May 27, 1958 F. LOWITZ 2,836,016

APPARATUS FOR OPENING HERMETICALLY SEALED CASINGS

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Fig. 1.

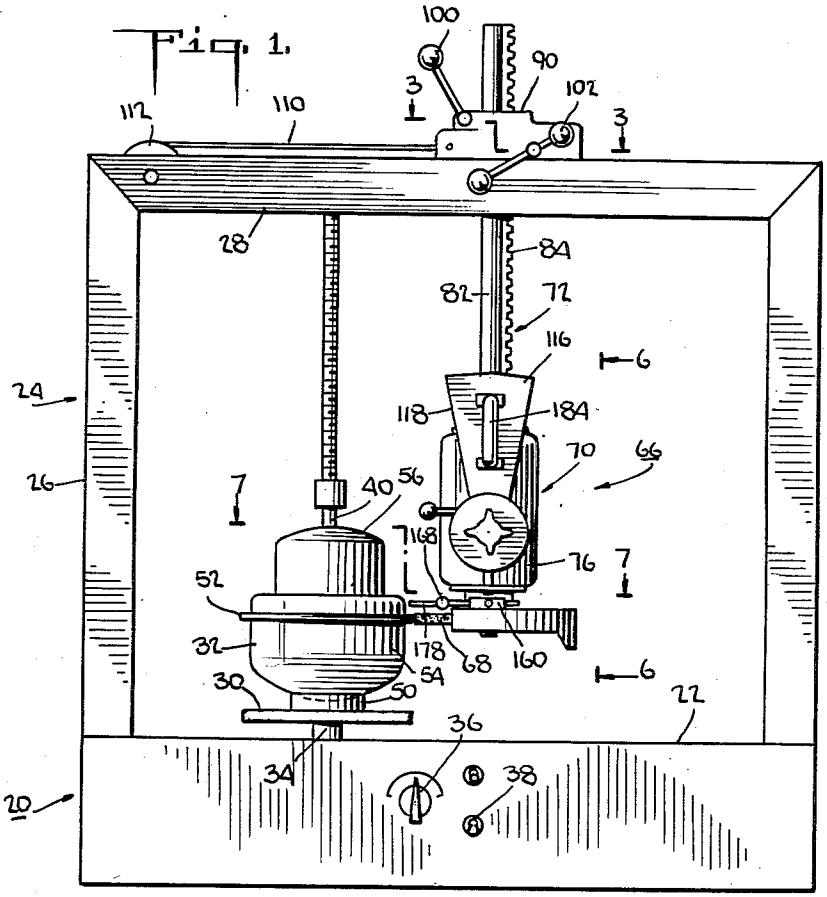
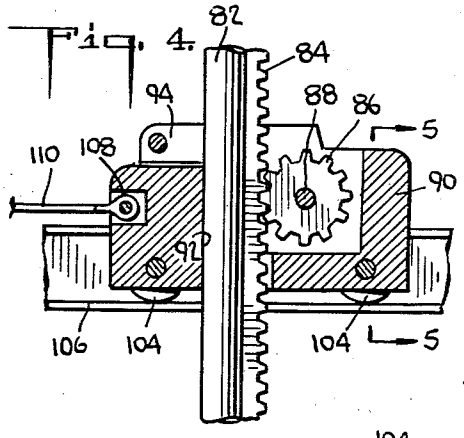


Fig. 4.



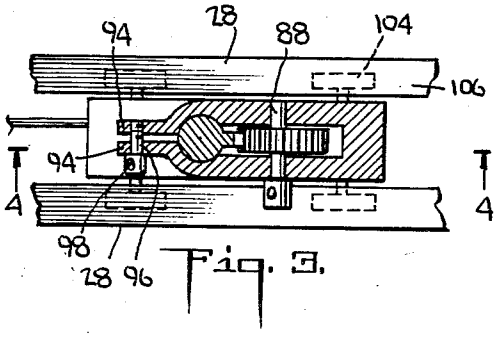
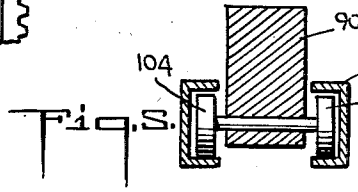


Fig. 3.

Fig. 5.



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Fig. 11.

