

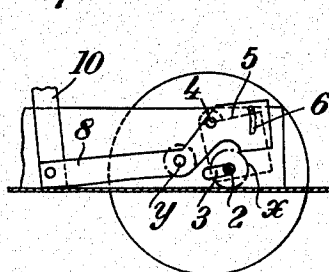
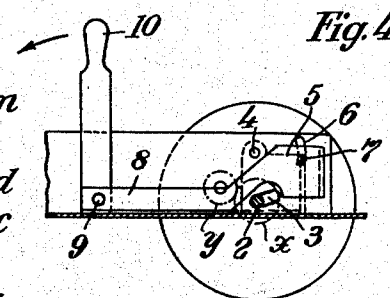
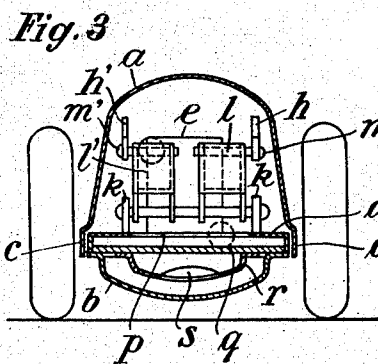
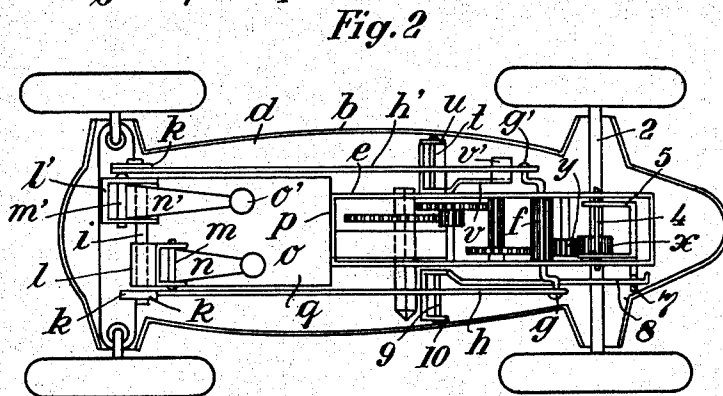
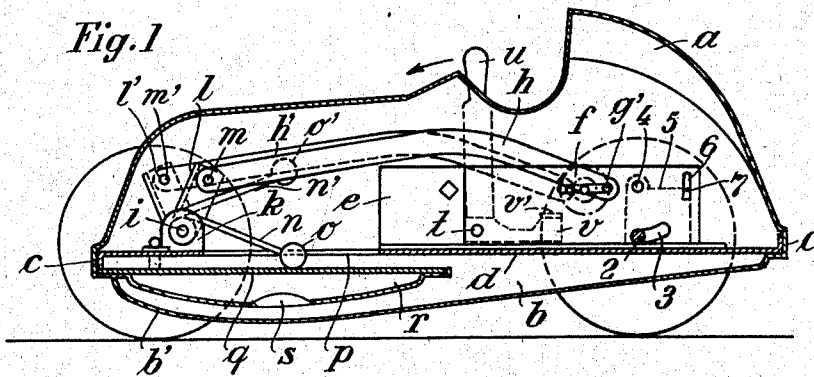
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TOY VEHICLE WITH SOUNDING MEANS

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TOY VEHICLE WITH SOUNDING MEANS

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6 Claims. (Cl. 46—175)

This invention relates to a toy in the form of a vehicle (motor car, locomotive, locomobile, tractor or the like), an aeroplane or a stationary engine, in any case a large technical structure with audible engine, preferably internal combustion engine, and consists chiefly in that, by means of a self-acting percussion mechanism, for example actuated by the driving mechanism of the toy, the sound of the engine of the large technical structure is imitated true to nature as regards kind and rhythm of the sound. The percussion mechanism is constructed and arranged so that it acts at the same time as a speed regulation means for the driving mechanism.

An embodiment of the invention as applied to a toy motor car is illustrated by way of example in the accompanying drawing in which:—

Fig. 1 shows the motor car in longitudinal section.

Fig. 2 is a top plan view, the top casing being removed.

Fig. 3 is a cross section.

Figs. 4 and 5 show details.

The vehicle comprises a top casing *a* and a bottom casing *b* enclosing the sound producing device. A frame *e* carrying the spring motor rests on a base plate *d* mounted in a recess *c* in the casing. A pinion *f* of the spring motor is mounted on a shaft projecting through the frame *e* and provided at its ends with oppositely directed cranks *g*, *g'* on which upwardly bent flat connecting rods *h*, *h'* arranged parallel to the longitudinal axis of the vehicle, are mounted. The percussion mechanism in the front part of the vehicle is connected to these rods and comprises the following parts:—

Two straps *l*, *l'* are rotatably mounted side by side on a stationary axle *i* and form arms *n*, *n'* carrying striker heads *o*, *o'*. The connecting rods *h*, *h'* are hingedly connected to the straps *l* and *l'* at *k*. The arms *n*, *n'* may be rigid or resilient and, if desired, they may form separate parts on the straps *l*, *l'*. The straps *l*, *l'* are mutually displaced in the same sense as the cranks *g*, *g'*. The striker heads *o*, *o'* extend through an aperture *p* in the base plate *d* and act on a diaphragm *q* arranged below this plate *d* and mounted on a resonance board *r*. This resonance board which is curved like a sound box, has a sound aperture *s* and is fitted in the casing of the toy in a suitable manner.

On one side of the driving mechanism frame a lever is mounted at *t*, one arm *u* of this lever being directed upwardly and so arranged that it can be actuated by hand, whereas the flat bent

end *v* of the other lever arm *v* is situated so that it can be brought within the range of movement of the connecting rod *h'* near crank *g'*.

