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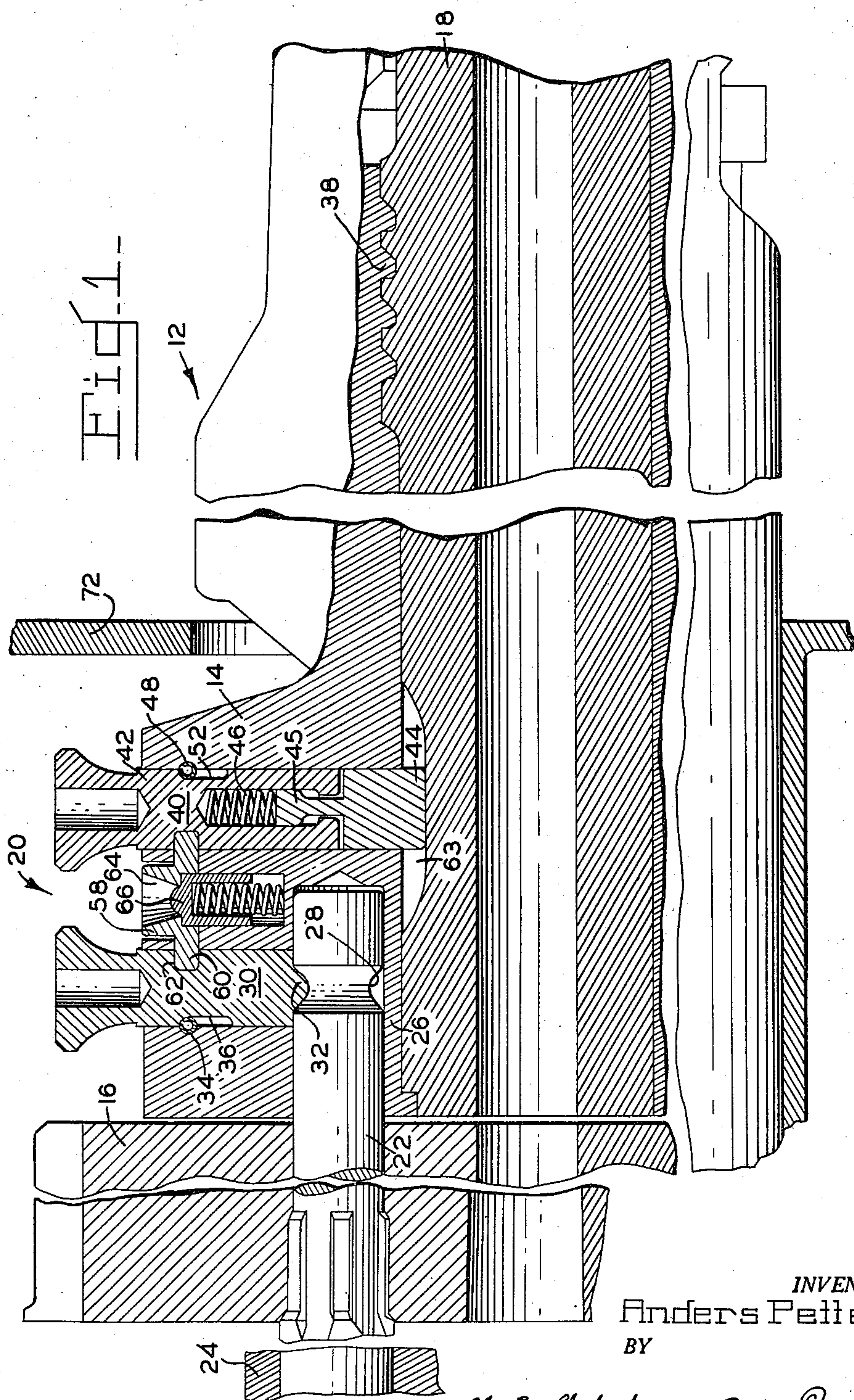
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2,849,922

