R. T. JOHNSTON.

APPARATUS FOR DETERMINING LEVEL FOR BOWLING ALLEY BEDS.

APPLICATION FILED AUG. 6, 1914.

1,129,400.

Patented Feb. 23, 1915

3 SHEETS—SHEET 1.

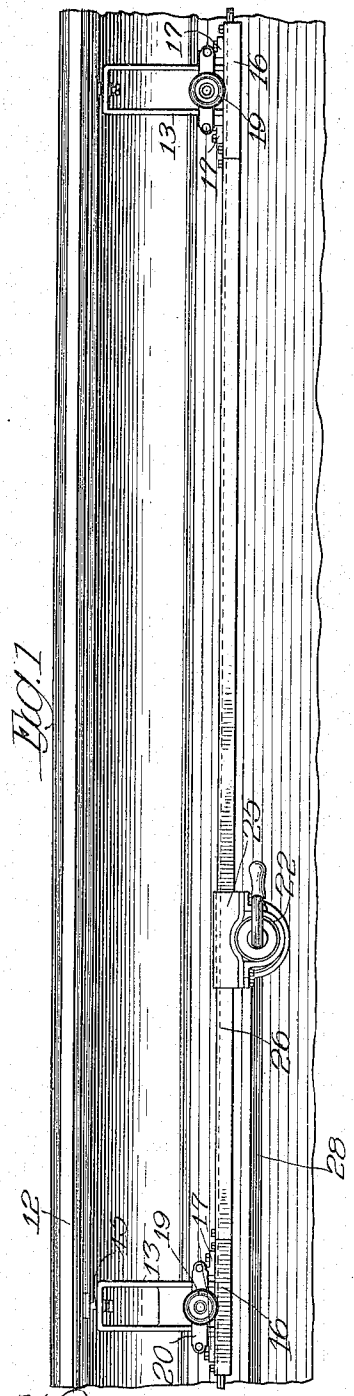


FIG. 1.

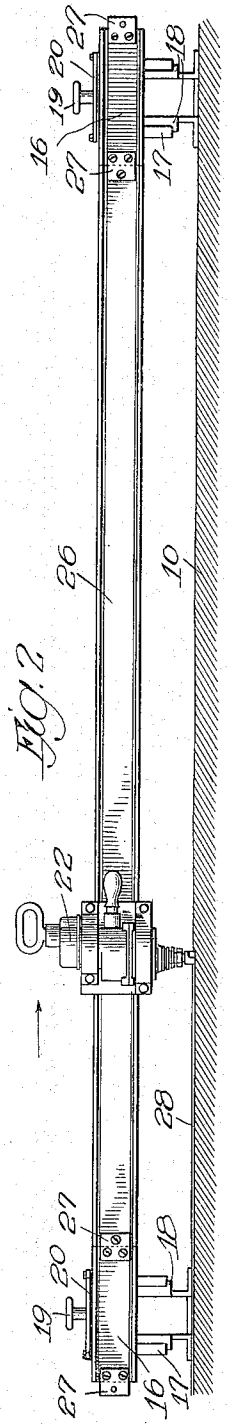


FIG. 2.

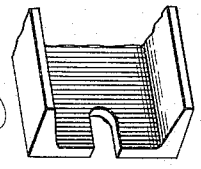


FIG. 9.

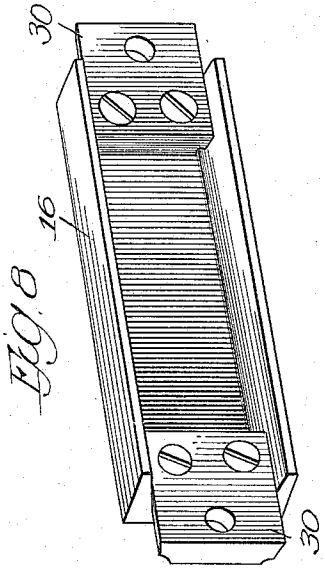


FIG. 8.

