

April 27, 1965

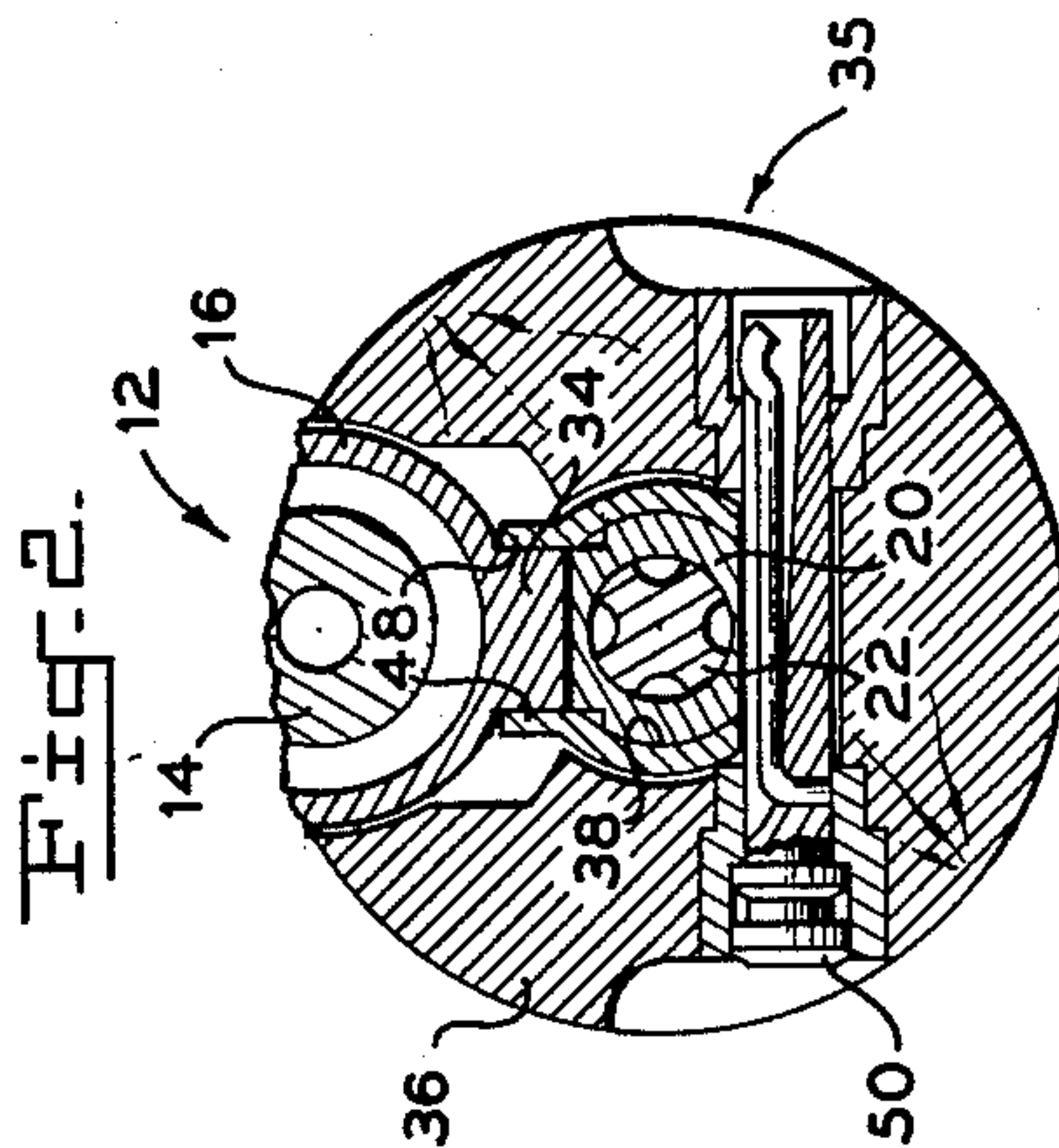
