Oct. 5, 1965 W. J. TRYON 3,210,079

TEACHING AND PRACTICE DEVICE FOR BOWLING

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Fig-1

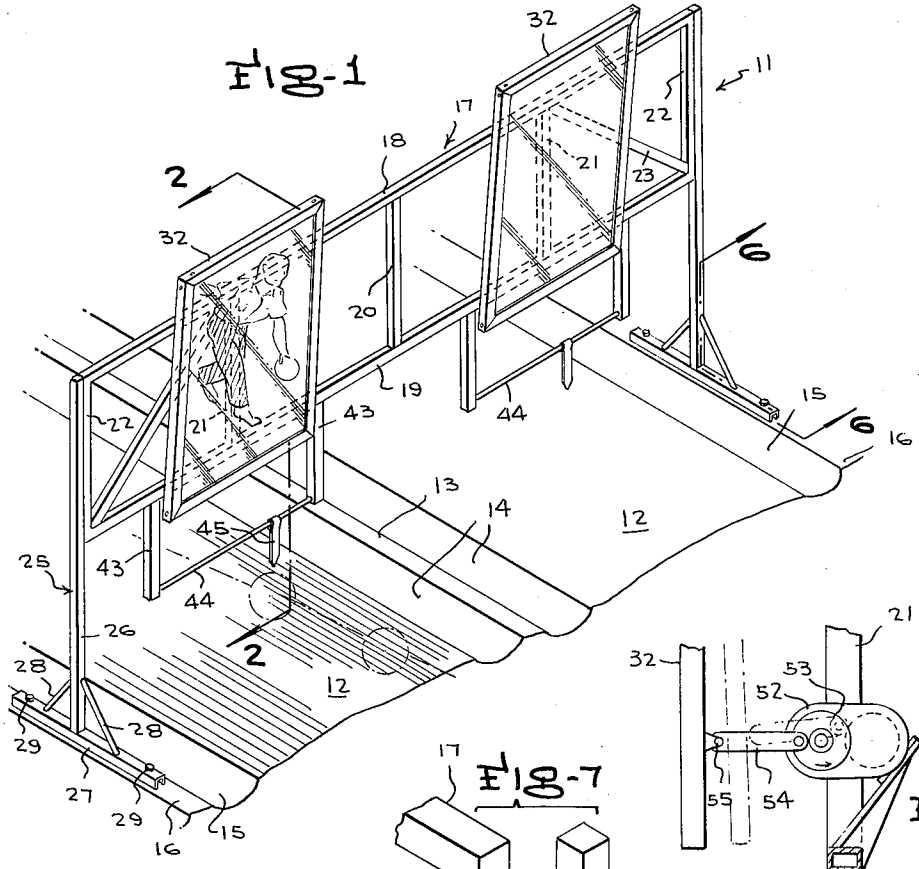


Fig-7

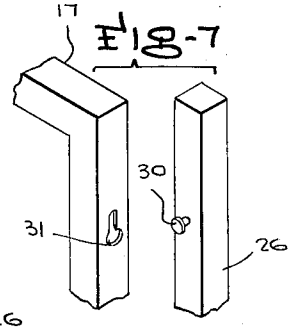


Fig-8

Fig-6

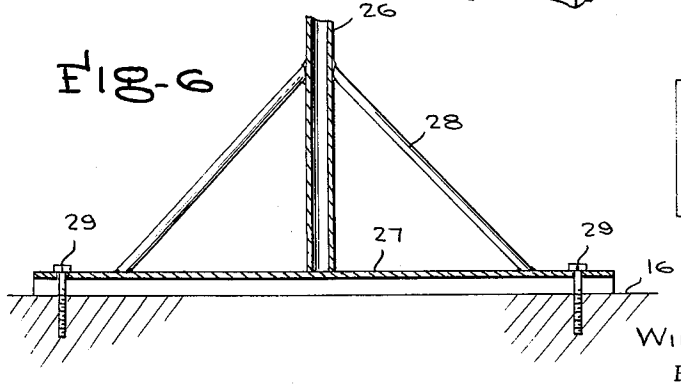
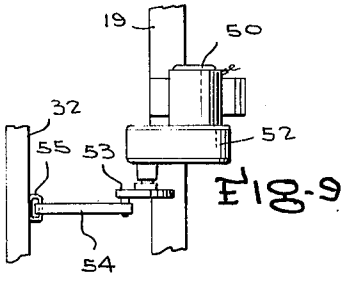


