

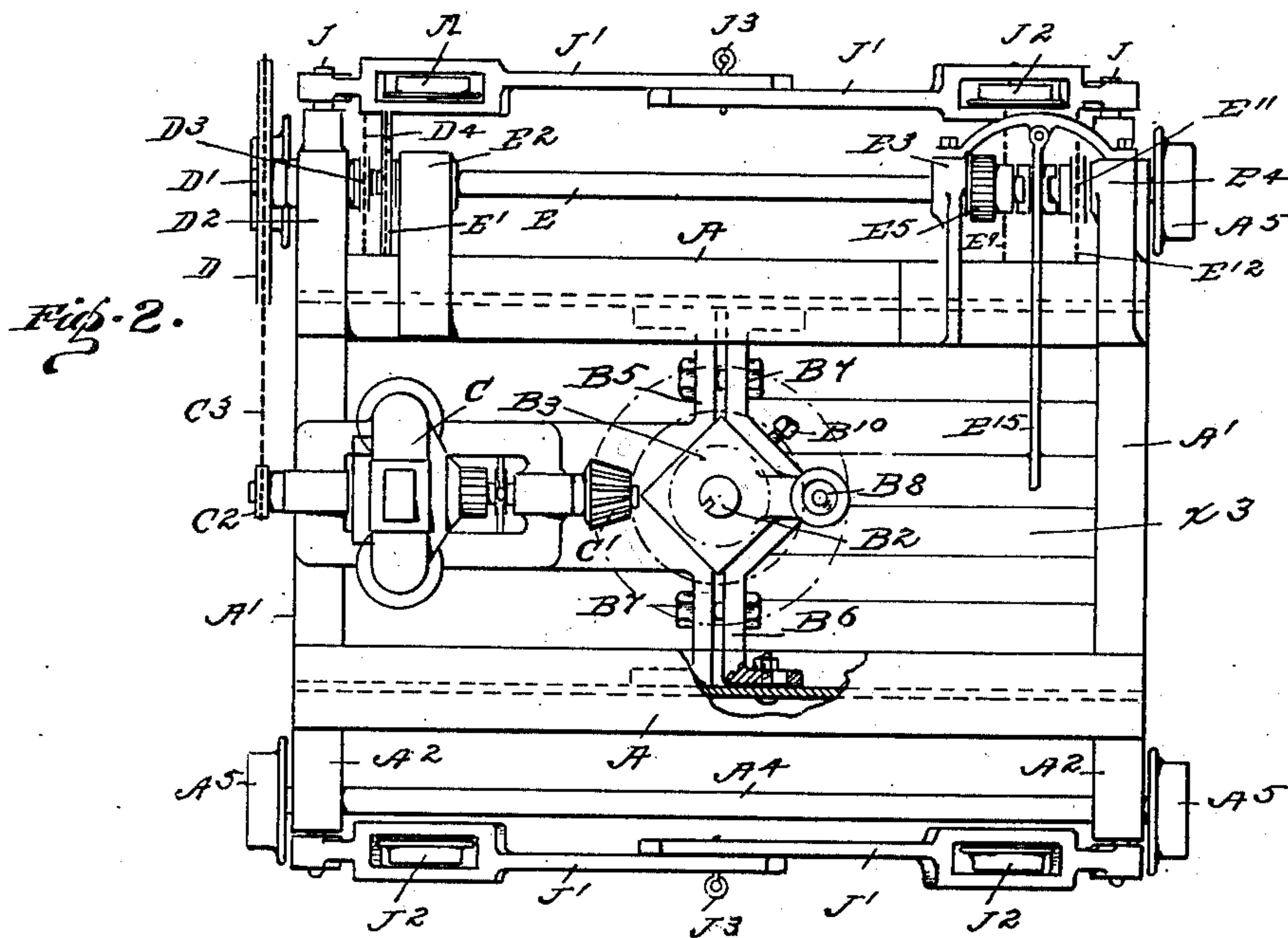
