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W. S. EDWARDS

GASKET SEATING MACHINE

Filed July 26, 1926

Fig 1.

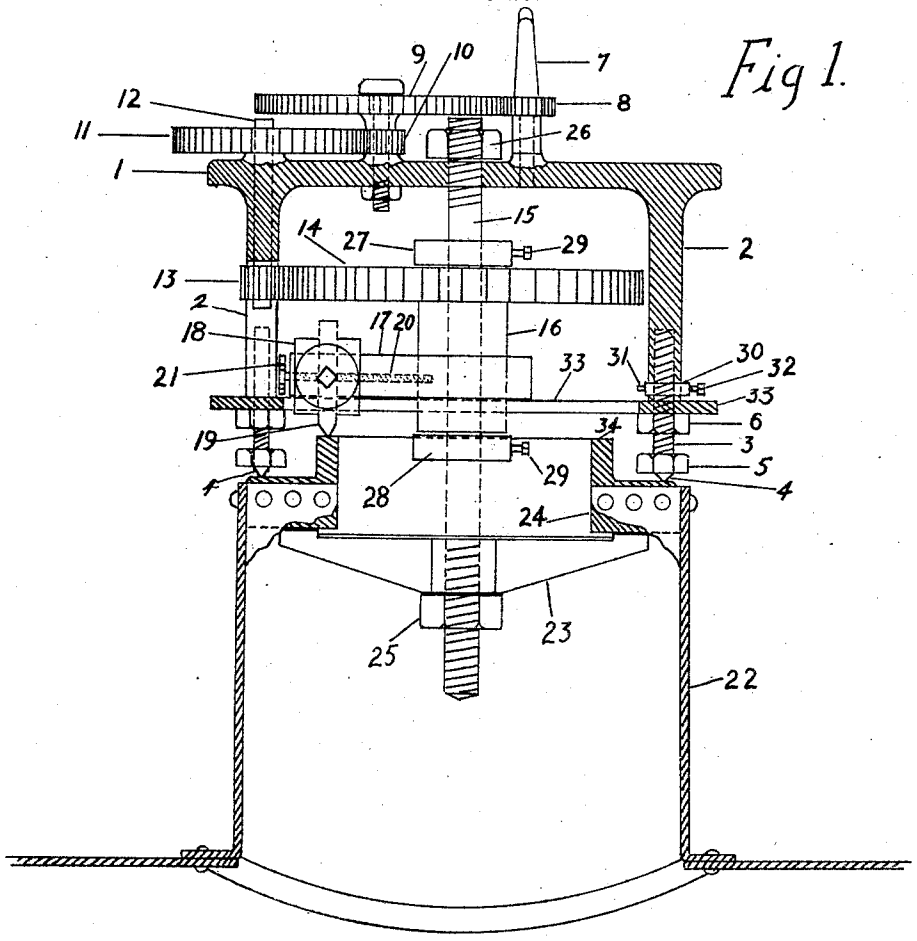
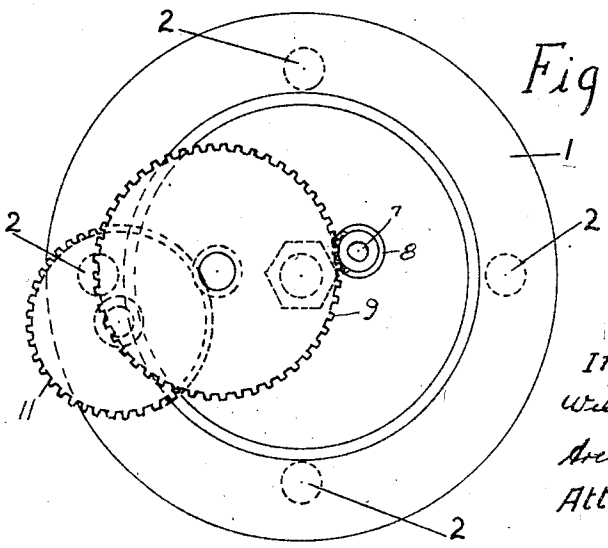


Fig 2.



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GASKET-SEATING MACHINE.

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My invention relates to a machine for surfacing the gasket seats on the domes of tank cars. In the handling of acids in tank cars the gasket seat on the dome of the car frequently becomes pitted and acid-eaten and requires re-surfacing before the gasket and cover can be applied so as to provide an entirely leak-proof joint for the transportation of the acid. This operation has heretofore been accomplished by removing the dome casting from the car dome, by taking out the large number of rivets by means of which the parts are assembled, and removing the casting to a shop where the seat is machined. When the seat has been re-surfaced the casting must be again riveted to the dome and this cannot be done under usual safety regulations until the car has been entirely cleansed and freed from acid, all of which requires considerable labor, time and expense.

