

PATENT SPECIFICATION



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302,266

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COMPLETE SPECIFICATION.

Aircraft Toy.

We, BING WERKE vorm. Gebrüder Bing A.G., of 16, Blumenstrasse, 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:—

10 This invention comprises an aircraft toy with a rotary girder, mounted on a mast and actuated by the aircraft motor, said toy being advantageously distinguished from the known aircraft toys of this type in that the mast, together with its circling girder on which the aircraft is suspended, describes a luffing movement during the circling movement of the aircraft, so that the starting and landing of the aircraft take place at points of different locality. These points are denoted, for example by representations of celebrated structures. For example, in starting, the aircraft circles the Statue of Liberty at New York, ascends spirally, describes its circular course, the upper end of the mast travelling round at the same time in accordance with the angle of elevation of the mast, and descends spirally to the landing place, represented, for example, by the Eiffel Tower in Paris. This difference of locality between the starting point and landing place, in conjunction with the symbolical representation of emblem of metropolitan cities, substantially increases the attractiveness of this aircraft toy by comparison with those of the tower type. The luffing of the mast is caused by the motor provided in the aircraft itself, for the reason that the lower end of the mast is pivotally mounted on a baseplate and is swung out on either side by means of a guide rod controlled by the circling girder. The lower end of the guide rod is also pivotally mounted on the baseplate, whilst its upper end is guided vertically up or down, by means of a travelling nut, on a spindle which is rotated by the girder carrying the aircraft. The vertical displacement of the upper end of the guide rod thus luffs the mast, which is articulated to a guide frame containing the

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threaded spindle. The parallel movement of this guide frame is assured by a forked lever mounted in the centre of the mast. The travelling movement of the spindle nut is braked, at the terminal points, by springs. Auxiliary springs may be provided to assist the movement of the mast.

Our invention will be clearly understood from the following description aided by the example illustrated on the annexed drawings in which a typical embodiment of the invention is shown, Figure 1 representing an elevation of the aircraft toy with the mast in the upright position, representations of structures being mounted on the right and left. Figure 2 shows the mast in its luffing positions towards the left and right. Figure 3 is a side elevation of the mast in its terminal left-hand position, but without the braking springs. Figures 4 and 5 show the top and bottom portions respectively of the mast, with the guide frame, guide rod and lever, together with the base plate, as a side elevation and on a larger scale, and Figures 6 and 7 represent the front elevations corresponding to Figures 4 and 5.

The aircraft traffic toy consists substantially of a mast M, which is adapted to luff, and is pivotally mounted on a baseplate G; of the circling girder T carrying the aircraft F and counterpoise C; and of the two characteristic features of cities, namely the Eiffel Tower E and the Statue of Liberty N with their baseplates 1 and 2, which are connected with the baseplate by push-in wire rods 3 and 4 so that the mast is prevented from tipping over even when in the inclined position.

The mast M consists of two interconnected lattice bars 5 and 6 of channel cross section, which are adapted to pivot at the lower end on a cross pin 7 mounted in eyes 8 (Fig. 7). The baseplate G is provided with two wedge-shaped lugs 9 and 10, the inner surfaces of which limit the two extreme luffing positions of the mast. The upper ends of the lattice bars 5 and 6 of the mast are firmly secured by means of a headpiece 11 (Figs. 4, 6) composed of two flat pieces of iron. At the upper end of the mast is articulated a

bow 12 of iron strip, to the arms 12a and 12b on which are soldered pieces of wire 13 and 14. The ends 13a and 14a of these wires are bent at right angles and are passed through bores in the webs of the channelled lattice bars 5 and 6, so as to form the pivots for the swing bow 12. On this bow 12 is mounted a guide frame 15, composed of two interconnected channel bars 15a and 15b between which is rotatably mounted a threaded spindle 16. The upper end of the threaded spindle 16 is provided with a slotted head 17 (Fig. 3), the slot 18 of which serves to accommodate a coupling member 19 (Fig. 1) mounted on a shaft 20 attached to the girder T. A nut 21 adapted to travel along the thread of the spindle 16, is composed of a channelled piece of sheet metal, the flanges of which slide in the channelled bars 15a, 15b. Riveted to the one flange of the nut 21 is a pin 22, with which engages the upper end of a guide rod 23. The pin 22 is provided with a collar 22a, which is adapted to slide to and fro in a longitudinal slot 24 (Fig. 6) of the channelled bar 15a. The other end of the guide rod 23 is pivotally mounted on a pin 24a of a bearing 24 on the baseplate G.