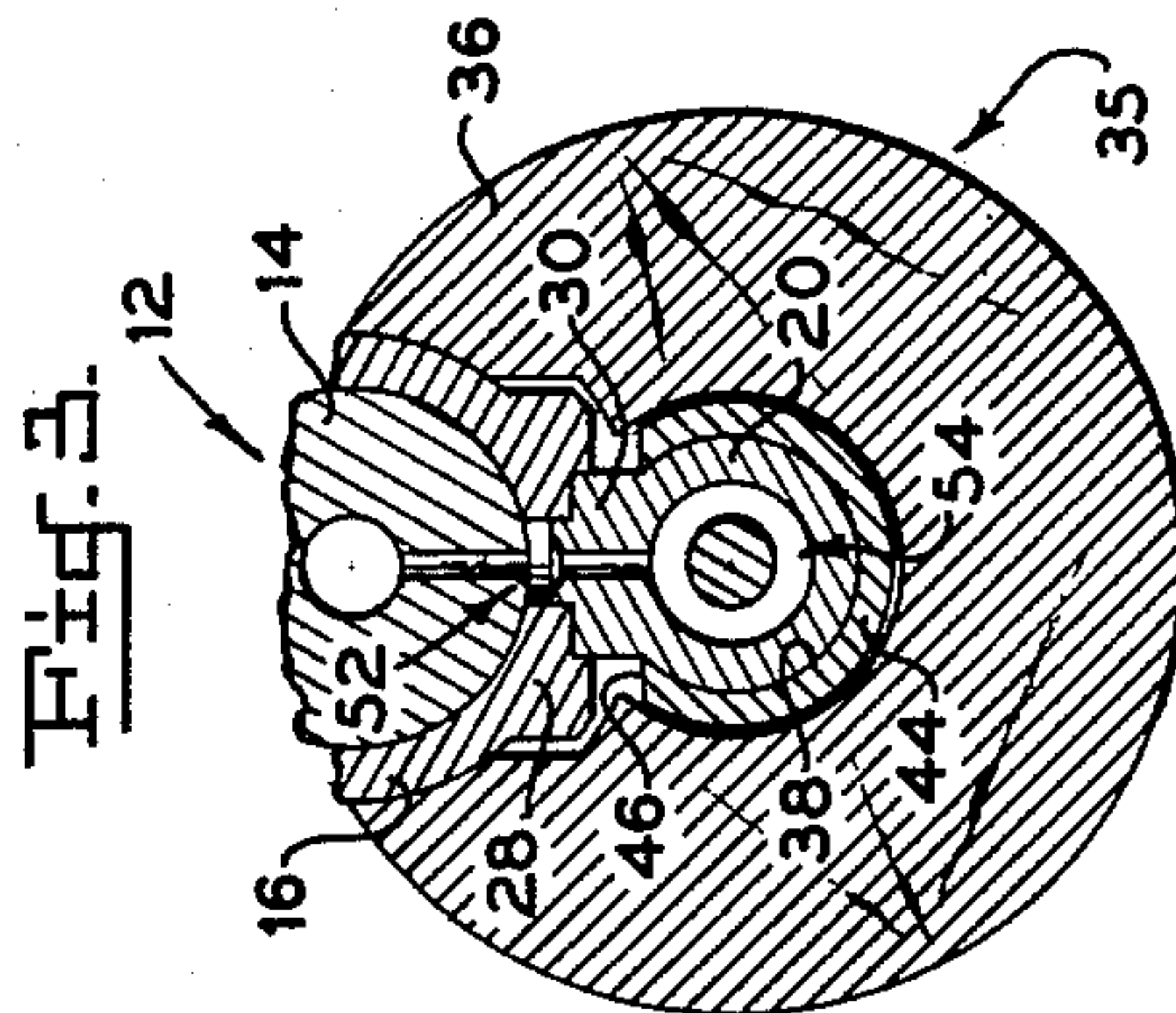
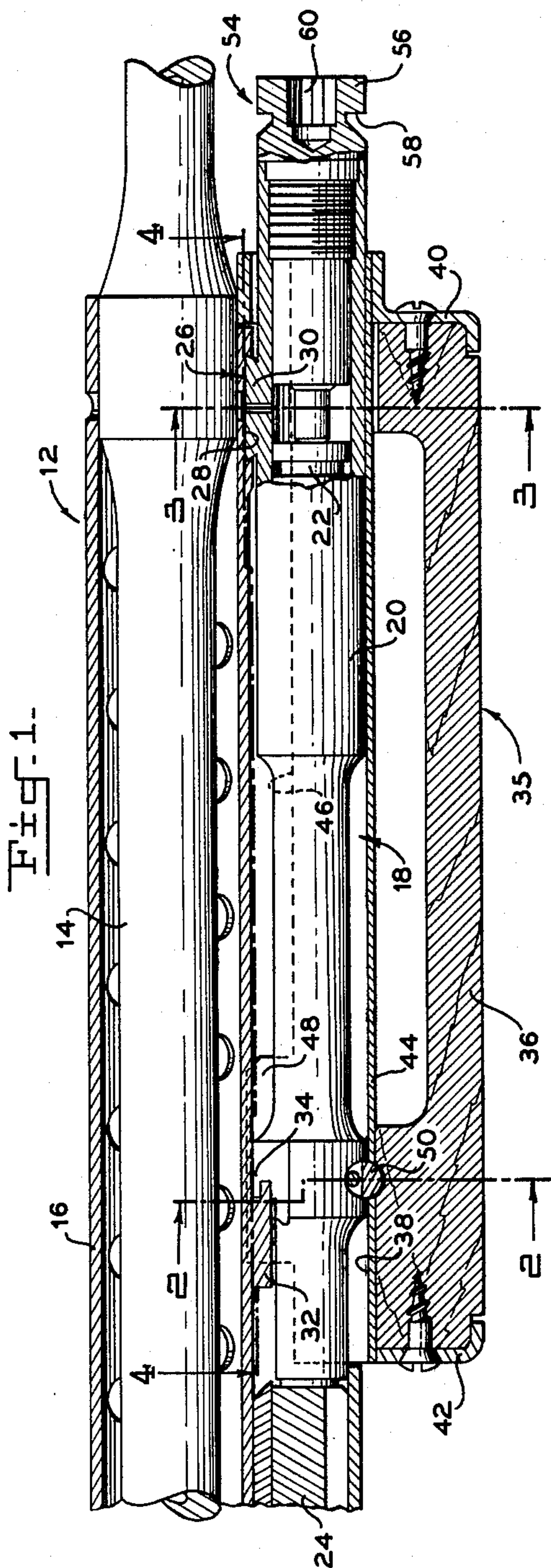
J. L. LOCHHEAD