Fig-9



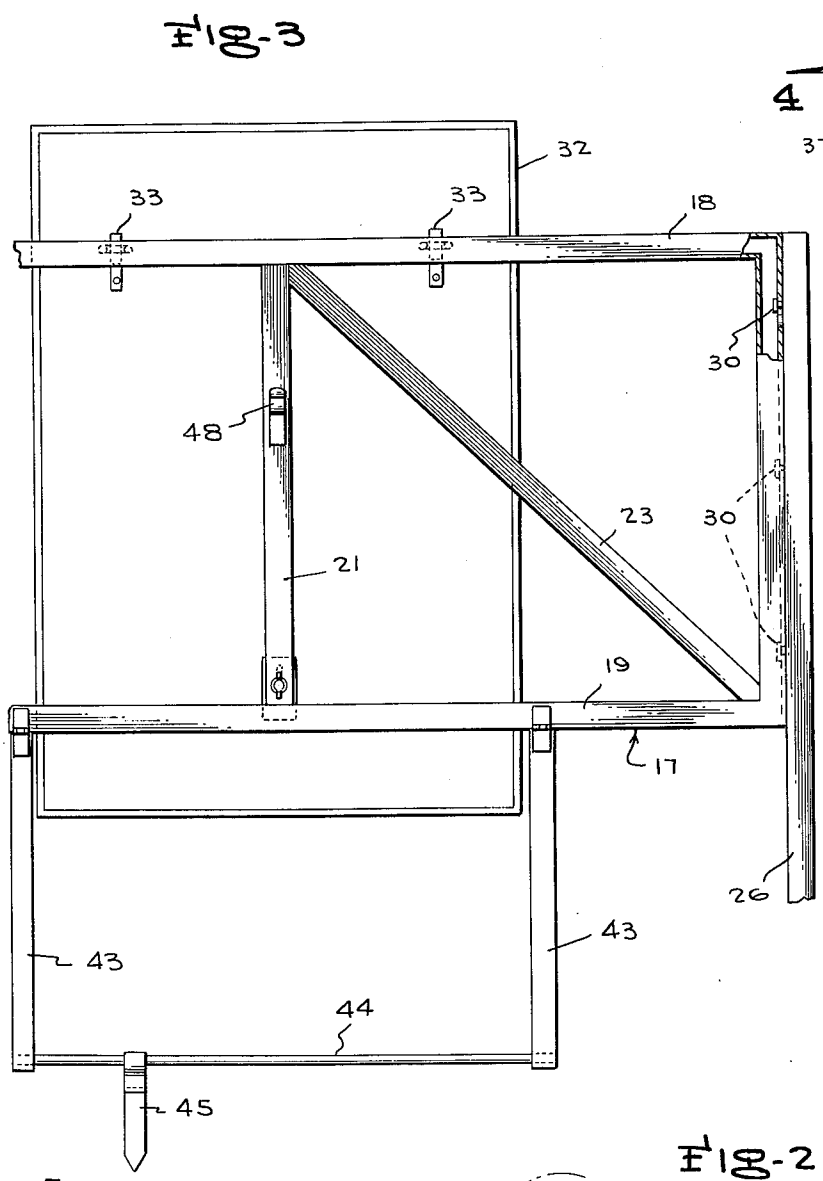
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TEACHING AND PRACTICE DEVICE FOR BOWLING