In the middle of the mast and on a shaft 25, is mounted a lever 26 provided at both ends with longitudinal slots 26a and 26b (Figs. 6 and 7). The longitudinal slot 26a engages a pin 27 attached to the guide frame 15, and the slot 26b slides on a pin 28 of a bearing lug 29 of the base plate G. The lever 26 serves to keep the guide frame 15 in an approximately vertical position in all the luffing positions of the mast.

A rod 30 (Fig. 6), mounted at the side of the guide frame 15 is provided at both end with spiral springs 31 and 32 respectively, against which bears a laterally projecting lug 33 of the nut 21 when the latter is in its terminal position. The springs have a shock absorbing and braking effect, and thus prevent breakage of the mechanism by the centrifugal force still prevailing in the girder when the aircraft runs down.

The girder T is built up of a plurality of folding parts. One end of the girder is provided with a hook 34 (Fig. 1), in which is suspended the aircraft F containing the motor. The opposite end is fitted with a counterweight C, but may also carry an aircraft. The arm 35 of the girder T extends so far that when in the inclined position, the aircraft F can rest or run on the base on which the emblems E and N are situated.

Since, in consequence of the unilateral mounting of the guide rod 23 in relation

to the pivotal point of the mast, the conditions in respect of force are different in the two extreme luffing positions of the mast, tension springs 36 and 37 are provided for luffing the mast towards the right hand—for which purpose a slightly increased force is needed—said springs being connected up between the mast and the baseplate G and assisting said luffing.

The traffic aircraft operates in the following manner:—By turning the head 17 in a suitable manner, so as to screw the nut 21 downwards, the mast is brought by hand into the inclined left hand position indicated by the continuous lines on Figure 2. The spring mechanism in the aircraft F is then wound up, the aircraft is suspended on the hook 34, and the girder T is placed on the head 17 in such a way that said head 17 engages the head 19. On the spring mechanism being released, the rapidly revolving propeller sets the girder in circling motion and the aircraft ascends spirally, circling round the structure E. The circling movement of the girder T also turns the threaded spindle 16, the nut 21 on which travels upwards (Fig. 2). Since the top pivotal point 22 of the guide rod 23 is connected to the nut 21, the guide rod begins to turn towards the right, thereby moving the guide frame 15, bow 12 and head member 11, and thus causing the mast to turn towards the right on its pivot 7. The vertical position of the guide frame 15 parallel to itself, is maintained by the lever 26 mounted on the mast M. The stretched auxiliary springs 36 and 37 assist the right hand movement of the mast. The luffing movement of the mast continues until the nut 21 has attained its top position, which corresponds to the position (indicated by broken lines in Fig. 2) of the mast, and to the position of the parts as represented in Figures 4—7. On reaching the end of its movement the lateral lug 33 on the nut 21, compresses the spiral spring 31 mounted on the rod 30. At the same time the speed of the aircraft diminishes, owing to the spring mechanism running down, so that the craft approaches the ground, circling the structure N, and runs along. The mast now rests against the oblique limiting surface 10.

If the spring mechanism of the aircraft motor be now wound up again and the aircraft suspended in the opposite direction of rotation, the movement will be repeated in the reverse direction, the aircraft therefore flying from N back to E.

