May 8, 1934. L. STROHACKER 1,957,679

LIGHTING SYSTEM FOR TOY AUTOMOBILES

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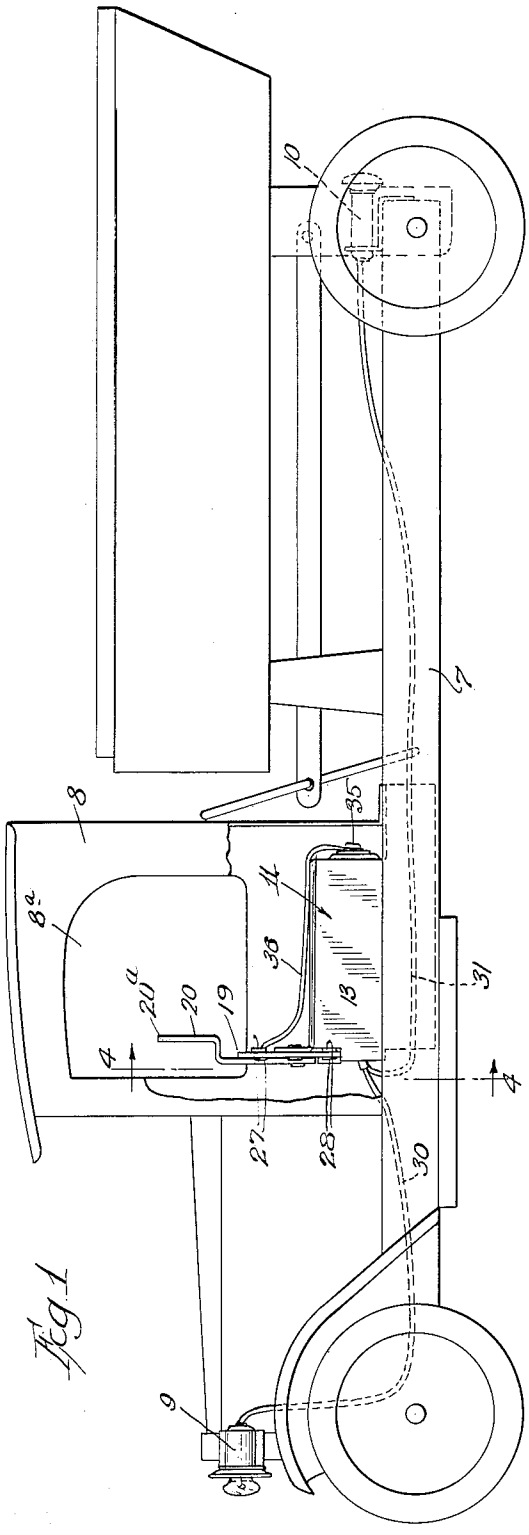


