Feb. 9, 1954 H. B. TRIMBLE 2,668,370

MEANS FOR DEMONSTRATING AND RECORDING RELATIVE MOTION BETWEEN OBJECTS

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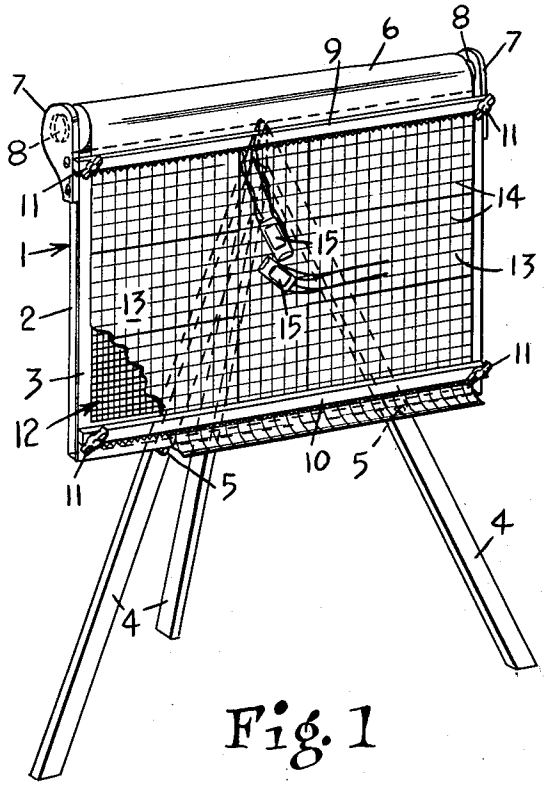


Fig. 1

Fig. 2

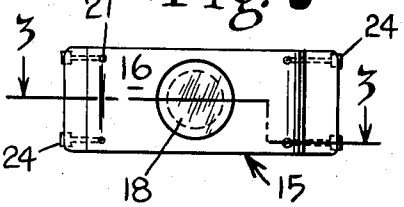
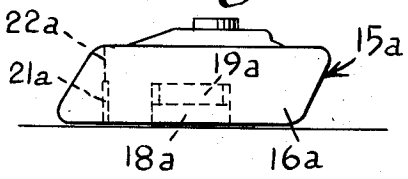


Fig. 4



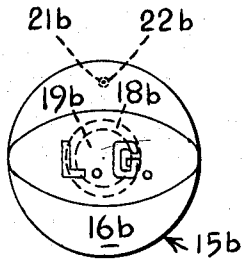


Fig. 5

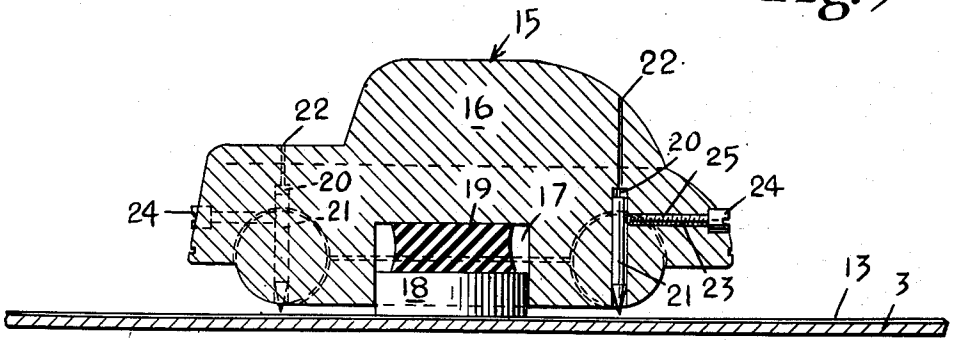


Fig. 3

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MEANS FOR DEMONSTRATING AND RECORDING RELATIVE MOTION BETWEEN OBJECTS

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6 Claims. (Cl. 35—7)

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My invention relates to a demonstration apparatus of the type in which scale-models of objects are movably held by magnets, or by gravity, on a surface representing a scene or locality of the action to be demonstrated.

Prior-art demonstrators of this general type have proven only partially satisfactory for showing the beginning or the end of a pattern of relative movements, but have not been satisfactory for a complete showing of the motion-pattern, even during the demonstration. Moreover, prior-art devices of this type did not provide for making permanent records of the actions demonstrated, which records would be of great value for later study or review, as, for example, an appeal from a traffic-court ruling on a highway-accident.

Objects of invention

Accordingly, it is an object of my invention to provide a demonstration apparatus having means associated therewith for making permanent records of the actions demonstrated thereon.

It is another object to make the record-preserving means easily and conveniently placeable and removable from the apparatus.

It is a further object of the invention to provide such an apparatus with movable models or pieces having means selectively and easily operable to make continuous records of movements of the models or specific parts thereof, as desired.

Other objects and advantages of the invention will become apparent as the description proceeds.

Detailed description

In the drawings forming a part of this specification and in which like reference characters refer to like parts thruout the several views:

Fig. 1 is a perspective view of the apparatus in operative position and condition.

Fig. 2 is a bottom view of one of the model automobiles shown in Fig. 1.

Fig. 3 is an enlarged longitudinal cross-sectional view in elevation of the model car of Fig. 2 taken on the line 3—3 of Fig. 2.

Fig. 4 is a side elevational view of a model piece simulating a military tank.

Fig. 5 is a plan view of a symbol-bearing piece.

