

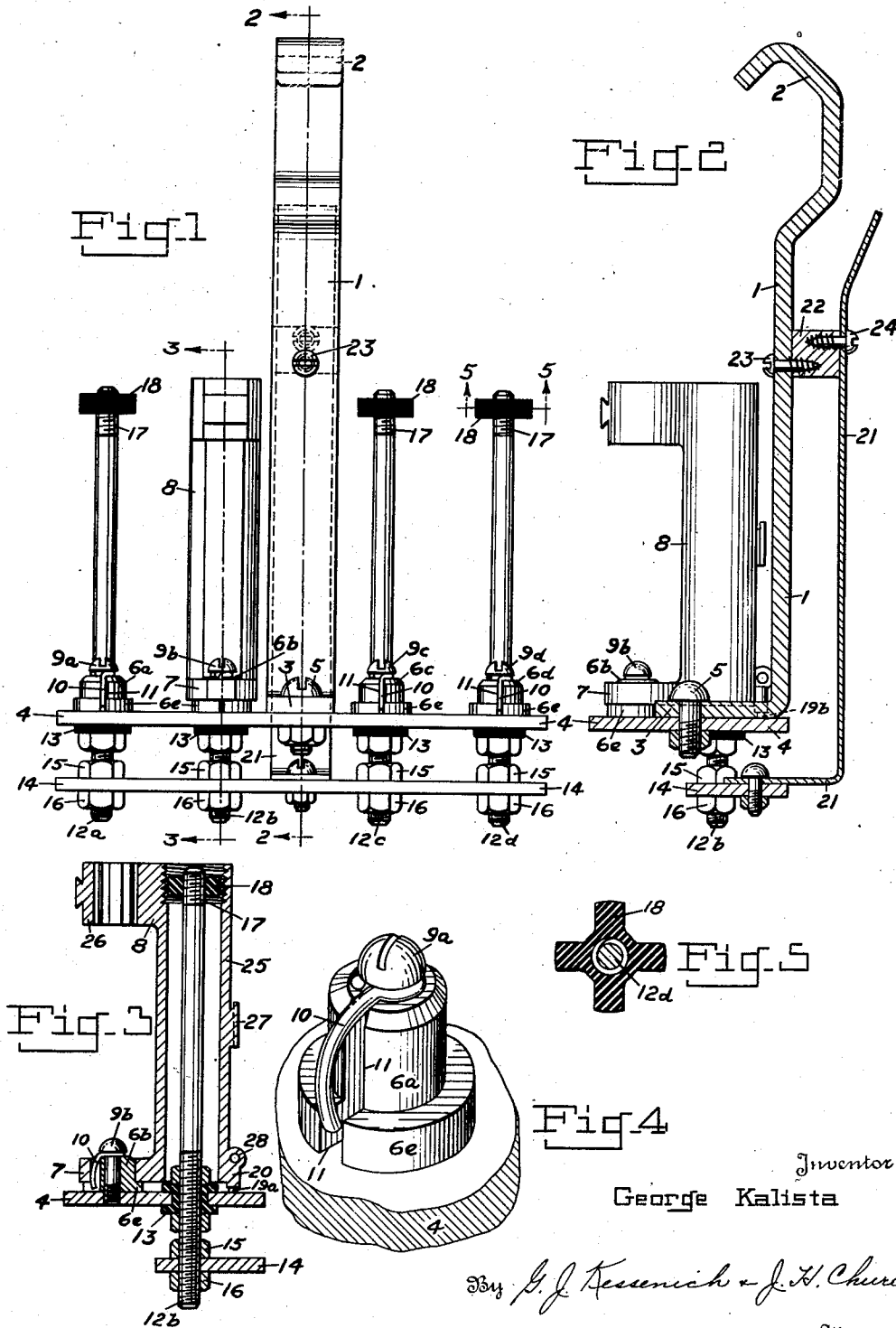
Nov. 21, 1944.