Fig. 1

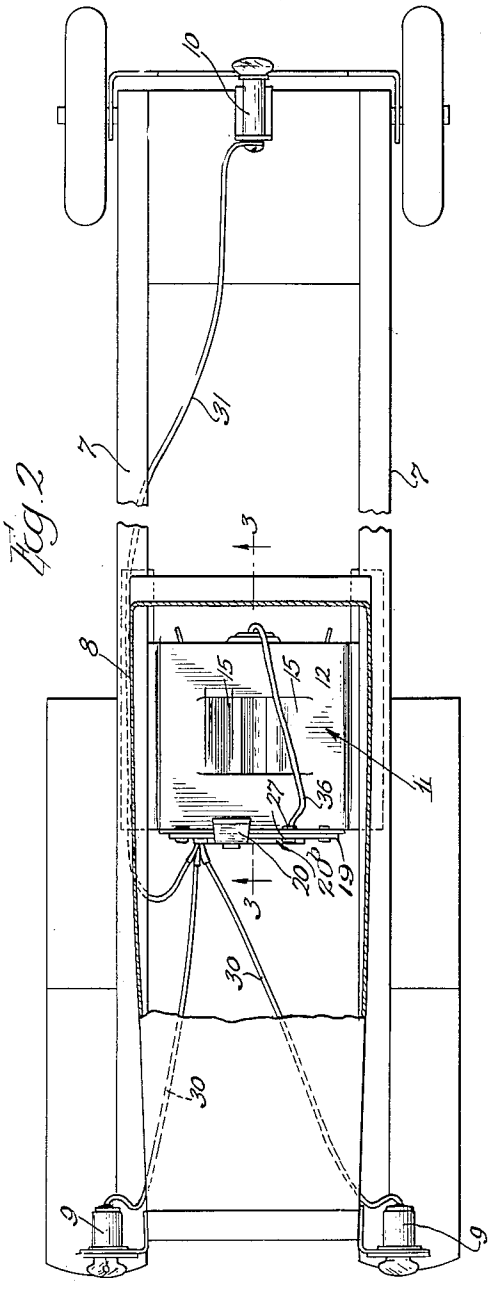


Fig. 2

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Fig. 3

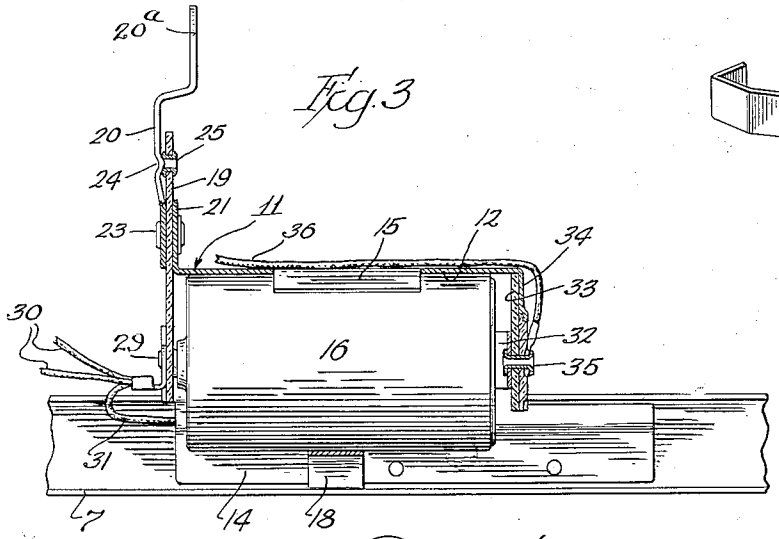


Fig. 6

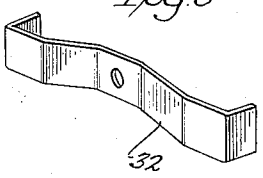


Fig. 4

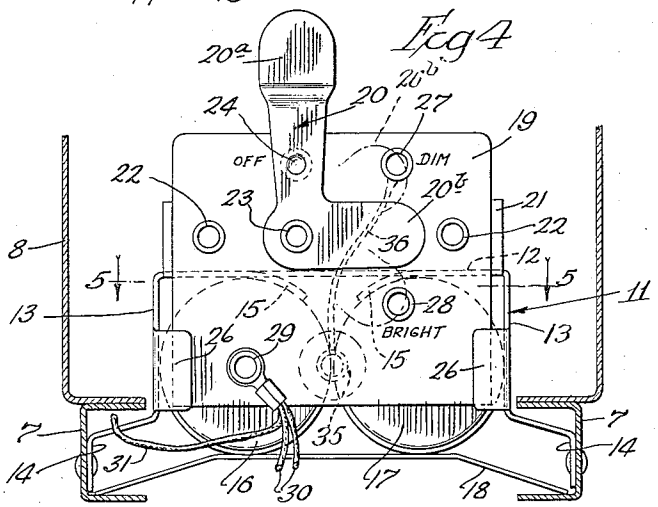
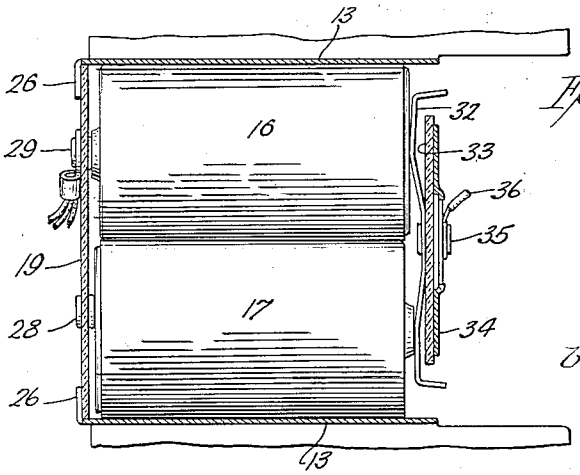


