

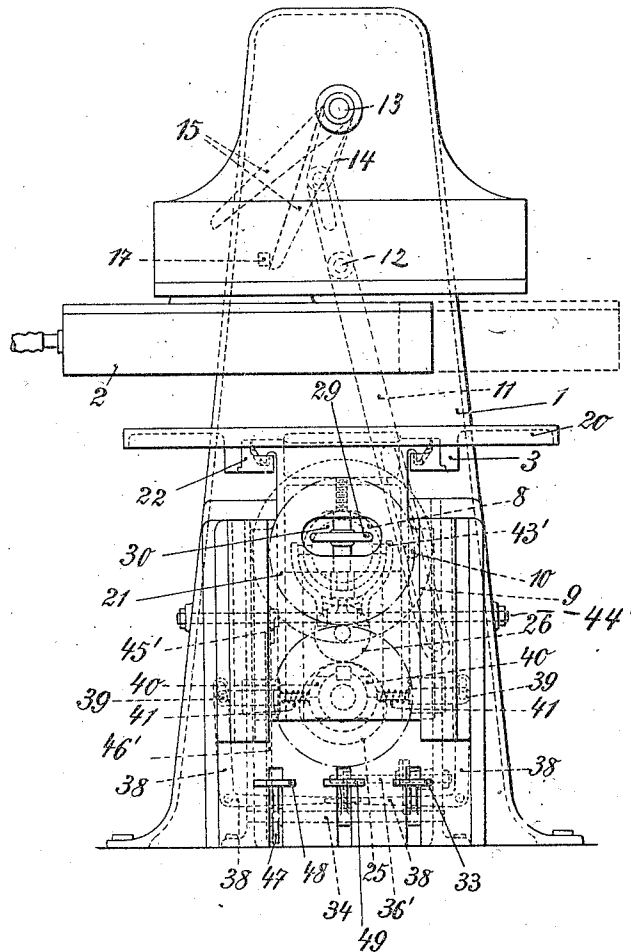
A. HAMMER.
IRONING MACHINE.
APPLICATION FILED DEC. 8, 1911.

1,032,403.

Patented July 16, 1912.

3 SHEETS—SHEET 2.

Fig. 2.



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3 SHEETS—SHEET 3.

Fig. 3.

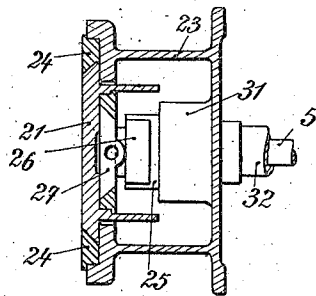
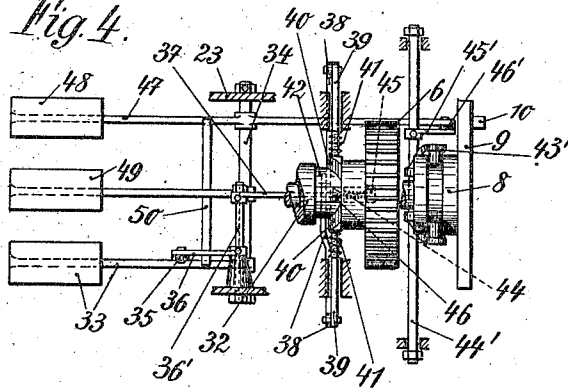


Fig. 4.



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ARTHUR HAMMER, OF BERLIN, GERMANY.

IRONING-MACHINE.

1,032,403.

Specification of Letters Patent.

Patented July 16, 1912.

Application filed December 8, 1911. Serial No. 664,645.

To all whom it may concern:

Be it known that I, ARTHUR HAMMER, a subject of the German Emperor, residing at Berlin, Germany, have invented new and useful Improvements in Ironing-Machines, of which the following is a specification.

This invention relates to an ironing machine, especially adapted for the handling of shirts, said ironing machine being provided with an oscillatory smoothing iron supported by an overhanging arm, and with an ironing table capable of being raised and lowered and movably positioned in a horizontal plane below the smoothing iron.

The present invention has for object an improved machine of the above type in which the reciprocation of the ironing table is effected automatically so that this not inconsiderable task of the attendant is obviated and the work of the machine facilitated. In this respect it is necessary that complete control of the movements of both ironing table and iron should be retained so that the machine attendant can exercise the high accuracy required particularly in the ironing of dress shirts and the like.

My invention consists in an improved ironing machine of the type referred to in which the up and down motion of the ironing table required to obtain the desired contact pressure during the reciprocation of the smoothing iron is obtained by means of an eccentric acting on the table which eccentric can be coupled as desired to the main driving shaft of the machine. Driving mechanism is also provided for the iron, which latter mechanism can be separately coupled and uncoupled. The couplings for the iron and for the table can be actuated separately or together from a common pedal.

