

Aug. 28, 1928.

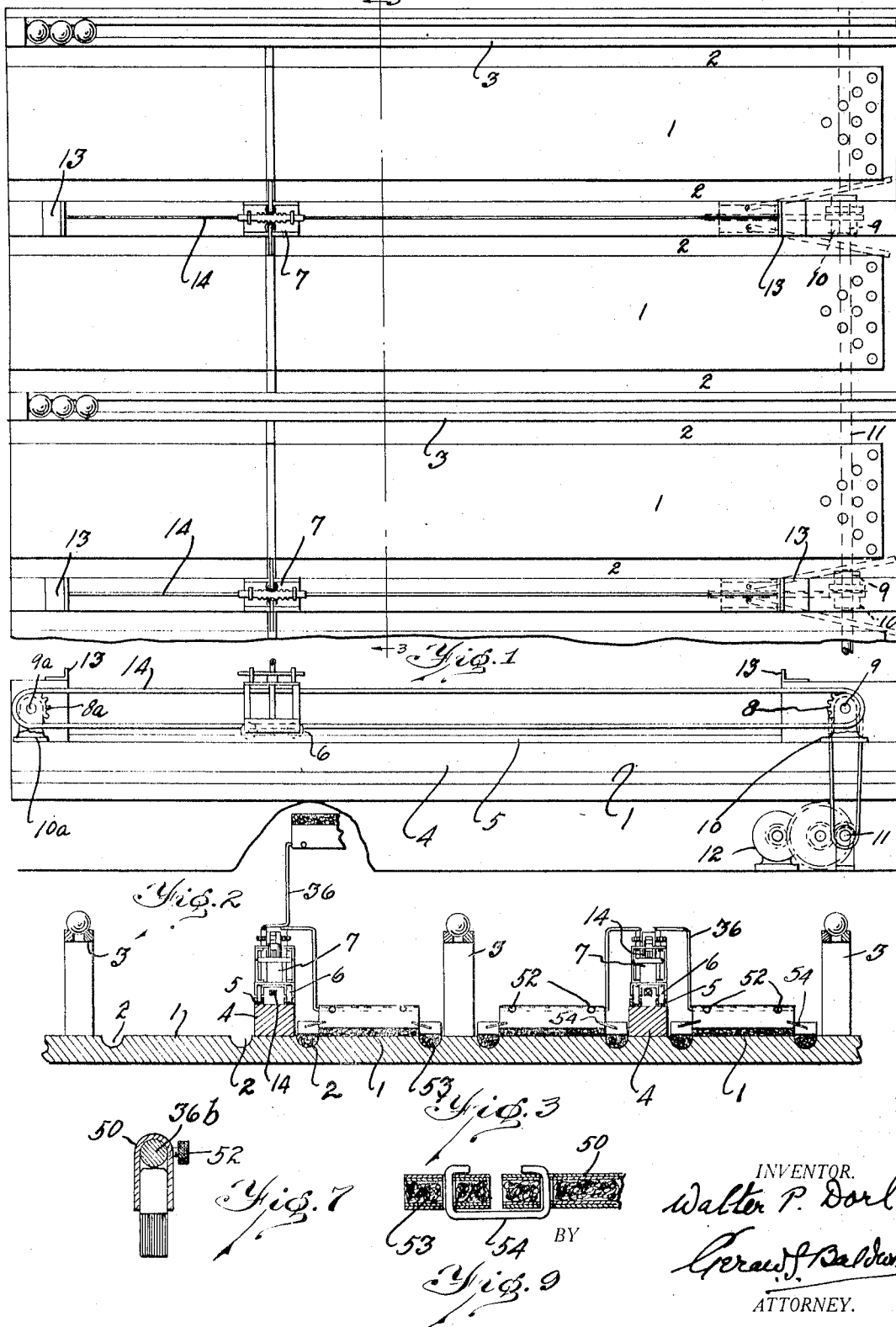
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RECIPROCATING MOP