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. Aircraft toy with a circling girder mounted on a mast and actuated by the aircraft motor, characterised in that the mast is adapted to luff. 30
2. Aircraft toy according to Claim 1, characterised in that the mast, the lower end of which is pivotally mounted on a baseplate, is adapted to be luffed towards one side or the other way by means of a guide rod which is pivotally mounted on the baseplate and is indirectly actuated by the motor of the aircraft. 35
3. Aircraft toy according to Claims 1 and 2, characterised in that a guide frame with a threaded spindle is suspended at the upper end of the mast by means of a rockable bow, said spindle being turned by the circling girder, whilst its travelling nut, guided in the guide frame, effects the pivotal movement of the guide rod which luffs the mast. 40
4. Aircraft toy according to Claims 1—3, characterised in that a two-arm lever is mounted in the middle of the mast, the one end of said lever engaging a pin, which is attached to the guide frame, by means of a longitudinal slot, whilst the other end slides over a pin on the baseplate by means of a longitudinal slot. 45
5. Aircraft toy according to Claims 1—4, characterised in that two braking springs are mounted at the upper and lower ends of the guide frame, a stop on the travelling nut striking against said springs at the termination of the flight. 50
6. Aircraft toy according to Claims 1—5, characterised in that auxiliary springs connected at the lower end of the mast, between this latter and the baseplate, assist the movement of the mast towards the side on which the guide rod is mounted. 55
7. Aircraft toy according to Claims 1—6, characterised in that the bases of the reproductions of structural edifices, representing the starting and landing places, are connected with the baseplate of the mast by push-in wires or the like. 60
8. The aircraft toy constructed substantially as described with reference to the annexed drawings.

Dated this 7th day of March, 1928.

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Agents for the said Applicants.

Fig. 1.

