PATENT SPECIFICATION

Convention Date (Germany): Jan. 28, 1930.

352,251

Application Date (in United Kingdom): July 9, 1930. No. 20,777/30.

Complete Accepted: July 9, 1931.

COMPLETE SPECIFICATION.

Toy Steam Locomotive.

We, BING WERKE, vorm Gebruder Bing Aktiengesellschaft, of 215, Regensburgerstrasse, Nuremberg, Germany, a Joint Stock Company, registered under the Laws of Germany, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

In the existing toy steam locomotives provided with a steam whistle, this latter cannot be operated in any other way than by bringing the engine to a standstill and working the whistle by hand. This measure differs considerably from the procedure in actual railway traffic, and the toy therefore loses a good deal of its attractiveness. Moreover, the risk is incurred in stopping the engine and turning the whistle handle by hand, that the fingers may be burned by contact with the hot locomotive or by the steam issuing from the whistle.

The present invention obviates these inconveniences and relates to a toy steam locomotive which is fitted with a steam whistle and differs from the known engines of this type in that the steam whistle is controlled by an adjustable and fixable striker projecting into the path of travel of the locomotive, without any necessity for interrupting the running of the latter. Along with this automatic whistle control, an automatic device is provided for shutting off the supply of steam to the cylinders. Both devices are operated by strikers disposed on the track, and are mounted as a rotatable slide, on a common steam distributor.

The invention will be clearly understood from the following description aided by the annexed drawings in which a typical embodiment of the subject of the invention is illustrated and in which Figure 1 shows the whistle device incorporated in the locomotive, the latter being indicated by broken lines. Figures 2 and 3 show details of the steam distributor in side and end elevation, with the rotatable slide set for admitting steam to the whistle. Figures 4 and 5 show the steam distributor in side and end elevation, with the rotatable slide set for admitting the working steam. Figure 6 shows the steam distributor, in side elevation, with the rotatable slide for the working steam. Figure 7 shows the distributor, in side elevation with the rotatable slide for controlling the whistle steam. Figures 8 and 9 show the steam distributor of Figures 6 and 7, with the rotatable slides removed. Figure 10 is a section along the line A—B of Figure 6. Figures 11 and 12 are sections along the lines C—D and E—F of Figure 8. Figures 13 and 14 show the casing of the steam distributor according to Figures 8 and 9, in end elevation and plan. Figures 15 and 16 show the rotatable slides for the working steam and the whistle steam, separately.

From the rear wall 3 of the steam space 1 of the locomotive boiler 2 (Figure 1), a steam pipe 4 leads along the under side of the boiler shell 2 to a steam distributor 5, from which branch the two steam pipes 6, 7. The distributor 5 is mounted in front of the front axle 9 and between the wheels 10 of the latter, and provided for the attachment of the pipes 4, 6, 7, are an upper branch 11 and two end branches 12, 13. The pipe 6 runs parallel with the pipe 4 and opens into a steam whistle 14 disposed in the casing 15 representing the drivers cab on the engine. The pipe 7 leads to the steam cylinders of the locomotive, which are not shown on the drawing.

Directly below the branch 11, the steam distributor 5 is traversed by a traverse bore 16 (Figures 8, 12, 13, 14), which is in continuous communication with the steam pipe 4. The two ends of said bore 16 are covered by rotatable slides 17, 18 (Figures 6 and 7), which are rotatably mounted on screwbolts 19 (Figure 10) and are pressed in a steam tight manner against the flat side walls of the distributor casing 5 by spiral springs 20 threaded on said bolts 19. Each rotatable slide 17, 18 is provided with a downwardly extending rocking arm 21, 22 (Figures 15, 16) and two lugs or straps. Both the rocking arms 21, 22 are also provided, on their free lower ends with an outwardly projecting striker pin 27, 28 (Figures 3, 5, 10). The rotatable slide 17 is provided with an eye

[*Price* 1/-]

29 (Figure 15) engaged by a rod 30 provided with a knob 31 (Figure 1). The free ends 32, 33 of a bent, forked flat spring 34 (Figures 6 and 7) attached to the casing 5, bear, with a positive action, against the ledge formed by lugs 25, 26 on the rotatable slide 18, and also on the eye 29 of the slide 17. The end 33 of the spring is provided with a bend 35, which corresponds to the eye 29 of the slide 17, and is of such dimensions that the eye 29 can move out of said bend when the slide 17, 21 is swung. The slide 17 is provided with a quadrant channel 36 (Figure 15) which masks with the bore 16 and terminates at the mouth of said bore (Figures 6, 8, 15). The other end of said channel covers a bore 37, which is provided in the steam distributor 5 and opens into a bore 38 in the branch 13 (Figures 8, 11, 13 and 14).