Fig. 5



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UNITED STATES PATENT OFFICE

1,957,679

LIGHTING SYSTEM FOR TOY AUTOMOBILES

Louis Strohacker, Freeport, Ill., assignor to Structo Manufacturing Company, Freeport, Ill., a corporation of Illinois

Application December 17, 1932, Serial No. 647,838

6 Claims. (Cl. 46—48)

This invention relates to lighting systems for toy automobiles and its principal object is to provide a simple and novel mounting for the batteries which furnish the electric current for the headlights and tail light of the toy automobile. Another object is to provide a mounting for the batteries arranged to support a switchboard at right angle to the length of the mounting, whereby the switch lever is located in convenient position for manipulation. Another object is to provide simple switching means for obtaining dim and bright lighting effects. Other objects and advantages will appear in the course of this specification and with all of said objects and advantages in view, this invention consists in the several novel features hereinafter fully set forth and claimed.

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

Fig. 1 is a side elevation, partly broken out, of a toy automobile equipped with a lighting system embodying a simple form of the present invention;

Fig. 2 is a plan thereof partly broken out;

Fig. 3 is a detail vertical longitudinal section of the battery mounting taken on the line 3—3 of Fig. 2;

Fig. 4 is a detail view partly in end elevation and partly in vertical cross section taken on the line 4—4 of Fig. 1;

Fig. 5 is a detail horizontal section taken on the line 5—5 of Fig. 4 and

Fig. 6 is a perspective view of a spring contact piece used to make contact between two batteries.

Referring to said drawings, the reference character 7 designates the longitudinal frame members of a toy automobile, here shown in the form of a dump wagon, and 8 designates the cab having the usual window openings 8a. The usual wheels, engine hood, box and equipment are provided to simulate corresponding parts of a standard vehicle. Headlights 9, are mounted at the front of the toy and a tail light 10 is mounted at the rear thereof. These headlights and tail light are of conventional form and usually contain a screw socket in which is screwed a small electric lamp, one terminal of which is grounded, on the frame of the toy through the screw socket, and the center contact of which is adapted to contact with a contact piece from which runs an electric wire to the battery connections.

The battery mounting or holder is seen at 11 and desirably is in the form of a sheet metal stamping formed with a horizontal top wall 12, having down turned side walls 13 which terminate in laterally projecting flanges 14, riveted, spot-welded or otherwise rigidly secured to the frame members 7. The latter are preferably of channel formation and the flanges 14 of the battery mounting extend laterally so as to enter the channels and rest on the lower flanges thereof. The top wall 12 is slit and struck downwards adjacent its medium line to provide two downwardly curved wings 15 which act to position the electric batteries 16, 17, that are used to furnish the current for the lamps of the headlights and tail light. A spring metal clip 18 is used to hold the batteries in place in the battery mounting. The clip is bent to form a middle part that bears against the underside of the batteries and two downwardly inclined parts that bear down against the frame members. The batteries are held parallel with each other, but with the corresponding poles extended in opposite directions.