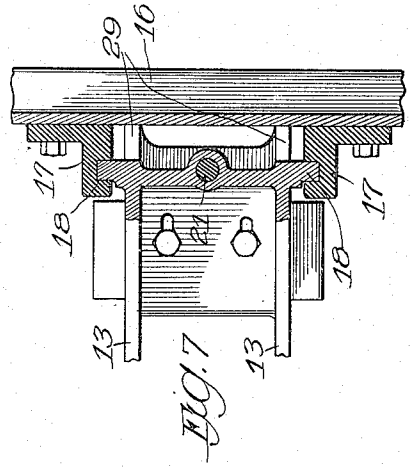


FIG. 7.

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3 SHEETS—SHEET 2.

Fig. 3

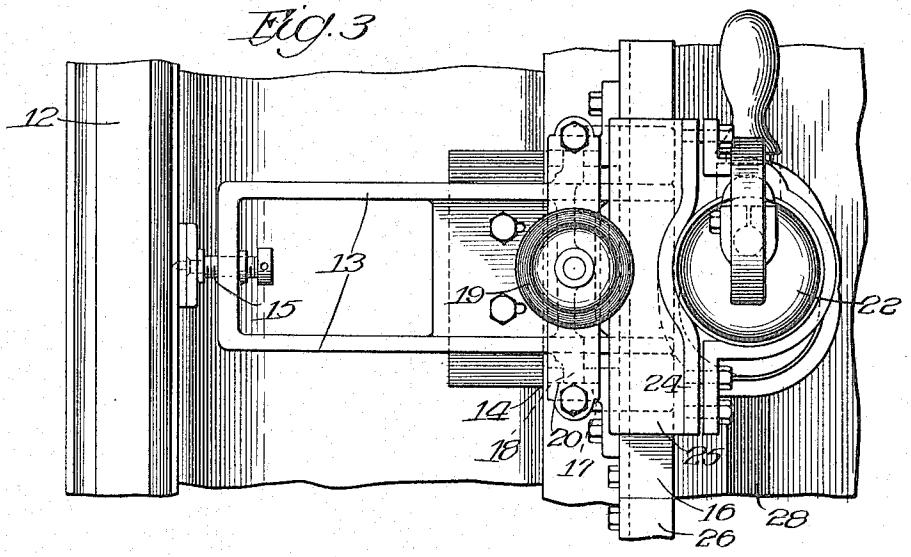
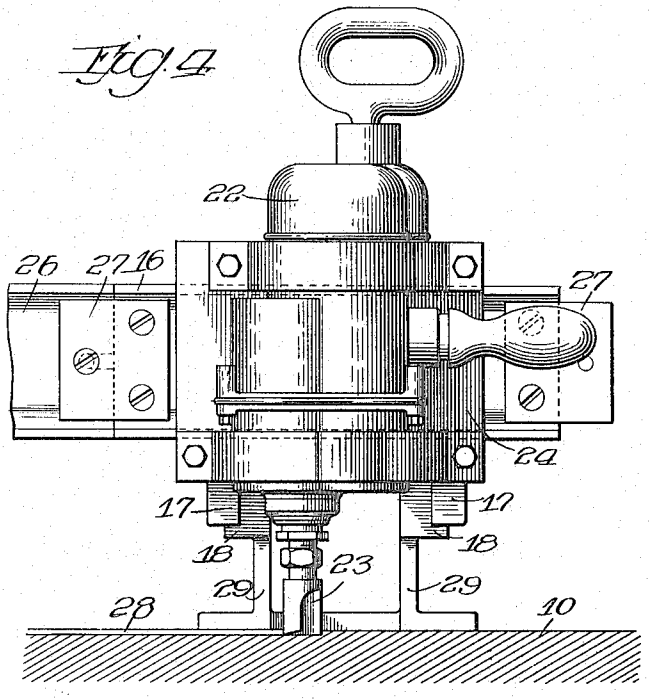


Fig. 4



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3 SHEETS—SHEET 3.