The rotatable slide 18 (Figure 16) is provided with an annular passage 39, which is interrupted only at the place where the transverse bore 16 opens on to the slide 18 (Figures 7, 16). At the point opposite to the mouth of the bore 16, the passage 39 communicates with a bore 40 (Figures 11, 12, 13) provided in the casing 5 and connected with a bore 41 leading to the branch 12.

The device also comprises a striker rail 43, which is firmly secured on and parallel with the track 42 or may be arranged to turn down if desired, and is disposed in the path of the striker 28 on the rocking arm 21 (Figure 3).

There is also a striker 44, which can be moved, by means of the adjusting lever 45 (Figure 5) situated outside the track, so as to bring it from the normal horizontal position into the path of the striker 27 on the rocking arm 21.

The device operates in the following manner:—

When the locomotive is running, the two rocking arms 21, 22 ordinarily project vertically downwards. The steam generated in the boiler space 1 flows through the pipe 4 to the transverse bore 16 in the steam distributor 5. At the one mouth of the bore 16, the flow of steam is stopped by the rotatable slide 18. On the other hand, the steam can pass from the bore 16 through the annular channel 36 in the rotatable slide 17, into the bores 37, 38 whence it flows through the branch 13 and pipe 7 to the working cylinders of the locomotive, and actuates same. If the striker 44 be raised by turning the lever 45 (Figure 5), said striker 44 swings the arm 21 forwards or backwards according to the direction in which the locomotive is running, as shown in Figures 2 and 6, thus moving the eye 29 out of the bend 35 in the spring end 33. The displaced arm 21 is held in its new position by the pressure of the spring. This rocking movement causes the thrust rod 30 to be pushed in the one or other direction by the eye link 29. At the same time the communication between the passages 36, 37 is interrupted, either at the end of the passage next the transverse bore 16, or at that next the bore 37. In this way, the supply of steam to the pipe 7 and the locomotive cylinders is shut off, and the engine soon comes to a standstill. It can be restarted by hand, on actuating the rod 30 by means of the knob 31, the slide 17, 21 being thereby returned into its vertical position in which communication is again established between the transverse bore 16 and the bore 37.

The whistle 14 is controlled in a similar manner. In travelling over the rail 43 (Figure 3), the striker 28 on the rocking arm 22 of the rotatable slide 18 is moved forwards or backwards—according to the direction of travel—overcoming the force of the spring 32. In so doing either the lug 25 or lug 26 acts as a lever arm loaded by the spring 32 and tending under the pressure of the spring, to return the arm 22 into its former position. On the rotation of the slide 18, the end of the channel 39 which is next the mouth of the bore 16 moves over said bore and thus enables the steam to flow from the bore 16 into the bores 40, 41 whence it passes through the branch 12 into the pipe 6 and to the whistle 14. As soon as the locomotive has passed beyond the rail 43, that is, as soon as the rail 43 has released the striker 28, the spring 32 returns the slide 18—by pressing against one of the lugs 25, 26—into its old position, the communication between the bore 40 and transverse bore 16 by way of the channel 39 being again interrupted, and the admission of steam to the whistle 14 shut off again.

The pipes 4, 6 are led under the boiler, within reach of the heating flames, in order to assure complete evaporation of any moisture carried from the boiler 2. The whistle 14 and steam distributor 5, together with the pipes 4, 7 may also be so arranged that the whistle is controlled by a striker inside a tunnel. Both control devices may be provided independently or only one of them may be employed.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. Toy locomotive equipped with a steam whistle, and a contact brake or striker (44) operated from outside the track, characterised in that the steam

whistle is controlled by a fixed or movable striker projecting into the path of the locomotive and if movable adapted to be operated without the locomotive having to be stopped.

2. Locomotive according to Claim 1, characterised by a steam distributor with a supply pipe from the steam space of the boiler and two steam delivery pipes one of which leads to the steam whistle and the other to the working cylinders of the locomotive.

3. Locomotive according to Claim 1, characterised by two spring-controlled rotatable slides provided on the steam distributor one of them controlling the admission and shutting off of steam to the working cylinders, whilst the other admits and shuts off the supply of steam to the steam whistle.