The form in which I have shown my invention as being reduced to practice, comprises a blackboard-like panel generally designated as 1. The panel comprises a relatively rigid back-member 2, which may be either a rectangular frame or a solid board. Over the face of said frame or board is a sheet 3 of iron, steel, or other ferro-magnetic material (it should be noted, however, that for

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a horizontally disposed demonstration device, the panel 3 may be formed of any desired material, since in such form gravity would hold the models in place). The panel 1 may be supported on any desired type of support such as the tripod 4, being supported thereon as by pins 5. Along one edge of the panel 1, preferably the top edge, there may be supported a roll of recording paper 6 or the like, supported in any well-known manner between the support members 7. The members 7 carry trunnion-forming protuberances 8 for engagement within the tubular opening usually present in such rolls of paper. Along the edge of the panel 1 and adjacent the roll 6, there is provided a conventional serrated tear-off rod or bar 9. Along the opposite edge of panel 1 is a second like tear-off bar 10. Said bars may be pressed against the plate 3 by conventional means, such as springs, or wing-nuts 11 as shown.

The panel 3 is preferably lined to a selected scale, as is shown at 12, where the corner of the sheet of paper 13 is torn away. The lines are preferably black or of a dark color on a background of white or light color, whereby unlined translucent paper may be used, with the graph lines 12 of the plate 3 showing therethrough. The panel 3 could also be made ferro-magnetic by adding iron filings or wire to a sheet of cardboard, plywood, etc.

As shown in Fig. 1 the paper may be substantially opaque and have thereon graph-like scale lines 14. As shown in Fig. 1 the lines 14 may be used to assist in drawing a street intersection, or the like, to scale, and vehicles such as 15 (also to scale) may be placed thereon to demonstrate traffic accidents or occurrences.

The scale models may simulate an automobile 15, as in Fig. 3; a military tank 15a, as in Fig. 4; or a checker-like object 15b, as in Fig. 5, the distinctiveness of which would be indicated by words or symbols, such as "L. G." to designate "Left Guard," etc.

The model automobile 15 of Fig. 3 comprises a body 16 of wood, plastic or other suitable material. Centrally of the bottom there is provided a recess 17, into which a magnetic body 18 is snugly but slidably received. The magnetic body 18 is normally held slightly protruding from the bore 17 by a member 19 of resilient material, such as rubber or other spring-like material, which is fastened to the top surfaces of the bore 17 and of the magnet 18. By this construction a downward pressure on the car 15 will force the body 18 upwardly into the recess 17, for a purpose to be described later. The bottom of the car 15

is provided with from one to four vertically extending recesses 20 into each of which may be inserted a pencil or other marking device 21. These pencils may be held in adjusted position either by a close frictional fit in said recesses, or by other suitable means, such as set-screws 25, which may have enlarged heads 24 simulating head and tail lights as shown. The bores 20 may be provided with smaller-gage extensions 22 for the insertion of a pin or push rod for adjusting the position of the markers 21.

The pencils 21 are preferably located at points corresponding to mid-points of the areas of contact between the tires and a road surface, whereby upon application of a force downwardly on the model car and upon a demonstration-movement of the downwardly pressed model across a record-preserving sheet 13, a permanent record of the path followed by each wheel is produced. Each pencil or pair of pencils may be of a different color, if desired, according to a code.

In Fig. 4 the model 15*a* simulates a military tank. Other models obviously may represent guns, battleships, aeroplanes, etc.

In Fig. 5 there is disclosed a disk-like piece 15*b* which is suitable for representing players in a sports-game, such as football for example.

It should also be noted that the markers need not be placed in the bottom surface of the models, but could be located on other surfaces thereof or be omitted altogether, making part 19 dispensable.

Mode of operation

When it is desired to use my apparatus for making a record-preserving demonstration of relative movements of a plurality of objects, represented by models or pieces, a sheet of paper 13, which may be pulled from the roll 6, is placed so as to overlie sheet 3, as shown in Fig. 1, and is then clamped in such position by the bars 9 and 10, as described above. Assisted by the lines 14 on the sheet of paper 13 (or if said sheet is unlined and is translucent, by the lines 12 on the plate 3) the operator will draw lines to represent curbs, hills, game-court markers, etc., to a desired scale. Then objects, such as car 15, tank 15*a* or football player 15*b*, are placed in their initial positions on the panel 1, against which they are held by the magnets 18, or by gravity. The outline of the models in their initial positions may, if desired, be traced with a pencil or other marker. The models are then moved through a demonstration path to their final position, with or without line-producing pressure on the models. Such line-producing pressure may be deferred until substantial agreement is reached as to the path followed by each model, and then be made by pressure and movement, as previously described.

Having thus described my invention, I claim:

1. A demonstration piece for use with a demonstration surface having ferro-magnetic properties, comprising: a body, a magnet associated with and defining a bottom surface of said body, a yieldable means interposed between said body and said magnet, and marker means on the bottom of said body, lying slightly above the bottom surface of said magnet, whereby a downward pressure on said body will cause said marker means to contact a record-preserving surface for marking the same.

2. A demonstration piece according to claim 1 and in which said yieldable means comprises a layer of resilient material adhesively connected to said body and to said magnet on its opposite faces.

3. A demonstration piece according to claim 1 and in which said marker means are rod-shaped members lying in vertical channels and adjustable therein.

4. A demonstration piece according to claim 3 and additionally comprising: small bores alined with said channels for receiving an adjusting rod.

5. A demonstration piece according to claim 4 and additionally comprising set-screws for holding said marker means in adjusted positions.

6. A piece for demonstrating relative motions between objects on a demonstration surface, comprising: a body member, support means attached to said body member for engaging a surface to hold said body in normal resting relation thereto but permitting motion thereof along said surface, yieldable means acting between said body member and said support means so as to urge said body member away from said surface, at least one marker attached to said body and normally held out of contact with said surface by said yieldable means, said body being thereby selectively manipulatable to bring said at least one marker into engagement with said surface to produce record-preserving markings thereon.

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