIG. 6, the cylinder device 5 is operated as shown in
FIG. 7 in such a way that the extremity end of the rod 5a is moved forward around a fixing axle 8a and arranged to be inclined. Then, the right and left link members 10 are opened synchronously in the same angle in the figure under an action of the control member 6b and the left side vertical-oriented link member 10 is moved in parallel and separated. With this arrangement as above, the clothes press iron 4 at the rear side moves in parallel in a forward direction to push against the rear side of the torso 3 and to make a press finish of the clothes.

[0069] In addition, when the rod 5a of the cylinder device 5 is retracted, the main body 6a operates in opposition to that of the aforesaid example. As a result, the clothes press iron 4 at the rear side is retracted and separated from the torso 3 (refer to the states shown in FIG. 1 and FIG. 6).

[0070] Additionally, the finishing machine of this invention, as shown in FIG. 2, the clothes press iron 14 at the front side is arranged at the side part of the torso 3. When the clothes 2 are put on the torso 3 and a starting switch is turned on, the lateral-oriented cylinder 20 drives the clothes press iron 14 at the front side to move in front of the torso 3 and is arranged (refer to a two-dotted line of FIG. 2).

[0071] Then, the cylinder 18 drives the rod 18a to push the lower end of the supporting arm 21 of the clothes press iron 14 at the front side. As a result, the supporting arm 21 is turned toward the torso 3 around the axle 17 as shown in FIG. 10 and the clothes press iron 14 at the front side pushes against the front side of the torso 3 and press finishes against the front side of the clothes 2.

[0072] After this operation, the rod 18a of the cylinder 18 is retracted and the extremity end of the rod 18a is moved away from the lower end of the supporting arm 21 as shown in FIG. 9 and the like. Then, the supporting arm 21 is turned around the axle 17 in front of the torso 3 by a recovering force of a spring 24 because a force applied to the lower end is eliminated, and returned. With this operation, the clothes press iron 14 at the front side is separated from the torso 3.

1. An apparatus for driving clothes press irons for pressing a front side and a rear side of a torso for putting on clothes, wherein the apparatus is formed by a vertical-oriented cylinder device oscillated in a forward or rearward direction of the torso and a link device fixed to the extremity end of a rod of this cylinder device to convert an extending or retracting operation of the rod into an advancing or retracting operation of the clothes press iron.

2. The apparatus for driving clothes press irons according to claim 1, wherein the main body of the link device is formed by connecting six link members in a substantial hexagonal shape as seen from a side part of the torso with an axle member along a lateral direction of the torso.

3. The apparatus for driving clothes press irons according to claim 2, wherein the link device is formed to provide a control member for restricting a motion of the main body and moving in parallel the clothes press irons fixed to a side of the main body opposite side against the torso.

4. A clothes press finishing machine comprising a torso for putting on clothes and clothes press irons for pressing the front and rear sides of the torso to press finish the clothes, the clothes press iron at the front side of the torso is formed at a side part of the torso in such a way that it can be retracted, an improvement in which the driving device of a clothes press iron at the rear side of the torso is formed by a vertical-oriented cylinder device oscillated in a forward or rearward direction of the torso, and a link device fixed to the extremity end of a rod of this cylinder device to convert an extending or retracting operation of the rod into an advancing or retracting operation of the clothes press iron at the rear side.

5. The clothes press finishing machine according to claim 4, wherein the main body of the link device is formed in such a way that six link members are formed to be connected by axle members along a lateral direction of the torso in a substantial hexagonal shape as seen from the side part of the torso.

6. The clothes press finishing machine according to claim 5, wherein the link device is formed to be provided with a control member for restricting a motion of the main body and making a parallel motion of the clothes press iron fixed to the opposite side against the torso of the main body.

7. The clothes press finishing machine according to any one of claims 4 to 6, wherein the driving device of the clothes press iron at the front side of the torso is formed by a separating member for arranging the clothes press iron at the front side in front of the torso after pressing the clothes, and a cylinder for turning the clothes press iron at the front side around an axle along a lateral direction of the torso against a force of said separating member toward the torso when the clothes press iron at the front side is moved from the retracted position and arranged in front of the torso and pushing it against the torso, and said cylinder is arranged at the lower part of the rear side of the torso under a state in which the rod is extended or retracted in a forward or rearward direction.

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