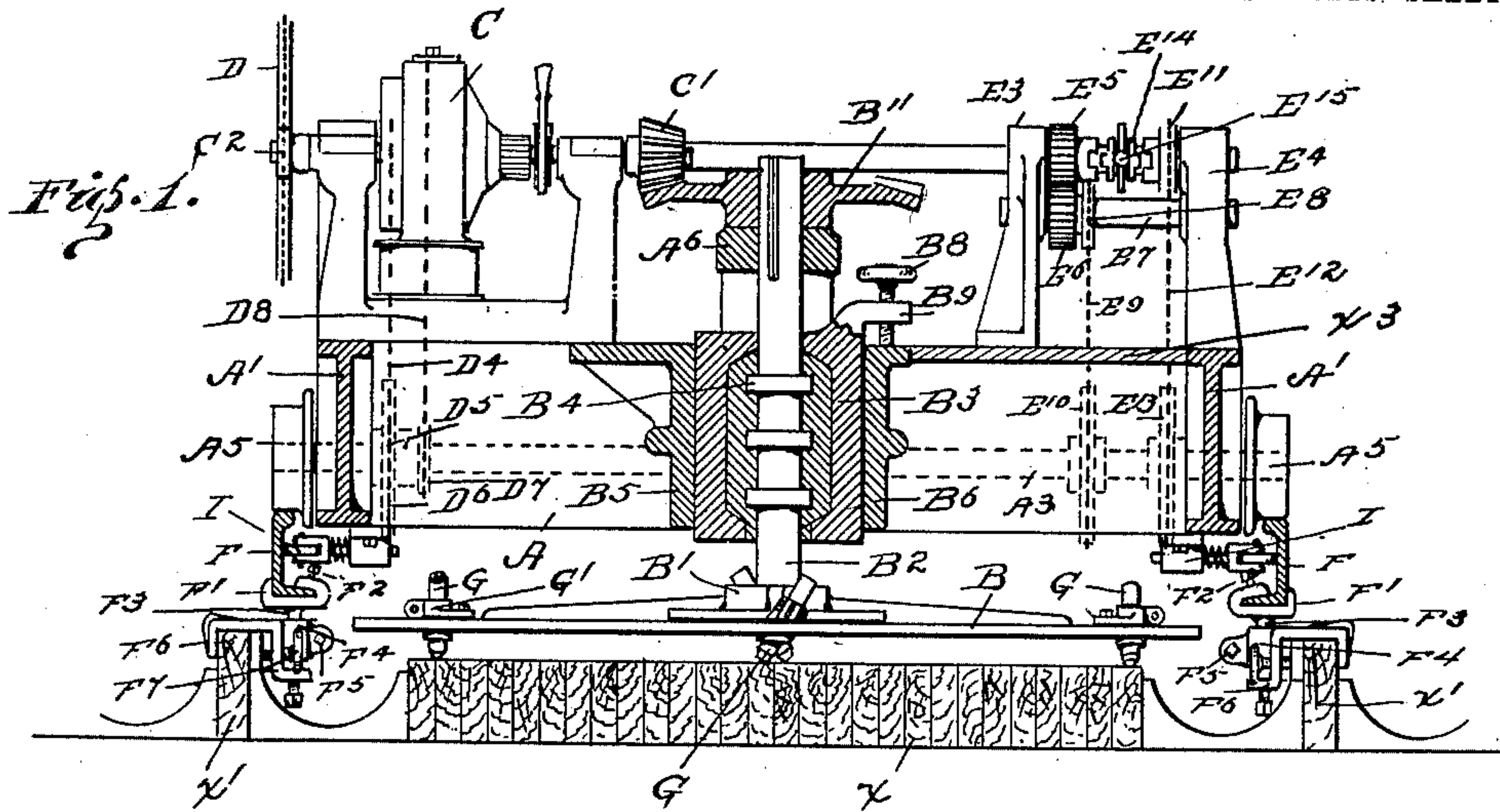
No. 756,780.

