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(71) Applicant: **WILMOT BREEDEN LIMITED**
Fordhouse Lane Stirchley
Birmingham B30 3BW(GB)

(72) Inventor: **Jeavons, Philip Swingewood**
88 Ingestre Road Hall Green
Birmingham B28(GB)

(74) Representative: **Spruce, George Philip et al,**
Shaw, Bowker & Folkes Whitehall Chambers 23 Colmore
Row
Birmingham B3 2BL(GB)

(54) Lockable handle.

(57) Lockable handle assembly for motor vehicle trunks or boots includes a manually operable handle member (14) linked to the trunk or boot latch in use; a blocking lever (24) movable to a position at which it blocks movement of the handle member; and an electric motor (28) actuatable under remote control, e.g. in common with a central locking system of the vehicle, for selective shifting of the blocking lever. Preferably a key-operated locking device (33) is also included for actuation of the blocking lever.

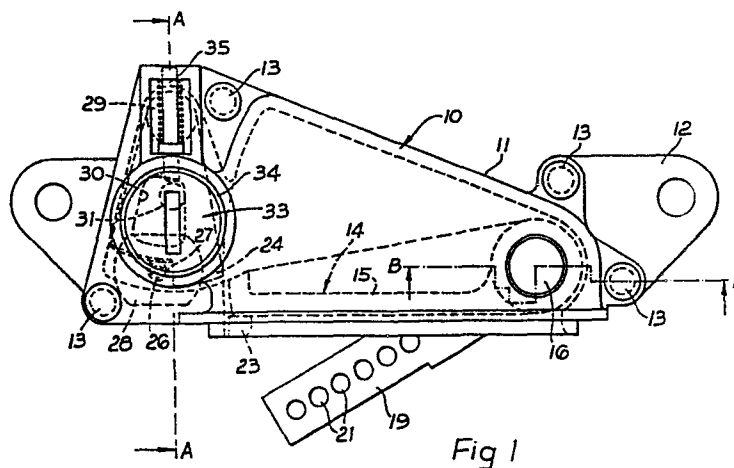


Fig 1

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LOCKABLE HANDLE

This invention relates to handles for motor vehicles and is more specifically concerned with lockable handles for the trunks or boots of motor vehicles.

5 With the current increase in requirements for central door locking systems for motor vehicles, there is a growing requirement for electric locking of the trunks or boots of the vehicles. At present electric locking of the trunk or boot is achieved by mounting an electric actuator on or adjacent the trunk or boot latch or handle. The electric actuator may be an electric motor
10 or solenoid and is arranged to operate a linkage system to effect locking and unlocking operations in a manner corresponding to the operations effected by means of a key-operated locking device. The motors and solenoids that are employed for this purpose are comparatively heavy and expensive and it is accordingly an object
15 of the invention to provide an electrically operable lockable handle construction which offers weight and cost-saving advantages as compared to existing systems referred to above.

According to the present invention there is provided a lockable handle which includes a housing having means whereby it can be
20 mounted on the trunk or boot of a motor vehicle, a handle member pivotally mounted in the housing and arranged to effect movement of an operating lever connectable to a latch mounted on the trunk or boot, a blocking lever movable into a position in which it blocks pivotal movement of the handle member and an electric motor mounted
25 in the housing and arranged on operation to drive the blocking lever between blocking and non-blocking positions.

The electric motor preferably has an output shaft carrying a pinion disposed in mesh with a toothed segment forming part of the blocking lever so that a direct drive relationship is obtained between the
30 motor output shaft and the blocking lever.

When the handle is installed in a motor vehicle, the blocking lever is preferably displaceable by means of a key-operated locking device

and the housing will accordingly include a recess for reception of a key-operated locking device, the arrangement being such that, when the blocking lever has been moved into its blocking position by operation of the electric motor, i.e. the handle has been locked
5 electrically, displacement of the blocking lever out of its blocking position can be effected either electrically (by operation of the motor) or manually (by use of the key).

In order to provide a "garage" facility, i.e. a facility whereby the trunk or boot is maintained in a locked condition when the vehicle
10 is being parked by an attendant, provision may be made whereby, when the blocking lever has been moved into its blocking position by operation of the key-operated device, i.e. the handle has been locked manually, displacement of the blocking lever out of its blocking position can only be effected manually (by use of the key) and
15 cannot be effected electrically (by operation of the motor).

The invention will now be described by way of example with reference to one embodiment thereof which is illustrated in the accompanying drawings in which:-

- Figure 1 is a front view of a vehicle trunk handle,
20 Figure 2 is a sectional view of the handle along the line A-A of Figure 1, and
Figure 3 is a part-sectional view of the handle along the line B-B of Figure 1.