Fig. 5

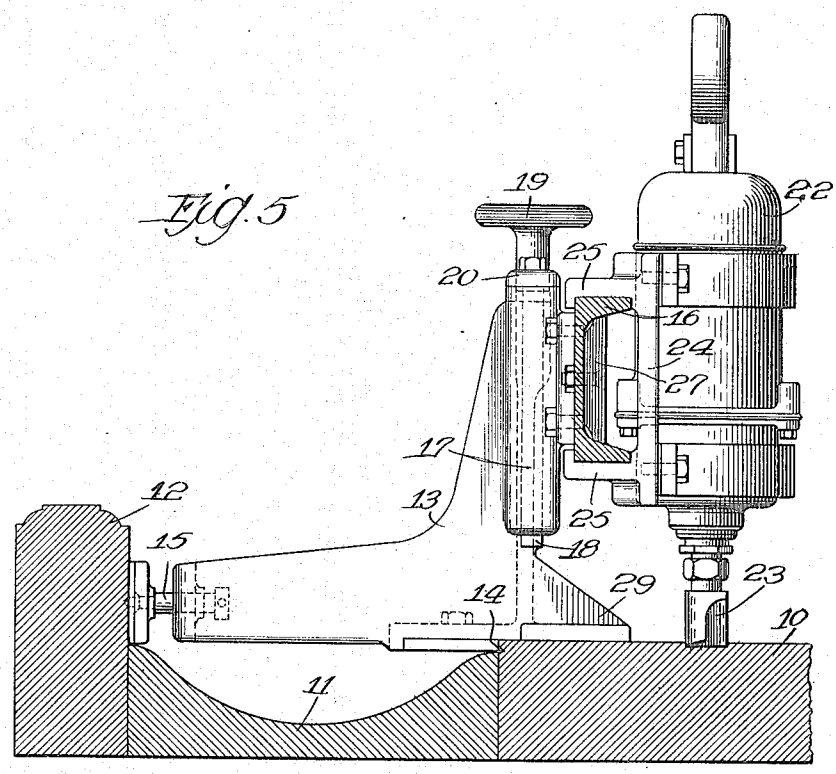
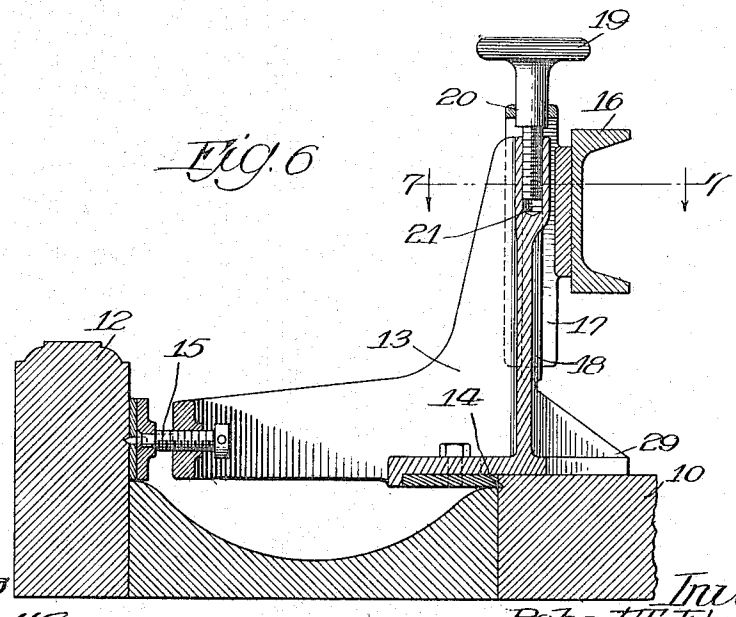


Fig. 6



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR DETERMINING LEVEL FOR BOWLING-ALLEY BEDS.

1,129,400. Specification of Letters Patent. Patented Feb. 23, 1915.

Application filed August 6, 1914. Serial No. 855,366.

To all whom it may concern:

Be it known that I, ROBERT T. JOHNSTON, a citizen of the United States, and residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Apparatus for Determining Level for Bowling-Alley Beds, of which the following is a specification.

The object of this invention is to provide an apparatus which can be easily transported and operated for obtaining guides by which a bowling alley bed can be properly and accurately leveled whenever occasion requires. And a further object of the invention is to provide an apparatus of simple construction for cutting guide grooves in the surface of a bowling alley bed to guide the machine and indicate the depth of cut in cutting down the bed to relevel it.