4. Locomotive according to Claim 1, characterised in that a steam distributor consisting of a block casing is provided with an upper steam inlet branch, a transverse bore connected with the steam admission, a transverse bore leading to the outlet branch for the cylinder steam, a transverse bore leading to the outlet branch for the whistle steam, and an axial bore for the bolt carrying the rotatable slides, and also a forked spring the ends of which bear against lugs provided on the rotatable slides, or against an eye or the like.

5. Locomotive according to Claim 4, characterised in that a rotatable slide controlling the steam for the working cylinders is provided, in addition to an eye link for a rod leading to the driver's cab, with a quadrant channel, which covers the transverse admission bore, so that according to the position of said slide, either the bore is placed in communication with a bore leading to the pipe for the working cylinders or that said communication is closed.

6. Locomotive according to Claim 4, characterised in that a rotatable slide controlling the whistle steam is provided with an annular channel interrupted by a blank space covering the transverse bore so that by turning the slide to a slight extent, in a convenient direction, communication is established between the transverse bore and the bore leading to the branch for the pipe and the steam whistle.

7. Locomotive according to Claim 1, characterised in that each of the rotatable slides is provided with a downwardly extending rocking arm carrying strikers coacting with strikers provided on the track, the length of time during which the whistle continues to blow being adapted to be determined by the length of the striker rail which may be adapted to turn down.

8. Locomotive according to Claim 1, characterised in that rotatable slides are employed influenced by springs in such a manner that after the locomotive has passed over the striker, the whistle slide springs back automatically into its former position, whilst the slide for the working steam remains in its changed position, and can be returned into the old position by means of a hand-operated control rod.

9. Locomotive according to Claim 1 characterised in that rotatable slides are pressed in a steamtight manner, against mouths of pipes which are under pressure and a casing of a steam distributor by means of spiral springs slipped over their pivot pin.

10. The improved steam locomotive engine constructed substantially as described with reference to the annexed drawings.

Dated this 9th day of July, 1930.

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Chartered Patent Agents,
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Agents for the said Applicants.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1931.