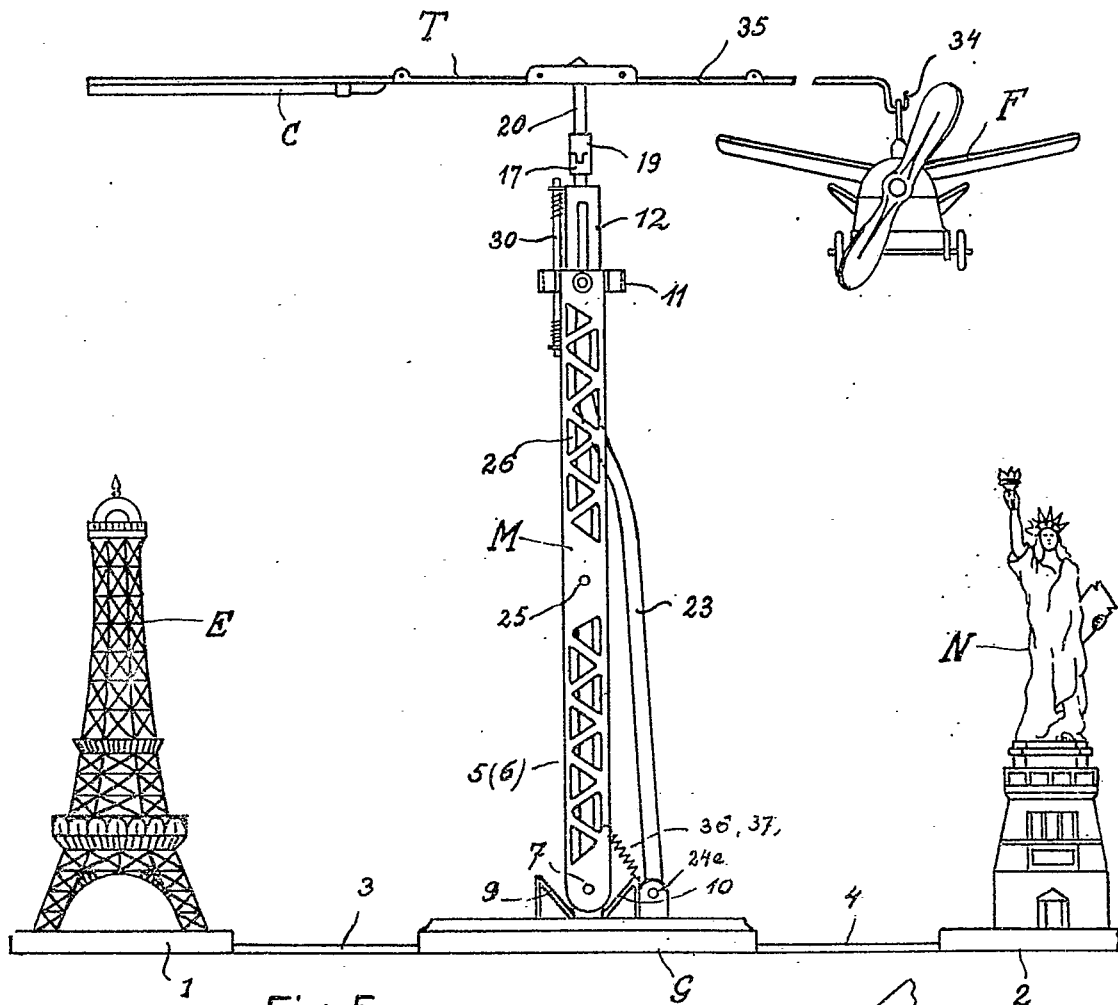


Fig. 5

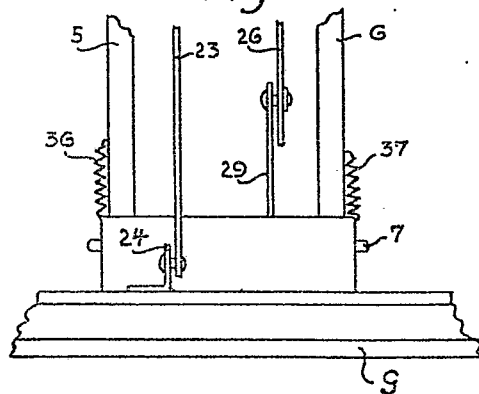
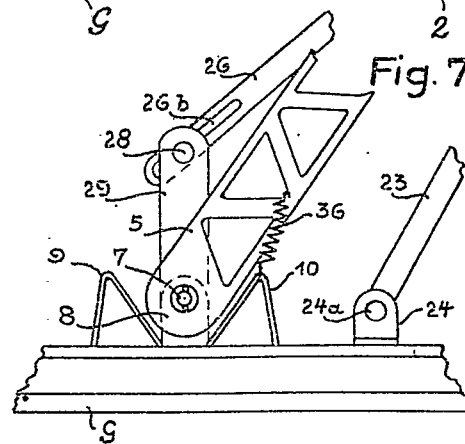


Fig. 7



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

2
12a
2i
13c
15c
5

34

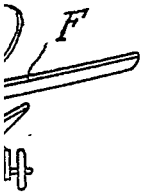


Fig. 7

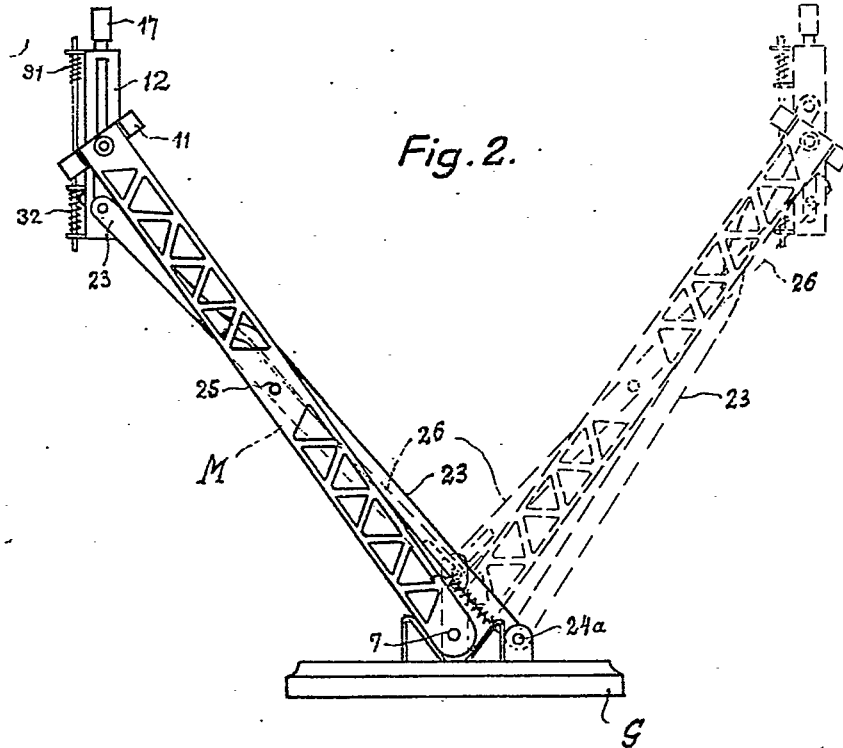
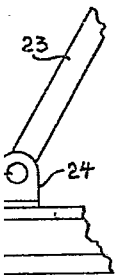


Fig. 2.