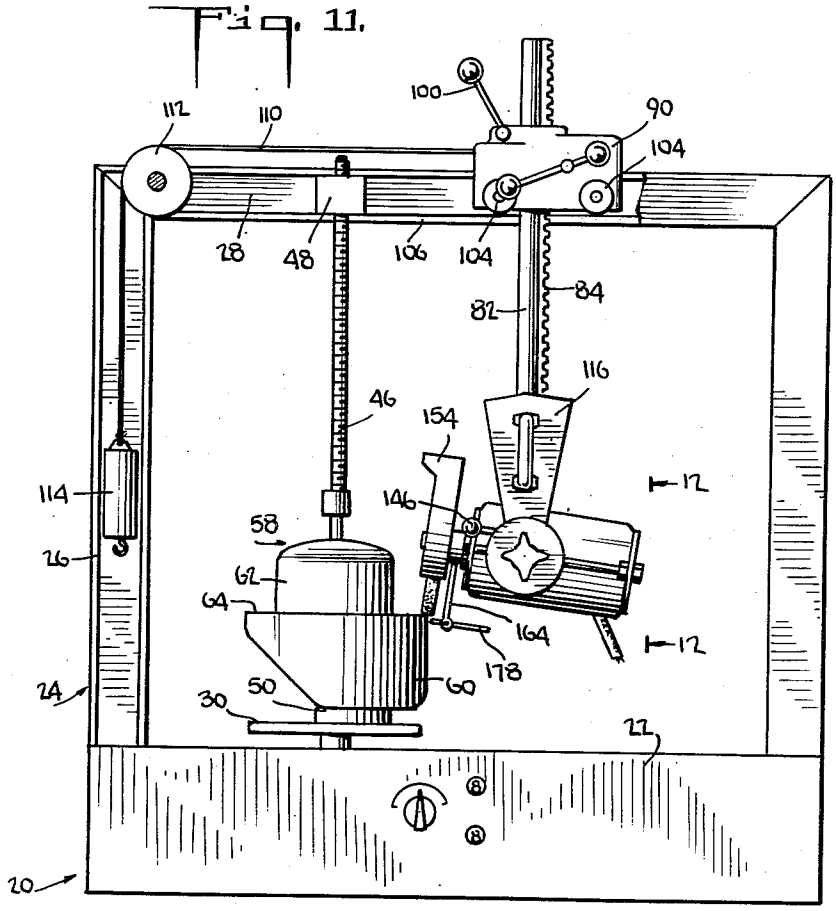


Fig. 2.

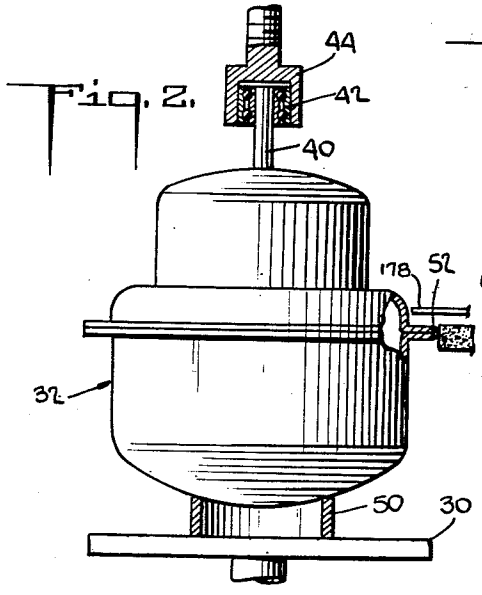
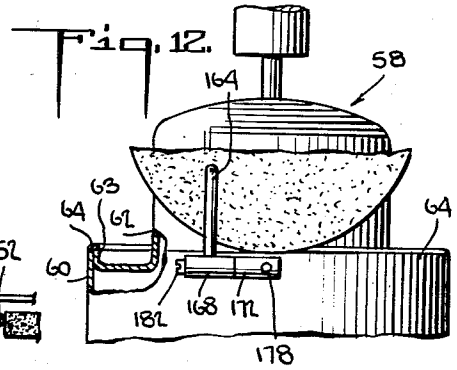


Fig. 12.



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Fig. 6.

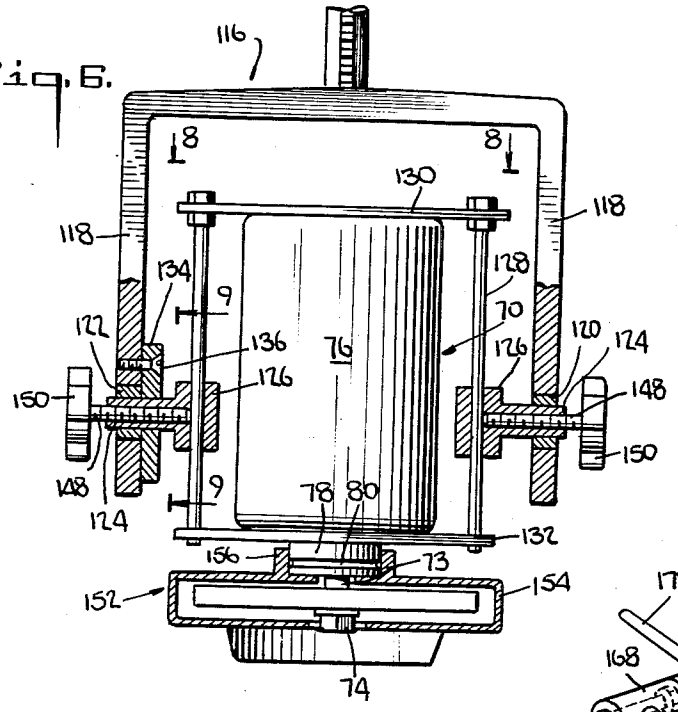


Fig. 7.

