

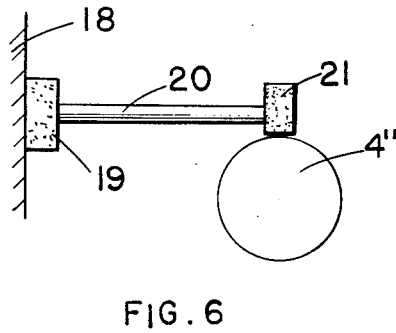
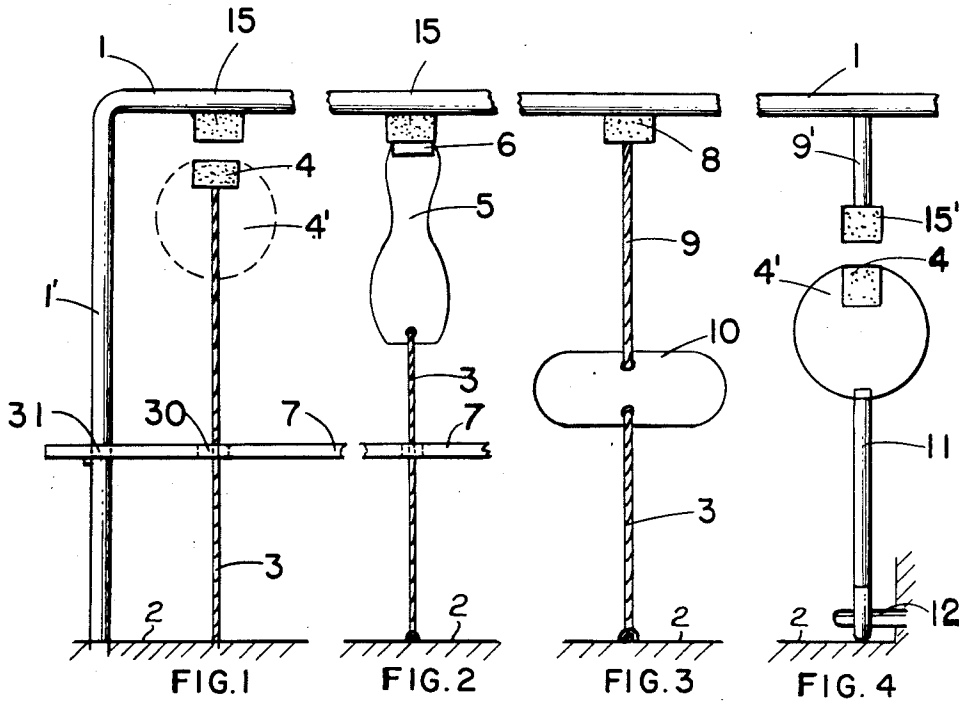
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MAGNETIC TARGET

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2 Sheets-Sheet 1



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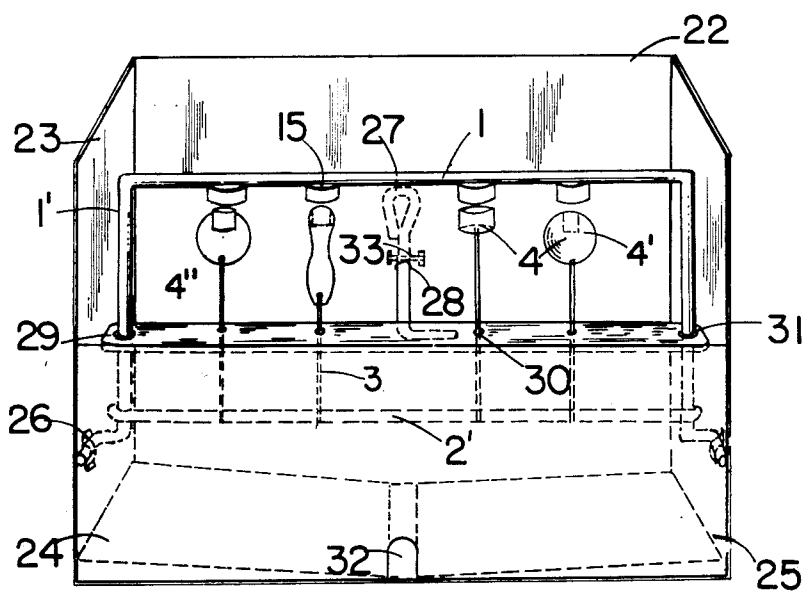


