Jan. 13, 1948. C. B. COXHEAD 2,434,310

IRON WITH FOLDING HANDLE

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Fig 1

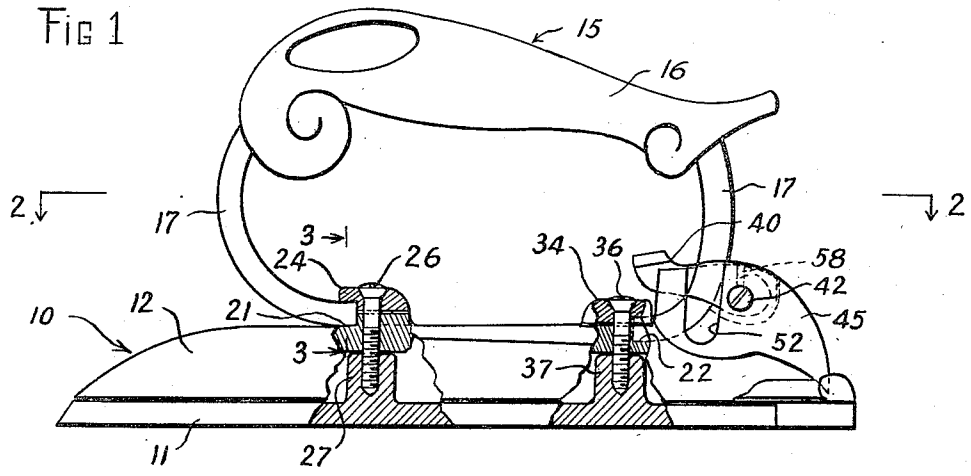


Fig 2

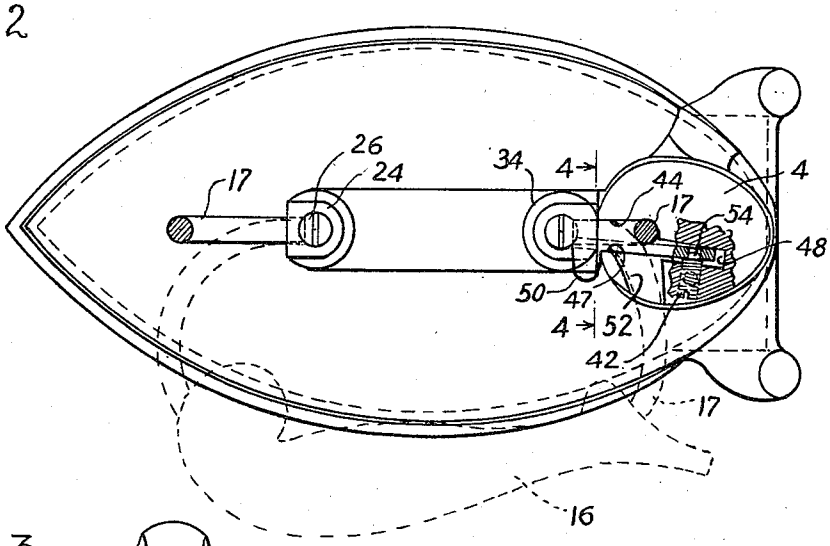


Fig 3

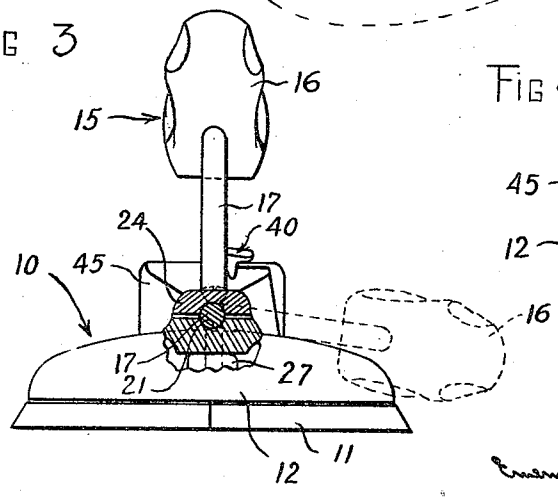
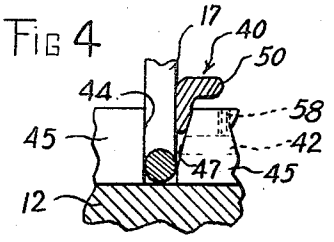


Fig 4



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IRON WITH FOLDING HANDLE

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4 Claims. (Cl. 38—90)

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This invention relates to irons, such as used for pressing garments and other cloth articles for household and personal use.

It is an object of the invention to provide an improved iron of the type having a folding handle, that is, a handle which swings transversely into a position that reduces the overall height of the iron. Such irons are convenient because they require less space for storage, but the bearings in which the bail of the handle turns, when the handle is moved between upright and folded position, wear and become loose. This results in play which may be limited to certain directions, or the bail may be loose in every direction.