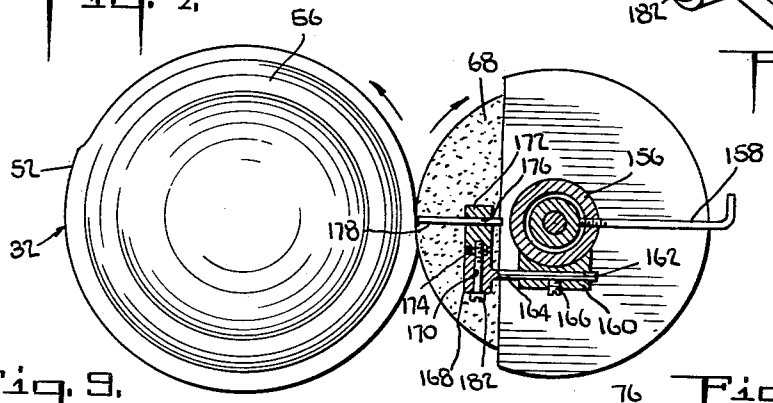


Fig. 10.

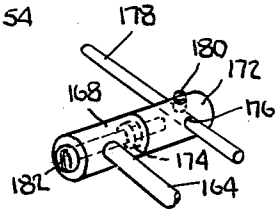


Fig. 9.

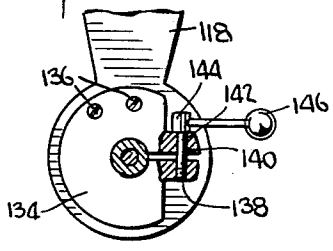
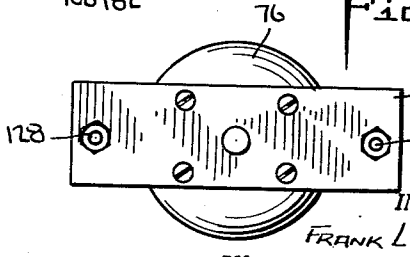


Fig. 8.



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2,836,016

APPARATUS FOR OPENING HERMETICALLY SEALED CASINGS

Frank Lowitz, Bronx, N. Y.

Application August 2, 1956, Serial No. 601,719

16 Claims. (Cl. 51—105)

This invention relates to an apparatus for opening hermetically sealed casings. The present invention is an improvement over the invention disclosed in my copending application Serial No. 430,242 for Means for Opening Hermetically Sealed Casings filed May 17, 1954, now United States Letters Patent No. 2,775,852, issued January 11, 1957.

As pointed out in my said copending application, it has been the practice in the field of refrigeration units, and particularly compression refrigeration units which are employed in domestic refrigerators, dehumidifiers, air conditioners, and the like, to provide a so-called "sealed" unit which includes an electric motor and a compressor housed within a casing. The casing consists of two parts having matching open ends which are interfitted and welded together along a continuous seam, e. g. a circular or oval seam. Electric wires and gas lines extend to the motor and compressor through suitable openings in the casing. However, due to the nature of the connection between the two parts of the casing, if any trouble develops in either the motor or the compressor the entire sealed unit is considered to be defective and is discarded and replaced as a whole.

It has been the practice in general to treat the discarded units as junk and to consider them as worthless because of the difficulty attendant upon the opening of the casing in order to provide access for removal and repair of the motor and/or the compressor. Even where equipment is available for opening up a unit, such equipment constituting, for example, a lathe or a heavy hand grinder, it takes a man so long to open the unit, that, taking into consideration the fact that the motor or compressor may be beyond practical repair, it is rare that compression units are salvaged.

It will be appreciated that the aforesaid equipment requires the constant attendance, guidance and skill of a man to open up a unit. The metal removing tool must be continuously guided so as to follow the weld seam and to remove metal therefrom without destroying the casing. A conventional tool, such as a lathe or surface grinder, which revolves the work with relation to a fixed metal removing element is particularly difficult to employ for the foregoing purpose since the seam never is regular and since the shapes of the seams vary from unit to unit requiring special set-ups that are too expensive to make in automatic machinery when measured against the value of the parts to be recovered.

It is an object of the present invention to provide an improved, simple, rugged, easy-to-operate machine for opening hermetically sealed units.

More specifically, it is an object of my invention to provide a machine of the character described which can open the welded seams of two-part hermetically sealed casings of the type commonly employed in domestic compression refrigeration systems, the opening being effected with minimum mutilation of the casing parts, with a minimum set-up time and without constant care of the men.

It is another object of my invention to provide an apparatus of the character described having controls which are so simplified that the apparatus can be set up and run by unskilled labor.

It is another object of my invention to provide an apparatus of the character described which can with very few and very simple changes be adapted to open sealed units of known sizes, shapes and types.

It is another object of my invention to provide an apparatus of the character described which can open compression refrigeration units having either non-centered or asymetric welded seams joining their two casing parts.

It is another object of my invention to provide an apparatus of the character described in which it is not necessary to center the casing with any great degree of accuracy preparatory to opening the same.

It is another object of my invention to provide an apparatus of the character described which when once set up and started in operation can be left alone without danger of mutilating the casing parts beyond re-use.

It is another object of my invention to provide an apparatus of the character described which, without complex parts or circuity, will stop removing the metal of the casing or of the weld at a predetermined depth of grinding.

It is another object of my invention to provide an apparatus of the character described which can automatically follow highly irregular weld seams, for example, weld seams which deviate from a horizontal plane and are asymetric in plan.

It is another object of my invention to provide an apparatus of the charcter described having a metal removing tool, such as a grinding wheel, which is shiftably floatable in more than one plane at a time, whereby to enable it automatically to follow a complex shape of welded seam without special controls or set-ups.