Fig. 7

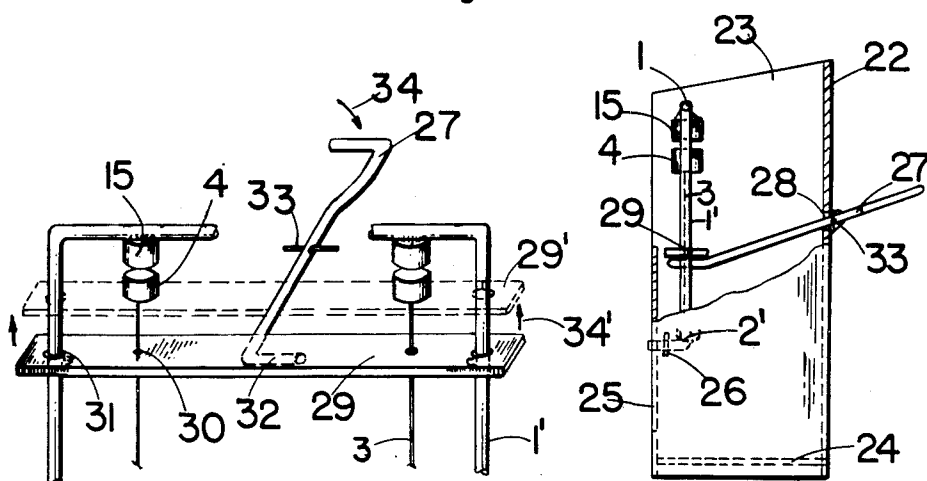


Fig. 8

Fig. 9

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1

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MAGNETIC TARGET

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10 Claims. (Cl. 273-103)

This invention relates to targets and target games and particularly to targets which are suspended or held by the forces of magnetism.

It is an object of this invention to provide an amusement device or target game consisting of one or more objects which are suspended in space by the forces of magnetic attraction.

It is a further object to describe various types of targets which may be suspended in space or secured to a target frame by the forces of magnetic attraction.

A third object of the invention is to provide a target game with means for quickly resetting one or more targets automatically and suspending them in space after they have been knocked out of a magnetic field.

A fourth object of this invention is to provide a target game with means for quickly resetting one or more targets automatically and suspending them from a frame after they have been knocked down.

Other objects will more fully appear as the description proceeds.

This invention utilizes the mutual attraction of the opposite poles of two magnets for each other or of a magnet and a magnetically susceptible object for each other. In the former arrangement, a magnet may be suspended in space on the end of a flexible line if said line is secured or anchored so as to position the magnet a fixed distance below another secured magnet when extended its full length. In other words, the magnet is actually floating in space anchored by the flexible line and held aloft by the mutual attraction of the magnets for each other. The same ends may be accomplished by a magnet and a magnetically susceptible object though the effects would not be as pronounced since the attractive forces are not as great as the mutual attraction of one magnet for another. Hence, a larger supporting magnet would be necessary to permit a gap between the object and magnet which is equivalent to the maximum permissible gap between two magnets for each other. Beyond this maximum permissible gap the forces of magnetic attraction will not be great enough to suspend the target in space and it will drop out of the field by gravity.

In the drawings, Fig. 1 is a side elevational view of a suspended magnetic target, suspending magnet and frame and resetting mechanism.

Figure 2 is a side elevational view of a target engaged by a magnet and resetting mechanism.

Fig. 3 is a side elevational view of a target suspended from a magnet which is attracted to a frame.