Fig.1

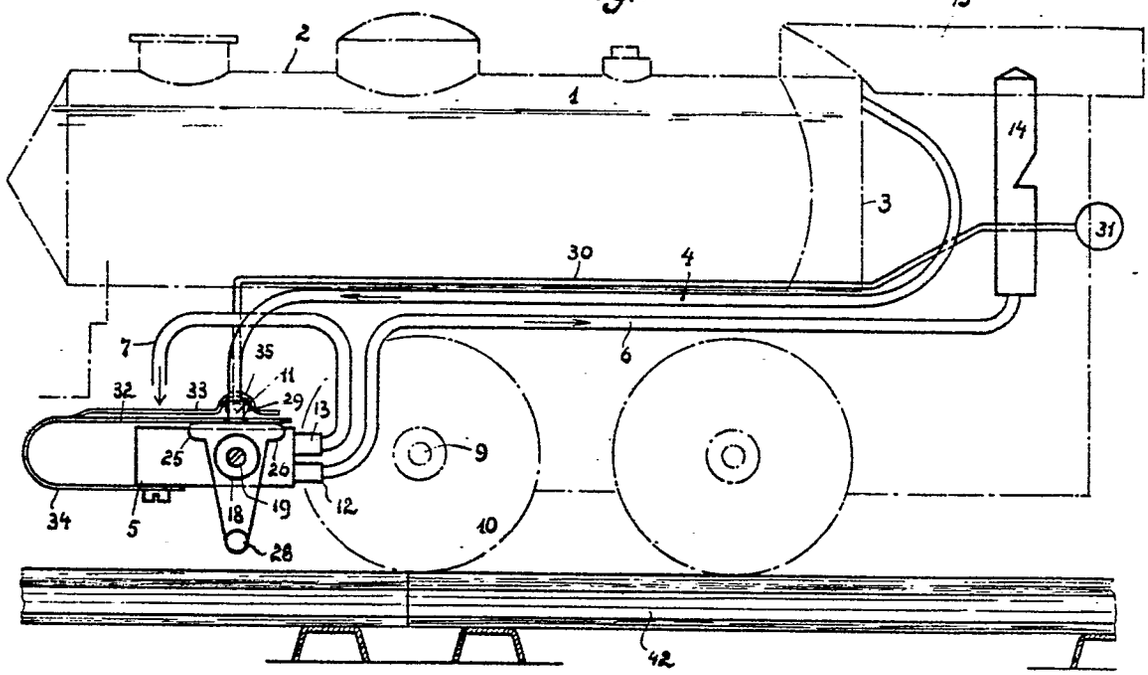


Fig.2

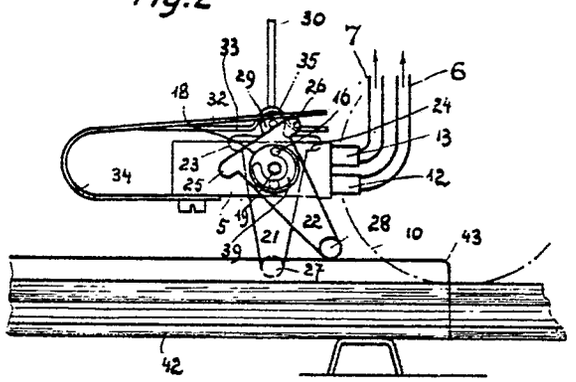


Fig.3

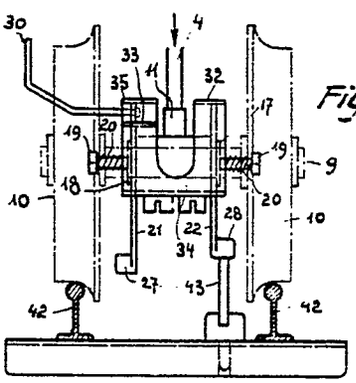


Fig.4

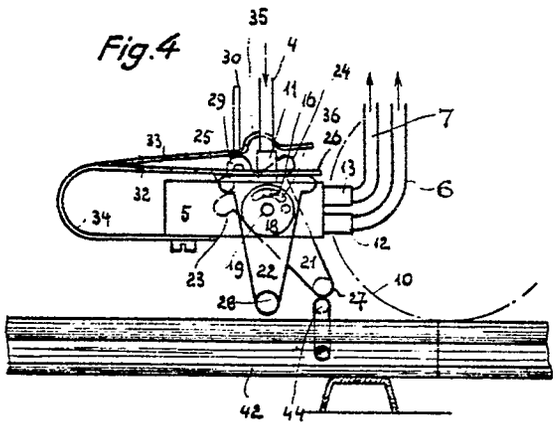
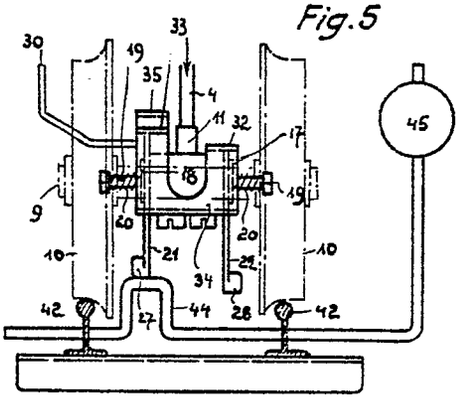
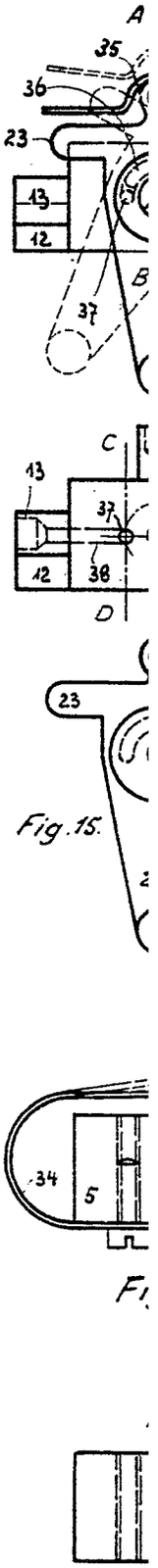


Fig.5





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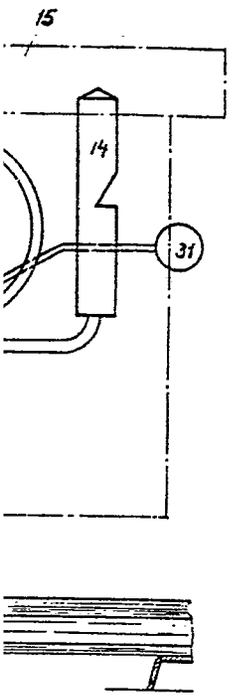


