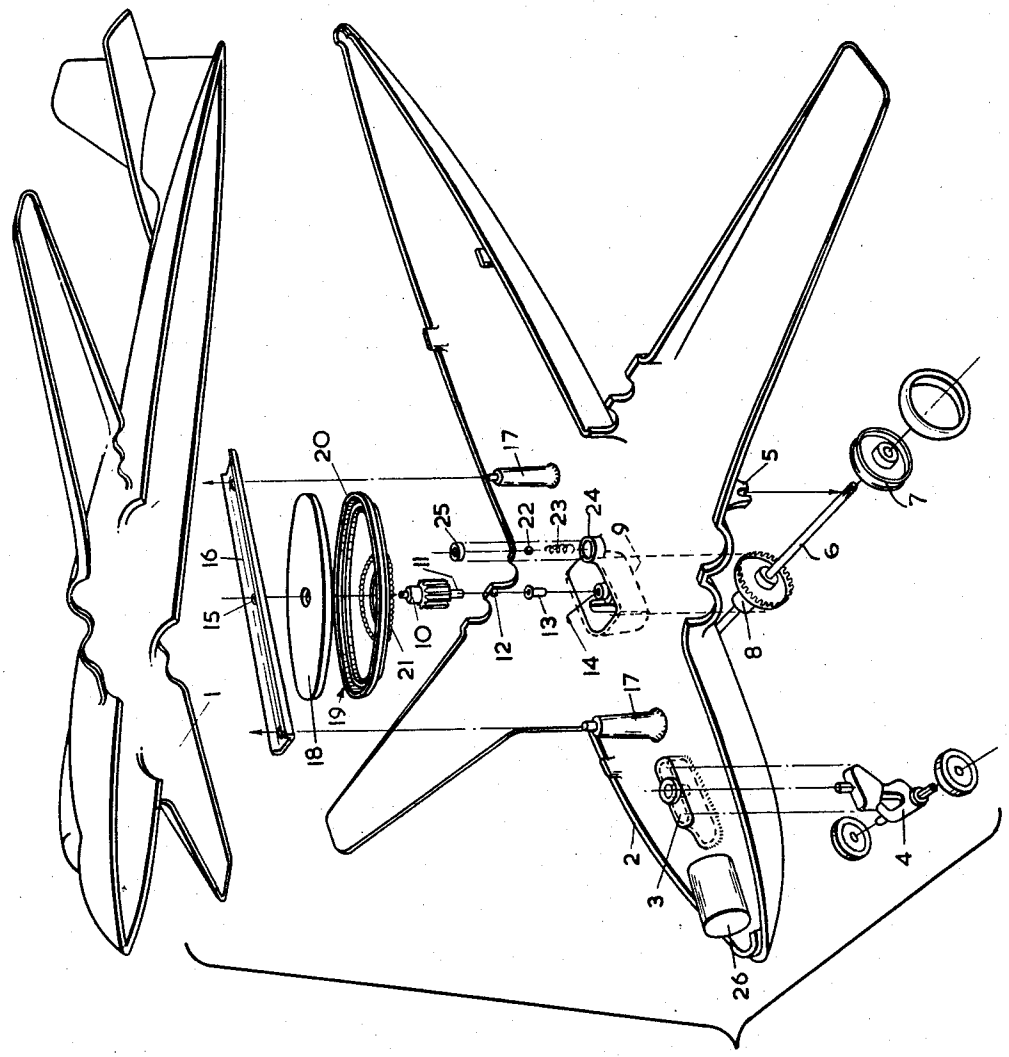
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SOUNDING TOYS

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SOUNDING TOYS

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This invention relates to toys and is primarily concerned to provide an improved sound producing device for incorporation in toys.

According to the present invention there is provided a sound producing device for incorporaiton in a toy comprising a vibratory diaphragm carrying a circular sound track, at least one striker member mounted to engage the diaphragm, and means for producing relative rotation between the diaphragm and the striker member, so that the latter moves relative to the sound track and causes vibration of the diaphragm.

The invention contemplates mounting my sound producing device on a model vehicle including at least one wheel on which the vehicle can be run along a surface, the vibratory diaphragm carrying its circular sound track being rotatably supported on the vehicle, and there being at least one striker mounted on the vehicle to engage the diaphragm as it rotates, together with means for causing rotation of said circular vibratory diaphragm relative to said striker member upon rotation of said one wheel, so that said striker member moves relative to the sound track and causes vibration of the diaphragm.

