

# PATENT SPECIFICATION



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## PROVISIONAL SPECIFICATION.

### An Element for use in Building Constructional Toys or Models.

I, FRANK HORNBY, of Meccano Limited, Binns Road, Old Swan, Liverpool, British subject, Constructional Toy Manufacturer, do hereby declare the nature of this invention to be as follows:—

This invention relates to an improved part or element for use in building constructional toys or small engineering or other models made up from interchangeable parts, such models being capable of being taken to pieces and the parts again utilised by being remade up into other toys or models as required. It is desirable that the parts used in the building of such constructional toys should be available for fulfilling several functions in order that the number of parts required in an outfit for building a series of models should be minimised. The part or element forming the subject of the present invention is capable of several uses or functions for this purpose.

According to this invention, the part or element consists of a double pawl or stop comprising a boss or eye to which is secured, preferably by rivetting or pressing, a blade element having two toes or pawl projections, the projections being relatively reversed so that by throwing the pawl over about its pivot either projection may be engaged with one or other of two gear wheels to control the movement of such gear wheels to permit rotation in one direction only and lock either gear wheel against backward rotation. For using such a pawl in connection with constructional models built up from perforated strips and plates a special form of pivot bolt is desirable, such pivot bolt having a shank, the end only of which is threaded, leaving a considerable plain cylindrical part near the head of the bolt, this plain part being that about which

the pawl pivots and the threaded end enabling the bolt to be secured into the holes of the perforated strips or plates from which the models are built up, the pawl being thus readily positioned where desired.

In carrying out the invention, the pawl comprises a boss element or eye having a bore to fit the usual standard diameter round rods used in such model building; the boss being provided with a pinching screw to enable the pawl either to be loosely pivotted or to be gripped to a length of rod or the like. Secured to the boss in any suitable manner such as by rivetting is a blade formed at its outer end with two reversed projections or toes which act as a double pawl and are adapted to engage the teeth of the usual gear wheels used in building up constructional models. The shape of the toe points is preferably formed with a curved sweep on the inner faces and an inclined edge on the outer faces so that the pawl may trail over the teeth of the gear wheels when rotating in one direction and lock in such teeth when the gear wheel tends to rotate backwardly. By providing the outer end of the blade with two such reversed pawl projections, the element may be mounted centrally with respect to two gear wheels the rotation of which it is desired to control, the pawl being thrown over about its pivot so that one pawl projection engages one gear wheel when the pawl is in one position, but when thrown over, the opposite pawl projection engages the other gear wheel. Such an arrangement is of advantage in the control of the winding and operating mechanism of small model cranes.

The pivot bolt for use with such a pawl consists of a headed bolt having a plain

shank and a threaded tip, the plain portion of the bolt forming an easy pivot for the boss of the pawl, while the threaded end permits the bolt to be rigidly secured

5 into one of the holes of the perforated strips or plates from which the pawl is to be carried. The depth of the threaded portion of the bolt is made sufficient to permit of two nuts being threaded there-

10 on, one nut being positioned on each side of the strip of plate, the tightening up of the nuts gripping the bolt in position.

15 If desired, instead of being loosely pivotted the pawl may be gripped by the pinching screw rigidly on an axle or rod,

or even to the pivot bolt, and then used as a fixed element.

Where the pawl is utilised as a loosely pivotted element it may be connected to a reciprocating part the projection or projections engaging a geared wheel, the reciprocation of the pawl causing a step by step rotary movement of the gear wheel.

Dated this 12th day of January, 1921. 25

For the Applicant,  
A. J. DAVIES,  
Patent Agent,  
37, Moorfields, Liverpool.

### COMPLETE SPECIFICATION.

#### An Element for use in Building Constructional Toys or Models.

30 I, FRANK HORNBY, of Meccano Limited, Binns Road, Old Swan, Liverpool, British subject, do hereby declare the nature of this invention and in what manner the same is to be performed, to

35 be particularly described and ascertained in and by the following statement:—

This invention relates to an improved part or element for use in building constructional toys or small engineering or

40 other models made up from interchangeable parts, such models being capable of being taken to pieces and the parts again utilised by being remade up into other toys or models as required. It is desirable that the parts used in the building

45 of such constructional toys should be available for fulfilling several functions in order that the number of parts required in an outfit for building a series of models

50 should be minimised. The part or element forming the subject of the present invention is capable of several uses or functions for this purpose.

According to this invention, the part

55 or element consists of a double pawl or stop comprising a boss or eye to which is secured, preferably by rivetting or pressing, a blade element having two toes or pawl projections, the projections being

60 relatively reversed so that by throwing the pawl over about its pivot either projection may be engaged with one or other of two gear wheels to control the movement of such gear wheels to permit rotation in one direction only and lock either

65 gear wheel against backward rotation. For using such a pawl in connection with constructional models built up from perforated strips and plates a special form of

pivot bolt is desirable, such pivot bolt having a shank, the end only of which is threaded, leaving a considerable plain cylindrical part near the head of the bolt, this plain part being that about which

75 the pawl pivots and the threaded end enabling the bolt to be secured into the holes of the perforated strips or plates from which the models are built up, the pawl being thus readily positioned where

80 desired.

The invention is illustrated in the accompanying drawings in which Fig. 1 is an elevation of the double pawl element, Fig. 2 being a plan and Fig. 3 a section through the boss of the

85 pawl. Fig. 4 is a sectional view analogous to Fig. 3 showing the pivotal bolt by which the double pawl is supported. Fig. 5 is an elevation showing the method of utilising the pawl to control

90 two gear wheels and Fig. 6 is a plan.