PATENTED APR. 5, 1904.

E. F. DREGER.  
BOWLING ALLEY DRESSER.  
APPLICATION FILED JULY 23, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES:

*James M. Cartney*  
*F. E. Birge*

INVENTOR.

*Edward F. Dreger*  
BY

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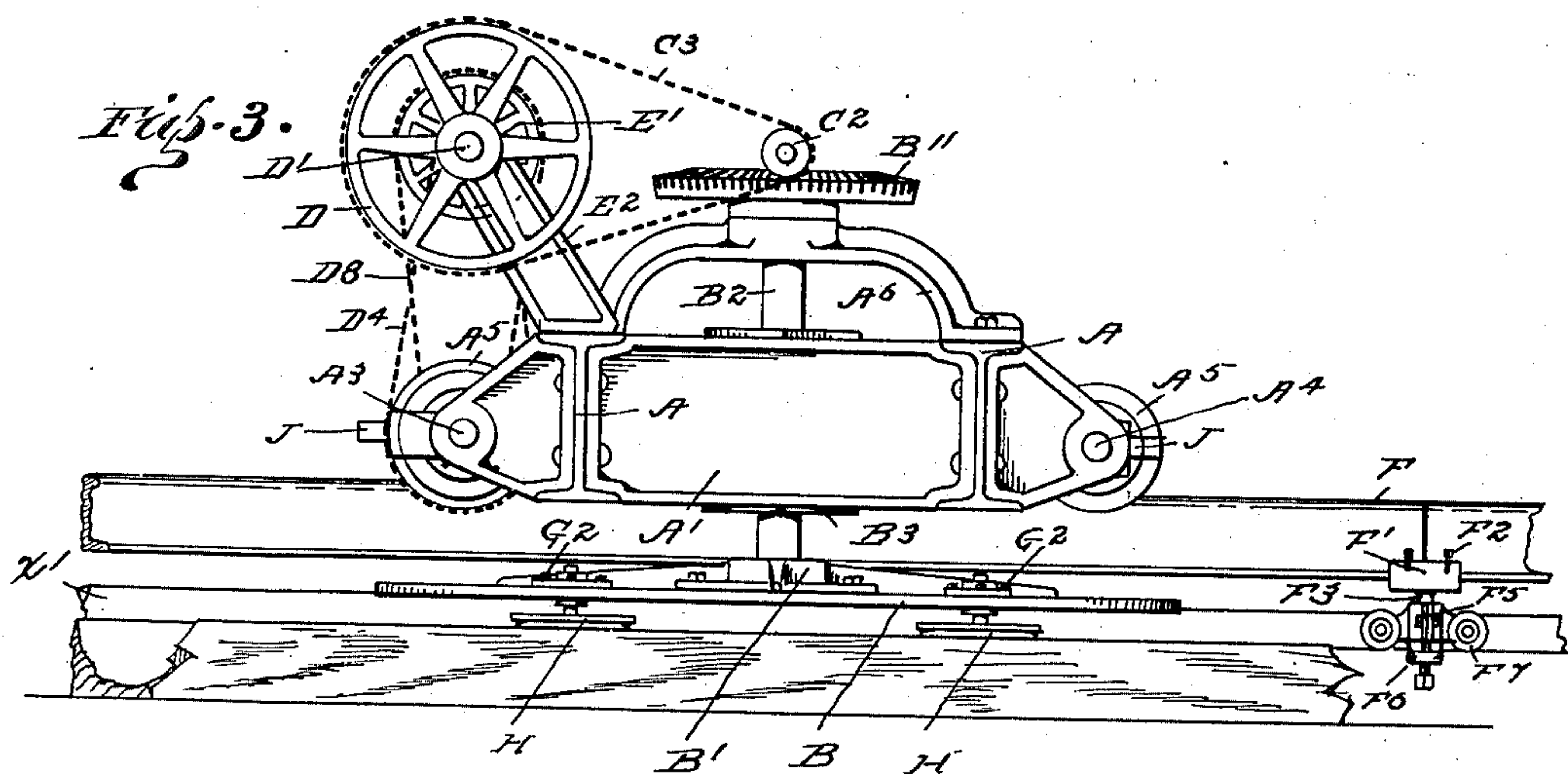
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INVENTOR.

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## UNITED STATES PATENT OFFICE.