When the spring motor is in operation and lever *u*, *v* assumes the position shown in Fig. 1, the connecting rods *h*, *h'*, during the rotation of the pinion *f*, will be reciprocated in counter sense by means of the cranks *g*, *g'* and by means of these rods the straps *l*, *l'* will be rapidly oscillated on the axle *i*. Consequently the strikers formed by the parts *n*, *n'* and *o*, *o'* alternately strike the diaphragm *q* in quick succession. Thus, a percussion noise is produced which is amplified by the resonance board *r* and damped by the casing *a—b*. This sound corresponds according to kind and rhythm with the noise made by the motor of a motor vehicle which the toy simulates.

The percussion mechanism *l*, *n*, *o*, *l'*, *n'*, *o'* and the rods *h*, *h'* act on the pinion *f* like a governor. Thus the whole spring motor is influenced in the same manner as by means of a speed regulator, so that a separate regulating device can be omitted which would otherwise be necessary.

The striking mechanism is rendered inoperative by means of a lever *u*, *v*. For this purpose the lever *u* is moved by hand in the direction of the arrow Fig. 1 and thereby the end *v* of the lever arm *v* comes to bear against the connecting rod *h'*. By these means, the motor is also arrested.

The driven rear axle 2 of the vehicle may be disconnected from the driving mechanism independently of the striking mechanism. For this purpose serves the device illustrated in Figs. 1, 2, 4 and 5.

A pinion *x* keyed on the rear axle 2 meshes with a pinion *y* of the spring motor when the rear axle is engaged (Fig. 4). The axle 2 is slidably guided in slots 3 in the motor frame *e* and mounted in a frame 5 pivotally mounted on an axle 4 within the motor frame *e*. A pin 7 on frame 5 projects through a slot 6 in the motor frame *e* and engages a lever 8 pivotally mounted at 9 on the outer side of the motor frame *e* (Figs. 2, 4 and 5). The other arm 10 of this lever is upwardly directed and provided with a handle. By moving this lever 8, 10 the frame 5 is swung about the axle 4. The wheel axle 2 participates in the movement. Thus, it is possible to stop the vehicle whilst the driving machine is still driving the percussion device. The sound of the motor, when the vehicle is standing still, is simulated and the toy enables the percussion mechanism to first be oper-

ated whilst the vehicle is standing still and to thus simulate the noise of starting up the engine, whereupon the rear wheel axle is engaged and the vehicle commences to travel with the percussion mechanism still operating and imitating the sound of the engine.

In the position shown in Fig. 4 the rear wheel axle 2 is engaged and the pinion x is in mesh with the pinion y of the driving motor. If the lever arm 10 is moved in the direction of the arrow, Fig. 4, the lever arm 8 will be brought into the position shown in Fig. 5 and frame 5 swung upwards. The axle 2 swinging with the frame 5 shifts in the guide slots 3 so that the pinion x moves out of mesh with the pinion y , thereby disconnecting the axle 2 from the driving mechanism. The vehicle then stands still, whereas the percussion device can be set in operation by means of the driving mechanism, so that the sound of the engine is reproduced when the vehicle is standing still. If the lever 8—10 is moved back, the axle 2 is again engaged by means of frame 5 and the vehicle starts to travel, the percussion mechanism remaining operative. When the lever v is operated to arrest the connecting rod h' , as described, the entire action of the toy is stopped, i. e. the percussion mechanism and the drive of axle 2 are stopped.

According to the characteristic of the sound of the motor which is to be made audible, more than two strikers or only a single striker may be employed. Furthermore, the percussion mechanism may be constructed in a different manner to that shown in the drawing.

The invention can be applied to any toy which represents a large technical structure with driving or operating engine and audible machinery. Reproductions of large stationary machines come into question besides vehicles and aeroplanes.

I claim:—

1. In a toy representing a power plant producing noise, a motor, a percussion mechanism operatively connected to the motor for imitating the noise of the plant, a driven part of the toy adapted to be operatively connected to the motor, and means for making and breaking the operative connection of the driven part and the

motor independently of the percussion mechanism.

2. In a toy representing a power plant producing noise, a motor, a percussion mechanism operatively connected to the motor for imitating the noise of the plant, a movable frame, a driven part of the toy mounted in the frame, and manually operated means for moving the frame so as to place the driven part into and out of operative relation to the motor.

3. In a toy representing a power plant producing noise, a motor, a crank shaft operatively connected to the motor, a percussion mechanism including as many strikers as there are cranks on the shaft, a connecting rod extending from each crank to the corresponding striker, a diaphragm in the path of the striker, and a resonance board connected to the diaphragm.

4. In a toy representing a power plant producing noise, a motor, a crank shaft operatively connected to the motor, a percussion mechanism including as many strikers as there are cranks on the shaft, a fixed pivot on which the strikers are mounted to oscillate, a connecting rod extending from each crank shaft to the corresponding striker, a diaphragm in the path of the striker, and a resonance board connected to the diaphragm.

5. In a toy representing a power plant producing noise, a motor, a crank shaft operatively connected to the motor, a percussion mechanism including as many strikers as there are cranks on the shaft, a connecting rod extending from each crank to the corresponding striker, manually operated means for locking one of the connecting rods against movement, a diaphragm in the path of the striker, and a resonance board connected to the diaphragm.

6. In a toy representing a power-driven vehicle, a motor, a percussion mechanism operatively connected to the motor for imitating the noise of the vehicle engine, a driving axle for the vehicle, a power-transmitting member on the axle, and means for placing the member into and out of operative relation to the motor.

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