



No. 14,388/14.

APPLICATION DATED

11th September, 1914.

Actual Inventor and Applicant ... FRANK HORNBY.
 Application and Complete Specification ... Received, 11th September, 1914.
 Acceptance ... Advertised, 14th September, 1915.

Classes 53.9; 74.5; 62.8.

Drawing attached.

COMPLETE SPECIFICATION.

“An improved coupling or the like device for shafts, rods, axles or the like.”

I, FRANK HORNBY, of 274 West Derby Road, Liverpool, England, Manufacturer, hereby declare this invention and the manner in which it is to be performed, to be fully described and ascertained in and by the following statement:—

This invention relates to an improved device for use in the construction of toys or small engineering models adapted to be built up from standard separate parts, such parts being capable of being taken to pieces and re-made up into other toys as required. In such construction of toys it is frequently desirable to extend a length of shafting, rod or the like, by means of an element adapted to join the abutting ends of the pieces of shafting, or to connect together rods or the like disposed at right angles or otherwise relatively inclined.

According to this invention, a tubular element is provided, the bore of which is adapted to fit the exterior diameter of the pieces of shafting, or the like, required to be connected, the element being provided at each end with pinching screws, and having also a transverse hole at one end, by which arrangement a length of shafting may be fitted axially into the element or transversely thereto, and be gripped therein if desired by the pinching screws. In addition to this end transverse hole, the element may be also provided with one or more transverse holes disposed intermediate between the end

pinching screws, such intermediate hole or holes being disposed in planes at right angles to the axis of the element or obliquely thereto, and fitted with pinching screws adapted to retain the shafting or the like therein.

The invention is illustrated in the accompanying drawings, in which:—

Fig. 1 is a perspective view of an element constructed in accordance with this invention, and shown connecting together three lengths of shafting, the intermediate hole being disposed at right angles to the axis of the coupling element.

Fig. 2 is a vertical section through the element shown in Fig. 1.

Fig. 3 is a plan view, and

Fig. 4 an end view, of Fig. 1.

Fig. 5 is a view analogous to Fig. 1, but showing the intermediate hole obliquely disposed to the axis of the element, and

Fig. 6 is a plan view of Fig. 5.

Figs. 7 to 11 show various applications of the element.

Figs. 7 and 8 being side and end views, respectively, showing the element used as an end bearing for a shaft.

Figs. 9 and 10 are side and end views, respectively, showing the element used as a bearing for two shafts at right angles, and

Fig. 11 shows the element utilised as a chuck for a model lathe.

The element 1 comprises a tubular piece of any suitable material, the bore 2 of which

is made of standard diameter to closely engage round the shafts, axles, rods, or the like a which it is desired to connect together. Pinching screws 3 and 4 are fitted into threaded holes formed at each end of the element, so that by inserting the ends of the separate pieces of rod into the element and then tightening up the screws 3 and 4 a rigid continuity of the shafting may be effected. In this arrangement also, a transverse hole 5 is formed at one end of the element, and in the same plane as one of the pinching screws, 4, so that the latter screw may be available for gripping a rod disposed either axially as indicated in dotted lines, Fig. 1, or transversely in the element, as shown. Between the end pinching screws, 3, 4, one or more transverse holes 6 are provided. In the arrangement shown in Fig. 1, a hole 6 is formed at right angles to the hole 5, and a pinching screw 7 is fitted adapted to grip a length of shafting or the like when inserted through this hole. The element shown in Fig. 1 can, therefore, be utilised for connecting together shafting or rods disposed in three different directions, and is extremely useful in building up small braced structures or models.

In the modification shown in Figs. 5 and 6, the intermediate hole, instead of being formed at right angles to the main bore 2 of the element, is disposed obliquely thereto, as shown more clearly in the plan Fig. 6. As previously mentioned, several such intermediate holes, and of different angular inclinations, may be provided in the element.

Various applications of the element in toy or model construction are shown in Figs. 7 to 11. In Figs. 7 and 8 the element 1 is shown utilised as an end bearing for the rotating shaft 8, here shown provided with a pulley 9, the supporting rod 10 for the bearing 1 being gripped to the element by the pinching screw 5, the intermediate screw 7 and the other end screw 3 being slackened to permit the shaft 8 to rotate. Figs. 9 and 10 show the element 1 used as a bearing for two shafts 11 and 12, disposed at right angles, the rotating shaft 12 being shown carrying pulleys 13, and the element being gripped to the supporting rod 10 by the end screw 3, the remaining set screws being slackened. The shaft 11 may be a rotating shaft if the screw 7 is slackened, or, as shown, a frame rod. In Fig. 11 the element 1 is utilised as a chuck, being gripped by

the end set screw 3 to the lathe spindle 14, here shown journalled in perforations formed in the bent strips 15 as usual in model construction, the lathe spindle being driven from the pulley 16. Any small article to be turned may be directly gripped by either of the pinching screws 4, 7, in either the axial hole of the element or the transverse holes engaged by the pinching screws, or connected to a small piece of rod inserted in the holes.

For a simpler type of element, the intermediate hole 6 and its pinching screw 7 may be eliminated, the element being in that case merely provided with one or more end holes commanded by either or both of the pinching screws 3, 4.

Having now fully described and ascertained my said invention and the manner in which it is to be performed, I declare that what I claim is:—

1. An element for connecting together axles, rods, shafting, or the like, for use in building toys or models, comprising a tubular piece fitted with pinching screws at each end and having one or more holes intersecting the axial hole of the element, the pinching screw or screws being disposed so as to command the point or points of intersection of the holes, whereby a rod or the like may be gripped by the same screw in either the axial or a transverse hole.

2. An element for connecting together axles, rods, shafting, or the like, for use in building toys or models, comprising a tubular piece fitted with pinching screws at each end and having one or more end transverse holes intersecting the axial holes of the element and commanded at the point of intersection by the end pinching screws, one or more transverse holes intermediate to the end holes being formed in the element, said intermediate hole or holes being also fitted with pinching screws whereby the element may be adapted for connecting together a series of rods or shafts at different angular inclinations.

3. A tubular element for use in building toys or models, from interchangeable parts, substantially as described and shown in the accompanying drawings.

Dated this 10th day of September, A.D. 1914.

EDWIN PHILLIPS,
Patent Attorney for the Applicant.

Witness—Frank Helps Cain.

FRANK HORNBY.

Shaft, &c., Coupling.