Supported at one end of the battery mounting or holder is a switchboard 19 formed of a sheet of insulating material, upon which is pivotally mounted a contact piece 20 which is in the form of a switch lever having a finger piece 20a by which it is manipulated and a contact arm 20b for making the electrical connections as will be presently explained. The switchboard is arranged to stand at right angles to the batteries and the battery mounting with the switch lever in convenient position to be manipulated through the window openings in the cab. The supporting connections between the battery mounting and the switchboard comprise an upturned flange 21 which is bent up at one end of the top wall 12, of the battery mounting to which the switchboard is secured by eyelets or rivets 22. The switch lever 20 is also fastened to the switchboard by eyelet or rivet 23, which passes through the flange 21 and makes electrical contact between the switch lever and battery mounting, thereby grounding the switch lever on the frame of the toy. In the upstanding position of the finger piece of the switch lever, the latter occupies a neutral position determined by a depressed lug 24 formed on the switch lever, which enters an eyelet 25 secured in the switchboard. Desirably the side walls 13 of the battery mounting are formed with inwardly bent flanges 26 at one end which overhang the switchboard and reinforce it, thereby preventing it from being bent or sprung outwardly.

At the sides of the switch arm 20b eyelets or rivets 27, 28 are secured in the switchboard, which eyelets or rivets provide terminals for making electrical connection with one or both of the bat-

teries. A third eyelet or rivet 29 is secured in the switchboard, which provides a terminal for the conductor wires 30, 31 that lead respectively to the headlight lamps and tail light lamp. The eyelet 28 is located on the switchboard in position to contact with the negative pole of the battery 17, and the eyelet 29 is located to contact with the positive pole of the battery 16. (See Fig. 4.)

At the end of the battery mounting opposite the switchboard, is a contact piece 32 which extends crosswise of the battery mounting and makes contact with the positive pole of one battery and the negative pole of the other one as is best seen in Fig. 5. The contact piece 32 is insulated from the battery housing by a strip of insulating material 33 which is interposed between the contact piece 32 and a down turned flange 34 that is bent down from the top wall of the battery mounting. The contact piece 32 and insulating strip 33 are fastened to the flange 34 by an eyelet or rivet 35 which is insulated from the flange. An electric conductor 36 connects the contact piece 32, through the eyelet 35, with the terminal 27, with which the switch lever makes contact to establish the circuit through the one battery 16 and the headlight and tail light lamps. The batteries extend between the switchboard 19 and contact piece 32 and the latter being formed of spring metal, it holds the opposite ends of the batteries in contact with the terminals 28, 29, with the terminal 28 contacting with the negative pole of the battery 17 and the terminal 29 contacting with the positive pole of the battery 16. The contact piece 32 contacts with and electrically connects the positive pole of the battery 17 with the negative pole of the battery 16, thereby placing the batteries in series between the terminals 28, 29. The connections are such that the circuit for the lamps can be closed through the battery 16 alone and thereby obtain a dim light effect or the circuit may be closed through both batteries to obtain the bright light effect. The circuit for the dim light effect can be readily traced from the switch lever, which is grounded on the battery mounting, through terminal 27, conductor 36, contact piece 32, battery 16 and terminal 29 to the conductor wires 30, 31 that lead to the lamps which are grounded on the frame of the toy. The circuit for the bright light effect can be traced from the grounded switch lever 20, through contact 28, battery 17, contact piece 32, battery 16, contact 29, conductor wires 30, 31 to the lamps of the head lights and tail light and back to ground.

The parts are very rugged, easily applied to a toy automobile, are substantial and not likely to get out of order. By placing the switchboard at right angles to the batteries, simple electrical connections are made possible, and the switch lever is located in convenient position for manipulation.