Other objects of my invention in part will be obvious and in part will be pointed out hereinafter.

My invention accordingly consists in the features of construction, combinations of elements and arrangements of parts which will be exemplified in the machine hereinafter described and of which the scope of application will be indicated in the appended claims.

In the accompanying drawings, in which is shown one of the various possible embodiments of my invention,

Fig. 1 is a front view of a machine constructed in accordance with the invention and arranged, i. e., set up, to operate on a sealed unit having a laterally facing welded parting seam;

Fig. 2 is an enlarged fragmentary front view of the sealed unit shown in Fig. 1 and of the table and clamping means for supporting and turning said unit, portions of the unit and clamping means being broken away to illustrate certain details;

Fig. 3 is an enlarged sectional view taken substantially along the line 3—3 of Fig. 1, and showing certain details of the mechanism for adjusting the height of the grinding wheel;

Fig. 4 is a sectional view taken substantially along the line 4—4 of Fig. 3;

Fig. 5 is a sectional view taken substantially along the line 5—5 of Fig. 4;

Fig. 6 is an enlarged fragmentary view of the grinding motor support, the same being taken along the line 6—6 of Fig. 1, and having portions thereof broken away in order better to illustrate various structural details;

Fig. 7 is an enlarged sectional view taken substantially along the line 7—7 of Fig. 1;

Fig. 8 is a top view of the frame for the grinder wheel motor, the same being seen as viewed along the line 8—8 of Fig. 6;

Fig. 9 is a sectional view taken substantially on the line 9—9 of Fig. 6;

Fig. 10 is a fragmentary perspective view of a portion of the feeler associated with the grinding wheel;

Fig. 11 is a view similar to Fig. 1 of the machine as it appears when set up to operate on a sealed unit having an upwardly facing welded parting seam; and

Fig. 12 is a fragmentary enlarged view taken substantially along the line 12—12 of Fig. 11, the motor being omitted for the sake of clarity.

Referring now in detail to the drawings, the reference numeral 20 denotes a machine constructed in accordance with my invention. Said machine includes a frame constituting a base 22 and a bridge 24, the latter consisting of pairs of legs 26 at opposite sides of the machine and a pair of parallel spans 28 connecting the upper ends of the legs.

The machine further includes a rubber-covered work table 30 which is adapted to hold and turn a compression refrigeration unit, such for instance as the unit 32, located in proper position for performance of a grinding operation thereon. The work table has a downwardly depending central stem 34 which is affixed to the low speed output shaft (not shown) of a rotary driving unit housed within the base 22. The driving unit may conventionally comprise an electric motor which turns the stem 34 through a suitable gear reduction train, the duration of operation of said motor and of the grinding motor hereinafter described being set by a timer under the control of a knob 36 which is mounted on the front of the base for convenience. An off-on switch 38 near the knob 36 is provided to control the table motor.

A hold down pin 40 is carried by an anti-friction bearing 42 for rotation about a vertical axis coincident with the axis of rotation of the table 30. The outer race of the bearing is secured in the lower cupped end 44 by a threaded adjusting shaft 46, the upper end of which is screwed into a vertically tapped block 48 fixed between the spans 28. It will be appreciated that by rotating the shaft 46 the vertical position of the pin 40 can be set to any desired height.

I further provide for use in connection with the table a sleeve 50.

The typical sealed unit 32 which is shown in Fig. 1 is set up by placing the sleeve 50 on the work table in a substantially central location. The unit has its large convex bottom disposed on the sleeve and is manipulated to locate its laterally facing welded parting seam 52 in a substantially horizontal plane with the center of the unit substantially coincident with the vertical axis of rotation of the table. It may be mentioned that satisfactory operation of the grinder does not require absolute centering or levelling of the parting seam. The pin 40 is lowered by rotation of the shaft 46 to clamp the unit between said pin and the table. It will be appreciated that it thus is possible quickly to set up and secure a unit on the work table.

As is conventional, the sealed unit 32 constitutes a casing that includes two interfitted parts, to wit: a lower part 54 and an upper part 56. The adjacent portions of these two parts have outwardly extending flanges, the peripheries of which are abutted along the laterally outwardly facing parting seam 52 that is closed by a bead of weld deposited metal. It is this bead which must be removed in order to separate the two parts of the casing and gain access to the motor and compressor which are hermetically sealed within the casing. Inasmuch as in the unit 32 the weld metal which connects the outwardly extending flanges of the two parts of the casing faces radially outwardly, such metal can be most conveniently removed by a grinding wheel which turns about an axis perpendicular to the plane including the weld bead so that the periphery of said wheel lies in a horizontal plane.

Another common type of sealed unit casing 58 is shown in Figs. 11–12. This casing consists of two parts, to wit: a deep lower cup 60 and an upper cover 62 having a retroverted upwardly extending flange 63 received in the mouth of the cup. The rims of said flange and cup are substantially co-planar and define an upwardly facing parting seam which is closed by a bead 64 of weld deposited metal that likewise faces upwardly. Hence the metal of this bead can best be removed by a grinding wheel the periphery of which lies in a vertical plane.

It shortly will be seen that the machine 20 is sufficiently versatile to handle both of the foregoing types of units.