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Fig-3



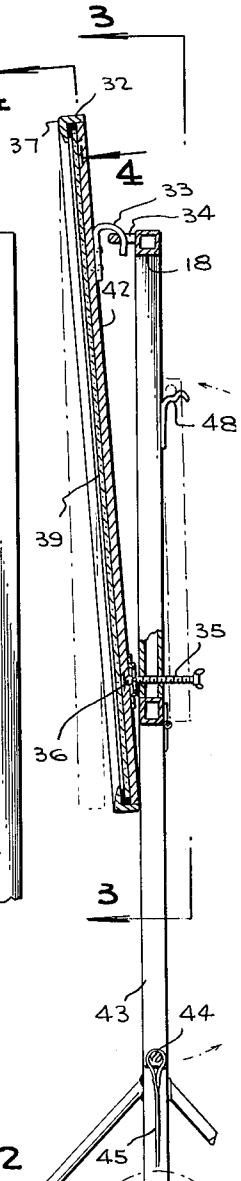


Fig-2

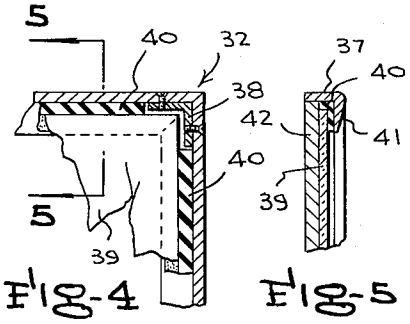


Fig-4

Fig-5

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TEACHING AND PRACTICE DEVICE FOR BOWLING

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3 Claims. (Cl. 273—54)

This invention relates to bowling teaching and bowling practice devices, and more particularly to an adjustable mirror and marker device to be employed by a bowler to improve his technique and to assist him in properly directing a bowling ball along a bowling alley so as to improve his aim and general proficiency.

A main object of the invention is to provide a novel and improved bowling practice device which is relatively simple in construction, which is easy to install, which does not interfere with normal use of a bowling alley, and which is adjustable so that it can be set for different types of bowling practice.

A further object of the invention is to provide an improved bowling practice device which is inexpensive to fabricate, which is durable in construction, which is neat in appearance and which is usable by bowlers of different height and different bowling styles by merely making minor adjustments to the apparatus, for example, for adjusting the angle of the mirror portion thereof.

A still further object of the invention is to provide an improved bowling practice device of the type including an adjustable mirror, the device being adapted to be installed over a pair of bowling alleys so that a person using one of the alleys will be able to watch his own movements during bowling and will obtain information as to possible errors or mistakes, thereby enabling him to correct his form so as to eliminate such errors or mistakes in his technique.

A still further object of the invention is to provide an improved bowling practice device of the type including an adjustable mirror and adapted to be placed over a bowling alley to enable a bowler to watch his own action during bowling, the apparatus including marker means which may be employed to indicate the optimum point toward which a bowler should aim in order to obtain best results.

Further objects and advantages of the invention will become apparent from the following description and claims, and from the accompanying drawings, wherein:

FIGURE 1 is a fragmentary perspective view of a portion of a pair of side-by-side bowling alleys over which is mounted an improved practice device constructed in accordance with the present invention.

FIGURE 2 is an enlarged vertical cross sectional view taken substantially on the line 2—2 of FIGURE 1.

FIGURE 3 is a fragmentary elevational view, partly in vertical cross section, of the practice device taken substantially on the line 3—3 of FIGURE 2.

FIGURE 4 is an enlarged cross sectional detail view taken substantially on the line 4—4 of FIGURE 2.

FIGURE 5 is a fragmentary cross sectional detail view taken substantially on the line 5—5 of FIGURE 4.

FIGURE 6 is an enlarged vertical cross sectional view taken substantially on the line 6—6 of FIGURE 1.

FIGURE 7 is a fragmentary perspective view showing the upper corner portion of the main transverse frame of the device and the top portion of the associated supporting standard, indicating the manner in which the frame is lockingly connected to the standard.

FIGURE 8 is an enlarged fragmentary transverse cross sectional view taken through the lower portion of the main supporting frame of a modified form of practice device according to the present invention, showing a motor-driven adjusting means for the hinged mirror of the device.

FIGURE 9 is a top plan view of the structure shown in FIGURE 8.

Referring to the drawings, and more particularly to FIGURES 1 to 7, **11** generally designates an improved bowling practice device constructed in accordance with the present invention. The device is adapted to be employed with a pair of side-by-side bowling alleys **12, 12** provided with the center dividing ribs **13** with ball return troughs **14** located on opposite sides of said ribs. Similar ball return troughs **15** are provided at the outer sides of the respective bowling lanes **12, 12** shown in FIGURE 1. Adjacent to the outer return troughs are the respective ribs **16, 16**.

The practice device **11** comprises a vertical transversely extending horizontally elongated supporting frame **17** comprising the top and bottom bars **18** and **19**, the vertical intermediate bar **20**, respective additional vertical bars **21, 21**, and respective vertical end bars **22, 22**, the bars **21** being spaced substantially midway between the center vertical bar **20** and the end vertical bars **22**. Diagonal brace bars **23** are provided in the end panel defined between the vertical bars **21** and **22**.