EDWARD F. DREGER, OF OAKLAND, CALIFORNIA.

## BOWLING-ALLEY DRESSER.

SPECIFICATION forming part of Letters Patent No. 756,780, dated April 5, 1904.

Application filed July 23, 1903. Serial No. 166,758. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD F. DREGER, a citizen of the United States, residing at 761 Fourteenth street, in the city of Oakland, county of Alameda, and State of California, have invented certain new and useful Improvements in Bowling-Alley Dressers; and I do hereby declare the following to be a full, clear, and exact description of the said invention, such as will enable others skilled in the art to which it most nearly appertains to make, use, and practice the same.

This invention relates to improvements in surface-dressers for bowling-alleys, and particularly to the novel construction and arrangement of the parts.

The object of this invention is to provide means for dressing the surfaces of alleys to remove depressions caused by uneven wear, warping, &c., by planing, sandpapering, and polishing.

The bed of a bowling-alley is composed of laminated strips of timber, usually maple, and varies in width from forty-one to forty-three inches, having the channels on either side in which balls leaving the bed are directed to the pit at the end of the alley. The constant rolling of balls over the bed-surface seek out the softer spots, which are soon worn below the plane of the surface or the whole bed may warp or settle, materially influencing the direction of the balls.

Broadly, the invention consists of a traveling carriage running upon rails parallel with the line of the alley and leveled with the plane thereof, the carriage carrying a revolving head adapted to be fitted with cutting-bits, sandpapering-disks, and waxing and polishing devices to complete the process of refinishing the bowling-surface. The carriage and cutter-head are driven by a suitable motor through the necessary gearing, clutches, &c. The rails upon which the machine travels are adjustably secured to the division-pieces of the alley and are capable of easy and delicate adjustment vertically. The depth of cut made by the cutter-head is determined by a screw adjustment by means of which the said head is raised and lowered with respect to the plane of the bowling-surface.

In the drawings, Figure 1 is a front elevation of a machine constructed in accordance with this invention. Certain of the parts are shown in partial section to better illustrate their construction. Fig. 2 is a plan view from above of the same, the large gear-wheel on the vertical shaft of the cutter-head being omitted to disclose the underlying thrust-block. Fig. 3 is a side elevation of the same.

Similar letters of reference designate similar parts throughout the several views.

In detail the construction consists of the traveling carriage made up of the transverse I-beams A, connected across the ends by the cast bolsters A', and having the truck-brackets A<sup>2</sup>, in which the axles A<sup>3</sup> A<sup>4</sup>, carrying the traction-wheels A<sup>5</sup>, are journaled. The cutter-head consists of the disk B, reinforced by the webbed hub B', fixed on the shaft B<sup>2</sup>. The shaft B<sup>2</sup> revolves in the thrust-block B<sup>3</sup>, which is hollowed to receive melted Babbitt or some suitable antifriction metal which molds itself about the shaft to receive the thrust of the thrust-flanges B<sup>4</sup> thereon. The thrust-block B<sup>3</sup> is vertically adjustable in the bracket composed of the cross-beam B<sup>5</sup>, fixed between the webs of the I-beams A, the cross-beam B<sup>6</sup>, (coincident,) bolted thereto by the bolts B<sup>7</sup>, being slotted in its connection with the I-beams A to allow for lateral adjustment with the cross-beam B<sup>6</sup>, between which the square thrust-block is adjustably guided. The thrust-block controlling the cutter-head is vertically adjustable by the hand-screw B<sup>8</sup>, threaded in the overhanging bracket B<sup>9</sup> and stepped in the cross-beam B<sup>6</sup>. The adjustment of the thrust-block is fixed by the set-screw B<sup>10</sup>, threaded in the cross-beam. The shaft B<sup>2</sup> is driven by the bevel-gear B<sup>11</sup>, feathered on the shaft and resting upon the bridge A<sup>6</sup>, extending across the center of the machine between the I-beams A. The cutter-head shaft is driven by the bevel-gear B<sup>11</sup>, meshed directly with the pinion C' of the motor C, which is mounted on the carriage between the cross-beams B<sup>5</sup> and the adjacent I-beam.