In describing said machine I have arbitrarily considered the same first as set up to handle the unit 32, the grinding wheel accordingly having its periphery located in a horizontal plane and turning about a vertical axis. I subsequently, will describe the set-up for opening the casing 58 of the other type of sealed unit.

The machine 20 includes a grinding head 66 consisting of a grinding wheel 68, a grinding motor 70, and an adjustable motor support 72.

The grinding wheel is conventional, simply consisting of a circular disc of abrasive material, such for example as carborundum, and has a central opening to receive the drive shaft 73 of the grinding motor. The wheel is secured to the shaft, as by a nut screwed on the threaded tip of said shaft.

The grinding motor 70 likewise is conventional, being an ordinary electric motor in a casing 76 having a cylindrical extension 78 at the end of the motor casing from which the drive shaft 73 projects. Said extension is formed with an annular groove 80 to adjustably hold a guard and feeler subsequently to be described.

The motor support 72 includes a vertical shaft 82 having an axially extending rack 84 secured to a side thereof. Said rack meshes with a pinion 86 (see Fig. 4) fixed to a shaft 88 journalled in a truck 90 to rotate about a horizontal axis. The shaft 82 and rack 84 are slidable in a through opening 92 extending vertically through the truck 90 and including an upper portion having spaced vertical walls 94 (see Fig. 3). A horizontal clamp shaft 96 has a threaded end screwed into a tapped bore in one of the walls 94 and an unthreaded section freely rotatable in an opening in the other wall 94. Adjacent the threaded section said shaft carries a collar 98 from which a handle 100 radially extends. When the threaded section of the clamp shaft is backed partially out of its tapped bore the walls 94 will spring apart sufficiently to provide free passage for the vertical shaft 82 and the rack 84. However, when the clamp shaft is turned in the opposite direction the walls 94 will be squeezed together to clamp said shaft 82 in any selected position to which it has been set by manipulating the handle 102 on the adjusting shaft 88. It will be appreciated that in this fashion I am quickly and simply able to adjust the horizontal level of the motor casing.

Wheels 104 are provided at the corners of the truck 90. Said wheels ride on coplanar horizontal flanges 106 forming part of the parallel spans 28 and thereby guiding the truck for level movement in a horizontal plane. Attached to the truck as by a shackle 108 (Fig. 4) is an elongated flexible member such as a rope or wire 110 which turns about a horizontal rotatable idler sheave 112 and has a weight 114 attached to its dangling end. Said weight is guided for vertical movement in a channel defined by a pair of legs 26 at one side of the machine. It will be appreciated that the weight, the truck and the anti-friction horizontally movable mounting for the truck mutually constitutes a means biasing the grinding wheel horizontally toward and against the sealed unit so that said wheel is guided for floating shiftable movement toward the casing in a horizontal plane.

Mounted at the lower end of the shaft 82 is a downwardly facing cradle 116 including parallel vertical side arms 118. Horizontal openings 120 (Fig. 6) in hori-

zontal alignment with one another extend through the arms 118 near their lower ends to receive bushings 122. Journalled in each bushing is a tube 124 which projects inwardly of the cradle and terminates in a T-shaped head 126. The heads are axially bored and are in registry so as slideably to receive parallel motor-balancing rods 128. At their opposite ends said rods are connected to space plates 130, 132 which are firmly secured, as by screws or bolts to the motor casing 76.

The foregoing arrangement permits the motor to experience two adjustments over and above the change in vertical position brought about by varying the location of the height adjustment shaft 82. These two additional adjustments are first: a rotatable adjustment of the motor casing with respect to the cradle about the aligned horizontal axes of rotation of the tubes 124 and, second: an axial adjustment of the motor, this latter being accomplished by sliding the rods 128 within the T-shaped heads 126.

Suitable means is included selectively to lock the motor in any fixed position with respect to the two adjustments just described. More particularly I locate a split ring 134 (Figs. 6 and 9) on the inner surface of one of the cradle arms 116. When the ring is unstressed the central opening thereof passes the associated tube 124 and permits free rotation thereof. A pair of screws 136 passing through the ring anchors it to the cradle arm. In order to enable the ring to be constricted on the tube 124 a tapped opening 138 extends away from one side of the slit and a clear opening 140 in registry with the tapped opening extends away from the other side of the split. A short rod 142 has a threaded end screwed into the opening 138 and its shank located in the clear opening 140. The enlarged head 144 of the rod bears against the outer surface of the ring. Thus when the rod is turned, by means of a handle 146, it either will squeeze the tube 124 so as to hold the motor casing in a pre-set angular orientation with respect to the cradle or will free the tube for rotation to any desired position.

A pair of long set screws 148 (Fig. 6) are threaded through the tapped bores in the tubes 124, said set screws projecting from the tubes and carrying control knobs 150. The inner tips of said screws are adapted to bear against the motor-balancing rods 128. Thus the motor casing can be locked in any selected axial position with respect to the heads 126.

The machine 20 further includes a grinder guard and feeler 152. The guard constitutes a narrow semi-cylindrical hollow hood 154 carried by a cylindrical sleeve 156 (Fig. 6) that is mounted to turn on the motor casing extension 78. Said sleeve is tapped to receive the threaded end of a locking key 158 (Fig. 7), the tip of which rides in the groove 80 to allow the hood 154 to turn about the grinding wheel and permitted to be locked in any desired position.