The handle comprises a two-part housing 10, the two parts 11 and 12 of which are formed as injection mouldings from a polyacetal resin and, after the other components of the handle have been assembled together, the two housing parts 11 and 12 are joined together using lugs 13 on part 12 which enter appropriately positioned apertures in the part 11. A handle member 14 is pivotally mounted within
25 the housing 10 and includes a rectangular operating portion 15 arranged, when the handle is fitted to the vehicle trunk lid, to rotate about a horizontal axis provided at one end by a trunnion 16
30

on the handle member 14 which engages within a bearing aperture in housing part 11 and at the other end by a shaft 17 forming part of the handle member 14 which is located within a cylindrical extension 18 of the housing part 12. A lever 19 is attached by means of a pin 20 to the free end of the shaft 17 and is formed with a row of apertures 21 for connection of the lever 19 to the trunk latch of the vehicle by means of a suitable link.

The relative dispositions of the parts of the handle are such that, when fitted to the tailgate lid, the user of the vehicle can put the end portions of his fingers into the downwardly facing mouth of the housing to engage the operating portion 15 of the handle member 14 and move it upwardly to operate the lever 19 and release the trunk latch. The handle member 14 is acted on by a spring 22 which serves to bias the handle member 14 into engagement with a stop 23 afforded by part of the housing part 11.

When the tailgate latch is to be locked, this release movement of the handle member 14 is prevented by means of a blocking lever 24 (see Figure 2) moulded as a die casting, and including a portion 25 having a series of teeth which mesh with a pinion 26 mounted on the output shaft 27 of an electric motor 28 contained within a chamber in the housing part 12. The motor 28 can be actuated, on operation of a suitable switch forming part of the vehicle central locking system or on unlocking of any of the doors of the vehicle, to move the blocking lever 24 from the unlocking position shown in the drawing into the locking position in which it blocks movement of the handle member 14. The blocking lever 24 includes an integral trunnion 29 mounted in a bearing aperture in housing part 12, the lever 24 being held in position between opposed planar surfaces of the housing parts 11 and 12.

The blocking lever 24 is formed with an aperture 30 within which is located an eccentric pin 31 which projects from the inner end of the body 32 of a key-operated locking device 33. The device 33 has a chromium-plated housing 34 which is retained within a cylindrical chamber of the housing part 11 by means of a spring-loaded retention pin 35 located to the rear of the handle so as to be inaccessible

when the handle is attached to the vehicle trunk lid. The pin 31 is shown in the position which it occupies when the blocking lever 24 has been moved into its unlocking position by operation of the electric motor 28. If the electric motor 28 is subsequently
5 actuated to drive the pinion 26 and effect rotation of the blocking lever 24 in the anti-clockwise direction as viewed in Figure 1, the pin 31 will remain in the position shown and will function as a stop limiting the extent of rotational movement of the lever 24. The lever 24, after having been moved into its blocking position,
10 blocking pivotal movement of the handle member 14, can be returned to its unlocking position either by actuation of the electric motor 28 in the reverse direction or by turning the body 32 of the device 33 in the anti-clockwise direction by means of the appropriate key.

If, however, the body 32 of the device 33 is turned in the clockwise
15 direction from the position shown in Figure 1, the pin 31 will engage the side of the aperture 30 to move the blocking lever 24 into its locking position. The device 33 is so constructed that, after turning the body 32 through 90° , the key can be withdrawn and the body 32 will then be locked in this position with the pin 31 turned
20 through 90° clockwise from the position shown in Figure 1. The blocking lever 24 will be maintained in the locking position by the pin 31 even if the motor 28 is actuated in a direction corresponding to unlocking of the handle. Thus a facility is provided whereby the owner of the vehicle can lock the trunk of the vehicle using
25 his key and then hand the vehicle to an attendant for parking, servicing or the like. The attendant will be able to enter the vehicle and start it using the door keys but will not be able to open the trunk latch using the central locking system.

An important advantage of the handle construction shown in the drawings
30 is that, by arranging the pinion 26 on the motor output shaft 27 and the pin 31 of the device 33 to engage the blocking lever 24 on a common plane disposed between the motor 28 and the device 33, a compact, easily assembled unit is produced providing the locking and unlocking functions currently provided by larger, heavier, more
35 expensive units.

1. A lockable handle assembly for a motor vehicle trunk or boot including a housing adapted to be mounted on the trunk or boot, a handle member pivoted in the housing for selective movement of an operating lever of the assembly adapted for operative connection to a latch of the trunk or boot, a blocking lever movable between a blocking position at which it blocks the pivotal movement of the handle member and a non-blocking position at which said member is freed for said movement, and an electric motor mounted in the housing and drivingly connected to the blocking lever.