BARREL AND DRUM LOCK

Filed Oct. 13, 1954

2 Sheets-Sheet 1



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Fig. 2

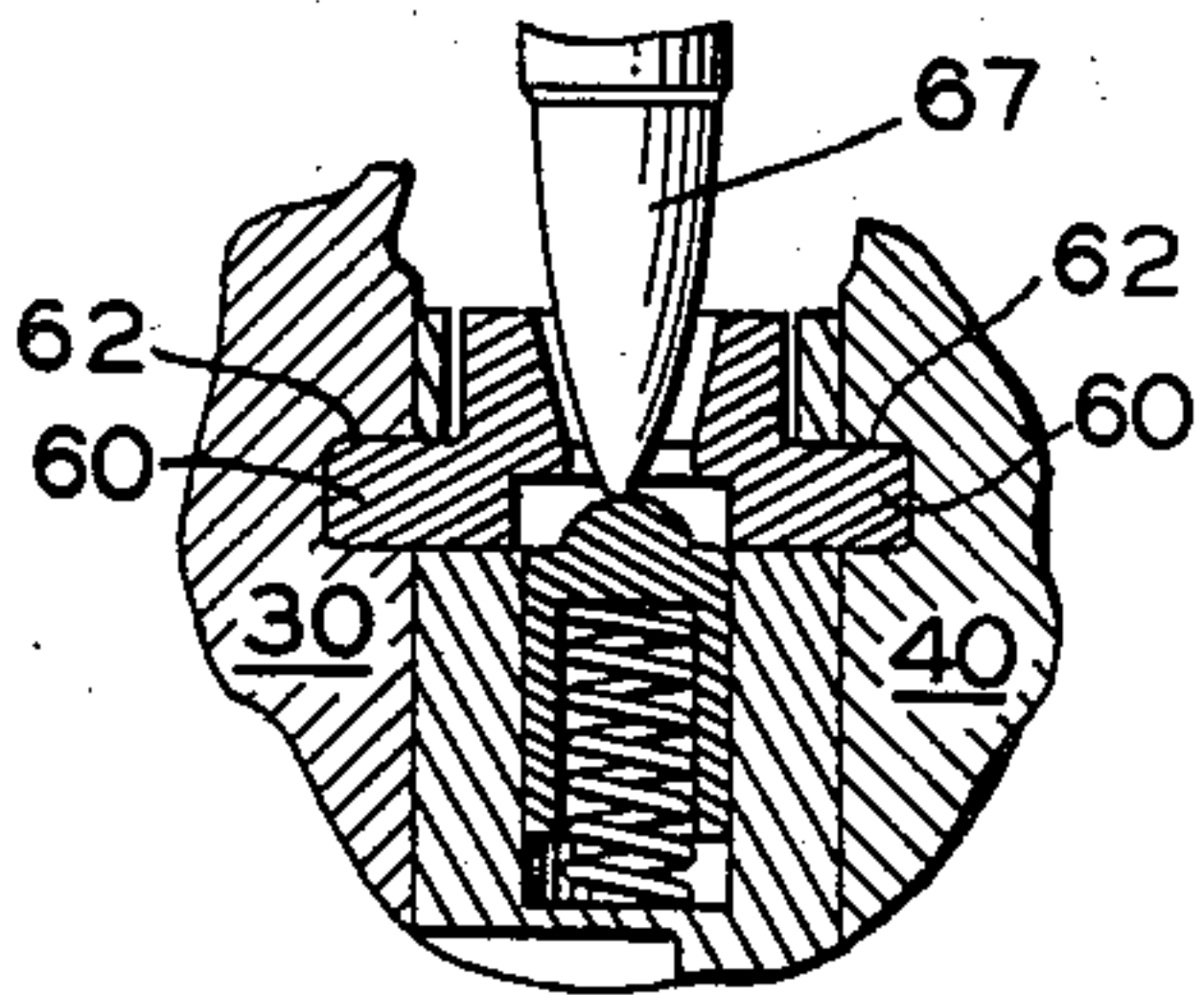


Fig. 3