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2,363,005

PLATING FIXTURE FOR GAS CYLINDERS OF RIFLES

Filed July 1, 1942



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UNITED STATES PATENT OFFICE

2,363,005

PLATING FIXTURE FOR GAS CYLINDERS
OF RIFLES

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Application July 1, 1942, Serial No. 449,374

2 Claims. (Cl. 204—297)

(Granted under the act of March 3, 1883, as
amended April 30, 1928; 370 O. G. 757)

The invention described herein may be manufactured and used by or for the Government for governmental purposes, without the payment to me of any royalty thereon.

This invention relates to a plating fixture, particularly a fixture for plating the interior bore surface of the gas cylinder of a rifle.

Plating the bore of a gas cylinder of a rifle is at best a difficult procedure when conventional plating apparatus is employed because the odd shape of the cylinder makes it extremely hard to hold in the plating solution without the use of a special fixture. A gas cylinder of the type to be plated is a comparatively short tubular member with two integral projecting brackets one at each end of the tube, which secure the gas cylinder to a barrel. There is also an integral projecting lug on one end of the gas cylinder, opposite the lower bracket. These projecting members interfere with conventional plating apparatus and therefore necessitate a unique form of plating fixture for plating the bore of the gas cylinder.

It is an object of this invention to provide an improved fixture to conveniently hold the gas cylinder of a rifle or articles of similar shape and to plate the interior bore surface thereof.

It is a particular object of this invention to provide an improved plating fixture to plate the interior bore surface of a gas cylinder for the rifle disclosed in U. S. Patent No. 2,198,610.

It is a further object of this invention to provide a plating fixture for accommodating a plurality of gas cylinders.

The specific nature of the invention as well as other objects and advantages thereof will clearly appear from a description of a preferred embodiment as shown in the accompanying drawing in which:

In Fig. 1 there is shown a front elevational view of a plating fixture for plating the bore surface of a gas cylinder of a rifle.

Fig. 2 is a cross-sectional view of the plating fixture shown in Fig. 1 taken along the plane 2—2.

Fig. 3 is a longitudinal cross-sectional view taken along the plane 3—3 of Fig. 1 of a gas cylinder assembled to the plating fixture in position for plating the bore surface.

Fig. 4 is an enlarged perspective view showing the friction device employed for obtaining positive electrical contact between the gas cylinder and the cathode.

Fig. 5 is an enlarged cross-sectional view showing the construction of the spacer used at

the top of the anode to hold the bore of the gas cylinder concentrically about the anode.

A gas cylinder of the type requiring plating is shown in Fig. 3, and comprises a cylindrical tube 25, integrally formed projecting brackets 7 and 26, one at each end of tube 25, an integral projecting lug 20 opposite the bracket 7 and projecting slightly below the tube 25, and an integrally formed bayonet lug 27 projecting outwardly from the tube 25. The projecting brackets 7 and 26 are narrow cylindrical bands which secure the cylinder to a rifle barrel (not shown). The bayonet lug 27 projects outwardly from the tube 25 on the outer periphery opposite to the brackets 7 and 26 approximately in the center of tube 25 and is suitably shaped to receive a bayonet (not shown). The outwardly and downwardly projecting lug 20 has a transverse hole 28 for a stacking swivel (not shown) while the portion projecting below the tube 25 positions a front handguard (not shown).

In Fig. 1 is shown, in assembled relation, a gas cylinder plating fixture having a vertical cathode member 1. One end of the cathode 1 is formed in a suitable hook shape 2 so that the fixture may be suspended from the cathode bar of any conventional plating apparatus (not shown). The other end of the cathode member 1 is bent to form a short projecting member 3 at right angles to the cathode 1. Attached to the member 3, as by means of the screw 5, is a horizontal flat cathode plate 4 which is formed of conducting material, such as metal. Near the forward edge and equally spaced on the metal plate 4 are small cylindrical cathode studs 6a, 6b, 6c and 6d. These studs are somewhat smaller in diameter than the lower barrel bracket 7 of a gas cylinder 8 and are secured to the metallic plate 4 by means of the screws 9a, 9b, 9c and 9d respectively. To insure good electrical contact between the cathode and the gas cylinder, a spring friction device 10 is inserted in a suitable slot 11 provided in each of the studs 6a, 6b, 6c, and 6d and are secured therein by the screws 9a, 9b, 9c, and 9d. The spring 10 protrudes sufficiently beyond the outer periphery of each stud to provide suitable engagement with the barrel bracket 7 of gas cylinder 8. A shoulder 6e is provided at the base of each stud on which the barrel bracket rests, hence supporting the cylinder slightly above cathode plate 4, permitting ready flow of electrolyte into the cylinder.