The advance of the carriage is synchronized with the rotation of the cutter-head and is propelled by a reduction of speed from the small sprocket C<sup>2</sup> on the motor-shaft (nine



hundred and seventy-five revolutions per minute) transmitting through the sprocket-chain C<sup>3</sup> to the large sprocket D, fixed on the short shaft D', revolving in the pillar D<sup>2</sup>, bolted to the frame of the carriage. The small sprocket D<sup>3</sup>, fixed on the opposite end of the shaft D', transmits the rotation through the sprocket-chain D<sup>4</sup> to the idler D<sup>5</sup>, loose on the axle A<sup>3</sup>, and composed of the sprocket-gears D<sup>6</sup> D<sup>7</sup>. The sprocket D<sup>7</sup> transmits through the sprocket-chain D<sup>8</sup> to the sprocket E' on the end of the shaft E, supported by the pillars E<sup>2</sup> E<sup>3</sup> E<sup>4</sup> bolted to the frame of the carriage. The tractive power is derived from the line-shaft E, the direction of travel being controlled by the clutch mechanism located between the pillars E<sup>3</sup> E<sup>4</sup> and consisting of the loose pinion E<sup>5</sup>, meshed with the pinion E<sup>6</sup>, fixed on the counter-shaft E<sup>7</sup> and carrying the sprocket E<sup>8</sup>, transmitting through the sprocket-chain E<sup>9</sup> to the sprocket E<sup>10</sup>, fixed on the axle A<sup>3</sup>. From the loose pinion E<sup>11</sup> power is transmitted through the sprocket-chain E<sup>12</sup> to the sprocket E<sup>13</sup>, fixed on the axle A<sup>3</sup>. The direction of travel is determined by throwing the clutch E<sup>14</sup>, feathered on the shaft, into engagement respectively with the pinion E<sup>5</sup> or E<sup>11</sup>. The clutch is controlled by the lever E<sup>15</sup>, pivoted between the pillars E<sup>3</sup> E<sup>4</sup>. The traction-rails F are preferably composed of convenient lengths of bulb-angle iron, the flange of which is set in the socket F' and secured by the set-screw F<sup>2</sup>, the socket having the vertical stem F<sup>3</sup>, extending through the clamp F<sup>4</sup>, where it is pinched by the bolt F<sup>5</sup>. The rails are adjusted to the desired level by the screw threaded in clamp F<sup>6</sup> and operating against the end of the stem F<sup>3</sup>. The clamp F<sup>6</sup> is secured to the division-pieces X' of the alley by the hand-screws F<sup>7</sup>. The division-pieces vary with different construction of alleys, in which event the clamp must be made to conform thereto.

The first operation is to apply and level the traction-rails the whole length of the alley, then mount the carriage thereon and adjust the cutter-head to remove the desired cut from the surface of the alley-bed. The cutting-bits G consist of a length of steel tube of the desired temper, beveled to an edge to the inner diameter and staggered or set back at an angle to present only a portion of the cutting diameter to give clearance to the bit. The bits are clamped in the bushings G', set through the disk B of the cutter-head, and are arranged four in number in about this proportion, the first being from the center of the cutter-head twenty-one inches, the second twenty-one and one-quarter, the third twenty-one and one-half, and the fourth twenty-one and three-quarters. This arrangement of the bits provides for four concentric cuts with each revolution of the cutter-head in a constantly-advancing direction. In addition to the above arrangement the bits are set at va-

rying depths in rotation, so that the cut from the alley-surface is approached gradually. For instance, if one-quarter of an inch is to be removed the second bit is set one-sixteenth of an inch below the first, and so on. Obviously this arrangement or the number of bits could be varied without departing from the spirit of this invention.

To insure tractive force and steadiness, the whole structure is massive, heavy, and carefully balanced, the weight of the motor being balanced on the opposite of the center by the weight of the operator, who sits on the flooring X<sup>3</sup> in reach of the reversing-lever and starting-switch of the motor. Lateral deviation of the carriage is absorbed by the rollers I, adjustably mounted on the carriage and resiliently bearing against the inside of the web of the traction-rails.