The transversely extending horizontally elongated vertical frame **17** is releasably secured to and supported on a pair of end standards **25, 25** which comprise upstanding vertical bars **26** rigidly secured to horizontal bottom channel bars **27** and braced thereto by diagonal struts **28, 28**, the channel bars **27** being positioned on and secured to the ribs **16** by any suitable securing means, for example, by fastening screws **29**. The upstanding post elements **26** are of square cross section, as shown in FIGURE 7, and are provided with outwardly projecting headed pins **30** which are receivable in keyhole-shaped slots **31** provided in the outside walls of the hollow vertical bar elements **22, 22** at the ends of the frame **17**. The elements of frame **17** are formed of hollow square stock, and the keyhole slots **31** are formed in the outside walls of the end vertical bar members **22, 22**, as above mentioned, being registrable with the headed studs **30** in the vertical upstanding post elements **26**. As shown in FIGURE 3, any desired number of headed studs **30** and cooperating keyhole slots **31** may be employed at each side of the apparatus, for example, three studs **30**, spaced in the manner illustrated in FIGURE 3. Thus, the frame **17** may be rigidly secured to the upstanding post elements **26**, but may be easily disconnected therefrom by lifting the frame relative to the post elements and then disengaging the heads of the studs **30** from the relatively large circular bottom portions of the slots **31**.

As shown in FIGURE 1, the frame **17** is supported a substantial height above the bowling lanes **12, 12**, and mounted on the frame are the respective relatively large forwardly facing mirrors **32, 32**, each mirror being approximately centered between the intermediate vertical bar element **20** and an end bar element **22**, being thus positioned directly in front of a vertical bar element **21**. Each mirror **32** is provided with a pair of spaced supporting hooks **33, 33**, the hooks being secured to the upper rear portions of the mirrors and being arranged substantially symmetrically, as shown in FIGURE 3, being engageable with supporting loops **34** rigidly secured on and projecting forwardly from the horizontal top bar member **18** of the frame **17**. Threadedly engaged through the lower portion of each vertical bar member **21** is a horizontal thumb screw **35** which is rotatably connected to the lower portion of the adjacent mirror **32** by a ball and socket joint **36**, defining an adjustable strut member, so that the inclination of the mirror may be adjusted by rotating the screw **35**, for example, from the full line position of the mirror shown in FIGURE 2, to the dotted view position thereof.

Each mirror 32 is of substantial size, for example, being three feet wide and four feet high, and the apparatus 11 is preferably located a substantial distance from the foul lines of the bowling lanes, for example, twenty feet forwardly from said foul lines. The mirrors 32 are supported at a substantial height above the lanes 12, with the upper portions of the mirrors being substantially at eye level, whereby a bowler can see his whole body in the mirror.

As shown in FIGURES 4 and 5, the mirrors may be of suitable rigid frame construction, comprising outer frame bar elements 37 which are fastened together at their corners by angle brackets 38, each mirror element, shown at 39, being secured in the frame in any suitable manner and being spaced from the frame bars 37 by resilient deformable cushioning or lining strips 40, protecting the edges of the mirror element and keeping the corners thereof spaced from the angle brackets 38. The frame bars 37 are provided with front marginal flanges 41 which overlie the strips 40 and the marginal portions of the mirror element 39, a rigid backing plate 42 being provided to which the frame bars 37 are secured, thus defining a unitary mirror assembly. As shown in FIGURE 2, the supporting hooks 33 are secured to the backing member 42.

Hinged to the bottom frame bar 19 are respective pairs of spaced supporting bar members 43, 43, the free end portions of the bar members 43, 43 being connected by respective horizontal rod members 44. A depending marker element 45 is slidably supported on each rod member 44, the marker elements being slidable along the rod members so that they will indicate a specific point on a lane 12 towards which a bowler should aim in order to properly direct his ball. As shown in FIGURE 2, the marker element 45 is located so that it will provide sufficient clearance for a bowling ball 47 to pass freely thereunder.