If the handle has play in a direction normal to the sole plate, a person using the iron will experience a looseness of a handle when lifting the iron from, or putting it down, on the article to be pressed. If the play is in a direction parallel with the sole plate of the iron, such play will be taken up every time the user of the iron changes the direction of movement of the iron over the work. While looseness of the connection of the handle to the iron does not interfere with the operation of the iron, most people find it very annoying and it therefore makes the task of ironing an increased nervous strain.

A more particular object of this invention is to provide a construction for preventing play and for taking up wear in the connection of a handle to an iron of the character indicated. This object is attained by means of a locking device which clamps the bail of the handle securely against a stop, when the handle is in raised position, in combination with bearings in which the bail turns with means for taking up wear in the bearings so that the bail cannot shift when wedged aaginst the stop by the locking device.

One feature of the invention relates to a simple and economical construction for the bearing means by which the handle is connected with the body of the iron, and by which wear of the bearings can be taken up, and stiffness of the bearings controlled. The fact that the bail on the handle of an iron turns in bearings subject to extremely high temperature increases the wear of the bearings, and makes the elimination of play more difficult. Bearing constructions having no play when the iron is cold may become objectionably loose when highly heated since the metal is expanded by the change in temperature.

Another feature of the invention relates to a novel construction of the locking device. The invention provides a dever which wedges into a slot and clamps the bail of the handle against a

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stop on the body of the iron; and means are provided for taking up any wear in the fulcrum bearing of the lever, and for controlling the wedging action obtained by the lever in the slot.

Other objects, features and advantages of the invention will appear or be pointed out as the description proceeds.

In the drawing, forming a part hereof, in which like reference characters indicate corresponding parts in all the views,

Figure 1 is a side elevation of an iron embodying this invention.

Figure 2 is a sectional view taken on the line 2—2 of Figure 1.

Figure 3 is a front view of the iron shown in Figures 1 and 2, partly in section on the line 3—3 of Figure 1.

Figure 4 is an enlarged sectional view taken on the line 4—4 of Figure 2.

The iron includes a body portion 10 made up of a sole plate 11 and a cover 12. The iron has a handle 15 which includes a grip 16 and a bail 17. The bail 17 preferably extends entirely through the handle grip 16, but this is not essential, and the bail can be made as two separate parts extending downward from opposite ends of the grip.

In the top surface of the cover 12 there are two short grooves 21 and 22 extending lengthwise of the iron. These grooves 21 and 22 are in substantial alignment, and in position to receive aligned end portions of the bail 17.

There is a block 24 that fits over the groove 21, and the block 24 has a recess in its bottom face in position substantially to register with the groove 21 to form with this groove a bearing for holding one end of the bail 17. A screw 26 extends through the block 24 and threads into a stud 27 of the sole plate 11.

The recess in the bottom face in the block 24 is shallow so that the top wall of this recess contacts with the ball 17 before the surfaces of the block 24, on either side of the recess, come in contact with the cover 12. The groove 21 and the recess in the block 24 thus provide a split bearing for the bail. As the screw 26 is tightened, therefore, it clamps the block 24 against the end portion of the bail 17.

The screw 26 has a slow thread so that the friction of the screw is sufficient to hold it in any set position without resorting to a lock nut, set screw, or other expedient for holding the screw 26 against rotation.

When the iron is assembled, the screw 26 is tightened until the block 24 is clamped against

the end portion of the bail 17 with sufficient force to provide the desired friction for resisting turning movement of the bail 17 in the bearing provided by the block 24 and groove 21. The screw 26 serves also to hold the sole plate 11 and cover 12 of the iron body in assembled relation.

The rearward end portion of the bail 17 is clamped down in the groove 22 by a block 34, similar to the block 24 and similarly held in position by a screw 36 which threads into a stud 37 that extends upward from the sole plate 11.

The handle 15 swings into the folded position indicated in dotted lines in Figure 3 so that the iron can be conveniently packed, or put away in a smaller storage space. When repeated movement of the handle 15, between its upright and folded positions, has caused so much wear of the ends portions of the bail 17 that they become loose in their bearings, the screws 26 and 36 are tightened to take up the play. Ordinarily these screws 26 and 36 are tightened, before any actual play develops, in order to keep the friction in the bearings great enough to make the movement of the handle stiff, so that the handle will remain in raised position even before it is locked in such position.

For holding the handle upright, when the iron is in use, it is necessary to lock the bail in its raised position. This is done by means of a locking lever 40 which swings about a fulcrum screw 42. The bail 17 comes against a stop or abutment 44 on one side of a projection 45 at the back of the body of the iron. Another part of the projection 45 has a sloping wall 47 (Figure 4) that forms with the stop 44 a slot into which the lock 40 swings to clamp the bail 17 against the stop 44. The slope of the wall 47 downward and toward the vertically extending stop 44 provides a cam surface that wedges the lever 40 against the bail 17.