The sleeve 156 carries a block 160 (Figs. 1 and 7) provided with a straight cylindrical passageway 162 in which a feeler rod 164 is slidably and rotatably supported. A set screw 166 screwed into the block 160 holds the feeler rod in any given position. Said feeler rod has an end terminating in a feeler body 168 (Figs. 1, 7 and 10) which is provided a through axial passageway 170 at right angles to the longitudinal axis of the feeler rod. The body 168 rotatably carries a feeler holder 172 having an axially located cylindrical boss 174 received in a matching axial well in the body 168. The holder 172 is formed with a through cross bore 176 that passes a feeler finger 178. Said finger is axially shiftable in the bore 176 and is locked in any desired position by a set screw 180. A long bolt 182 extends through the passageway 170 and engages a tapped bore in the holder 172 at the bottom of the well.

It will be appreciated that the feeler finger 178 is capable of experiencing several adjustments. One adjustment is obtained by varying the angular position of the

sleeve 156 on the extension 78. Another is obtained by rotating the feeler rod 164. Still another is obtained by axially shifting the feeler rod 164. A fourth adjustment is obtained by rotating the holder 172 with respect to the body 168. The fifth adjustment is obtained by axially shifting the feeler finger 178. These adjustments are employed for various set-ups of the machine 20, two of which now will be described.

In Fig. 1 I have illustrated the machine arranged to grind off an outwardly facing welded head 52 the plane of which is substantially horizontal.

The unit 32 is, as noted before, placed on the metal sleeve 50 with the plane of the head substantially horizontal and the center of gravity of the unit located substantially in line with the vertical axis of rotation of the work table. The hold down pin 40 clamps the unit in place while permitting it to turn with the work table.

The handle 146 is turned to permit the motor casing to be turned in the cradle until the axis of rotation of the motor is vertical so that the plane of the grinding wheel 68 is horizontal. The handle 100 is loosened and the handle 102 turned to locate the grinding wheel in the horizontal plane of the bead 52. The key 158 is loosened and the hood 154 turned so that its open side faces the sealed unit. This will locate the block 160 with its passageway 162 pointed horizontally toward the sealed unit 32. The screw 182 is loosened and the holder 172 turned to bring the finger 178 into the horizontal plane of the rod 164. In may be mentioned that, as is best seen in Fig. 7, the offset effected by the body 168 and the holder 172 is equal to the radial distance between the passageway 162 and the drive shaft 73 of the motor whereby the finger 178 lies in the same plane as the rotary axis of the motor. The set screw 180 is loosened and the tip of the finger 178 set to be located at such a radial distance from the axis of the grinding wheel that said tip will touch the sealed unit casing when the grinding wheel reaches the base of the weld bead.

All the necessary adjustments have now been made, it being understood that the various screws, clamps, etc. that were loosened subsequently were tightened. The cradle thereupon is pulled away from the sealed unit, using the handle 184 to facilitate manipulation. The grinding motor and work table motor are actuated and the handle 184 then released thereby allowing the grinding wheel to engage the weld bead said wheel being biased in that direction by the weight 114. Thereupon the operator can work away from the machine and the machine will continue to move until the wheel seam is open. The limit to which the grinding wheel will penetrate the bead and flanges secured to one another by the bead is determined by the feeler finger 178. As soon as the finger touches the upper part 56 of the casing, although both motors still are operating, the grinding wheel will stop removing metal. It will be appreciated since the table is turning some parts of the bead may be removed to the desired depth before other parts but this will be remedied as the table continues to turn so that the other bead parts eventually will be ground away. It also will be seen that if the bead 52 is of non-circular contour or is disposed eccentrically with respect to the axis of rotation of the work table, grinding nevertheless will proceed without difficulty since the truck 90 permits the grinding wheel to be moved outwardly and by the periphery of the bead and to return as under the influence of the weight 114. In other words the foregoing construction permits a floating shiftable movement of the wheel toward and away from the bead in a horizontal direction.

In Figs. 11 and 12 I have illustrated a second set-up of the machine which is suitable for removing an upwardly facing weld bead 64, my machine as so arranged showing a greater degree of versatility than when set-up to remove an outwardly facing bead. To secure the set-

up shown in these figures the handle 146 is loosened to permit the motor casing to turn freely about the registered axes of the tubes 124. The knobs 150 are loosened and the rods 128 slid in the heads 126 to place the motor in such a position that the center of gravity of the combined motor, motor support, grinding wheel, grinding hood and all parts carried thereof is located in the vertical plane includes the registered axes of the tubes 124. The knobs 150 thereupon are locked. The key 158 is loosened and the hood 154 manipulated to locate it above the grinding wheel so that the grinding wheel will project downwardly therefrom and the passageway 162 will be pointed downwardly. The screw 182 is loosened and holder 172 turned to locate the feeler finger 178 substantially at right angles to the rod 164. The set screw 166 is loosened and the rod 164 slid out a sufficient distance to locate the tip of the feeler finger below the grinding wheel (Fig. 12). The set screw 180 is loosened and the tip of the feeler finger located to ride on the side of the unit when the grinding wheel engages the weld joint. All said screws, handles, locks, etc., except the handle 146 are tightened. The height of the cradle is set so that with the motor substantially horizontal the periphery of the grinding wheel is at the top of the bead 64.