2. An assembly as in Claim 1 wherein the motor has an output shaft carrying a pinion dispersed in mesh with a toothed segment of the blocking lever.

3. An assembly as in Claim 1 or 2 including a key-operated locking device mounted on the housing and operable in use to move the blocking lever without operation by the motor.

4. An assembly as in Claim 3 wherein the blocking lever is formed with an aperture and the locking device includes an eccentric formation coacting with said aperture to effect said movement of the blocking lever

5. An assembly as in Claim 4 wherein the drive output of the motor and the locking device engage the blocking lever on a common plane disposed between the motor and the locking device.

6. An assembly as in Claim 3, 4 or 5 wherein the locking device is operable to retain the blocking

lever at the blocking position even if the motor is actuated, said lever being returnable to the non-blocking position only by operation of the locking device to provide a "garage" facility.

- 5 7. A lockable handle assembly substantially as hereinbefore described with refernece to and as shown in the accompanying drawings.
8. A motor vehicle trunk or boot including a lockable handle as in any preceding claim.

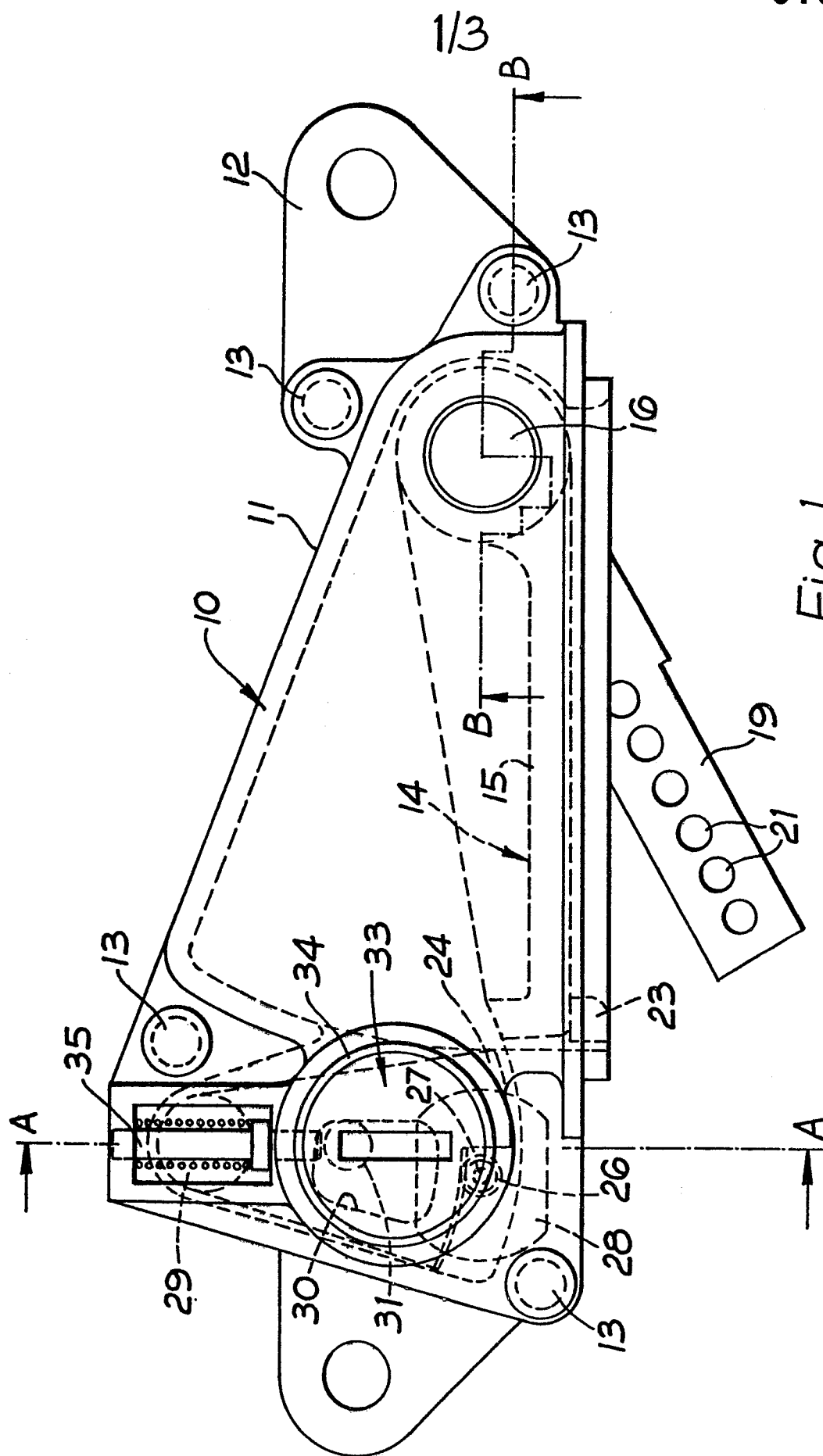


Fig. 1

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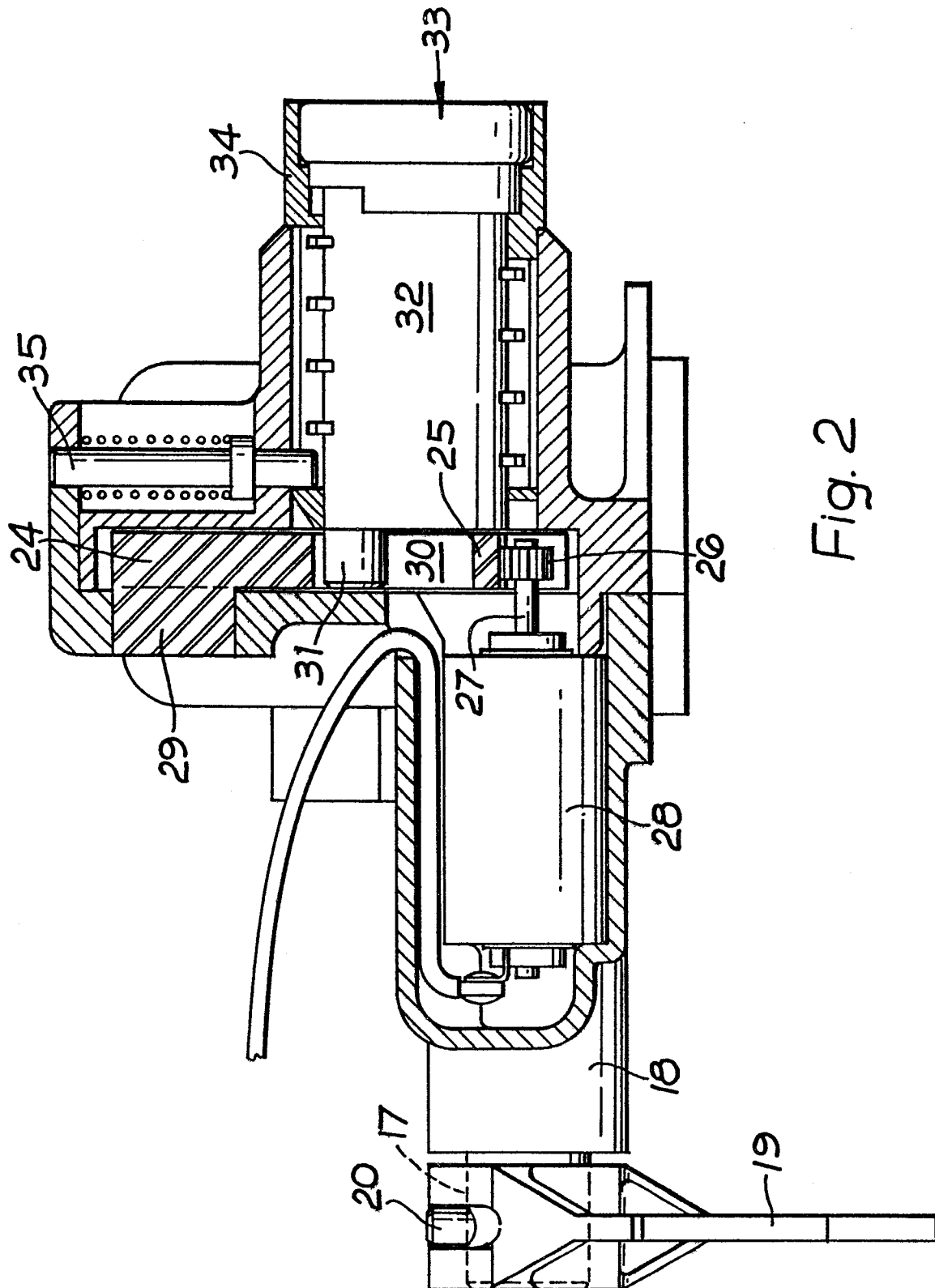