Fig. 4 is a variation of the target in Fig. 1.

Fig. 5 is an end elevational view of the target and toy figure arrangement.

Fig. 6 is an end elevational view of a portable target. Fig. 7 is a side elevational view of a target game with which the targets may be automatically reset simultaneously.

Figure 8 is an end elevational view of the target game in Fig. 7.

Fig. 9 is an isometric view of the target frame and resetting mechanism shown in Figs. 7 and 8.

In the drawings, wherein like numerals designate like parts, Fig. 1 shows a magnetic target object 4 suspended in space by utilizing a flexible line 3 secured to the base 2 and a supporting magnet 15 which is positioned on a frame 1 above the target. Line 3 is of such a length that the target 4 will be held a short distance away from the supporting magnet 15 when 3 is in its extended position. The maximum separating distance or gap between

2

both magnets will depend upon their mutual attraction for each other, the weight of the target and supporting flexible line. The same effect though not as pronounced may be had by utilizing a supporting magnet and a target object of a magnetically susceptible material. The suspended target may also consist of a target of a light material such as plastic or wood to which has been secured a magnet, positioned as shown, so as to support the object by magnetic attraction when line 3 extends its full length. The object of the game is to knock said target out of the magnetic field so that it drops away. The force of the blow required will depend upon the strength of the magnets and the length of gap between them. Target magnet 4 may be cemented to or embedded in the upper end of target 4'. 4' may consist, for example, of a hollow plastic object such as a "Ping Pong" ball.

For resetting the target after it has been knocked down, a horizontal bar 7 may be utilized. Said bar is guided vertically by the vertical supports 1' of the horizontal post 1. The flexible line 3 extends through a hole 31 in the bar so that the target is lifted to its suspended position when the bar is raised.

Figure 2 is the same as Figure 1 save that a target 5 of a magnetically susceptible material or having a magnetically susceptible button 6 secured to its upper end comes in direct contact with the supporting magnet 15. The target is automatically reset as described above.

Fig. 3 shows a target 10 suspended from a line 9 secured to a magnet 8 which is suspended from a magnetically susceptible frame by magnetic attraction between 8 and frame 1. Line 3 is anchored below the target and secured to its lower end as shown. The object in this arrangement is to hit the target squarely otherwise it will spin and not disengage as desired.

Fig. 4 shows a target 4' having a magnet 4 secured to it. In this arrangement a rigid support 11 which may pivot about a base eyelet or hook 12 replaces the flexible line 3 and a supporting magnet 15' is secured to a projection 9' extending from the horizontal frame 1. This latter arrangement will permit a target to hang a greater distance below the horizontal frame for added realism. Target supporting magnet 15' may also be secured to or embedded in a toy object to hide it.

Figure 5 illustrates an arrangement whereby a target or toy is suspended from a toy figure to simulate, for example, a clown holding a balloon. In the figure, a frame 13 extends beyond the toy clown figure and contains supporting magnet 15. The upright projecting member or frame 13 is secured to base 16 on which toy figure 17 is also mounted. In this case, a "Ping Pong" ball 4' simulates a toy balloon. A magnet 4 is secured to its upper section and it is held below 15 by flexible line 3. The numeral 14 refers to a projecting section of upright 13 which may be used to mask the magnet 15.

Fig. 6 shows a target 4'' and target mount which is portable for its placement anywhere on a surface which is magnetically susceptible. The player may thus place targets at random to be knocked off their supports. Target 4'' may consist of a magnetically susceptible material or may have a magnet secured to it and is supported by a magnet 21 which is secured to an extend-arm 20. 20, in turn is secured to a magnet 19 which engages and is held to a magnetically susceptible surface such as 18. Considerable flexibility is thus attained since the unit may be suspended at any angle from any magnetically susceptible object.