The cradle is manipulated to a point such that the tip of the feeler finger engages the side surfaces of the lower cup 60 of the sealed unit 58. The grinding wheel is held just out of contact with the bead 64 and the grinding motor and the table motor are energized. The operator releases his hold on the cradle. The weight 114 thereupon will urge the grinding motor toward the sealed unit casing. However, only the tip of the feeler finger initially will touch the casing and this will create a torque that will tilt the grinding wheel and grinding motor as a unit in a direction such that the grinding wheel will move downwardly into engagement with the weld bead to be removed. This pressure will maintain the grinding wheel in contact with the bead as the sealed unit turns with the work table.

Any horizontal irregularity or eccentricity of the bead will cause the grinding motor to move horizontally or away from the axis of rotation of the work table moving either against or under the influence of the weight 114. Any vertical irregularity or eccentricity of the bead will be compensated for in grinding since the wheel is free to floatingly shift up or down by rotation of the motor casing about the registry horizontal axes of the tubes 124, the wheel being biased downwardly by the tilting torque engendered by the weight 114.

With the foregoing arrangement it is occasionally necessary to examine the work in order to ascertain when the bead has been ground off since the feeler finger will not act as an automatic stop in this set-up.

It thus will be seen that I have provided machines and methods for using the same which achieve the several objects of my invention and are well adapted to meet the conditions of practical use.

As various possible embodiments might be made of my above invention, and as various changes might be made in the embodiments above set forth, it is to be understood that all matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim as new and desire to secure by United States Letters Patent:

1. In a grinder for opening a unit having a casing including at least two parts joined by an endless welded joint, a grinding head and a work holder, said work holder comprising a table, means to secure a unit to the table, means to mount said table for rotation about an axis and to turn the table about said axis, said grinding head including a grinding wheel, power actuated means for rotating said wheel about an axis, means supporting and guiding the wheel for shiftable floating movement toward and away from the unit in plural planes at the same time, said planes being at an angle to one another, and means biasing the wheel against the welded joint for applying a yielding operative pressure against said joint.

2. In a grinder for opening a unit having a casing including at least two parts joined by an endless welded joint, a grinding head and a work holder, said work holder comprising a table, means to secure a unit to the table, means to mount said table for rotation about an axis and to turn the table about said axis, said grinding head including a grinding wheel, power actuated means for rotating said wheel about an axis, means supporting and guiding the wheel for shiftable floating movement toward and away from the unit in plural planes at the same time, said planes being at an angle to one another, and means biasing the wheel against the welded joint for applying a yielding operative pressure against said joint whereby to permit the wheel automatically to follow the joint which deviates from planarity to circularity.

3. In a grinder for opening a unit having a casing including at least two parts joined by an endless welded joint, a grinding head and a work holder, said work holder comprising a table, means to secure a unit to the table, means to mount said table for rotation about an axis and to turn the table about said axis, said grinding head including a grinding wheel, power actuated means for rotating said wheel about an axis, means supporting and guiding the wheel for shiftable floating movement toward and away from the unit in plural planes at the same time, said planes being at a right angle to one another, and means biasing the wheel against the welded joint for applying a yielding operative pressure against said joint whereby to permit the wheel automatically to follow the joint which deviates from planarity to circularity.

4. In a grinder for opening a unit having a casing including at least two parts joined by an endless welded joint, a grinding head and a work holder, said work holder comprising a table, means to secure a unit to the table, means to mount said table for rotation about an axis and to turn the table about said axis, said grinding head including a grinding wheel, power actuated means for rotating said wheel about an axis, means to adjust the relative position of the table and wheel to match the height of the wheel to the height of the welded joint, means supporting and guiding the wheel for shiftable floating movement toward and away from the unit in plural planes at the same time, said planes being at an angle to one another, and means biasing the wheel against the welded joint for applying a yielding operative pressure against said joint whereby to permit the wheel automatically to follow the joint which deviates from planarity to circularity.

5. In a grinder for opening a unit having a casing including at least two parts joined by an endless welded joint, a grinding head and a work holder, said work holder comprising a table, means to secure a unit to the table, means to mount said table for rotation about an axis and to turn the table about said axis, said grinding head including a grinding wheel, power actuated means for rotating said wheel about an axis, a horizontal track, a truck riding on said track, means biasing said truck in a direction toward the work table, and means supporting the wheel from the truck, whereby the wheel is arranged to apply a yielding operative pressure against the welded joint.

6. In a grinder for opening a unit having a casing including at least two parts joined by an endless welded joint, a grinding head and a work holder, said work holder comprising a table, means to secure a unit to the table, means to mount said table for rotation about an axis and to turn the table about said axis, said grinding head including a grinding wheel, power actuated means for rotating said wheel about an axis, a horizontal track, a truck riding on said track, means biasing said truck in a direction toward the work table, and vertically adjust-

able means supporting the wheel from the truck, whereby the wheel is arranged to apply a yielding operative pressure against the welded joint.

7. In a grinder for opening a unit having a casing including at least two parts joined by an endless welded joint, a grinding head and a work holder, said work holder comprising a table, means to secure a unit to the table, means to mount said table for rotation about an axis and to turn the table about said axis, said grinding head including a grinding wheel, power actuated means for rotating said wheel about an axis, a horizontal track, a truck riding on said track, means biasing said truck in a direction toward the work table, and vertically adjustable means supporting the wheel from the truck, said last-named means including means permitting rotation of the axis of rotation of the wheel about a horizontal axis, whereby the wheel is arranged to apply a yielding operative pressure against the welded joint.