The principal object of the present invention is to provide a simple and efficient machine whereby the seat may be re-surfaced without removing the casting from the dome of the tank, thus obviating the necessity for removal of any remaining acid or fumes from the tank and expediting and facilitating the operation of re-surfacing the gasket seat.

Further objects of the invention will appear from the following detailed description thereof.

In the drawings:

Figure 1 is a section of a machine constructed in accordance with this invention, the same being illustrated in position on a tank dome.

Figure 2 is a plan view of the machine.

The numeral 1 indicates a frame which is substantially circular in plan, as shown in Figure 2, said frame being provided with a plurality of legs or standards 2, the same being four in number, as illustrated in the drawings. The lower end of each of the legs or standards 2 is bored and threaded to receive a bolt 3, the lower end of which has a pointed rest 4. Rigidly secured on each bolt 3 above the rest 4 is a turning nut 5. A lock nut 6 secures the bolt and rest in desired relation with the leg or standard 2.

The numeral 7 indicates a standard Morris tapered shank spindle which is journalled in the top of frame 1. Secured on the spindle is a pinion 8 which intermeshes with a gear 9 also journalled in the top of frame 1. Rigidly secured on the hub of the gear 9 is a pinion 10 which intermeshes with a gear 11 rigidly secured on a shaft 12 journalled in the top of frame 1. Secured on the lower end of shaft 12 is a pinion 13 which intermeshes with a large gear wheel 14, rotatably mounted on a central shaft 15 which extends upwardly through the top of the frame 1, as shown. Rigidly mounted on the hub 16 of the gear wheel 14 is an arm 17 carrying an adjustable tool head 18 for a cutter 19. The head 18 may be of any standard lathe or other type, the head being longitudinally adjustable on the arm by means of a screw 20 in the arm 17, said screw being provided with a star wheel 21 for rotation. The shaft 15 extends downwardly so as to extend into the dome 22 of a tank car, and the lower end is provided with a cross-arm 23 which is adapted to bear against the under-side of the dome casting 24. Both the lower and upper ends of the shaft 15 are threaded for nuts 25 and 26 respectively. The shaft 15 is slidable with relation to hub 16 of gear wheel 14 and collars 27 and 28 respectively, secured by set screws 29, are provided on the shaft for retaining the parts in proper adjustment when the machine is assembled on a tank dome. On either one of the legs 2 a sliding collar 30 is provided, having a short pin 31 which extends inwardly within the line of travel of the star wheel 21 of the tool head for the purpose hereinafter mentioned. The collar is slidable on the leg and may be secured in desired position by means of a set screw 32.

For the purpose of rigidifying the lower portion of the frame a ring 33 extends around the frame embracing the lower portions of the four standards.

The operation of the machine is as follows: When the seat 34 of the dome casting 20 is to be re-surfaced, the device is placed upon the dome with the lower portion of shaft 15 extending downwardly into the dome. The cross-bar 23 is then assembled on the shaft, the operator reaching downwardly into the dome between the frame standards, and brought to bear against the under portion of the dome casting, and secured in partially tight relation by means of the nut 25, the latter being turned by the operator's hand. The device is then levelled in a manner similar to the levelling of a surveyor's transit, by means of the rests 4 which are, as above explained, adjustable in the

standards 2, the levelling being secured by means of the lock nuts 6. The device is then finally tightened and secured to the dome by means of the nut 26 which is accessible to a wrench. Power is then applied to the spindle 7 by means of an ordinary electric or pneumatic drill motor provided with a suitable standard tapered socket. Through the train of gears and pinions described, the gear wheel 14 is rotated, carrying with it the arm 17 and tool head 18, the tool 19 bearing, as will be understood, upon the gasket seat of the dome casting, as illustrated in the drawings. With each revolution of the arm one of the arms of the star wheel 21 is brought into contact with the pin 31, rotating the wheel a portion of a turn and causing the tool to be moved either inwardly or outwardly upon the gasket seat. The direction of travel of the tool with respect to the gasket seat is accomplished either by raising or lowering the pin 31 above or below the axis of the star wheel 21, as will be understood.

By the operation of the machine as thus explained, it will be seen that the tool is caused to travel around the gasket seat and forwardly and backwardly over the same, thus properly surfacing the same. When the operation is completed the device may be removed from the dome by loosening up on nut 26 and removing nut 25 so that the cross bar 23 can be removed from the shaft. The machine may then be lifted from the dome, as will readily be seen.

While I have shown the machine equipped with a shank spindle so as to be adapted to receive power from a portable electric or pneumatic drill, it will readily be understood that the spindle may be provided with a pulley or other means so as to be driven by a permanent or fixed motor.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A device of the character specified, comprising a frame, a shaft centrally mounted in said frame, the lower end of said shaft being adapted to extend into the dome of a tank, standards on said frame whereby the same may be supported on said dome, a cross-bar arranged to be assembled on said shaft so as to bear against the underside of the dome casting, means for securing said cross-bar on said shaft, a tool arm rotatably mounted on said shaft, and means mounted in said frame for actuating said arm.