Filed May 12, 1927

2 Sheets-Sheet 1



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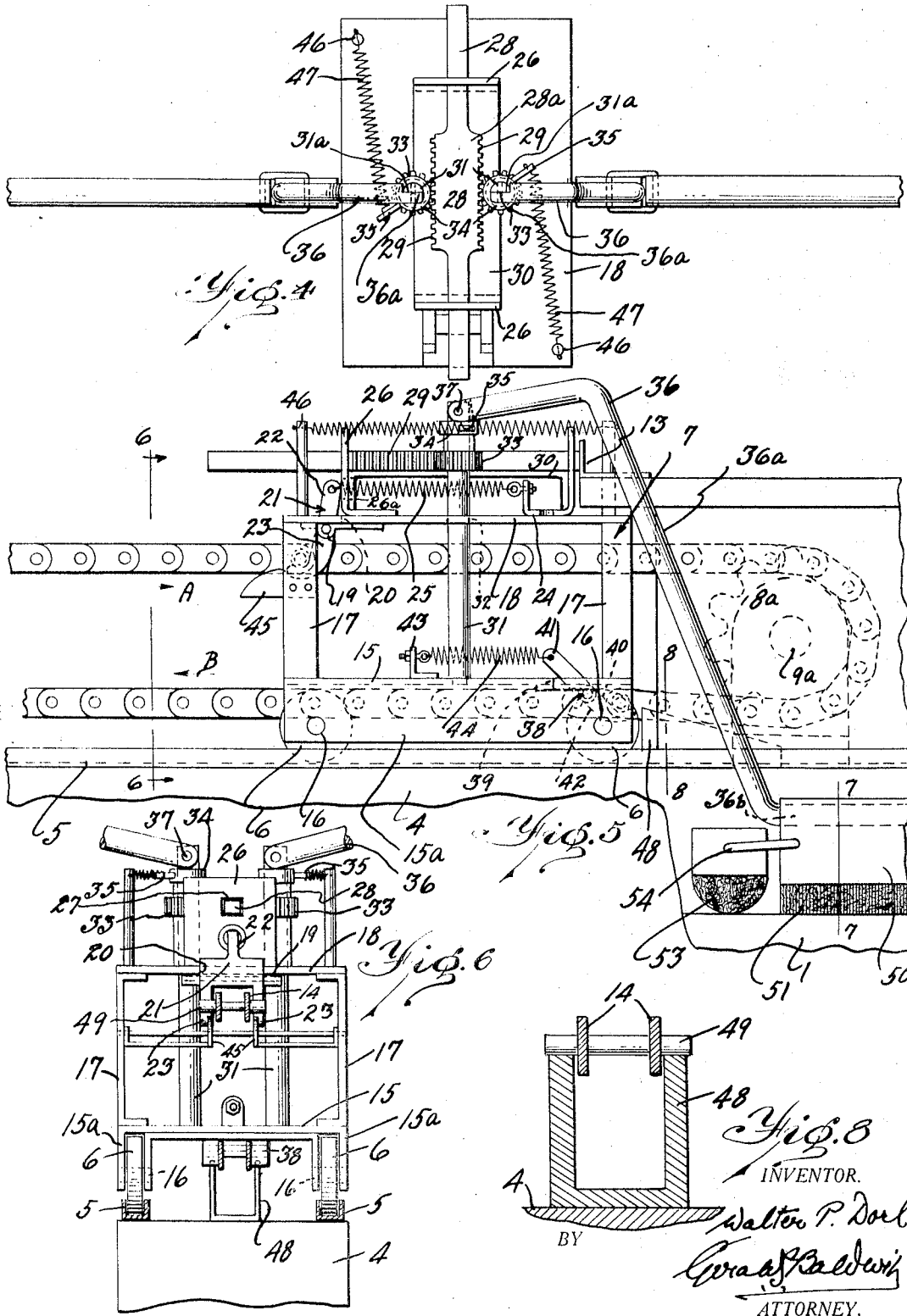
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UNITED STATES PATENT OFFICE.