The forward end of the locking lever 40 has a horizontally-extending portion 50 that serves as a handle for conveniently moving the lever 40 into and out of the slot in which it wedges against the bail 17. A groove 52 extending through one side of the projection 45 provides a clearance into which the bail 17 moves when the handle is folded. The fulcrum screw 42 threads through one side of the projection 45 and extends into the rearward portion of the slot 48. The fulcrum screw 42 has an unthreaded end portion 54 that extends through the locking lever 40 and serves as the actual fulcrum bearing on which the locking lever swings. At the end of the unthreaded portion 54 there is a shoulder which is larger than the opening in locking lever 40, and this shoulder bears against the side of the locking lever 40 and pushes the locking lever further to the right as the screw 42 is screwed further through the projection 45. Ordinarily the screw 42 is turned until the shoulder at the end of the unthreaded section 54 pushes the lever 40 toward the right hand side of the slot 48 far enough to obtain a tight wedging of the lever 40 against the bail 17 when the lever 40 is swung down along the sloping face of the wall 47.

This increase in the wedging action of the lever 40 by movement of the fulcrum end of the lever toward the right is made possible by having the width of the lever 40 so correlated with respect to the cam face 47 and the side of the bail that the lever 40 contacts with the side of the bail when the fulcrum end of the lever 40 is spaced for a substantial distance from the right hand side of the slot 48. A set screw 58 threads downward through the projection 45 and into contact with the screw 42 for holding the screw 42 against rotation after this screw 42 has been brought to the position that obtains the desired wedging action of the lever 40 against the bail. Any wear of the fulcrum bearing of the lever 40, or of the lever 40 itself, or of the surfaces of the bail 17 and wall 47 with which the lever 40 contacts, can be compensated for by loosening up the set screw 58 and turning the screw 42 to push the fulcrum end of the lever 40 to the right in the slot 48.

The preferred embodiment of the invention has been described and illustrated, but changes and modifications can be made, and features of the invention can be used in different combinations, without departing from the invention as defined in the claims.

I claim as my invention:

1. The combination of an iron and a folding handle, said handle including a bail with end portions for connecting the handle to the top of the iron, bearings in which the end portions of the bail turn to permit folding of the handle, at least one of said bearings being split with some clearance at the split, and an adjustable device for adjusting the clearance of the split bearing to control the friction of the bail in said bearing.

2. An iron including in combination a body, a folding handle comprising a grip and a bail, bearings by which the bail is connected with the body of the iron for angular movement into a folded position, a stop against which the bail abuts when swung into its upright position, locking elements for holding the bail in upright position, said locking elements including a wall and a device that moves into position between the wall and the bail to hold the bail against said stop, a cam face on one of said locking elements for wedging said device against the bail with a horizontal force, and means extending through the structure of said bearings and adjustable to apply a substantially vertical force to the ends of the bail for preventing vertical movement of the bail while it is wedged by said locking elements.

3. An iron including a body portion, a handle comprising a grip and a bail secured to said grip, hinge means connecting the bail to the body portion for angular movement about an axis extending lengthwise of the body portion, a stop against which the bail contacts when the handle is swung into upright position, a wall on the body portion, and a lock movable into a position where it is wedged between the bail and wall for clamping the bail against said stop.

4. An iron comprising a body, a handle, a bail secured to the handle, aligned end portions on the bail, bearings on the body of the iron for receiving the aligned end portions of the bail and in which the end portions of the bail oscillate to permit movement of the handle between upright and folded positions, said bearings including grooves in the body extending lengthwise of the body, a block overlying each of said grooves and having a recess in substantial register with the groove but of shallow depth so that the wall of the groove contacts with the bail before the faces of the block on both sides of the groove contact with the body of the iron, a screw extending through each block and threading into the body of the iron for clamping each block against the end portion of the bail immediately below it, each of said screws being located just beyond the end of the bail that it clamps and being formed with threads of slow pitch that re-

tain the screw at any set tension for the desired clamping action without locking the screw, a stop against which the bail abuts when swung into an upright position, a sloping wall spaced from said stop and forming with said stop a slot of decreasing width toward its bottom and of greater width than the bail, a lock comprising a lever that swings down into the slot and wedges the bail against the stop, a fulcrum on which the locking lever swings, said fulcrum comprising a screw threaded through a fixed part of the body portion of the iron and having an unthreaded end portion that extends through an opening in the lever and having a shoulder at the end of said unthreaded end portion in position to bear against the side of the lever and force said lever sideways to increase the pressure of the lever against the bail when the bail is in raised position, and a set screw for locking the fulcrum screw in any set position.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,119,964	Reichold	June 7, 1938