8. In a grinder for opening a unit having a casing including at least two parts joined by an endless welded joint, a grinding head and a work holder, said work holder comprising a table, means to secure a unit to the table, means to mount said table for rotation about an axis and to turn the table about said axis, said grinding head including a grinding wheel, power actuated means for rotating said wheel about an axis, a horizontal track, a truck riding on said track, means biasing said truck in a direction toward the work table, and vertically adjustable means supporting the wheel from the truck, said last-named means including means selectively permitting rotation of the axis of rotation of the wheel about a horizontal axis, whereby the wheel is arranged to apply a yielding operative pressure against the welded joint.

9. In a grinder for opening a unit having a casing including at least two parts joined by an endless welded joint, a grinding head and a work holder, said work holder comprising a table, means to secure a unit to the table, means to mount said table for rotation about an axis and to turn the table about said axis, said grinding head including a grinding wheel, power actuated means for rotating said wheel about an axis, a horizontal track, a truck riding on said track, means biasing said truck in a direction toward the work table, a member, means mounting the member on the truck for vertical movement relative thereto, means mounting the wheel on the member for relative rotation of the axis of rotation of the wheel about a horizontal axis of the wheel, whereby the wheel is arranged to apply a yielding operative pressure against the welded joint.

10. A grinder as set forth in claim 9, wherein means is included selectively to prevent relative rotation between the member and the axis of rotation of the wheel.

11. In a grinder for opening a unit having a casing including at least two parts joined by an endless welded joint, a grinding head and a work holder, said work holder comprising a table, means to secure a unit to the table, means to mount said table for rotation about an axis and to turn the table about said axis, said grinding head including a grinding wheel, power actuated means for rotating said wheel about an axis, means supporting and guiding the wheel for shiftable floating movement toward and away from the unit, means biasing the wheel against the welded joint for applying a yielding operative pressure against said joint, and means carried by said supporting means for engaging the casing when the grinding wheel has entered into the welded joint a predetermined distance.

12. In a grinder for opening a unit having a casing including at least two parts joined by an endless welded joint, a grinding head and a work holder, said work holder comprising a table, means to secure a unit to the table, means to mount said table for rotation about an axis and to turn the table about said axis, said grinding head including a grinding wheel, power actuated means for rotating said wheel about an axis, means supporting and guiding the wheel for shiftable floating movement toward and away from the unit, means biasing the wheel against the welded joint for applying a yielding operative pressure against said joint, and adjustable feeler means carried by said supporting means for engaging the casing when the grinding wheel has entered into the welded joint a predetermined distance.

13. In a grinder for opening a unit having a casing including at least two parts joined by an endless welded joint, a grinding head and a work holder, said work holder comprising a table, means to secure a unit to the table, means to mount said table for rotation about an axis and to turn the table about said axis, said grinding head including a grinding wheel, a motor for rotating said wheel about an axis, a cradle, said motor being located in said cradle, means mounting said motor in said cradle for rotation about an axis perpendicular to the motor axis, means for selectively locking said motor to said cradle, means supporting and guiding the cradle for shiftable floating movement toward and away from the unit, and means biasing the cradle toward the unit.

14. In a grinder for opening a unit having a casing including at least two parts joined by an endless welded joint, a grinding head and a work holder, said work holder comprising a table, means to secure a unit to the table, means to mount said table for rotation about an axis and to turn the table about said axis, said grinding head including a grinding wheel, a motor for rotating said wheel about an axis, a truck, rails guiding the truck in a direction toward and away from the unit perpendicular to the axis of rotation of the table, a cradle, vertically adjustable means supporting the cradle from the truck, means supporting the motor from the cradle for rotation about a horizontal axis, means selectively preventing rotation of the motor relative to the cradle, and means biasing the truck toward the unit.

15. In a grinder wherein a work piece is turned about a horizontal axis and wherein a top portion of the work piece adjacent its circumference is to be ground: that improvement comprising a grinding wheel, power actuated means for rotating said wheel about an axis, means supporting and guiding said wheel for shiftable floating movement toward and away from the work piece in one plane, means supporting and guiding the wheel for shiftable floating movement toward and away from the work piece in another plane at the same time that the wheel is supported and guided for shiftable movement toward and away from the work piece in the first-named plane, and means biasing the wheel in said planes against the work piece for applying a yielding operative pressure against said piece.

16. In a grinder wherein a work piece is turned about a horizontal axis and wherein a top portion of the work piece adjacent its circumference is to be ground: that improvement comprising a grinding wheel, power actuated means for rotating said wheel about an axis, means supporting and guiding the wheel for shiftable floating movement toward and away from the side of the work piece, means biasing the wheel toward the work piece from the side, a feeler movable bodily with the power actuated means and supported to engage the work piece from the side, and means supporting the power actuated means for rotation about an axis transverse to the direction of movement of the wheel under the influence of the supporting means whereby the wheel also is supported and guided for shiftable floating movement toward and away from the top of the work piece and yieldably biased against said top of the work piece.

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