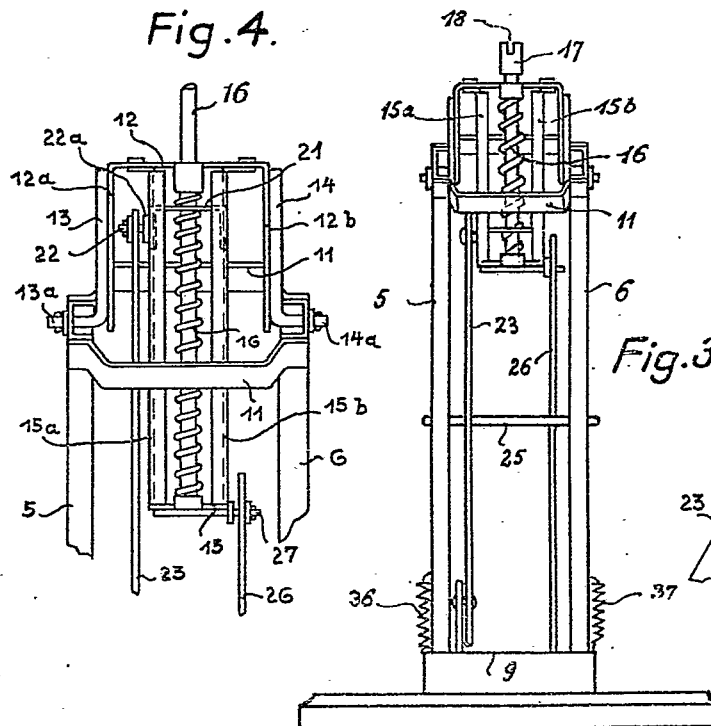
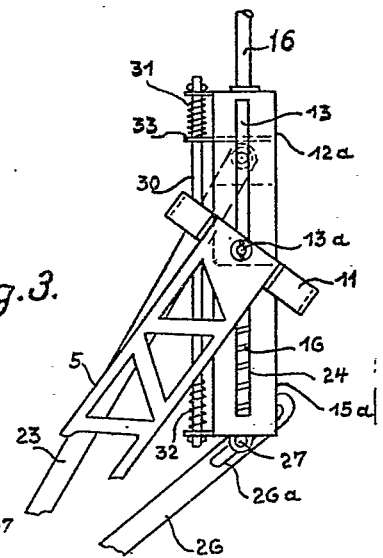


Fig. 4.

Fig. 3.

Fig. 6.



