

Jan. 19, 1926.

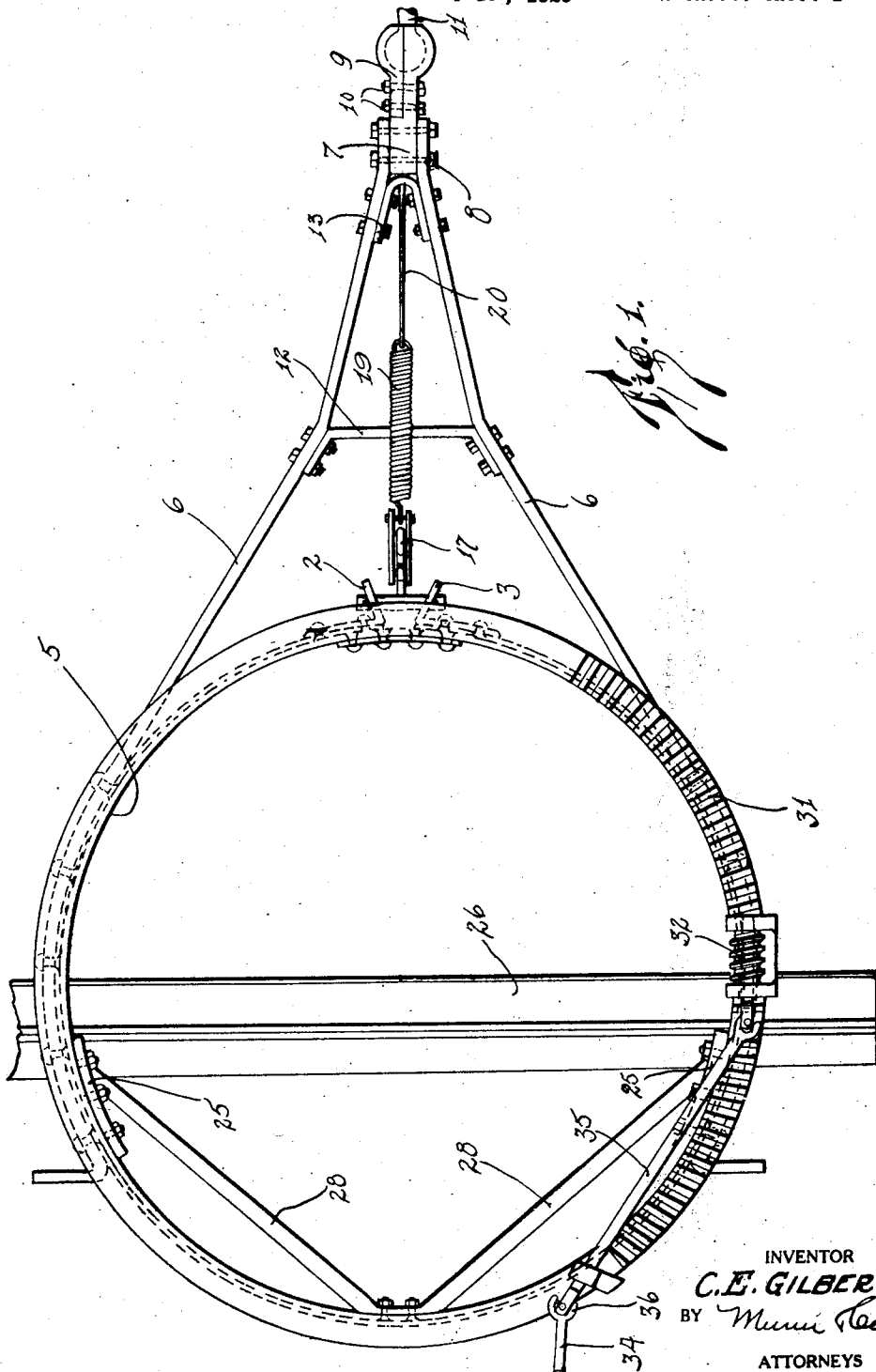
C. E. GILBERT

1,570,140

ROAD GRADER

Filed May 15, 1925

2 Sheets-Sheet 1



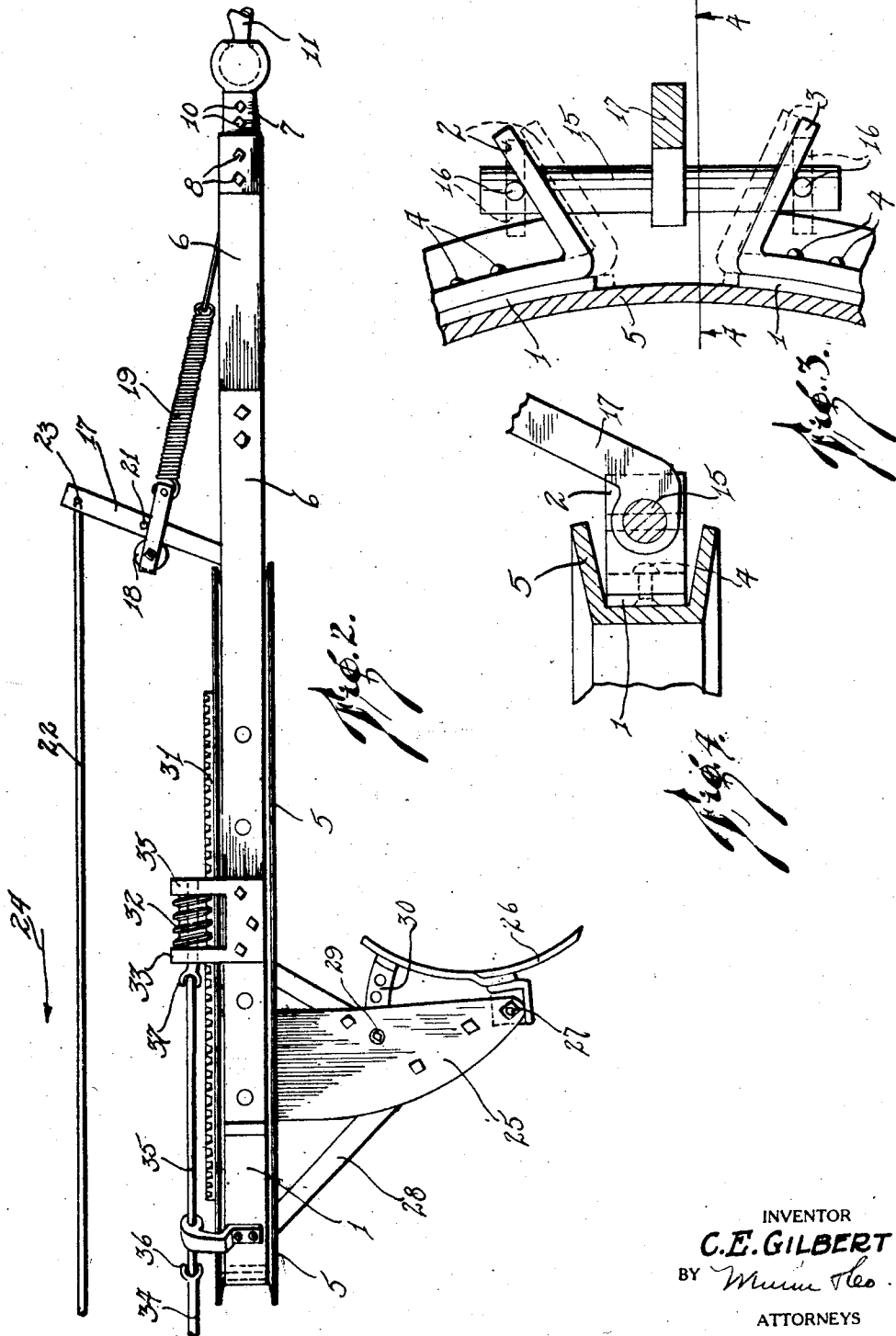
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2 Sheets-Sheet 2



UNITED STATES PATENT OFFICE.

CLARENCE EUGENE GILBERT, OF ABERDEEN, SOUTH DAKOTA.