WALTER P. DORL, OF DETROIT, MICHIGAN.

RECIPROCATING MOP.

Application filed May 12, 1927. Serial No. 190,742.

This invention relates to improvements in reciprocating mops, and refers more particularly to a reciprocating mop adapted to run up and down a fixed course.

It is an object of the invention to provide a reciprocating mop for such purposes as sweeping bowling alley floors wherein the mop carriage is moved back and forth along its course by an endless chain in one direction.

Another object of the invention is to provide a reciprocating mop having supporting arms so mounted on the carriage that they normally project laterally therefrom, are swung forwardly through an arc when the carriage reaches the end of its travel in either direction, and reassume a position substantially at right angles to the carriage as the latter commences to move back along its path.

With these and other objects in view the invention is hereinafter more fully described with the aid of the accompanying drawings, in which:

Figure 1 illustrates a plan view showing a plurality of bowling alleys equipped with the invention.

Figure 2 is a side view of Figure 1, and

Figure 3 is a section on the line 3—3 of Figure 1.

Figure 4 is a plan view of the carriage showing the mop carrying arms in normal outstretched position.

Figure 5 is a side elevation of the carriage showing one of the mop carrying arms swung forwardly, and the carriage in contact with a stop at one end of the course.

Figures 6, 7, and 8 are sections on the lines 6—6, 7—7 and 8—8 of Figure 5.

Figure 9 is a detail.

Referring to the drawings, 1 designates bowling alleys having the usual gutters 2 on each side. Between each alternate pair of gutters is a conventional raised ball runway 3, and between each other pair of gutters is a raised course 4 having guide rails 5 thereon to guide the wheels 6 on the underside of the carriages 7. At the ends of the courses 4 head and tail sprockets 8 and 8^a are mounted on head and tail shafts 9 and 9^a supported by bearings 10 and 10^a. The head shaft 9 may be driven from a drive shaft 11 arranged under the floor and said drive shaft may be rotated as by a motor 12. Stops 13 which project inwardly to-

wards one another are provided at each end of the course 4, and driving chains 14 are arranged around each pair of head and tail sprockets 8 and 8^a.

I will now proceed to describe one of the carriages 7. Each carriage consists usually of a lower platform 15 having downwardly flexed sides 15^a which support the outer ends of the axle 16 on which the wheels 6 are mounted, and at the sides of the platform towards each end distance pieces 17 are secured which in turn support an upper plate 18.

On the underside of the plate 18 towards one end and substantially centrally of its width a bearing 19 is secured. 20 indicates a slot in one end of the plate 18. Pivotaly mounted in the bearing 19 and projecting upwardly through the slot 20 is a member 21 having an upwardly extending arm 22 and downwardly extending bifurcations 23 the lower ends of which latter are flexed outwardly. Towards the opposite end of the plate 18 a bracket 24 is secured, and 25 indicates a coil spring one end of which is secured to the bracket 24 and the opposite end to the arm 22 thereby tending to hold said bifurcations 23 in outstretched position. Guides 26 are also secured to the plate 18 and have openings 27 through them through which the ends of the slide 28 pass. Intermediately of its length and on both sides of the slide are racks 29. 30 designates a rest secured to both the guides over which the slide is adapted to move. 26^a denotes an opening through one of the guides 26 and one end of the rest 30 through which the coil spring 25 passes.