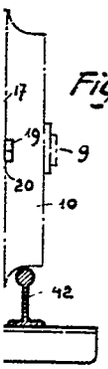
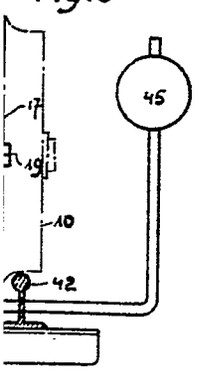


Fig.3



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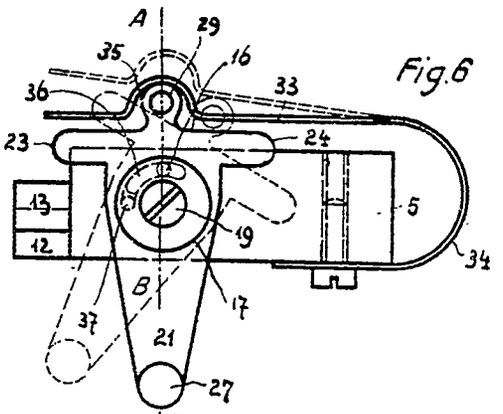
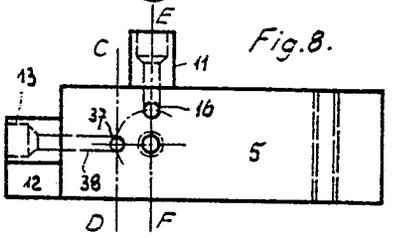


Fig.6



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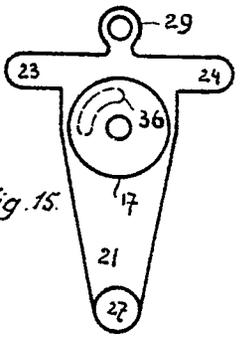

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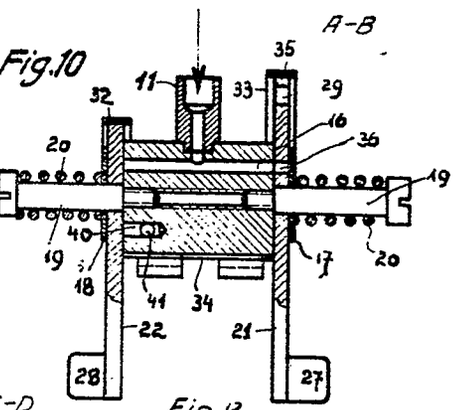


Fig.10

Fig.13.

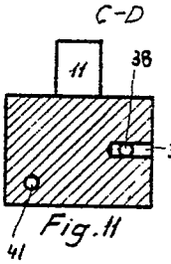
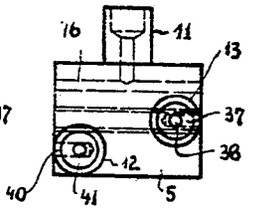


Fig.11



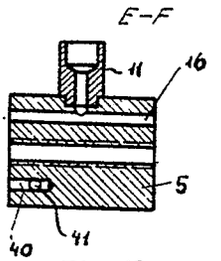


Fig.12

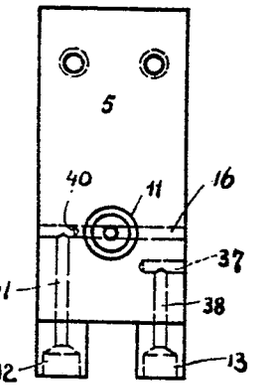
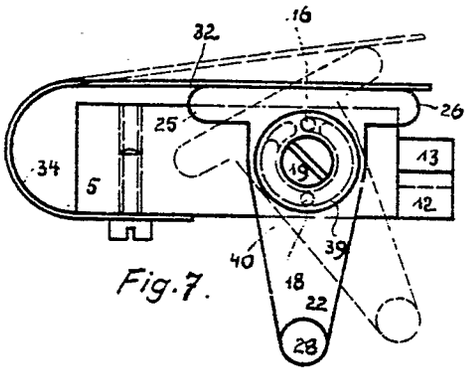


Fig.14.