3,180,226

REPLACEABLE GAS SYSTEM FOR FIREARMS

Filed Feb. 3, 1964

2 Sheets-Sheet 1



INVENTOR.
John L. Lochhead

BY
Harry M. Saragovitz, Edward J. Kelly,
Herbert Berl, & Albert E. Arnold.

April 27, 1965

J. L. LOCHHEAD

3,180,226

REPLACEABLE GAS SYSTEM FOR FIREARMS

Filed Feb. 3, 1964

2 Sheets-Sheet 2

Fig. 4

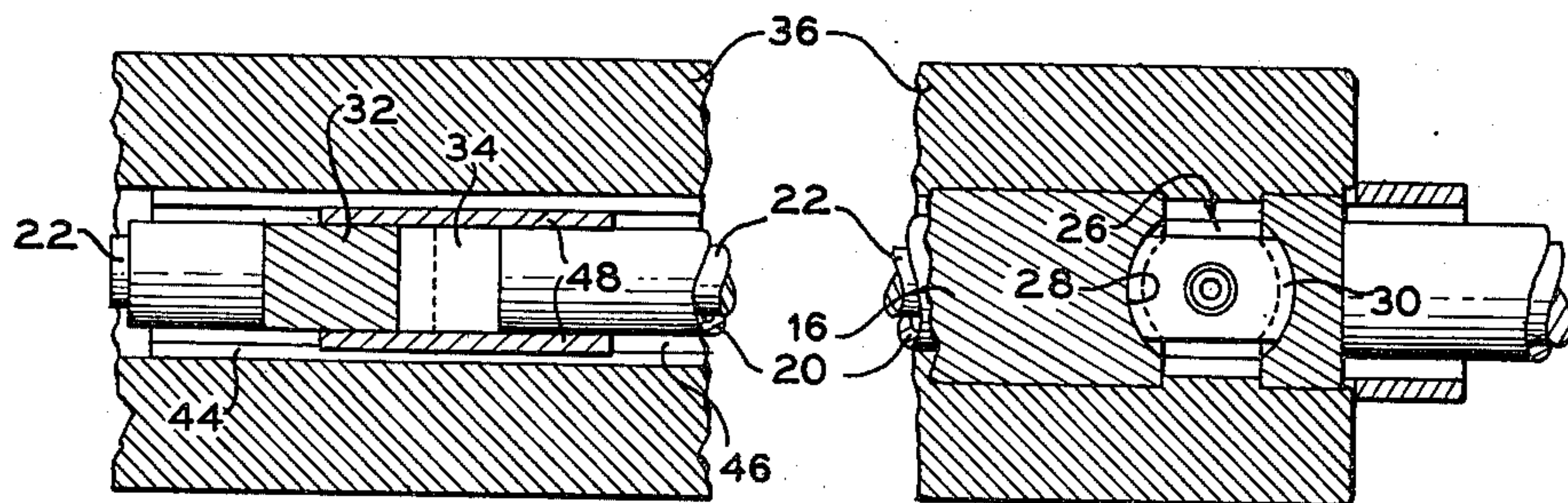
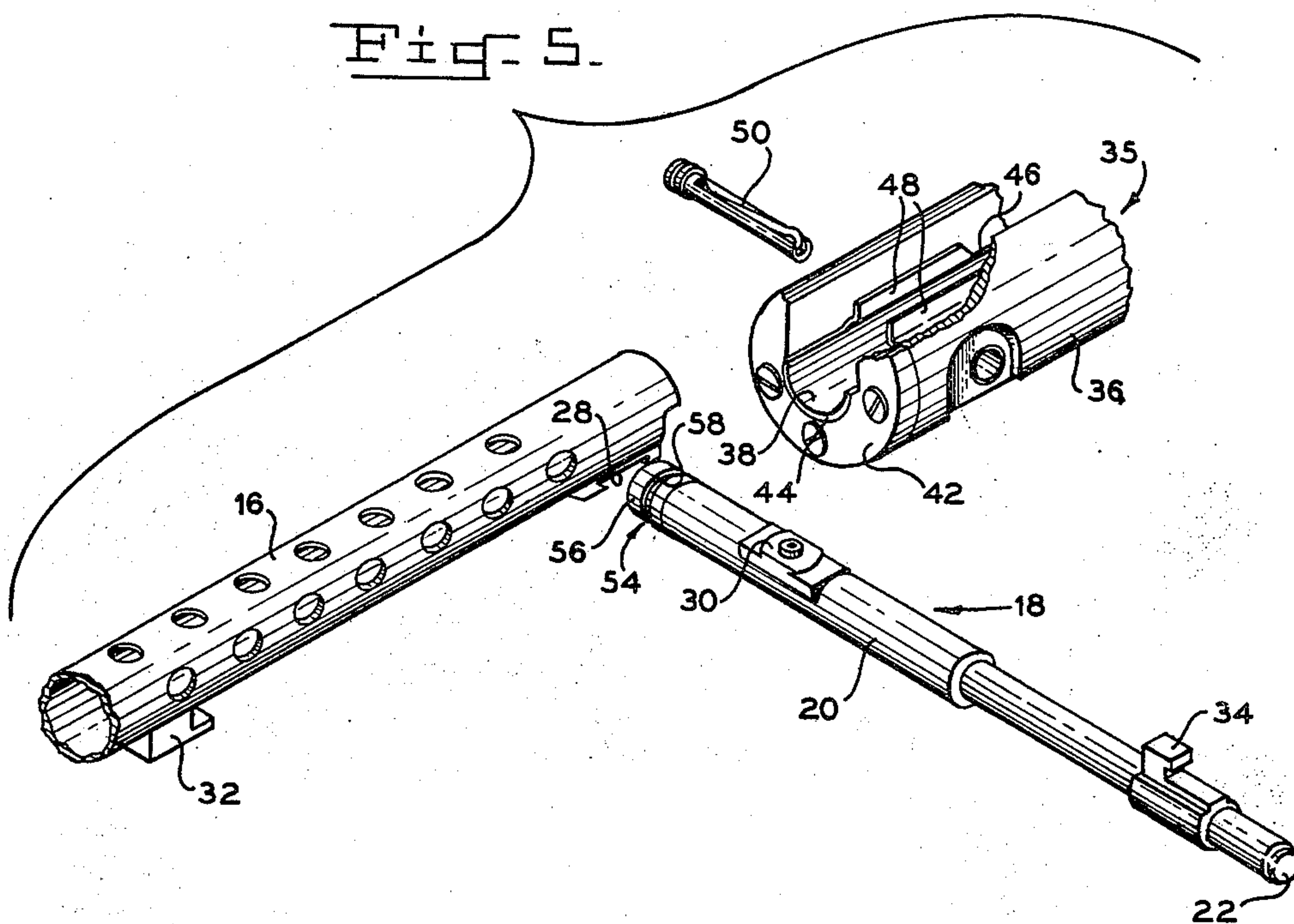