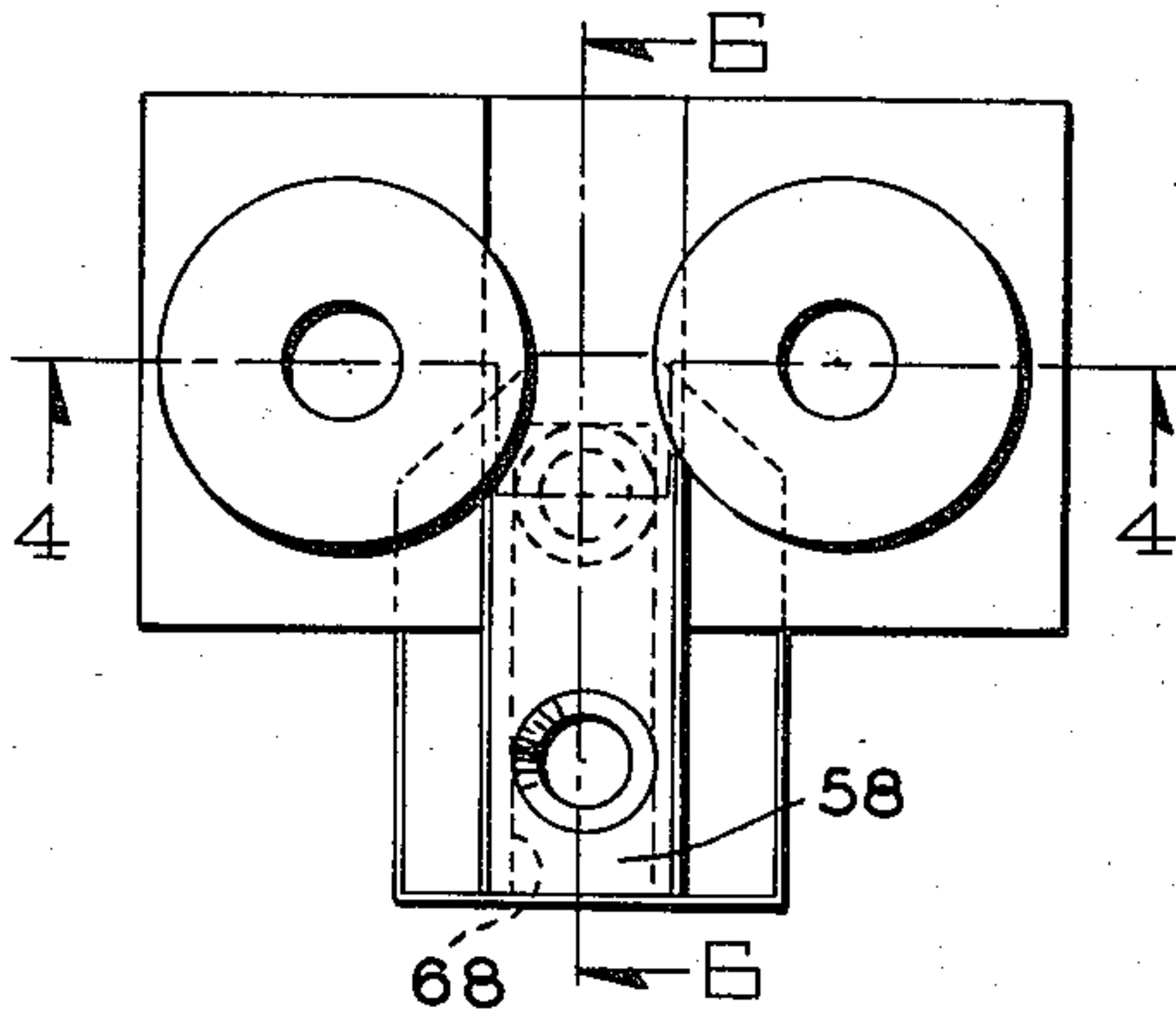


Fig. 4

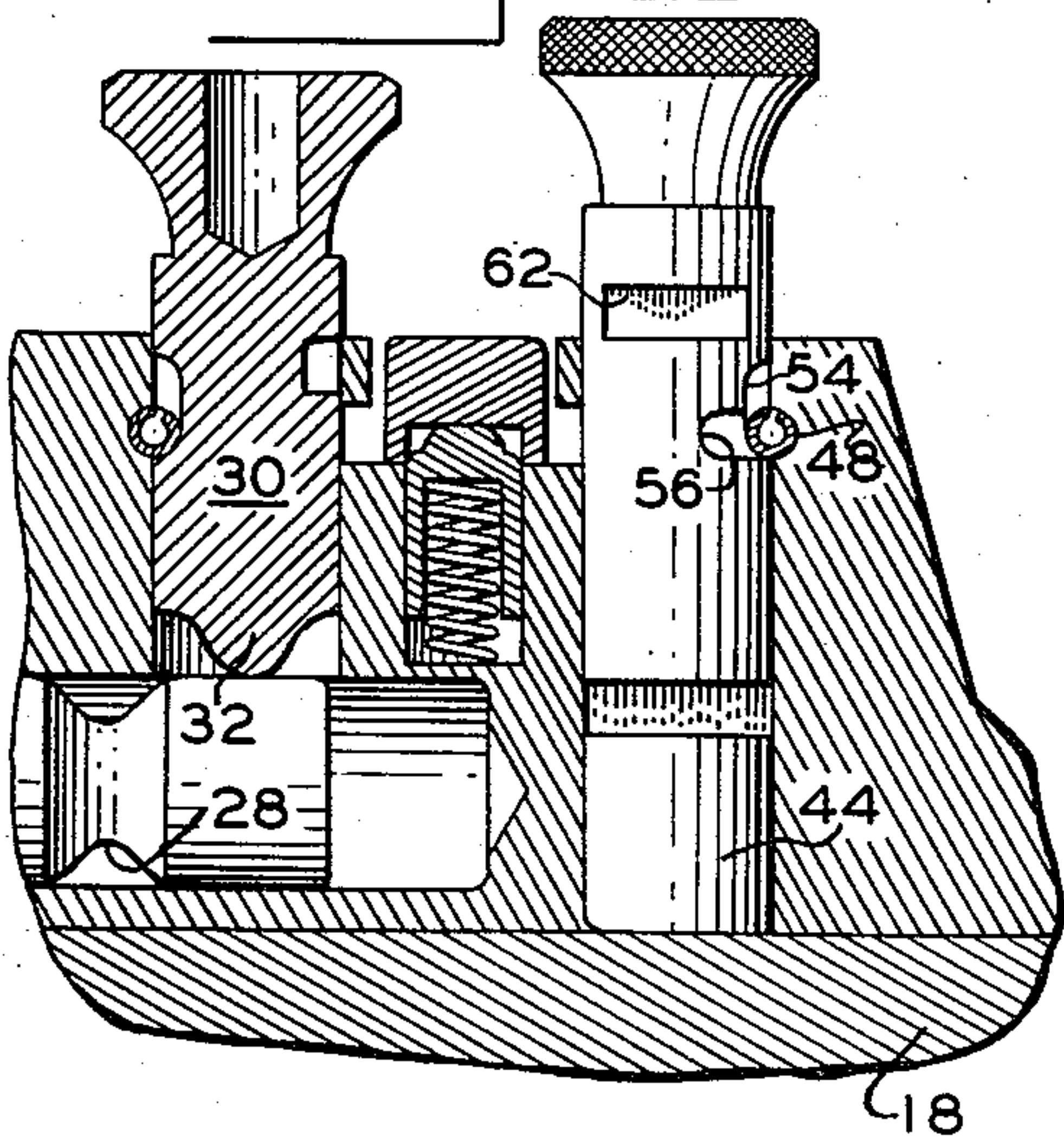