ROAD GRADER.

Application filed May 15, 1925. Serial No. 30,581.

To all whom it may concern:

Be it known that I, CLARENCE EUGENE GILBERT, a citizen of the United States, and a resident of Aberdeen, in the county of Brown and State of South Dakota, have invented a new and useful Improvement in Road Graders, of which the following is a full, clear, and exact description.

My invention relates to improvements in road graders, and it consists in the combinations, constructions, and arrangements herein described and claimed.

An object of my invention is to provide a road grader of the character described which is so constructed as to entirely eliminate play between the cutting edge of the grader and the grader frame or circle. This play between the cutting edge and frame is found in graders of the ordinary type, and particularly circle graders having a pin at the center of the circle and a locking pin for securing the grader blade against movement relative to the circle when it is moved upon the central pin. Such play or lost motion causes a so-called corduroy surface in roads upon which the grader is used which is highly undesirable.

A further object of my invention is to provide a road grader of the character described in which the entire circle rotates carrying with it the cutting edge of the grader and in which the circle is at all times normally locked against movement and may only be moved at the operator's will.

A further object of my invention is to provide a road grader of the character described in which novel means is employed for rotating the circle to effect a change in the disposition of the cutting edge with respect to the road.

A further object of my invention is to provide a road grader of the character described in which the draught attachments are such as to permit a maximum space between the grader frame and the road surface, which space at the present time in ordinary types of graders is partially occupied by portions of the grader frame.

Other objects and advantages will appear in the following specification, and the novel features of the invention will be particularly pointed out in the appended claims.

My invention is illustrated in the accompanying drawings, forming part of this application, in which

Figure 1 is a top plan view of an embodiment of my invention,

Figure 2 is a side elevation of the device illustrated in Figure 1,

Figure 3 is an enlarged plan view of a fragmentary part of Figure 2, and

Figure 4 is a sectional view along the line 4-4 of Figure 3.

In carrying out my invention I make use of a split annulus 1. The split annulus 1 has lugs 2 and 3 secured at the opposite ends thereof, see Figure 3, by the provision of rivets 4. These lugs 2 and 3 extend outwardly from the annulus and incline away from one another toward their outer ends.

An annular member 5 constructed of channel iron and substantially U shaped in cross section is rotatably mounted within the split annulus 1 and is free to rotate at all times except when the lugs 2 and 3 are drawn toward one another at which time the annular member 5, which I shall hereinafter refer to as the circle, is locked against movement relative to the split annulus 1 by frictional engagement therewith.

The split annulus 1 has forwardly extending draught frames 6 secured thereto which are connected with a socket member 7 by the provision of bolts 8. The socket member 7 has a complementary and cooperating part 9 secured thereto by bolts 10 by means of which a draught bar 11 having a ball at the outer end may be engaged with the ball within the socket formed by the members 7 and 9. The draught bar 11 is provided on whatever engine or locomotion is used to draw the grader, or to a whiffle-tree if horses are to be used. The draught frames 6 are provided with cross braces 12 and 13 for further reinforcing these members.

Means for normally maintaining the split annulus 1 in frictional engagement with the circle 5 and thereby preventing movement of the circle is provided in a shaft 15 which is projected through openings provided in the lug members 2 and 3 respectively. Pins 16 are projected transversely through the shaft 15 so as to bear upon the remote surfaces of the lugs 2 and 3. Thus when the shaft 15 is rotated to the position shown in dotted lines, the lugs 2 and 3 are drawn toward one another and the annulus is contracted, but when in the position shown in full lines, the annulus is expanded so as to permit free movement of the circle 5 therein.

An inclined arm 17 is fixed to the shaft 15 and extends upwardly and forwardly therefrom. A trolley 18 is disposed upon the inclined arm 17 and is connected to a compression spring 19, the opposite end of which is connected by a rod 20 to the brace 13 for the frame member 6.