Fig. 2

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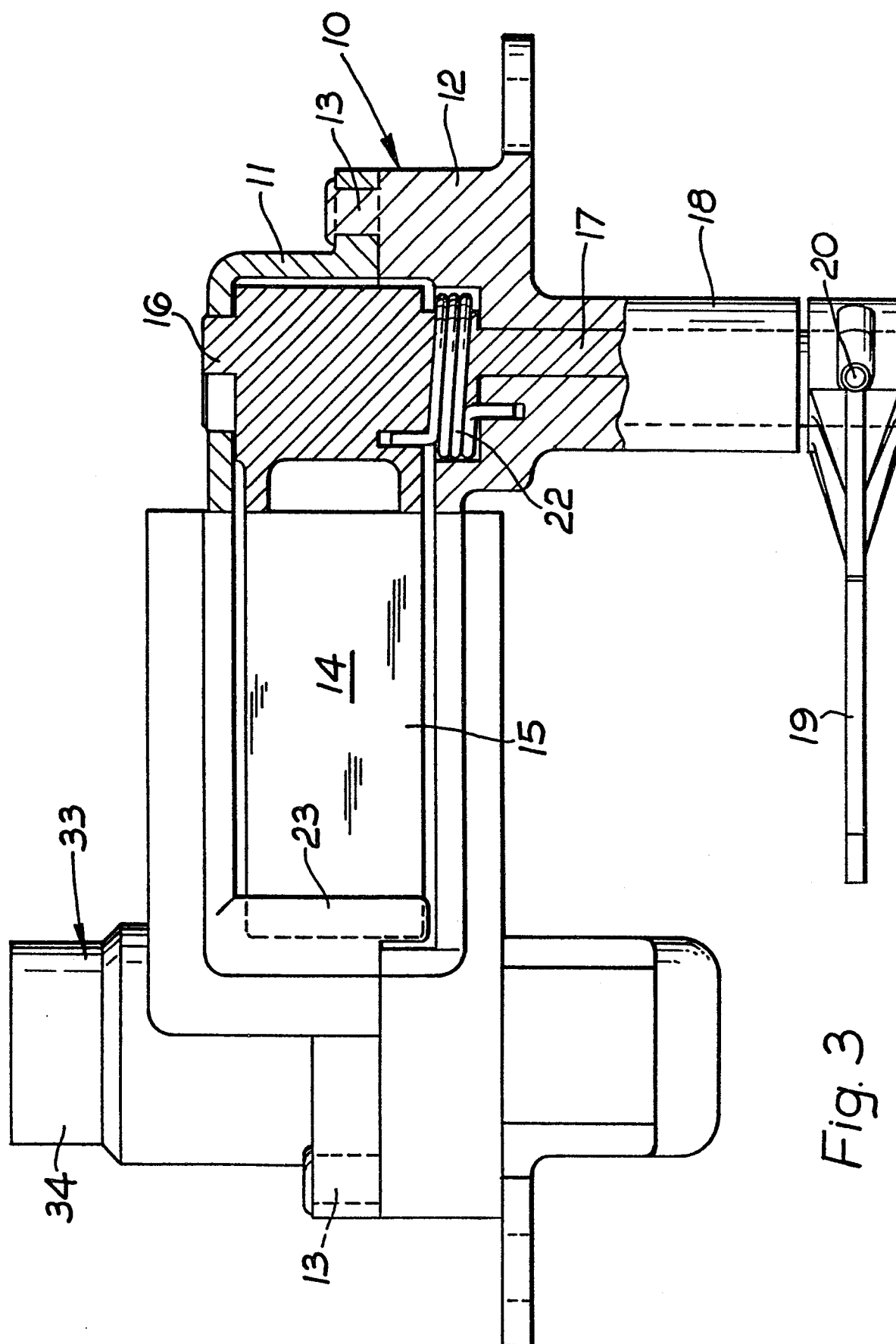


Fig. 3



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EUROPEAN SEARCH REPORT

Application number

DOCUMENTS CONSIDERED TO BE RELEVANT			EP 84305385.1
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 4)
X	<u>DE - A1 - 2 911 630</u> (ARN. KIEKERT SÖHNE) * Claim 1; fig. 1-5 and corresp. description; page 15, lines 8-27 * --	1,2,3,4,6	E 05 B 47/06 E 05 B 49/02 E 05 B 65/36
X	<u>US - A - 2 904 988</u> (GAIDA) * Claim 1; fig. 1 and corresp. description * --	1	
A	<u>DE - B2 - 2 708 393</u> (WACKER, RICHTERMETER) --		
A	<u>US - A - 3 733 861</u> (LESTER) * Fig. 1 * -----		
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int. Cl. 4) E 05 B
Place of search VIENNA		Date of completion of the search 26-09-1984	Examiner BRÄCHER
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			