Fig. 5

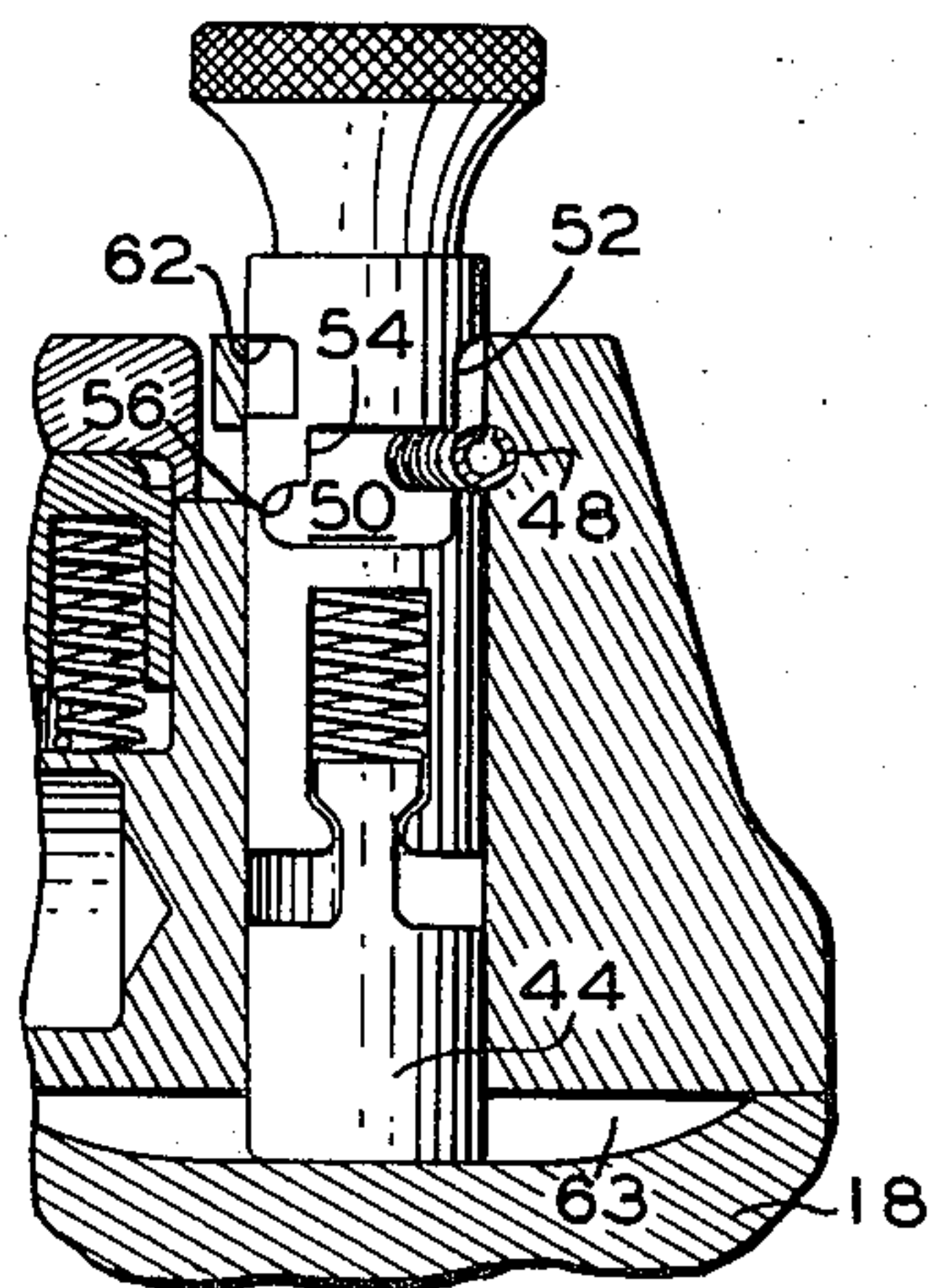
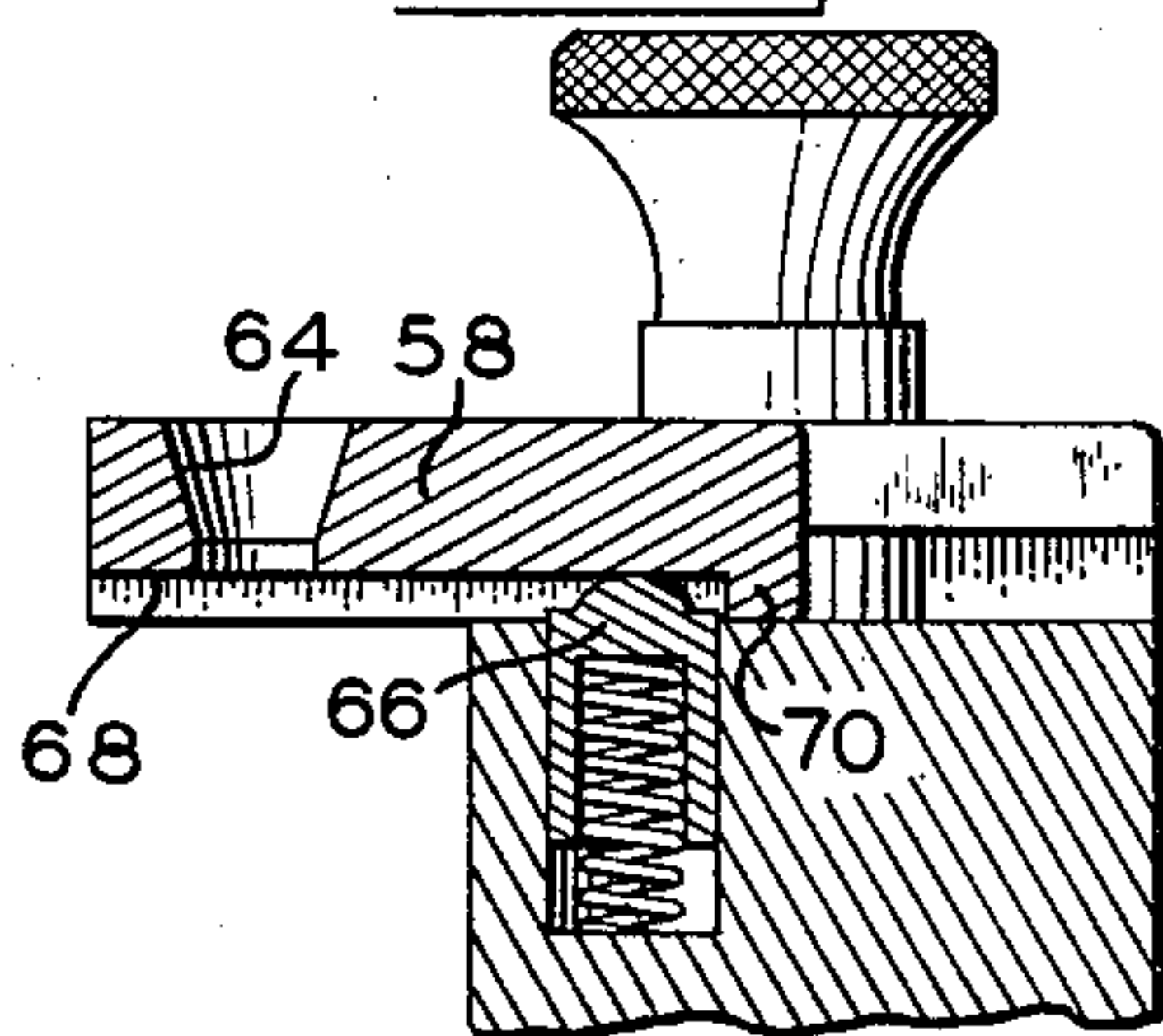