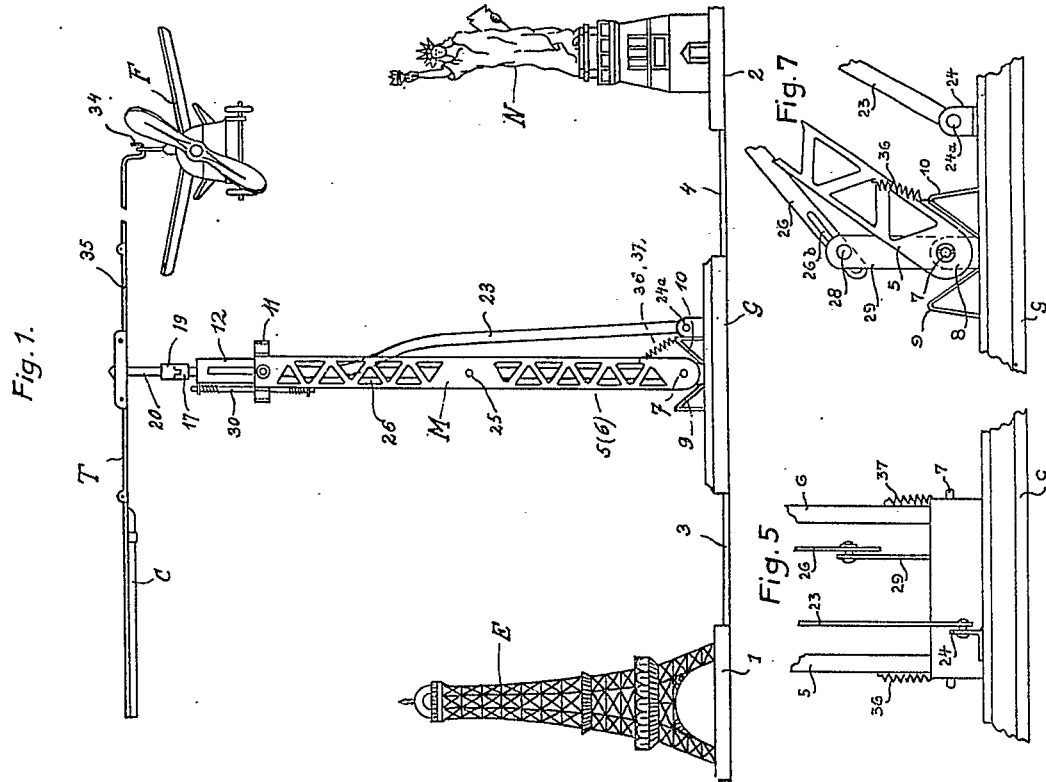


Fig. 1.

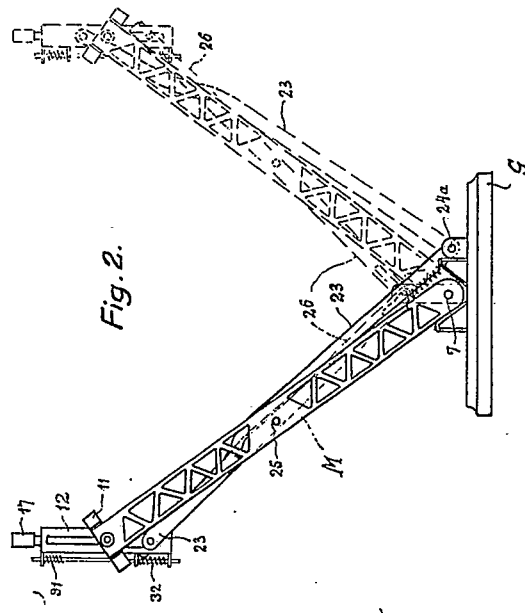


Fig. 2.

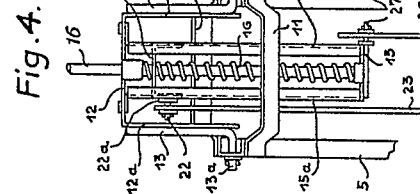


Fig. 4.

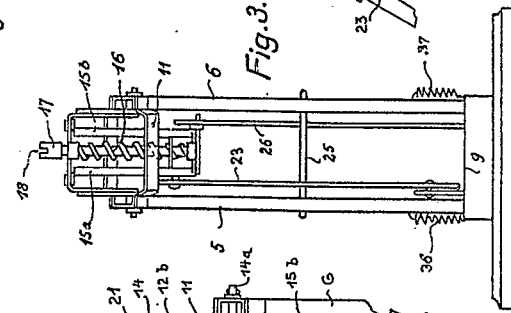


Fig. 3.

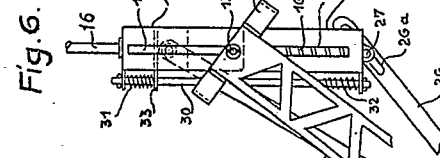


Fig. 6.

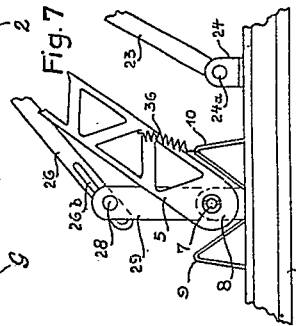


Fig. 7.

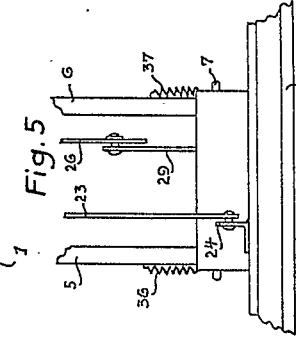


Fig. 5.

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