A further feature of my invention lies in the special manner of driving the smoothing iron enabling this latter to be at rest for a short interval at each end of its stroke. This arrangement in conjunction with the coupling devices referred to provide the necessary control of all the movements, particularly the exact coincidence of the upmost position of the ironing table with the outmost position of the iron; necessary to obtain irreproachable ironing near the neck band of the shirt.

Further features of the improved ironing machine will be hereinafter described, and pointed out in the claims.

One constructional form of my invention is given by way of example in the accompanying drawings, in which—

Figure 1 shows the improved ironing machine in medial sectional elevation, Fig. 2 is an end view of the machine, Fig. 3 is a horizontal section through the part of the machine containing the guides for the ironing table, and showing the eccentric shaft, Fig. 4 shows in detail the coupling device for engaging and disengaging the driving mechanism for the ironing table and smoothing iron.

The machine consists essentially of a frame 1, a smoothing iron 2, an ironing table 3 and driving mechanism for the ironing table and for the smoothing iron. The machine is driven from a belt pulley 4 mounted on a shaft 5 journaled in the lower part of the machine frame. From this shaft the drive is transmitted through gear wheels 6, 7 and a clutch 8 to a crank 9. The crank pin 10 engages in a slot in a rocking lever 11 fulcrumed on the machine frame at 12 the upper end of which lever is connected by means of a slot guide with a lever arm 14 on a shaft 13. The shaft 13 which is journaled in the upper horizontal part of the machine frame, carries near the front end two arms 15 forming a fork, which arms when the clutch 8 is in its position of engagement, execute an oscillating motion within the downwardly projecting head 16 of the machine frame. The arms of the fork 15 embrace with some clearance a transverse rod 17 which is arranged between the sliding supports 18 for the smoothing iron 2 in such a manner that the smoothing iron which is driven by the oscillations of the fork, on reversal of the motion of the latter remains in the extreme position for a period which depends on the distance apart of the fork limbs.

The smoothing iron 2, which is heated in the usual manner internally by means of a steam pipe, works in V-shaped guideways in the downwardly pointing head 16 of the machine frame. The iron is provided on its front side with a semi-circular recess in order to leave a space for the neck band of the shirt being ironed.

The ironing table consists of a top plate 20 which is mounted on the table support 21 in guideways 22 transverse to the direction of motion of the smoothing iron, so that the table can be conveniently moved forward

underneath the iron. The guideways 22 are provided with oil gutters as shown in Fig. 2. The table support 21 is in the form of a backwardly projecting bracket and is guided vertically in a dove-tail guideway 24 on a member 23 near the bottom of the machine frame. The up and down motion of the table support is effected by means of an eccentric 25 which coöperates with a roller 26 connected to the table support and can be brought into engagement with the shaft 5 by means of a coupling hereinafter described. The roller 26 is not mounted directly on the table support 21 but on a slide 27 guided vertically on the inner side of the table support (see Fig. 3). On the upper end of this slide is rotatably mounted a screwed rod 28 which is provided with a hand wheel 29 and screws into a threaded opening in the table support. At the height of the hand wheel 29 a hole 30 is provided in the front wall of the table support 21, through which the hand wheel can be reached. By turning the hand wheel the distance of the roller 26 from the top of the ironing table, and thus the maximum height of the stroke of the table during its reciprocation in the vertical, can be adjusted with great accuracy.

The member 23 above mentioned has on its front wall the guideway for the table support 21, and consists as is shown in Figs. 1 and 3 in a box shaped casting open at the top and front and formed at its lower part as a bearing 31 for the hub 32 of the eccentric 25. The eccentric drive is completely inclosed by the side walls of this projecting part of the frame and the front wall and top of the table support 21, so that any soiling of the clothes by contact with the driving parts is impossible. The same care is taken with the other working parts of the machine, which up to the pedals for actuating the couplings are completely inclosed within the hollow machine frame. The eccentric 25 is mounted with its hub 32 loose on the shaft 5 and can be coupled to this shaft by engagement of a coupling mounted on the same shaft, which coupling is controlled by the pedal 33 situated farthest to the right. The pedal 33 consists of a lever pivoted at the end on a rod 34 and connected by a link 35 with an arm 36 mounted on a spindle 36' journaled in the right hand side wall of the frame projection 23. On the free end of this spindle is fixed a second arm 37 inclined backward which presses from below against the horizontal arms of two bell crank levers 38, 38, pivoted laterally on the projection 23. The other arms of these bell crank levers are each connected to rods 39 guided in horizontal direction transversely to the shaft 5. These rods are provided at their inner ends with heads 40 which are pressed against the coupling

member 42 connected to the hub 32, by means of springs 41 (Figs. 1 and 4). The inner faces of the heads 40 are as shown in Fig. 2 formed to fit symmetrically the cylindric coupling member 42, while their front faces constitute gradually rising and then descending cam surfaces, as shown in Figs. 1 and 4.