Fig. 6



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BARREL AND DRUM LOCK

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4 Claims. (Cl. 89—13)

My invention relates to revolver-type automatic weapon having a recoil member and more particularly to a device for simultaneously locking the barrel and the cartridge drum of the weapon thereto.

A revolver-type weapon usually includes a receiver with a recoil unit slidable thereon, a barrel secured to the recoil unit and a drum including cartridge chambers rotatably disposed on the recoil unit between a portion of the recoil unit and a bearing pedestal to convey the chambers to a six o'clock firing position axially aligned with the barrel. The shaft of the drum necessarily is journaled in the recoil unit immediately above the barrel.

The weapon is designed for operation in a remote compartment of an aircraft with the barrel of the weapon projecting from a bulkhead of the compartment. A port is provided in an axial bulkhead of the compartment for loading the weapon and for access to the operating mechanism thereof including the device for locking the drum and the barrel to the recoil unit when the aircraft is grounded.

The barrel is secured to the recoil unit by means of interrupted threads and the barrel and the drum shaft are locked in normal position by a pair of slidable studs, respectively, projecting into grooves therein. Previously, the studs were spring-biased and individually secured in place by spring wire locking devices similar to that used for glass bottle stoppers. These devices are unstable and occasionally loosen as the gun is fired, to release the barrel or drum shaft from the receiver of the weapon. Also, when these devices are employed in a weapon, two men are required, respectively, to manipulate the barrel and the locking device when a barrel is replaced in the weapon.

It is, therefore, an object of my invention to provide such a weapon with a single device for positively locking the barrel and drum shaft in position in the recoil unit.

Another object of my invention is to provide such a device for one man assembly of the barrel and the cartridge drum in the weapon.

An additional object of my invention is to provide a barrel and drum lock with an audible device for blind location of the barrel in the weapon.

Still another object of my invention is to provide locks for the barrel and drum that are unaffected by the recoil and counterrecoil of the weapon.