Immediately in back of each stud 6a, 6b, 6c and 6d are placed anode rods 12a, 12b, 12c, and 12d respectively. These anodes pass thru bush-

ings 13 of suitable electrical insulating material in the cathode plate 4 and are securely fastened to a horizontal anode bus 14 by means of the nuts 15 and 16, the nut 15 serving as a lock nut against which the anode bus 14 is firmly held by the nut 16. The bushings 13 may be secured in the cathode plate 4 by any suitable means and the anodes 12a, 12b, 12c, and 12d may in turn be secured to the bushings 13 by threads or other suitable means. The anode rods 12a, 12b, 12c, and 12d are the same length as a gas cylinder 8. Attached to the upper end of the anode rods as by means of threads 17 are small cylindrical spacers 18 of suitable electrical insulating material to maintain the bore of the gas cylinder in concentric relation with the anode. These spacers are slightly smaller than the bore of gas cylinder 8 in order that a gas cylinder may be easily slipped over the anode. Each spacer 18 is suitably grooved to permit free passage of a solution around the spacer and thru the bore of the gas cylinder. Two upwardly projecting pins 19a and 19b in the plate 4 lightly engage the projecting lug 20 on gas cylinder 8 and help maintain the lower end of the gas cylinder above the metallic plate 4. An anode terminal 21 is suitably formed and fastened to the anode bus 14 directly in back of the cathode 1 and is separated from the cathode by a block 22 of suitable electrical insulating material. The block 22 is fastened to the cathode 1 and anode terminal 21 by any suitable means as by the screws 23 and 24.

The fixture herein described is preferably used when chromium plating the bore of a gas cylinder. Plating the bore is accomplished by conventional electro-chemical plating solution and practice. Prior to plating, the gas cylinders are placed on the fixture, the anodes 12a, 12b, 12c, and 12d being within the respective cylinder bores, and the lower bracket 7 of each cylinder placed over the studs 6a, 6b, 6c, and 6d. When the lug 20 of each cylinder is positioned on the pins 19a and 19b a suitable opening is left between the bottom of the cylinder and fixture to provide free circulation of the plating solution upwardly thru this bore of the cylinder.

With this construction it is apparent that each gas cylinder is accurately positioned with respect to its anode and there is no need for time consuming centering operations.

While the fixture shown in Fig. 1 and described herein will accommodate only four gas cylinders at a time, it should be understood that is within the scope of this invention to provide a fixture that will hold any desired number of gas cylinders within the limits of a fixture of convenient size to handle.

I claim:

1. A fixture for plating the interior surface of a hollow cylinder having a radially depending bracket, said fixture comprising a metallic plate connected to the negative terminal of the electroplating current, a rod-like anode having one end secured to said plate but insulated therefrom, a spacer on the other end of the anode engaging the interior surface of the cylinder said spacer being formed of insulating material and having apertures therethrough to permit the flow of electrolyte through said cylinder, a stud mounted on said plate in fixed relation to said anode, said stud being conductively connected to said plate and means on said stud adapted to conductively engage said bracket to hold said cylinder on said stud and in concentric relation with respect to said anode.

2. A fixture for plating the interior surface of a hollow cylinder having a radially depending bracket, said fixture comprising a metallic plate connected to the negative terminal of the electroplating current, a rod-like anode having one end secured to said plate but insulated therefrom, a spacer on the other end of the anode engaging the interior surface of the cylinder said spacer being formed of insulating material and provided with apertures therethrough to permit the flow of electrolyte through said cylinder, means conductively mounted on said plate and inserted into said bracket to conductively engage said bracket to hold said cylinder in concentric relation with respect to said anode.

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