In the illustrated position of the parts a bolt 43 is pressed by a spring 44 into a recess 45 of the toothed wheel keyed on the shaft 5, which couples the coupling member 42 containing the bolt 43, and thereby the eccentric 25 to the shaft 5. When this latter rotates the inclined head 46' of the bolt 43 comes in contact with the nearest of the two cam surfaces 40 and is thereby lifted out of the recess 45. As soon as the connection is released the eccentric comes to rest and the bolt 43 is held by the cam in its withdrawn position. When engagement is again to be effected the pedal 33 is actuated whereupon the head 40 is withdrawn from the coupling member through the agency of the transmission rods 35, 36, 37, and bell crank lever 38, and the nose of the bolt 43 released. The bolt is then pressed by means of the spring 44 against the boss of the toothed wheel 6 until it registers with the recess 45 and springs into the same. The coupling is then again in engagement.

The clutch 8 by means of which the drive for the smoothing iron is brought into action, is of the ordinary type and the shifting of the movable member is effected by means of a stirrup 43' which embraces a groove formed therein and which is pivoted on a shaft 44' journaled transversely in the machine frame. On this shaft is mounted an arm 45' which is connected by a link 46' with a double armed pedal lever 47 which rocks on the rod 34. Lever 47 projects like lever 33 from the front of the frame structure 23 of the machine and is here provided with a pedal 48. A third pedal 39 is mounted between pedals 48 and 33, said third pedal being also capable of swinging on the axle 34. The lever of this pedal is one armed and is provided with a transverse rod 50 (Fig. 4), said rod projecting over the arms of the pedals 33 and 48 in front of the axle 34, so that on pressing down the middle pedal the side pedals are also depressed and both couplings simultaneously brought into engagement.

The machine works in the following manner. Before the beginning of the ironing all the pedals are in the position of rest, and both couplings are disengaged, while the driving shaft 5 is in rotation. The ironing is not effected directly on the table but on an ironing board covered with felt or the like and forming a backing for the garment or the like to be ironed. The roller 26 is so adjusted relatively to the table sup-

port 21 by turning the hand wheel 29, that the exact pressure desired is obtained when the ironing table is in its highest position. This position can be kept constant when ironing similar articles requiring the same backing. If the ironing pressure is to be increased or diminished this is easily effected by means of corresponding adjustment of the hand wheel 29. The shirt or the like to be ironed is stretched in the usual manner over the backing and laid upon the ironing table which is pulled out along its guides for this purpose. The table with the backing is then pushed back and the ironing can begin. For this purpose by depressing the pedal 33 the coupling for the eccentric is first brought into engagement. The table immediately rises and presses the backing and the shirt to be ironed against the bottom of the iron 2. By releasing the pedal 33 and disengaging the coupling the ironing table can be kept in its highest position and by depressing the pedal 48 the drive for the iron brought into action. The iron then performs the usual reciprocating ironing motion with the required pressure obtained by having the ironing table in its raised position. When the front of a dress shirt or the like is to be ironed, the ironing motion should take place in one direction only, away from the neck band, while in the reverse stroke of the iron the latter should be out of contact with the shirt front in order that creases may be avoided. To enable this operation to be effected, after the ironing board with the shirt attached thereon has been so far displaced on the table that the neck band recess of the iron just reaches the neck band of the shirt when the iron is in farthest out position, the coupling actuated from the pedal 33 is engaged and the eccentrics set in continual motion so that the ironing table performs an up and down reciprocation synchronously with the motion of the iron. It is to be noted that the curved surface of the eccentric, as shown in Fig. 2 is of constant radius on one half of its periphery so that the highest position of the ironing table is retained during a half rotation of the shaft and thus during about a full stroke of the iron. In connection therewith consideration should be given to the fact that the gear wheels 6 and 7 are of an equal diameter and have an equal speed of rotation, and that as the arms of the fork 15 are separated the swinging movement thereof which causes the oscillatory movement of the smoothing iron, is not made use of to its fullest extent.

On ironing ordinary articles, the eccentric as already explained is brought out of action after the ironing table has attained its highest position and is idle during the ironing process, when the iron only reciprocates.

In pressing ironing on the other hand the iron is at rest while the ironing table along with the article thereon is pressed against the iron by coupling up the eccentric. In this manner all the different kinds of ironing can be carried out by power in the machine, the attendant having only to control the different couplings.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. An ironing machine comprising a machine frame, a rigid arm projecting from said machine frame and having an overhanging head, an iron capable of being reciprocated in guide-ways of said head, an ironing table mounted on a support capable of being moved up and down in a guide-way of said machine frame and means for actuating said iron and said ironing table from a common drive.