A further object of my invention is to provide such a locking device constructed for ready removal of the barrel and drum from the weapon.

Other aims and objects of my invention will appear from the following description thereof.

In carrying out my invention, drum and barrel locking pins are slidably disposed in the recoil unit and retaining pins are disposed in the recoil unit in normal relation to the drum and barrel pins. The retaining pins, respectively, engage chordal surfaces of the locking pins for limited movement thereof. The locking pins are movable between normal and retracted positions, respectively, to secure the shaft of the drum and the barrel

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of the weapon in the recoil unit and to permit the drum and the barrel to be quickly removed therefrom.

A bar is slidable to a locked position in the recoil unit for engaging grooves in the locking pins to secure the pins in the normal positions and a slidable latch is spring-biased to retain the bar in the recoil unit and engageable with a hole in the bar to restrict the bar to the locked position. The latch may be operated by application thereto of a cartridge of the weapon.

The barrel pin includes a body and a tip in locked slidable relation with a biasing spring disposed therebetween. The tip is constructed to engage a locating groove in the barrel and the body is provided with a chordal surface divided into three rotationally spaced and serially connected portions. The end portions determine the limits of movement of the barrel pin in the recoil unit and the intermediate portion is rotated into engagement with the retaining pin when a barrel is inserted in the recoil unit for engagement of the tip with the locating groove to position the barrel in rotation.

For a more complete understanding of my invention, reference is made to the following description and accompanying drawings in which:

Fig. 1 is a partial elevational section of a weapon incorporating my invention with the locking pins retaining the barrel and drum in position in the weapon;

Fig. 2 is a view of the locking device of Fig. 1 with the projectile of a cartridge in engagement with the latch;

Fig. 3 is a top view of the device shown in Fig. 1 with the bar in unlocked position;

Fig. 4 is a view along the line 4—4 of Fig. 3 with the locking pins in retracted positions for removal of the barrel and the drum from the recoil unit;

Fig. 5 is a view along the line 4—4 of Fig. 3 with the barrel locking pin in position for indexing the barrel; and

Fig. 6 is a view along line 6—6 of Fig. 3.

Accordingly, a weapon 12 having a recoil unit 14, a cartridge drum 16 and a barrel 18 is provided with a locking device 20 for securing the drum and the barrel in position in the recoil unit.

The drum is splined to a shaft 22 mounted for rotation between bearings 24 and 26 provided in recoil unit 14. Shaft 22 is slidable in the bearings and includes a circumferential groove 28 for receiving a corresponding portion 32 of a locking pin 30 slidably mounted in recoil unit 14 to secure shaft 22 therein. A retaining pin 34 is slidably mounted in recoil unit 14 in normal relation to drum locking pin 30 so as to be received by a chordal depression 36 therein to limit movement of the drum locking pin in the recoil unit.

Barrel 18 is removably secured to recoil unit 14 by engagement of corresponding interrupted threads, as noted at 38, and is releasably locked against rotation by the locking device 20 having a locking pin 40 which includes a body 42 and a tip extension 44 secured thereto for limited axial movement by a dovetail 45. A biasing spring 46 is disposed between body 42 and tip 44. A retaining pin 48 is disposed in recoil unit 14 in normal relation to pin 40 so as to be received by a chordal depression 50 therein having rotationally spaced and serially connected sections 52, 54 and 56, as best shown in Fig. 5.

Locking device 20 also includes a bar 58 provided with opposed flanges 60 and disposed in recoil unit 14 to slide laterally to a locked position for respective engagement of the flanges with chordal surfaces of similar grooves 62 of the locking drum and barrel pins 30 and 40, when such pins are depressed to the lock positions thereof, to retain portion 32 and tip 44 in engagement with groove 28 and an axial circumferential slot 63 of barrel 18, respectively. In the locked position of bar 58, the upper

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ends of depression 36 and of section 52 engage retaining pins 34 and 48, respectively.