In the preferred arrangement the diaphragm is mounted for rotation in its own plane and said circular sound track is formed on one face with and consists of a series of projections or serrations disposed along a circular path concentric with the axis of rotation, while the striker member is carried by a stationary support so as to bear against the said face of the diaphragm along the said path. Conveniently the diaphragm is supported by and secured for rotation with a flywheel arranged to be driven by at least one of the wheels upon which the toy is supported.

One particular toy embodying a sound producing device in accordance with the invention will now be described by way of example with reference to the accompanying drawing, but it will be understood that the invention is not limited to this particular toy.

The sole figure of the accompanying drawing shows an exploded view of a model aeroplane incorporating a sound producing device according to the invention and referring to this drawing the aeroplane comprises upper body member **1** and lower body member **2** in the form of thin shells moulded from a suitable synthetic resin material, which fit together to form a hollow body representing the fuselage, wings, engine cowlings and empennage of the aeroplane. The lower body member **2** is formed with a socket **3** which receives a nose wheel assembly **4** and with a pair of depending struts **5** whose forked lower ends receive a horizontal axle **6** having a pair of supporting wheels **7** secured to its ends. This axle **6** carries a crown wheel **8** which is accommodated in a housing **9** formed on the lower body member **2** and meshes with a pinion **10** formed integrally upon a vertical shaft **11** disposed within the hollow body. The

lower end of the vertical shaft rests upon a bearing ball **12** supported upon a thrust bearing formed by a metal eyelet **13** inserted in a socket **14** provided in the lower body member. The reduced upper end of the vertical shaft **11** is received in a hole **15** formed in a horizontally disposed strip metal bridge piece **16** of channel section, which is supported at its front and rear ends upon pillars **17** formed integral with the lower body member **2**. Between the pinion **10** and the bridge piece **16** there is secured to the shaft a horizontally disposed metal disc **18** of substantial size and mass, constituting a flywheel.

On the underside of the flywheel there is mounted a cupped circular diaphragm **19** of thin, resiliently flexible material, formed at its periphery with an upstanding wall or rim **20** which engages elastically around the periphery of the flywheel to secure these parts together. Within the marginal rim the diaphragm is dished downwardly, so as to be spaced apart from the underside of the flywheel, the flywheel and diaphragm together defining a substantially closed resonance chamber. At its centre the diaphragm is formed with a hole (not shown) of sufficient size to clear the vertical shaft **11** and its pinion **10**. Formed upon the underside of the diaphragm is a concentric annular ridge **21**, whose lower edge is formed with closely spaced serrations. This ring of serrations is engaged by a bearing ball **22**, which is urged upwardly against the diaphragm by a helical compression spring **23** accommodated in a socket **24** formed in the lower body member **2**. A metal or plastic cup **25**, having a central aperture through which the ball projects, engages in the upper end of the socket to retain the ball and spring. A balance weight **26** is provided in the nose of the aircraft.

It will be appreciated that when the toy is rolled along on its supporting wheels, the flywheel is set in rotation and that if the toy is then released or lifted clear of the supporting surface the flywheel will continue to rotate for some time. During rotation of the flywheel, the serrations on the diaphragm are carried over the spring mounted ball and the diaphragm is caused to vibrate and emit sound. The character of the sound produced is dependent upon the dimensions and other characteristics of the diaphragm and the sound track which it carries; in the toy described these are so chosen that the sound produced simulates the whine of jet aircraft engines.

I claim:

1. In a sounding toy, a supporting structure, a rotary shaft carried by said structure, a rigid and massive flywheel disc fast on said shaft, a thin resiliently flexible diaphragm having a cupped circular portion formed with a central aperture through which said shaft passes freely and a continuous peripheral flange projecting from the concave face of said circular portion, said flange resiliently embracing the periphery of said flywheel disc to secure said diaphragm thereto with said circular portion spaced from the adjacent face of said flywheel disc and together defining a substantially closed resonance chamber, a circular sound track concentric with said shaft formed on the convex face of said diaphragm, and a striker member carried by said structure for engaging said sound track and causing movement of said diaphragm towards and away from the adjacent face of said flywheel disc when said shaft is rotated.

2. In a sounding toy, a supporting structure, a shaft journalled in said structure, a rigid disc fast on said shaft, a resiliently flexible disc having a central aperture through which said shaft passes, said flexible disc being secured at its periphery to said rigid disc but being otherwise free of said rigid disc and spaced axially apart there-

from, a plurality of serrations on the face of said flexible disc remote from said rigid disc said serrations being distributed around the axis of said shaft and equidistant therefrom, a striker ball supported by said structure, said ball being held by said structure in rolling engagement with the serrated face of said flexible disc, and means for rotating said shaft to bring each of said serrations in turn into engagement with said striker ball and thereby cause displacement of said flexible disc towards said rigid disc.

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