After the cutters have passed over the alley-surface the gouging action of the bits has left slight corrugations, which are removed by lifting the bits and inserting in the bushings G<sup>2</sup> similar to G', the disks H having an abrasive surface bearing against the surface of the alley. After the sandpapering the disks can be removed and polishing-brushes substituted in two of them, while stocks of wax can be placed in the others to bear resiliently against the surface, which has been previously shel-lacked or treated to take the requisite polish. The changes in the cutter-head can be made while the same is at rest over the pit at the end of the alley.

In professional bowling-alleys it is usual to provide a number of parallel bowling-surfaces. The weight of the machine described necessitates some means for transferring its operations from one surface to another without undue labor. To this end the truck-brackets A<sup>2</sup> are provided with the studs J, adapted to receive the heads of the levers J', in which the wheels J<sup>2</sup> are mounted, and which are the fulcrum of the levers J', which being forced down and secured together by the pins J<sup>3</sup>, extending through both, form a temporary truck upon which the machine may be transversely transported on temporary tracks laid for the purpose. During the operation of the machine the mechanisms just described can be removed.

Having thus described this invention, what is claimed, and desired to be secured by Letters Patent, is—

1. A bowling-alley dresser, consisting of a traveling carriage; traction-rails laid parallel with the line of the alley, and capable of vertical adjustment; a revolving head mounted upon a shaft, engaging a thrust-block capable of vertical adjustment, a motor mounted on said carriage and adapted to rotate said shaft; cutting-bits consisting of sections of tubes sharpened and extending at an angle through the revolving head, at varying distances from the center thereof; a counter-shaft geared to



the said motor, and to the traction-wheels of the carriage; and suitable clutch mechanisms adapted to control the tractive travel of the carriage; temporary trucks capable of traveling transverse to the normal travel of the carriage, and consisting of levers pivoted to the carriage, and having rollers mounted thereon, and means for locking the levers together in operative position.

10 2. A bowling-alley dresser comprising a traveling carriage, a motor carried upon the carriage and adapted to drive the same, traction-rails laid parallel with the line of the alley, means for adjusting the same vertically, 15 a revolving head leveled with the plane of the alley and carried by said carriage said head being geared with said motor and provided with dressing devices, and means for absorbing lateral deviation of said carriage.

20 3. A bowling-alley dresser comprising a traveling carriage, and a revolving dresser-head mounted thereon, both synchronously driven, clamps adapted to embrace the division-pieces of the alley, sockets mounted in 25 said clamps and supporting rails, and means for adjusting said sockets vertically.

4. A bowling-alley dresser consisting of a traveling carriage, a revolving dresser-head mounted thereon, both synchronously driven, 30 traction-wheels for said carriage, means for adjusting the same vertically, and means for absorbing lateral deviation of said carriage.

5. A bowling-alley dresser comprising a traveling carriage, a revolving dresser-head

mounted thereon, both synchronously driven, 35 clamps adapted to embrace the division-pieces of the alley, sockets mounted in said clamps and supporting rails, said sockets having depending shanks, adjusting-screws engaging said shanks, and laterally-disposed rollers 40 mounted in resilient bearings and engaging said rails.

6. A bowling-alley dresser comprising a traveling carriage, a revolving dresser-head mounted thereon, both synchronously driven, 45 and temporary trucks arranged to travel transversely to the normal travel of the carriage.

7. A bowling-alley dresser comprising a traveling carriage, a revolving dresser-head mounted thereon, both synchronously driven, 50 levers pivoted to said carriage and extending transversely thereof, and carrying-wheels mounted in said levers.

8. A bowling-alley dresser comprising a traveling carriage, a revolving dresser-head 55 mounted thereon, both synchronously driven, levers pivoted to said carriage and extending transversely thereof, said levers having recesses, carrying-wheels mounted in said recesses, and means for locking the levers to- 60 gether in operative position.

In testimony whereof I have hereunto set my hand this 4th day of June, 1903.

EDWARD F. DREGER.

Witnesses:

BALDWIN VALE,  
JAMES McCARTNEY.