Substantially centrally of the length of the carriage 7 two vertical shafts 31 are arranged. The lower ends of the latter are revolvably supported by the platform 15 and their upper ends extend through and are revolvably supported in openings 32 through the plate 18. Each shaft 31 has a gear 33 fixed thereon which meshes with one of the racks 29, and around each shaft above its gear a collar 34 is secured which carries a radially projecting pin 35. The upper ends of the shafts have mop supporting arms 36 pivotally mounted thereon in such a manner that rotation of the shafts causes the arms to swing horizontally. Usually the upper ends of the shafts are partly cut away as indicated at 31^a to bear against corre-

spondingly reduced ends 36^a of the arms 36, and these ends are pivotally connected as by pins 37. Projections 46 are mounted on the upper sides of the plate 18 each having one
 5 end of a spring 47 connected to them and the opposite ends of these springs are fastened to the pins 35 so as to tend to hold the arms 36 in laterally outstretched position.

Substantially centrally of the underside
 10 of the platform 15 towards its end and remote from the bearing 19 a bearing 38 is secured substantially centrally of the width of the carriage. 39 indicates a slot at one end of the platform 15. Pivotally mounted in the
 15 bearing 38 and projecting upwardly through the slot 39 is a member 40 having upwardly extending arms 41 and downwardly extending bifurcations 42 the lower ends of which latter are outwardly flexed. To-
 20 wards the opposite end of the platform 15 from the bearing 38 a bracket 43 is secured thereon, and 44 indicates a coil spring one end of which latter is attached to the bracket 43 and the other end to the arm 41 thereby
 25 tending to hold the bifurcations in outwardly disposed position.

On the distance pieces 17 adjacent to the bearing 19 inwardly extending guide arms 45 are secured which have downwardly and
 30 outwardly curved bearing surfaces which are spaced somewhat wider apart than the width of the chain 14, the upper length of which passes between them. On the raised course 4 adjacent to the tail sprocket 8^a
 35 is an inclined lifter 48 which raises the lower portion of the chain at that point so that when the carriage is in the position shown in Figure 5 on its course the chain must pass between the bifurcations 42 which are spaced
 40 somewhat wider apart than the width of the chain.

In the chain is one horizontal pin 49 which projects beyond the sides of the chain. As the latter turns the carriage 7 remains
 45 stationary until the pin strikes the guide arms 45 which cause it to rise and engage the bifurcations 23. The carriage then travels with the chain in the direction of the arrow A. When one end of the slide 28
 50 strikes a stop 13 the former moves through the guides 26. The racks 29 cause the gears 32 to turn thereby turning the shafts 31 and the mop supporting arms 32 through an arc in the direction in which the carriage is
 55 travelling. When the slide 28 has been moved back until one end of its wider central portion 28^a strikes one of the guides 26 the stop halts further movement of the carriage. The movement of the chain however
 60 continues thereby forcing the bifurcations 23 inwards against the tension of the spring 25 until they are sufficiently turned to release the pin 49. The carriage then remains still until the pin has passed around the
 65 tail sprocket 8^a, and has been guided by the

lifter 48 into engagement with the bifurcations 42 when the carriage is moved back in the direction indicated by the arrow B. When the carriage reaches the opposite end of its travel the slide 28 is moved in the
 70 opposite direction in a similar manner and the opposite stop 13 and the pin 49 is released in the same way from the bifurcations 42.

As soon as the carriage commences to
 75 travel from a stop in the direction opposite to that in which it has last moved the spring 47 which has been stretched by the rotary movement of its pin 35 turns the latter, and its collar 34, shaft 31, supporting arm 36,
 80 gear 32, and rack 29 and slide 28 back into mid position; and this movement of the slide also turns the opposite gear, shaft and supporting arm back as well. In this manner the mop supporting arms are brought back
 85 into outstretched position and are normally held there by the springs 47.

The mop supporting arms 36 are downwardly inclined intermediately of their
 90 length as shown at 36^a, and terminate in substantially horizontal portions 36^b which take into housings 50 between the lower sides of which the mops 51 are held. 52 designates set screws for holding the housings on the portions 36^b. In order to sweep the
 95 gutters 2, gutter mops 53 are loosely connected to the ends of the mops 51 as by means of links 54 shown in Figure 9.