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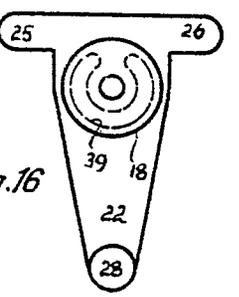

Fig.16

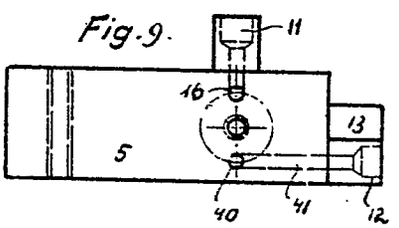

Fig.9.

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[This Drawing is a reproduction of the Original on a reduced scale]

Fig.1

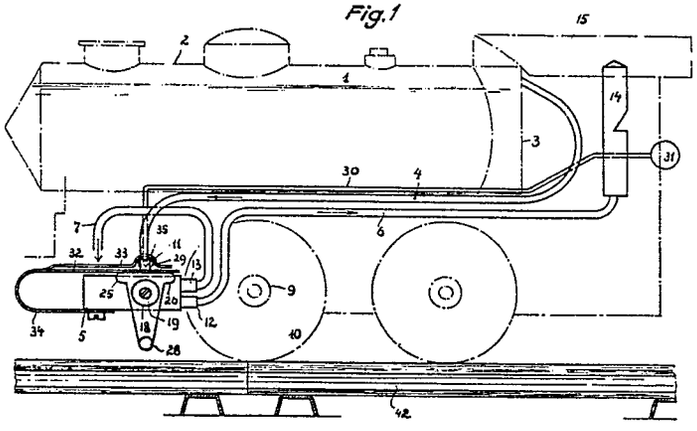
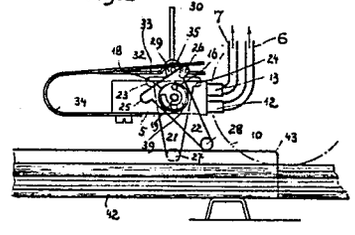


Fig.2



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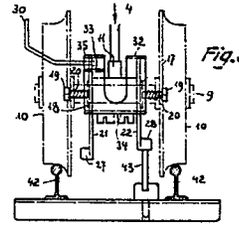

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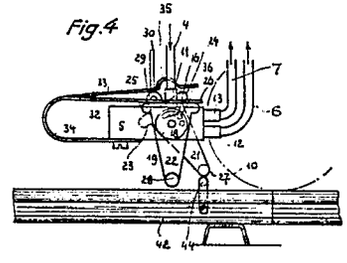
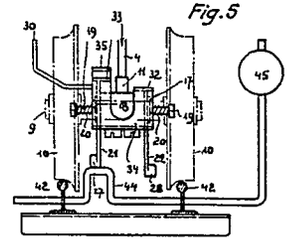


Fig.5



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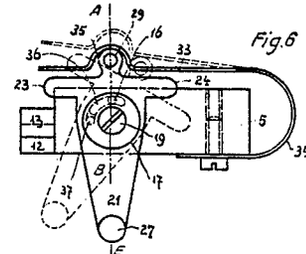

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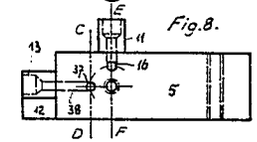

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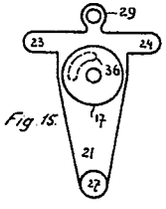

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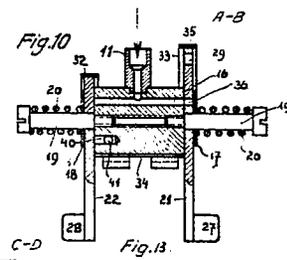

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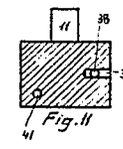

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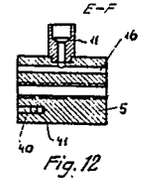

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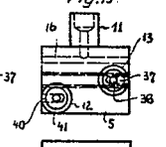

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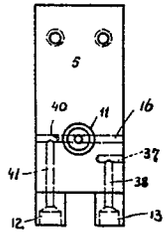

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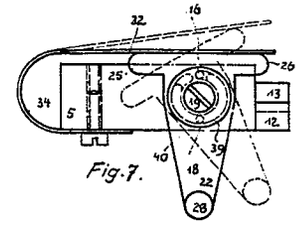

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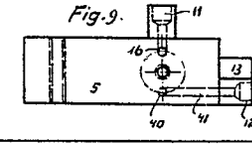
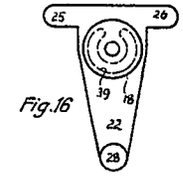


Fig.16



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