Fig. 5



INVENTOR

John L. Lochhead

BY

Harry M. Saragovitz, Edward J. Kelly,
Herbert Berk, & Albert E. Arnold
ATTORNEY

1

3,180,226

REPLACEABLE GAS SYSTEM FOR FIREARMS

John L. Lochhead, Springfield, Mass., assignor to the United States of America as represented by the Secretary of the Army

Filed Feb. 3, 1964, Ser. No. 342,318

2 Claims. (Cl. 89—191)

(Granted under Title 35, U.S. Code (1952), sec. 266)

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 automatic firearms and pertains more particularly to gas systems therefor.

It is the object of this invention to provide for automatic firearms a gas system which is quickly dismountable therefrom to reduce manufacturing costs and to facilitate maintenance of the firearms and servicing of the gas system.

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 drawings in which:

FIG. 1 is a longitudinally cross-sectioned view of the gas system of this invention mounted in place on a firearm barrel;

FIG. 2 is a view taken along line 2—2 of FIG. 1;

FIG. 3 is a view taken along line 3—3 of FIG. 1;

FIG. 4 is a fragmentary view taken along line 4—4 of FIG. 1; and

FIG. 5 is a fragmentary, exploded view of the gas system, barrel jacket and front handguard, shown in perspective.

Shown in the figures is a barrel assembly 12 of a gas operated firearm, which barrel assembly includes a barrel 14 and a barrel jacket 16. Mounted on barrel assembly 12, as hereinafter described, is a gas system unit 18 which converts gas pressure produced by discharge of cartridges in barrel 14 to mechanical movement and which includes a gas cylinder 20 and a gas piston 22 slidably disposed therein. When gas system unit 18 is mounted in place, piston 22 is actuatable rearwardly against a slide 24 for energizing the operating and feeding mechanisms (not shown) of the firearm.

Gas system unit 18 is fixed at the front end to barrel jacket 16 by means of a circular dovetail joint 26 which includes a female component 28 formed on the underside of the barrel jacket and a male component 30 formed on gas cylinder 20. The longitudinal axis of the tongue portion of male component 30 is disposed parallel to the axis of gas cylinder 20 and the longitudinal axis of the groove of female component 28 is disposed transverse to the axis of barrel jacket 16, whereby the male and female components are joined by positioning gas system unit 18 at right angles to barrel assembly 12, moving the male and female components into union and then rotating the rear end of gas cylinder unit around the axis of dovetail joint 26 until the gas system unit is parallel with barrel assembly 12. The rear end of gas system unit 18 is supported through the cooperation of a depending L-shaped flange 32 on barrel jacket 16 with a mating flange 34 of inverted L-shaped configuration on gas cylinder 20.