It will be noted that when desired either mop supporting arm may be swung into an
 100 upward position as shown in Figure 3 when it is necessary or desirable to sweep only one alley.

While in the foregoing the preferred embodiment of the invention has been described and shown, it is understood that the construction is susceptible to such modifications
 105 as fall within the scope of the appended claims.

What I claim is:

1. In a reciprocating mop, the combination of a carriage movable back and forth, stops at the limits of travel of said carriage, shafts revoluble on said carriage, arms on
 110 said shafts adapted to carry mops and rotatable with said shafts, and means cooperating with said stops for imparting rotary movement to said shafts as said carriage approaches either end of its travel.

2. In a reciprocating mop, the combination of a carriage movable back and forth, stops at the limits of travel of said carriage, vertical shafts revoluble on said carriage, arms on said shafts adapted to carry mops
 115 and rotatable with said shafts, and means cooperating with said stops for imparting rotary movement to said shafts in opposite directions as said carriage approaches either end of its travel.

3. In a reciprocating mop, the combina- 12

tion of a carriage movable back and forth, stops at the limits of travel of said carriage, vertical shafts revoluble on said carriage, arms on said shafts adapted to carry mops and rotatable with said shafts, said arms normally projecting at right angles to the directions of travel of said carriage, means cooperating with said stops for imparting rotary movement to said shafts in opposite directions as said carriage approaches either end of its travel thereby turning said arms, and means for returning said arms to their normal positions as said carriage moves away from said stops.

4. In a reciprocating mop, the combination of a carriage movable back and forth, stops at the limits of travel of said carriage, shafts revoluble on said carriage, an arm pivotally secured at one end of each shaft, each arm being adapted to support a mop, a slide longer than said carriage on said carriage, said slide normally extending beyond both ends of said carriage and adapted to be moved by one of said stops as the carriage approaches one of its limits of travel, and means cooperating with said slide for turning said shafts in opposite directions as said slide is moved.

5. In a reciprocating mop, the combination of a carriage movable back and forth, stops at the limits of travel of said carriage, shafts revoluble on said carriage, an arm pivotally secured to one end of each shaft, each arm normally extending at right angles to the directions of travel of said carriage and adapted to have a mop mounted thereon, a slide longer than said carriage on said carriage, said slide normally extending beyond both ends of the latter and adapted to be moved by one of said stops as the carriage approaches each of its limits of travel, means cooperating with said slide for turning said shafts in opposite directions as said slide moves, said shafts thereby turning said arms and spring means for returning said arms

to their normal positions and for returning said slide so that both of its ends project beyond the ends of the carriage.

6. In an arrangement of the character described, the combination of a carriage, a course, stops at each end of said course, means for moving said carriage back and forth along said course, a slide movable longitudinally on said carriage and adapted to be moved by one of said stops each time said carriage reaches one end of its course, a rack on each side of said slide, vertical shafts on said carriage, a gear on each of said shafts, each gear meshing with one of said racks, and supporting arms fastened to said shafts adapted to be turned when said slide and racks move.

7. In an arrangement as described in claim 6 wherein means are provided for returning said slide and racks back into substantially mid position on said carriage as the latter commences to move again from either of said stops.

8. In an arrangement of the character described the combination of a carriage, a course, stops at each end of said course, means for moving said carriage back and forth along said course, a slide movable longitudinally on said carriage and adapted to be moved by one of said stops each time said carriage reaches one end of its course, a rack on each side of said slide, vertical shafts revolubly mounted on said carriage, a gear on each of said shafts, each gear meshing with one of said racks, supporting arms pivotally fastened to said shafts, said supporting arms being adapted to hold mops thereon, and means for normally holding said supporting arms in outstretched position, said means being also adapted to hold said slide in mid position on said carriage, and to return said slide thereto as said carriage moves away from either of said stops.

WALTER P. DORL.