I claim as new and desire to secure by Letters Patent:

1. In a lighting system for toy automobiles having electric lamps, the combination of a metal toy automobile frame, a battery mounting on the frame, said battery mounting having a vertical flange at each end, a switchboard of non-conducting material, secured to one of said flanges, a contact piece secured to the other flange, but insulated therefrom, a switch lever mounted on said switchboard, a battery supported in said battery mounting with one pole in contact with said contact piece, two terminals secured on said switchboard, one arranged to make and break contact with said switch lever and electrically connected to one pole of the battery through said contact piece and one contacting with the other pole thereof, said switch lever and the second mentioned terminal being electrically connected with the electric lamps of the toy.

2. In a lighting system for toy automobiles, having electric lamps, the combination of a metal toy automobile frame, a battery mounting secured to the frame, a switchboard of non-conducting material, secured to said battery mounting at right angles to the length thereof, a switch lever mounted on said switchboard, a plurality of batteries supported in said battery mounting and arranged with the positive pole of one and the negative pole of the other disposed at one end, a contact piece contacting with said positive and negative poles, two contact making terminals secured in said switchboard, one arranged to make and break contact with the switch lever and having an electrical connection with one pole of one battery through said contact piece, and one arranged to make and break contact with the switch lever and having an electrical connection with a similar pole of the other battery, and a third terminal secured in said switchboard, and having an electrical connection with the opposite pole of the first mentioned battery, said switch lever and the third mentioned terminal being in circuit with the electric lamps of the toy.

3. In a lighting system for toy automobiles, the combination of a metal toy automobile frame, a battery mounting secured to the frame of the toy, a switchboard secured to said battery mounting to extend at right angles to the length thereof, a switch lever mounted on said switchboard, a plurality of batteries supported in parallel relation in said battery mounting and arranged in series, two contact making terminals secured in said switchboard co-operating with said switch lever to open and close two circuits and a third terminal secured in said switchboard, a contact piece contacting with one pole of one battery and with the opposite pole of the other battery, and an electrical connection between one of said contact making terminals and said contact piece, the batteries extending between the switchboard and contact piece and one pole of one battery being held in contact with the other of said contact making terminals, and the opposite pole of the other battery being held in contact with the third mentioned terminal, the switch lever and said third mentioned terminal being in circuit with the lamps of the toy.

4. In a lighting system for toy automobiles having electric lamps, the combination of a metal toy automobile frame, a sheet metal battery housing secured to the frame, a switchboard secured to the battery housing and extending at right angles to the length thereof, a switch lever mounted on said switchboard, two terminals secured in said switchboard, two batteries secured in said battery mounting with one pole of one battery contacting with one of said terminals, and the opposite pole of the other battery contacting with the other terminal, a contact piece contacting with the other poles of the two batteries, and a third terminal secured in said switchboard and having an electrical connection with said contact piece, the switch lever and one of said terminals being in circuit with the lamps of the toy, and said switch lever being arranged to make contact with either of said other two terminals.

5. In a lighting system for toy automobiles, having electric lamps, the combination of a metal toy automobile frame, a battery mounting having a top wall, down turned side walls, an up turned end wall and a down turned end wall, said battery mounting being secured on the frame of the toy, a switchboard secured to said up turned end wall, a switch lever and terminals secured in said switchboard, two batteries arranged parallel with each other, but with their corresponding poles extended in opposite directions, said batteries being held between the top and side walls of the battery mounting, and a spring contact piece insulated from and supported by said down turned end wall and arranged to contact with opposite poles of the two batteries and to hold the other two opposite poles of the batteries in contact with terminals on the switchboard.

6. In lighting systems for toy automobiles, the combination of a metal toy automobile frame, a sheet metal battery mounting secured thereto, a switchboard secured at one end of said battery mounting, and having a switch lever and terminals secured therein, a spring contact piece insulated from and secured to the battery mounting at the end opposite the switchboard, and two batteries arranged parallel with their corresponding poles extended in opposite directions, held with the poles at one end in electrical contact with the terminals on the switchboard and the poles at the opposite ends of the batteries held in contact with the contact piece.

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