A hole 64 is provided in bar 58 and a latch 66 is spring-biased in recoil unit 14 to project into the hole and retain the bar in the locked position. Hole 64 is formed to permit insertion therein of the point 67 of a cartridge projectile of weapon 12 to depress latch 66 as shown in Fig. 2 for displacement of bar 58 from the locked position to disengage flanges 60 and grooves 62. As bar 58 is moved, latch 66 engages a groove 68 in the bar, and such groove extends from the side of the bar adjacent hole 64 to a stop 70. The bar is prevented from disengagement with recoil unit 14 when moved to the unlock position because of the engagement of latch 66 with stop 70. Bar 58 may be removed from recoil unit 14 by movement in the opposite direction.

When flanges 60 are disengaged from slots 62, pin 30 may be raised for removal of shaft 22 from recoil unit 14. Also, pin 40 may be rotated for engagement of section 56 with retaining pin 48 to withdraw tip 44 from axial slot 63 and permit rotation of barrel 18 for disengagement of threads 38 and withdrawal of barrel 18 from recoil unit 14.

As weapon 12 is mounted in an aircraft, locking device 20 is disposed in the compartment inclosed by bulkhead 72 and is inaccessible from outside the aircraft except through an axial aperture of the compartment (not shown). The new barrel 18 is inserted in recoil unit 14 with section 56 in engagement with pin 48 and barrel pin 40 is rotated to a lock station and depressed for engagement of the upper end of section 52 with pin 48 to compress spring 46 and to press tip 44 against barrel 18. As barrel 18 is rotated for engagement of interrupted threads 38, tip 44 is biased by spring 46 to engage axial slot 63 with an audible click and index barrel 18. To lock drum 16 and new barrel 18 in place, pins 30 and 40 are depressed and bar 58 is moved to the locked position.

It can be seen that the barrel and drum are positively secured in the weapon and that the motions of the locking parts are transverse to the direction of recoil and counterrecoil of the weapon and, therefore, are not affected thereby. It can also be seen that with the device described above, one man only is required to change barrel 18.

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 revolver-type automatic weapon including a recoil unit provided with a barrel having a peripheral slot, and a drum rotatably disposed on a shaft having a circumferential groove, a device for locking the barrel and the drum in the recoil unit comprising a pair of locking pins radially slidable in the recoil unit to and from positions of respective engagement with the slot and the groove to prevent rotational and translational movement of the barrel and the shaft with respect to

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the recoil unit, a bar provided with a hole for accommodation of the tip of a cartridge of the weapon and slidably disposed in the recoil unit for operation to and from a position of engagement with said pins for securing said pins in said retaining positions, and a latch in the recoil unit spring-biased to engage said hole and lock said bar in said securing position.

2. In a weapon including a recoil unit, a barrel rotatively disposed therein and provided with an axial peripheral slot, a device for indexing the barrel comprising barrel and retaining pins respectively slidably and fixedly disposed in normal relation in the recoil unit, said barrel pin being provided with a body having communicating thereon a plurality of rotatively and axially-spaced chordal depressions, a slidable tip secured to said body and a compression spring disposed therebetween, and said barrel pin being rotatively disposed for engagement of the first, the third, and the second of said chordal depressions with said retaining pin respectively to project said tip into said slot and retain the barrel in a fixed position with respect to the recoil unit, to disengage said tip and the barrel for rotation thereof, and to permit said tip to bear on the surface of the barrel during rotation thereof and enter the slot to index the barrel upon arrival thereof in said fixed position.

3. In a weapon including a recoil unit and a barrel rotatable for threaded engagement therewith provided with an axial peripheral slot, a locking device comprising a pin including a notch, a bar and a slidable latch disposed in the recoil unit, said pin being radially slidable to a position of engagement with said slot to secure the threaded engagement, said bar including a hole, and being slidable to a locked position for engagement with said notch to retain said pin in said engagement position, and said latch being spring-biased for engagement with said hole to retain said bar in said locked position.

4. In a weapon including a recoil unit and a barrel mounted to the recoil unit for rotation to a predetermined position and provided with a longitudinal slot in the periphery thereof, an indexing and locking device comprising a pin slidably disposed in the recoil unit radially of the barrel and provided with a chordal groove, a tip slidably mounted in said pin for limited axial movement therein, a spring disposed in said pin for engagement with said tip for the biasing thereof outwardly, means for actuating said tip to a lock position for engagement with the slot to index the barrel in the predetermined position when said pin is rotated to a locking position and depressed, and a bar slidably mounted in said recoil unit for reception by said groove when said pin is depressed for securing said pin in the lock position.

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