The invention has other objects in view which will appear hereafter in the detail description of the accompanying drawings in which—

Figure 1 is a plan view of a portion of a bowling alley showing my invention applied thereto; Fig. 2 is a side elevation of the same; Fig. 3 is an enlarged plan view, Fig. 4 is a front elevation, and Fig. 5 is a side elevation, partly in section, showing one of the brackets, the supporting guide rail and the motor operated grooving tool in position on a portion of the alley. Fig. 6 is a vertical sectional view of the bracket and rail in place on the alley; Fig. 7 is a sectional view on line 7—7 of Fig. 6; Figs. 8 and 9 are detail perspective views of the supporting guide rail.

Referring to the drawings, 10 is a portion of a bowling alley bed and 11 and 12 are the usual gutter and partition. A bracket 13 of angular form is adapted to be secured on the alley adjacent to the side of the bed and preferably over the gutter, as shown. This can easily be accomplished by providing the bracket with a sharp edge 14 or teeth to engage the side of the bed above the gutter (Figs. 5, 6) and also with an adjusting and securing screw device 15 to engage the partition. By engaging the edge 14 with the alley bed and adjusting the screw device 15 the bracket can easily be set and secured in substantial and rigid position on the alley for the purposes hereafter described. A rail section 16, preferably of channel shape, is adjustably mounted on the bracket, being provided with guides 17 which engage flanges 18 on the bracket and an adjusting screw 19 which works through a cross bar 20 fastened to or made integral with the upper ends of the guides 17 and in a threaded socket 21 in the bracket. By operating the screw 19 the rail section may be raised or lowered as desired. A motor 22 of any suitable kind for operating the grooving tool 23 is mounted to travel on the rail section lengthwise thereof, being fastened to a carriage frame 24 having flanges 25 to engage the rail section.

In practice I employ two or more brackets and a single motor and grooving tool with as many rails 26 as may be conveniently used. The brackets are set up on the alley with the rail sections 16 thereon spaced apart a rail length, as shown in Figs. 1 and 2. The rail section of one bracket, preferably located at one end of the alley bed, is adjusted vertically to proper position so that the tool will cut into the bed to a depth which will correspond to the desired level of the surface of the bed. In other words, the operator will first locate the lowest spot on the alley bed and then set the apparatus so that the tool will cut to a depth corresponding approximately to said lowest spot. The rail 26 is then loosely fastened to the rail section thus adjusted and to the rail section of the next adjacent bracket in any suitable manner, as by plates and screws 27, and the latter rail section is then adjusted to the same height as the first rail section on the alley bed to level the rail therewith. The fastening devices are then tightened to rigidly secure the two rail sections and the rail in place with the top edge thereof in a single horizontal level plane, so that the carriage may be moved along from one rail section to the other with the tool cutting a groove 28 in the bed. This groove may vary in depth as it is cut along the bed but the bottom of the groove will be level throughout and lie in approximately the same horizontal plane with the lowest spot on the bed previously referred to.

When the carriage moves on to the second rail section the first bracket is moved forward and the rail is again connected with the two rail sections as before, using the rail section of the second bracket (now the first) as a guide in leveling the second rail

section (previously the first) and the rail. In this way the work proceeds down the alley from one end of the bed to the other, and for the purpose of more conveniently carrying out the method of releveling bowling alley beds set forth in my application filed August 6, 1914, Serial No. 855,365, I prefer to cut two parallel grooves in the bed one adjacent each side edge. These grooves form positive guides for releveling the bed because they are cut in the bed itself to a uniform level and when the bed is subsequently cut down to this level the entire surface of the bed will necessarily lie in the same level plane and can be shellacked and rubbed and finished in the usual way.

It is obvious, of course, that by the use of additional brackets and rails the track can be set up from end to end of the alley bed and the carriage caused to travel continuously but this involves additional apparatus which can be avoided in the manner previously described.