2. An ironing machine comprising a machine frame, a rigid arm projecting from said machine frame and having an overhanging head, an iron capable of being reciprocated in guide-ways of said head, an ironing table mounted on a support capable of being moved up and down in a guide-way of said machine frame, means for reciprocating said iron and means for moving up and down said ironing table, a common driving shaft for said means, both of said means being capable of being coupled and uncoupled at will to said common driving shaft.

3. An ironing machine comprising a machine frame, a rigid arm projecting from said machine frame and having an overhanging head, an iron capable of being reciprocated in guide-ways of said head, an ironing table mounted on a support capable of being moved up and down in a guide-way of said machine frame, means for reciprocating said iron and means for moving up and down said ironing table, said latter means consisting of an eccentric engaging a roller arranged on the support for said ironing table and being adjustable relatively to said table, a driving shaft, both of said means being capable of being coupled and uncoupled at will to said common driving shaft.

4. An ironing machine comprising a machine frame, a rigid arm projecting from said machine frame and having an overhanging head, an iron capable of being reciprocated in guide-ways of said head, an ironing table mounted on a support capable of being moved up and down in a guide-way of said machine frame, means for actuating said iron and said ironing table from a common driving shaft, couplings for connecting and disconnecting said means to or from said driving shaft and means for ac-

tuating said couplings as well separately as together.

5. An ironing machine comprising a machine frame, a rigid arm projecting from said machine frame and having an overhanging head, an iron capable of being reciprocated in guide-ways of said head, an ironing table mounted on a support capable of being moved up and down in a guide-way of said machine frame, means for reciprocating said iron and means for moving up and down said ironing table, a common driving shaft for said means, said reciprocating means comprising an oscillating forked member actuated from the driving shaft and a projection on said iron, the limbs of said forked member loosely embracing said projection.

6. An ironing machine comprising a machine frame, a rigid arm projecting from said machine frame and having an overhanging head, an iron capable of being reciprocated in guide-ways of said head, an ironing table mounted on a support capable of being moved up and down in a guide-way of said machine frame, means for reciprocating said iron and means for moving up and down said ironing table, a common driving shaft for said means, said reciprocating means comprising an oscillating forked member actuated from the driving shaft a projection on said iron, the limbs of said forked member loosely embracing said projection, the means for moving up and down said ironing table comprising an eccentric engaging a roller arranged on the support for said ironing table and being adjustable relatively to said table.

7. An ironing machine comprising a machine frame, a rigid arm projecting from said machine frame and having an overhanging head, an iron capable of being reciprocated in guide-ways of said head, an ironing table mounted on a support capable of being moved up and down in a guide-way of said machine frame, means for reciprocating said iron and means for moving up and down said ironing table, a common driving shaft for said means, said reciprocating means comprising an oscillating forked member actuated from the driving shaft a projection on said iron, the limbs of said forked member loosely embracing said projection, the means for moving up and down said ironing table comprising an eccentric engaging a roller arranged on the support for said ironing table and being adjustable relatively to said table, couplings for connecting and disconnecting said means

to or from said driving shaft and means for actuating said couplings as well separately as together.

8. An ironing machine comprising a machine frame, a rigid arm projecting from said machine frame and having an overhanging head, an iron capable of being reciprocated in guide-ways of said head, an ironing table mounted on a support capable of being moved up and down in a guide-way of said machine frame, means for reciprocating said iron and means for moving up and down said ironing table said latter means comprising an eccentric engaging a roller arranged on the support for said ironing table and being adjustable relatively to said table, the curved face of said eccentric having a constant radius on about one half of its periphery, a common driving shaft, both of said means being capable of being coupled and uncoupled at will to said common driving shaft.

9. An ironing machine comprising a machine frame, a rigid arm projecting from said machine frame and having an overhanging head, an iron capable of being reciprocated in guide-ways of said head, an ironing table mounted on a support capable of being moved up and down in a guide-way of said machine frame and means for actuating said iron and said ironing table from a common drive, the support for said ironing table being in form of a bracket, a box shaped casting mounted at the front of said machine frame and inclosing said means for actuating the ironing table, said bracket projecting backward over said casting so as to entirely inclose said last named actuating means together with said casting.

10. An ironing machine comprising a machine frame, a rigid arm projecting from said machine frame and having an overhanging head, an iron capable of being reciprocated in guide-ways of said head, an ironing table mounted on a support capable of being moved up and down in a guide-way of said machine frame and means for actuating said iron and said ironing table from a common driving shaft, the machine frame together with said rigid arm and said overhanging head being hollow, said first named actuating means being completely inclosed within said hollow machine frame.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ARTHUR HAMMER.

Witnesses:

HENRY HASPER,
WOLDEMAR HAUPT.