The embodiment of Figures 7, 8 and 9 illustrates a target game with a series of suspended targets which may be automatically reset after being knocked down by utilizing a lever arm and a resetting bar. In all figures, the open box shaped target backdrop consists of two sides 23, a back board 22 for stopping the flight of the missile, a bottom 24 and a half front face 25. A horizontal bar 1 extends to two vertical posts 1' which are secured to the target backdrop, in this case by extending through lugs 26 which are fastened to the sides 23. A target supporting bar 2' extends between the vertical posts 1' and is secured to them. Flexible lines 3 extend from this bar to targets each of which may be suspended below a supporting magnet 15 secured to the cross bar 1.

3

Each line 3 extends through a hole 30 in reset bar 29. Said bar 29 is guided by posts 1' extending through holes 31 in the bar. Means are provided to raise bar 29 and reset the targets to their extended positions below supporting magnets 15. In this particular arrangement, this is accomplished by a lever arm 27 extending through a hole 28 in the rear wall 22 of the target frame. Arm 27 pivots on a shaft 33 which may be soldered directly to the rear wall 22, or ride in brackets extending from the wall. The other end of lever arm 27 extends under the reset bar 29 as shown and is bent to form projection 32 to facilitate lifting of the bar 29. Depressing the lever 27 in the direction indicated by arrows 34 will raise bar 29 in the direction of arrow 34' and will automatically position all targets below supporting magnets 15.

It can be seen that a number of arrangements may be employed to reset the targets after they have been knocked down. The bar 29 may be raised by other lever arrangements or may have projecting arms extending forward for lifting it by hand. A flexible line extending over horizontal frame 1 may also be utilized to lift said resetting bar 29.

In this particular arrangement, if spherical pellets are shot at the target they may be collected and returned quickly by slanting bottom 24 as shown and providing one of the walls with an exit 32 through which the balls may roll.

From the foregoing description taken in connection with the accompanying drawings it is believed that the construction and operation of my target devices and combinations will be clearly understood and while I have herein shown and described specific embodiments of my invention I do not limit myself to the details herein except for such limitations as may be defined in the appended claims.

I claim:

1. A magnetic target game comprising a frame formed with a horizontal member, supporting members secured to the horizontal member, a magnet secured to the horizontal member, a magnetic target suspended below said magnet on the end of a flexible line, means for securing said flexible line below said horizontal member and means for resetting said target by replacing it in the field of the upper magnet so as to suspend it in space against the tension of the flexible line.

2. A magnetic target game comprising a frame formed with a horizontal member, supporting members secured to the horizontal member and guiding a resetting bar, a magnet secured to the horizontal member, a target suspended below said magnet on the end of a flexible line running through a hole in the resetting bar, means for raising said bar to position the target below said stationary magnet, and means for securing said supporting members and said flexible line to a base.

3. A magnetic target game comprising a frame formed with a horizontal member secured to a supporting member, a resetting bar guided by said supporting member, a magnet secured to the horizontal member, a magnetically susceptible target engaged and held by said magnet and secured to the end of a flexible line running through a hole in the resetting bar, means for raising the resetting bar to engage the target to the supporting magnet and means for securing said supporting members and said flexible line to a base.

4. A magnetic target game comprising a frame formed with a horizontal member, vertical supporting members secured to the horizontal member and extending through holes in a resetting bar, magnets secured to the horizontal member, magnetic targets suspended below said magnets on the ends of flexible lines running through holes in the resetting bar and secured to a base, a backdrop and side walls secured to the base, means for raising the resetting bar to simultaneously position the targets below said stationary magnets said means consisting of a lever arm extending through the backdrop under the resetting bar and pivoted about a shaft secured to the backdrop.

5. A magnetic target device comprising a rigid structure, a flexible line secured at one end thereof to said structure, a first magnet secured to the other end of said line, a second magnet secured to said structure at the top thereof exerting a force on said first magnet, said first magnet being adapted to be held below said second magnet with said line taut in a selected position relative to said second magnet so that said force exerted between said

4

magnets is opposed only by the earth's gravitational field acting upon said line and said first magnet whereby to normally maintain said line taut, and to normally maintain said first magnet in said position thereof.