Means for limiting movement of the trolley 18 relative to the arm 17 is provided in a pin 21 projecting through the arm 17. A rod 22 is connected at 23 to the outermost end of the arm 17 and extends rearwardly of the grader and has any suitable type of hand grip disposed at the rearmost portion of the rod. When the rod is drawn in the direction of the arrow 24, it will draw the arm 17 against the force of the spring 19 and permit the annulus to expand. It should be noted at this time that the split annulus is of substantially resilient material and has an inherent tendency to expand.

A pair of depending supporting members 25 are secured to the circle 5. A grader cutting edge 26 is pivotally mounted at 27 to each of the members 25 at points adjacent to the outer ends of the cutting edge 26. Rearwardly extending braces 28 extend from the depending member 25 to the rearmost portion of the circle 5 to brace the members 25. Means for adjusting the cutting edge 26 as to inclination is provided in bolts 29 projected through the members 25 and engaged with perforated arcuate members 30 carried by the cutting edge 26 through which perforations the bolts 29 are projected.

The circle 5 has a segmental gear portion at the upper part thereof as shown at 31 and which extends for a portion of the circumference of the circle. A worm gear 32 supported by bearings 33, which bearings are carried by the members 6, is in mesh with the teeth of the segmental gear 31. A pair of rods 34 and 35 connected to one another and to the worm gear 32 by universal joints 36 and 37 respectively provide means for rotating the worm gear so as to cause the circle 5 to turn when the split annulus is expanded, as previously described.

For the purpose of simplicity, I have omitted the rod 22 in Figure 1 of the drawing and the hand grips used in connection with the rods 22 and 34.

From the foregoing description of the various parts of the device, the operation thereof may be readily understood. It is apparent that the provision of the split socket 7—9 enables the device to be readily coupled to the engine of locomotion, or to a whiffle-tree, as desired.

Let us assume that the grader is ready for work and that it is desired to move the cutting edge 26 at a predetermined angle relative to the road. To accomplish this end, the operator will merely pull on the rod 22

in the direction of the arrow 24, thus rotating the shaft 15 against the force of the spring 19 to such position as will permit the split annulus to expand. The circle 5 is then released from frictional engagement with the annulus and rotation of the rod 34 and consequent rotation of the worm gear 32 must cause rotation of the circle within the split annulus until the predetermined position of the cutting edge 26 is attained. At this time the operator will release the rod 22 and permit the spring 19 to draw the arm 17 forwardly, thus rotating the shaft 15 and contracting the annulus as described.

I claim:

1. A road grader of the character described comprising a frame including a split annulus, a circle rotatably mounted in said split annulus, a grader cutting edge carried by said circle, means for normally contracting said split annulus so as to frictionally engage with said circle, and manually operated means for rotating said circle with respect to said split annulus when said split annulus is expanded.

2. A road grader of the character described comprising a frame including a split annulus, a circle rotatably mounted in said split annulus, a grader cutting edge carried by said circle, means for normally contacting said split annulus so as to frictionally engage with said circle, and manually operated means for rotating said circle with respect to said split annulus when said split annulus is expanded, said frame being adapted for connection with an engine of locomotion or the like.

3. A road grader of the character described comprising a frame having a split annulus, a circle rotatably mounted within said split annulus, yielding means for normally contracting said split annulus so as to frictionally engage with said circle, a road grader cutting edge carried by said circle, manually actuated means for opposing said yielding means to permit said split annulus to expand, and means for rotating said circle when the split annulus is expanded at will.

4. A road grader of the character described comprising a frame having a split annulus, a circle rotatably mounted within said split annulus, yielding means for normally contracting said split annulus so as to frictionally engage with said circle, a road grader cutting edge adjustably disposed on said circle, manually actuated means for opposing said yielding means to permit said split annulus to expand, means for rotating said circle when the split annulus is expanded at will, and ball and socket means for connecting said grader frame with an engine of locomotion or the like.

5. A road grader of the character described comprising a frame adapted for con-

nection with an engine of locomotion or the like, a split annulus carried by said frame, a circle rotatably mounted within said frame, means for yieldingly contracting
5 said split annulus to frictionally engage said frame, a cutting edge carried by said circle, and segmental teeth provided on said circle, a worm gear carried by said frame and in mesh with the teeth on said circle, and means for rotating said worm gear at will.

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