Bowling alley beds are now usually built up of narrow strips of wood on the job or are made in sections at the factory and properly fastened together on the job and it is usual to level them in the first instance in or about the same way that they are releveled after a period of use. While my invention is particularly adapted for releveling beds, because of its convenient adaptability to the work and the ease with which it can be transported, it is obvious that it is just as well adapted for leveling alleys in the first instance. It is apparent that the bracket may be mounted on the alley in any suitable manner to obtain the desired results but I am of the opinion that it is desirable to arrange the fastening devices for this purpose at one side of the bed to engage the gutter or the partition or the side of the bed, or one or more of them. In the construction illustrated in the drawings the bracket is provided with a toe 29 which extends over the alley bed and forms a substantial bearing for the bracket.

The rails and rail sections employed for forming the track on which the grooving tool is mounted and travels are preferably made of corresponding sections of channel iron, as shown, but other forms may be used with satisfactory results. Any suitable means may be employed for securing the ends of the rails and rail sections together. When they are made of channel shape the fish plates 30 can be satisfactorily used. These fish plates are made to fit the channels and they are secured in place by bolts or other fastening devices. When the grooving tool has traveled over one rail and onto a rail section, the rail may be removed and placed in position at the other end of the rail section and fastened thereto. The bracket not then in use may be removed and used to support the other end of the rail in its new position. It will only be necessary then to level the rail and the rail section on the repositioned bracket with the rail section on which the grooving tool is supported during this operation to provide a proper track for the tool. It is not necessary to handle or readjust the tool and its operation may be resumed just the same as if it had not been interrupted.

While it is desirable to mount the driving motor with the grooving tool to travel on the track as a convenient organization of the invention, the motor may be made as a separate unit and motion communicated from the same to the grooving tool mounted on the track by a flexible shaft or otherwise.

I claim:

1. In a machine for cutting level longitudinal grooves in the surface of a bowling alley bed, the combination of a pair of brackets adapted to be disposed in spaced relation and rigidly supported on said alley bed, vertically adjustable supporting means mounted on said brackets, a single track secured to said supporting means, and a rotatable grooving tool mounted on said track and movable longitudinally thereof.

2. In a machine for cutting level longitudinal grooves in the surface of a bowling alley bed, the combination of a pair of brackets adapted to be disposed in spaced relation and rigidly supported on said alley bed, supporting means mounted on said brackets, means for vertically adjusting said supporting means, a single track secured to said supporting means, a grooving tool mounted on said track and movable longitudinally thereof, and means for rotating said grooving tool.

3. In a machine for cutting level longitudinal grooves in the surface of a bowling alley bed, the combination of a pair of brackets adapted to be disposed in spaced relation and rigidly supported above said alley bed, vertically adjustable supporting means mounted on said brackets, a single track secured to said supporting means, a rotatable grooving tool mounted on said track and movable longitudinally thereof, a motor for rotating said grooving tool, and means whereby said grooving tool may be manually moved longitudinally of said alley bed along said track.

4. In an apparatus of the character described, the combination of a pair of brackets, means on the brackets for securing same on a bowling alley bed over the gutter, rail sections on the brackets, a single rail connected at its ends to said rail sections and forming therewith a continuous track, means for adjusting the rail sections on the brackets to position the track at a predetermined level, and a grooving tool mounted to travel on the track to cut a groove in an

alley bed or the like to a level parallel with the track.

5. In an apparatus of the character described, the combination of a pair of brackets and means for securing the same on a bowling alley bed over the gutter thereof, said brackets having projections to engage the bed, rail sections slidably mounted on the brackets, means for locking said sections in adjusted position, a single rail fastened at its ends to said sections to form therewith a continuous track, and a grooving tool mounted to travel on said track to cut a groove in the alley bed to a level parallel with the track.

6. In an apparatus of the character described, the combination of a bracket, a single track on the bracket, a grooving tool mounted to travel on said track, and means for securing the bracket to a bowling alley over the gutter, comprising a projection to engage the side of the alley bed above the gutter, and a clamping device to engage the partition of the alley.

7. In an apparatus of the character described, the combination of a pair of brackets, a rail section mounted on each bracket, a single rail arranged between each pair of rail sections with the ends of the rail and the sections abutting, means for clamping the rail to the rail sections to form a continuous track, means for adjusting the rail sections on the brackets to position the track at a predetermined level, a motor, and a grooving tool mounted to travel on the track to cut a groove in the bed of a bowling alley or the like to a level parallel with the track.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."