2. A device of the character specified, comprising a frame, a shaft centrally mounted in said frame, the lower end of said shaft being adapted to extend into the dome of a tank, standards on said frame whereby the same may be supported on said dome, means carried by said standards for levelling said frame with respect to said dome, a cross-bar arranged to be assembled on said shaft so as to bear against the underside of the dome casting, means for securing said cross-bar on said shaft, a tool arm rotatably mounted on said shaft, and means mounted in said frame for actuating said arm.

3. A device of the character specified, comprising a frame, a shaft centrally mounted in said frame, the lower end of said shaft being adapted to extend into the dome of a tank, standards on said frame whereby the same may be supported on said dome, a cross-bar arranged to be assembled on said shaft so as to bear against the underside of the dome casting, means for securing said cross-bar on said shaft, a tool arm rotatably mounted on said shaft and slidable thereon for adjustment in a vertical plane, means for securing the adjustment of said arm, and means mounted in said frame for actuating said arm.

4. A device of the character specified, comprising a frame, a shaft centrally mounted in said frame, the lower end of said shaft being adapted to extend into the dome of a tank, standards on said frame whereby the same may be supported on said dome, means carried by said standards for levelling said frame with respect to said dome, a cross-bar arranged to be assembled on said shaft so as to bear against the underside of the dome casting, means for securing said cross-bar on said shaft, a tool arm rotatably mounted on said shaft and slidable thereon for adjustment in a vertical plane, means for securing the adjustment of said arm, and means mounted in said frame for actuating said arm.

5. A device of the character specified, comprising a frame, a shaft centrally mounted in said frame, the lower end of said shaft being adapted to extend into the dome of a tank, standards on said frame whereby the same may be supported on said dome, a cross-bar arranged to be assembled on said shaft so as to bear against the underside of the dome casting, means for securing said cross-bar on said shaft, a tool arm rotatably mounted on said shaft, a tool adjustably mounted in said arm so as to operate on the gasket seat of said dome, means mounted in said frame for actuating said arm, and means for automatically adjusting said tool in said arm during operation.

6. A device of the character specified, comprising a frame, a shaft centrally mounted in said frame, the lower end of said shaft being adapted to extend into the dome of a tank, standards on said frame whereby the same may be supported on said dome, means carried by said standards for levelling said frame with respect to said dome, a cross-bar arranged to be assembled on said shaft so as to bear against the underside of the dome casting, means for securing said cross-bar on

said shaft, a tool arm rotatably mounted on said shaft, a tool adjustably mounted in said arm so as to operate on the gasket seat of said dome, means mounted in said frame for actuating said arm, and means for automatically adjusting said tool in said arm during operation.

7. A device of the character specified, comprising a frame, a shaft centrally mounted in said frame, the lower end of said shaft being adapted to extend into the dome of a tank, standards on said frame whereby the same may be supported on said dome, means carried by said standards for levelling said frame with respect to said dome, a cross-bar arranged to be assembled on said shaft so as to bear against the underside of the dome casting, means for securing said cross-bar on said shaft, a tool arm rotatably mounted on said shaft and slidable thereon for adjustment in a vertical plane, means for securing the adjustment of said arm, a tool adjustably mounted in said arm so as to operate on the gasket seat of said dome, means mounted in said frame for actuating said arm, and means for automatically adjusting said tool in said arm during operation.

8. A device of the character specified, comprising a frame, a shaft centrally mounted in said frame, the lower end of said shaft being adapted to extend into the dome of a tank, standards on said frame whereby the same may be supported on said dome, means carried by said standards for levelling said frame with respect to said dome, a cross-bar arranged to be assembled on said shaft so as to bear against the underside of the dome casting, means for securing said cross-bar on said shaft, a tool arm rotatably mounted on said shaft and slidable thereon for adjustment in a vertical plane, means for securing the adjustment of said arm, a spindle mounted in said frame and arranged to be driven by a portable source of power, and means whereby said spindle is arranged to actuate said arm.

9. A device of the character specified, comprising a frame, a shaft mounted in said frame, the lower end of said shaft being adapted to extend into the dome of a tank, standards on said frame whereby the same may be supported on said dome, means carried by said standards for levelling said frame with respect to said dome, means on said shaft for securing said frame to said dome, a tool arm rotatably mounted on said shaft and slidable thereon for adjustment in a vertical plane, means for securing the adjustment of said arm, a tool adjustably mounted in said arm so as to operate on the gasket seat of said dome, a spindle mounted in said frame and arranged to be driven by a portable source of power, means whereby said spindle is arranged to actuate said arm, and means for automatically adjusting said tool in said arm during operation.

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