6. A magnetic target device comprising a frame having a base, a first magnet supported by said frame above and spaced from said base, a flexible line secured at one end thereof to said base and a second magnet secured to the other end of said line, said second magnet being adapted to be placed above said base with said line taut, in a selected position relative to said first magnet so that said first magnet exerts a force of attraction on said second magnet whereby to normally maintain said line taut and to normally maintain said second magnet in said position thereof.

7. A magnetic target device comprising a frame having a base, a first magnet supported by said frame above and spaced from said base, a flexible line secured at one end thereof to said base, and a second magnet secured to the other end of said line, said second magnet being adapted to be placed above said base with said line taut in a selected position relative to said first magnet so that said first magnet exerts a force of attraction on said second magnet which is opposed only by the earth's gravitational field acting upon said second magnet whereby to normally maintain said line taut and to normally maintain said second magnet in said selected position thereof, said second magnet being adapted to be moved by an external force thereon to a further position wherein the gravitational force on said second magnet exceeds the force exerted thereon by said first magnet, said second magnet being then free to drop to said base.

8. A magnetic target game comprising a frame having a base, a first magnet supported by said frame above and spaced from said base, a flexible line secured at one end thereof to said base, and a second magnet secured to the other end of said line, said second magnet being adapted to be placed above said base with said line taut in a selected first position which is relative to said first magnet so that said first magnet exerts a force of attraction on said second magnet which is opposed only by the earth's gravitational field acting on said second magnet, whereby to normally maintain said line taut and to normally maintain said second magnet in said selected first position thereof, said second magnet being adapted to be moved by an external force thereon to a further position wherein the gravitational force on said second magnet exceeds the force exerted thereon by said first magnet, said second magnet being then free to drop from said first selected position and means for raising said second magnet to said selected first position below said first magnet.

9. A magnetic target game comprising a frame having a base, a first magnet supported by said frame above and spaced from said base, a flexible line secured at one end thereof to said base, and a second magnet secured to the other end of said line, said second magnet being adapted to be placed above said base with said line taut in a selected first position which is relative to said first magnet so that said first magnet exerts a force of attraction on said second magnet which is opposed only by the earth's gravitational field acting on said second magnet, whereby to normally maintain said line taut and to normally maintain said second magnet in said selected first position thereof, said second magnet being adapted to be moved by an external force thereon to a further position wherein the gravitational force on said second magnet exceeds the force exerted thereon by said first magnet, said second magnet being free to drop from said first selected position, means for raising said second magnet to said selected first position below said first magnet, said means comprising a horizontally extending bar member positioned between said target and the point where said flexible line is secured to said base, means guiding said bar member in vertical travel relative to said base, a hole in said bar member the diameter of which is greater than said flexible line but smaller than said second magnet, said flexible target line passing thru said hole, means for releasably lifting said bar from a first position relative to said base to a second position below said first magnet whereby said second magnet is lifted to its first position by said bar.

10. A magnetic target game comprising a base, a supporting member, means mounting said supporting mem-

5

ber above said base, a resetting bar, means mounting said resetting bar between said base and said supporting member for vertical movement, said resetting bar having a plurality of thru and thru vertical holes, a plurality of stationary magnets fixed to said supporting member in vertical alignment with respective thru and thru vertical holes in said resetting bar, a plurality of flexible lines fixed to said base at points vertically aligned with respective holes and extending upwardly thru said holes, magnetic targets respectively fixed to said lines above said resetting bar and adapted to be held in proximate positions to respective stationary magnets by the forces of magnetic attraction therebetween and thereby acting to tension said lines, a lever coupled at one point thereof to said resetting bar, and means coupled to said lever at another point

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6

thereof and pivotally mounting said lever above said base, whereby said lever may be manipulated to raise said resetting bar to position said targets simultaneously in their positions of proximity to said stationary magnets.

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