Gas system unit 18 is fixedly held in assembled position by a front handguard 35 which consists of a wooden

2

grip 36 with a longitudinal channel 38 for receiving gas cylinder 20, a front ferrule 40, a rear ferrule 42, and a sleeve 44 which lines the channel and which has an inside diameter similar to the outside diameter of the gas cylinder. Sleeve 44 is interrupted by a longitudinal clearance 46 which is wide enough to permit rearward insertion of front handguard 35 over gas cylinder 20 to an installed position without interference by dovetail joint 26 and flanges 32 and 34 but which is less than 180° in width so that the sleeve will retain the front handguard on the gas cylinder. A pair of lips 48 extends upwardly from the sides of clearance 46 at the forward end to contact opposite sides of flange 32 on barrel jacket 16 so as to prevent rotation of front handguard 35, and thereby gas system unit 18, about the central axis of dovetail joint 26. Front handguard 35 is held against longitudinal displacement on gas cylinder 20 from the installed position by means of a transverse pin 50.

Gases are bled from the bore of barrel 14 into the forward end of gas cylinder 20 by means of a passageway 52 which extends through the centers of male component 30 and female component 28 and radially through barrel jacket 16 and barrel 14. The front end of gas cylinder 20 is closed by a plug 54 which is screwed thereinto and which has a cylindrical extension portion 56 projecting forwardly from the gas cylinder. An annular channel 58 is formed around extension 56 and a well 60 extends rearwardly thereinto from the front end thereof to provide means for mounting a bipod support (not shown).

In order to remove gas system 18 for repair or replacement, pin 50 is removed and front handguard 35 then pulled forwardly off of gas cylinder 20. This frees the rear end of gas cylinder 20 which may then be swung around until the axis thereof is normal to the axis of barrel assembly 12, whereupon male component 20 is free to be pulled away from female component 28 for disassembly of gas system unit 18 from the firearm. Gas system unit 18 is reinstalled reversing the above noted steps of removal.

Although a particular embodiment of the invention has been described in detail herein, it is evident that many variations may be devised within the spirit and scope thereof and the following claims are intended to include such variations.

I claim:

1. In a firearm, a barrel, a barrel jacket, an operating rod, a gas system unit including a gas cylinder and a piston slidably disposed therein, a circular dovetail joint formed by cooperating members on said barrel jacket and said gas cylinder and arranged for pivotal displacement of said gas cylinder on said barrel jacket to and from an installed position relative thereto, a passageway extending from said barrel radially through said barrel jacket and centrally through said dovetail joint into said gas cylinder, a replaceable front handguard, an inverted L-shaped flange on said gas cylinder arranged for cooperation with a flange of L-configuration depending from said barrel jacket, a wooden grip on said front handguard, a longitudinal channel formed in said grip, a sleeve having an inside diameter similar to the outside diameter of said gas cylinder fixed in said channel to provide a lining therefor, a longitudinal clearance in said sleeve arranged to slidably receive said dovetail joint and said flange of inverted L-configuration when said front handguard

3

is slid rearwardly over said gas cylinder to an installed position, said clearance having a width of less than 180° so that said sleeve retains said front handguard on said gas cylinder when said front handguard is in the installed position thereon, and a pair of lips extending from the side of said clearance for contact with the opposite sides of said L-shaped flange to prevent pivotal displacement of said front handguard relative to said barrel jacket around the center of said dovetail joint.

2. The firearm as defined in claim 1 wherein said gas system unit includes a plug threaded into the front end

4

of said gas cylinder for closure thereof, and means on said plug for mounting a bipod support for the firearm.

References Cited by the Examiner

UNITED STATES PATENTS

3,003,400 10/61 Johnson ----- 89—191

BENJAMIN A. BORCHELT, *Primary Examiner*.10 FRED C. MATTERN, JR., *Examiner*.