In carrying out the invention, the pawl comprises a boss 1 or eye having a bore 2 to fit the usual standard diameter round rods 3 used in such model building, the

95 boss being provided with a pinching screw 4 to enable the pawl either to be loosely pivotted on or to be gripped to a length of rod or the like. Secured to the boss in any suitable manner such as by

100 rivetting over at 5 is a blade 6 formed at its outer end with two reversed projections or toes 7 which act as a double pawl and are adapted to engage the teeth of the usual gear wheels 8 used in building up

105 constructional models. The shape of the toe points is preferably formed with a curved sweep 9 on the inner faces and an inclined edge 10 on the outer faces so

that the pawl may trail over the teeth of the gear wheels when they rotate in one direction and lock in such teeth when the gear wheel tends to rotate backwardly.

5 By providing the outer end of the blade with two such reversed pawl projections 7, the element may be mounted centrally with respect to two gear wheels as shown in Figs. 5 and 6 the rotation of which it is desired to control, the pawl being 10 thrown over about its pivot *a* so that one pawl projection 9 engages one gear wheel 8 when the pawl is in one position, but when thrown over, as shown in dotted 15 lines, the opposite pawl projection 9<sup>a</sup> engages the other gear wheel 8<sup>a</sup>. Such an arrangement is of advantage in the control of the winding and operating mechanism of small model cranes.

20 The pivot bolt for use with such a pawl consists of a headed bolt *a* having a plain shank 11 and a threaded tip 12, the plain portion of the bolt forming an easy pivot for the boss 1 of the pawl, while 25 the threaded end permits the bolt to be rigidly secured into one of the holes of the perforated strips or plates 13 from which the pawl is to be carried. The depth of the threaded portion of the bolt 30 is made sufficient to permit of two nuts 14, 15, being threaded thereon, one nut being positioned on each side of the strip or plate, the tightening up of the nuts gripping the bolt in position.

35 If desired, instead of being loosely pivotted the pawl may be gripped by the pinching screw 4 rigidly on an axle or rod,

or even to the pivot bolt *a* and then used as a fixed element.

Where the pawl is utilised as a loosely 40 pivotted element it may be connected to a reciprocating part the projection or projections engaging a geared wheel, the reciprocation of the pawl causing a step 45 by step rotary movement of the gear wheel.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I 50 claim is:—

1. An element for use in building constructional toys or models comprising a boss or the like for fitting on a rod or pivot and having two toes or pawl projections 55 relatively reversed whereby the pawl element may be thrown over about its pivot to cause one or other projection to engage with one or other of two gear wheels.

2. A double pawl element, as claimed 60 in Claim 1, comprising a boss, and a plate element secured to the boss having two relatively reversed toes or pawl projections.

3. The improved double pawl element 65 for use in building constructional toys or models substantially as described and shown in the accompanying drawings.

Dated this 12th day of April, 1921.

For the Applicant, 70  
A. J. DAVIES,  
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FIG. 1.

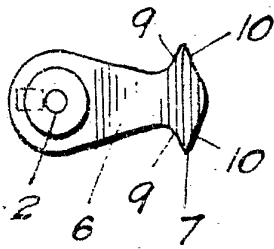


FIG. 3.

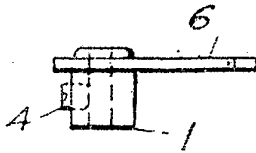
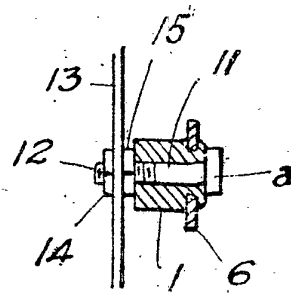
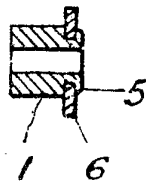


FIG. 4.

FIG. 2.

FIG. 5.

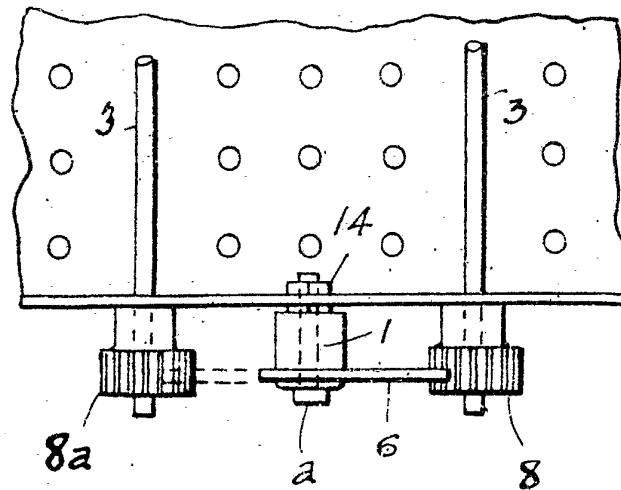
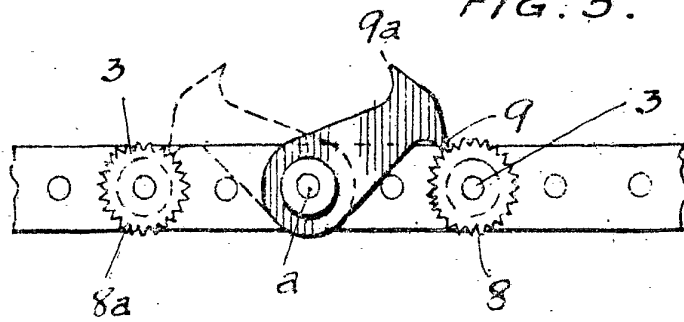


FIG. 6.

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