Secured on each vertical frame bar 21 is a resilient catch lug 48 having a yieldable top portion which is lockingly engageable beneath a rod member 44 when the frame structure comprising said rod member and its associated hinged bars 43, 43 is swung upwardly from the depending position thereof shown in FIGURE 2 to the elevated dotted view position thereof. Thus, the depending marker structure comprising the frame bars 43, 43, the cross rod 44 and the marker element 45 may be at times yieldably secured in an elevated unobstructing position, if so desired, by merely interlocking the rod 44 with the resilient lug element 48 in the manner above described, and illustrated in dotted view in FIGURE 2.

In using the device, the apparatus, installed in the manner illustrated in FIGURE 1, is so positioned that the bowler is able to see himself as he performs, the mirror member 32 of the associated lane being adjustable according to the bowler's style of bowling or his physical characteristics, by means of the thumb screw 35 associated with the mirror 32. The depending marker 45 may be set to indicate the optimum direction towards which the bowler should send his ball in order to obtain the desired action of the ball against the bowling pins, for example, for obtaining strikes or spares, in accordance with the bowler's motion and style of bowling. The ability of the bowler to see his body movements as he performs enables him to spot the mistakes and errors in his action so that he may readily correct such mistakes or errors. As will be readily apparent, the apparatus 11 may be set up across a pair of adjoining bowling lanes 12, 12, to enable two bowlers to practice simultaneously without interference with each other, and without interference with the normal use of the bowling lanes, when desired.

FIGURES 8 and 9 illustrate an arrangement wherein the angle of a mirror 32 may be adjusted from a remote position. Thus, each mirror 32 is provided with an adjusting motor 50 which may be remotely controlled. The motor 50 is mounted on the adjacent horizontal frame bar 19 and is provided with a gear reduction assembly 52 whose output shaft is connected to a crank disc 53. The peripheral portion of the crank disc 53 is connected by a link bar 54 to a fixed loop 55 secured to the back of the mirror 32. Thus, when the motor 50 is energized, disc 53 rotates, whereby the link bar 54 swings the mirror 32, the crank disc 53 being rotatable through a complete revolution to oscillate the mirror 32 over its entire range of adjustments.

It will be readily apparent that the device above described, in either of its forms, may be used effectively either as a teaching apparatus, for instructing beginners or learners in achieving proper form in bowling, or as a practice device for use by experienced bowlers in detecting and correcting errors in form or in bowling style.

While certain specific embodiments of a bowling teaching and practice device have been disclosed in the foregoing description, it will be understood that various modifications within the spirit of the invention may occur to those skilled in the art. Therefore, it is intended that no limitations be placed on the invention except as defined by the scope of the appended claims.

What is claimed is:

1. A bowling practice device comprising a vertical supporting frame having depending vertical slide standards adapted to be secured to side marginal portions of a bowling alley, whereby to support said frame transversely over the alley, a mirror pivotally attached to the top portion of the frame and depending therefrom, adjustable strut means connecting the frame to the mirror to adjust the angle of inclination of said mirror, a horizontal rod member, means swingably connecting said rod member to the frame to support the rod member below the mirror, said connecting means being swingable to elevate the rod member at times to a position adjacent the frame, means to releasably hold said rod member in said position, and a depending marker element slidably mounted on said rod member.

2. A bowling practice device comprising a vertical supporting frame having depending vertical side standards adapted to be secured to side marginal portions of a bowling alley, whereby to support said frame transversely over the alley, a mirror pivotally attached to the top portion of the frame and depending therefrom, adjustable strut means connecting the frame to the mirror to adjust the angle of inclination of said mirror, a horizontal rod member, means swingably connecting said rod member to the frame to support the rod member below the mirror, a depending marker element slidably mounted on said rod member, said connecting means being swingable to at times elevate said rod member to a position adjacent the frame, and a resilient catch lug on the frame lockingly engageable with said rod member to retain said rod member in its elevated position adjacent the frame.

3. A bowling practice device comprising a vertical supporting frame having depending vertical side standards spaced to engage the opposite side margins of a pair of bowling alleys, means to secure said side standards on said opposite side margins, whereby to support said frame transversely over the pair of bowling alleys, respective mirrors pivotally attached to the top portion of the frame and depending therefrom, said mirrors being spaced to overlie the respective bowling alleys, adjustable strut means connecting the lower portions of the mirrors to the frame to adjust their angles of inclination, respective horizontal rod members swingably connected to the frame below the mirrors, a depending marker element slidably mounted on each rod member, said rod members being swingable at times to

elevated positions adjacent the frame, and means to releasably hold said rod members in said elevated positions.

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