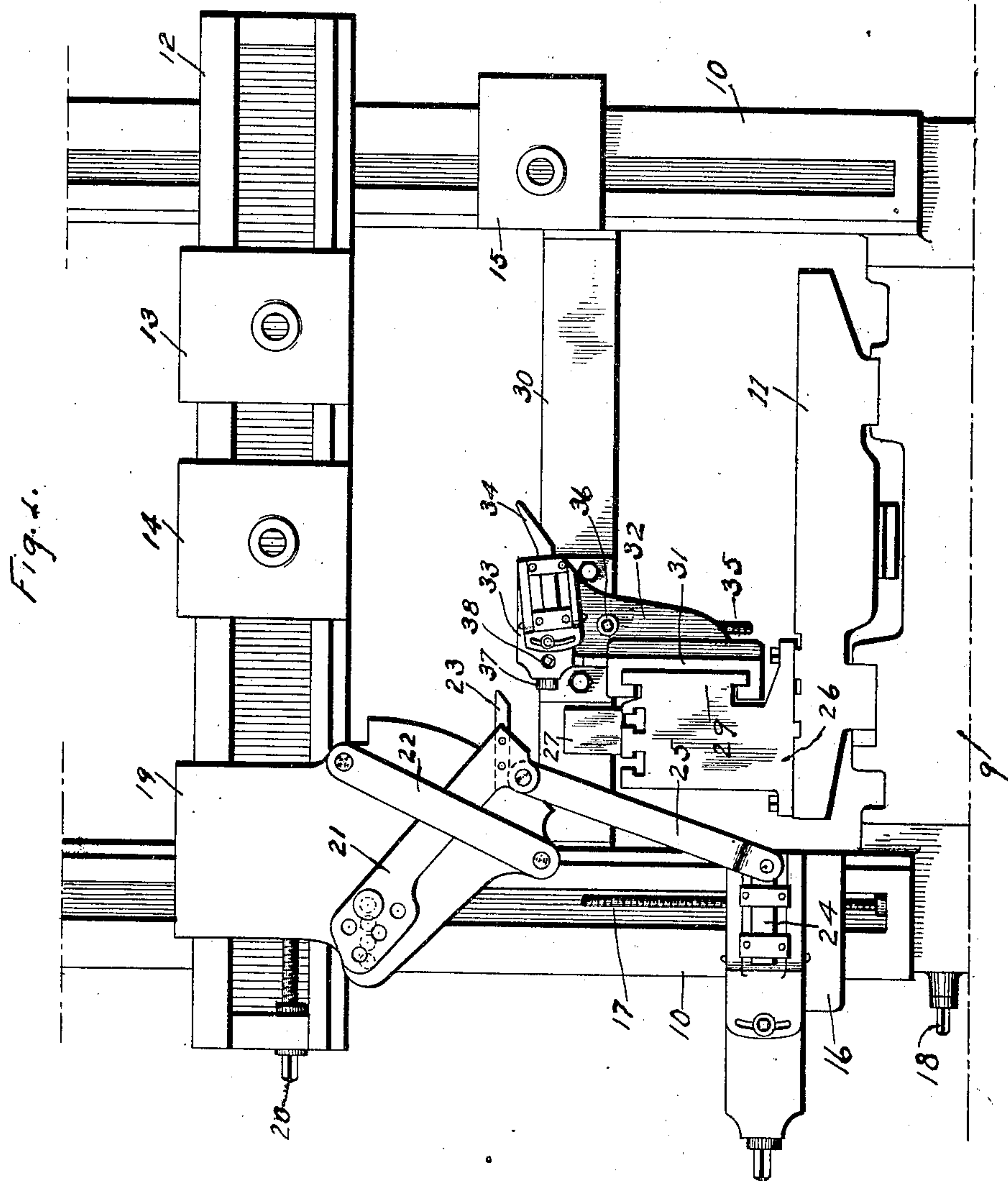


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 PLANER FOR LOCOMOTIVE CYLINDERS.
 APPLICATION FILED AUG. 17, 1908.

925,696.

Patented June 22, 1909.
 2 SHEETS—SHEET 1.



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 Carl H. Speer

Inventor
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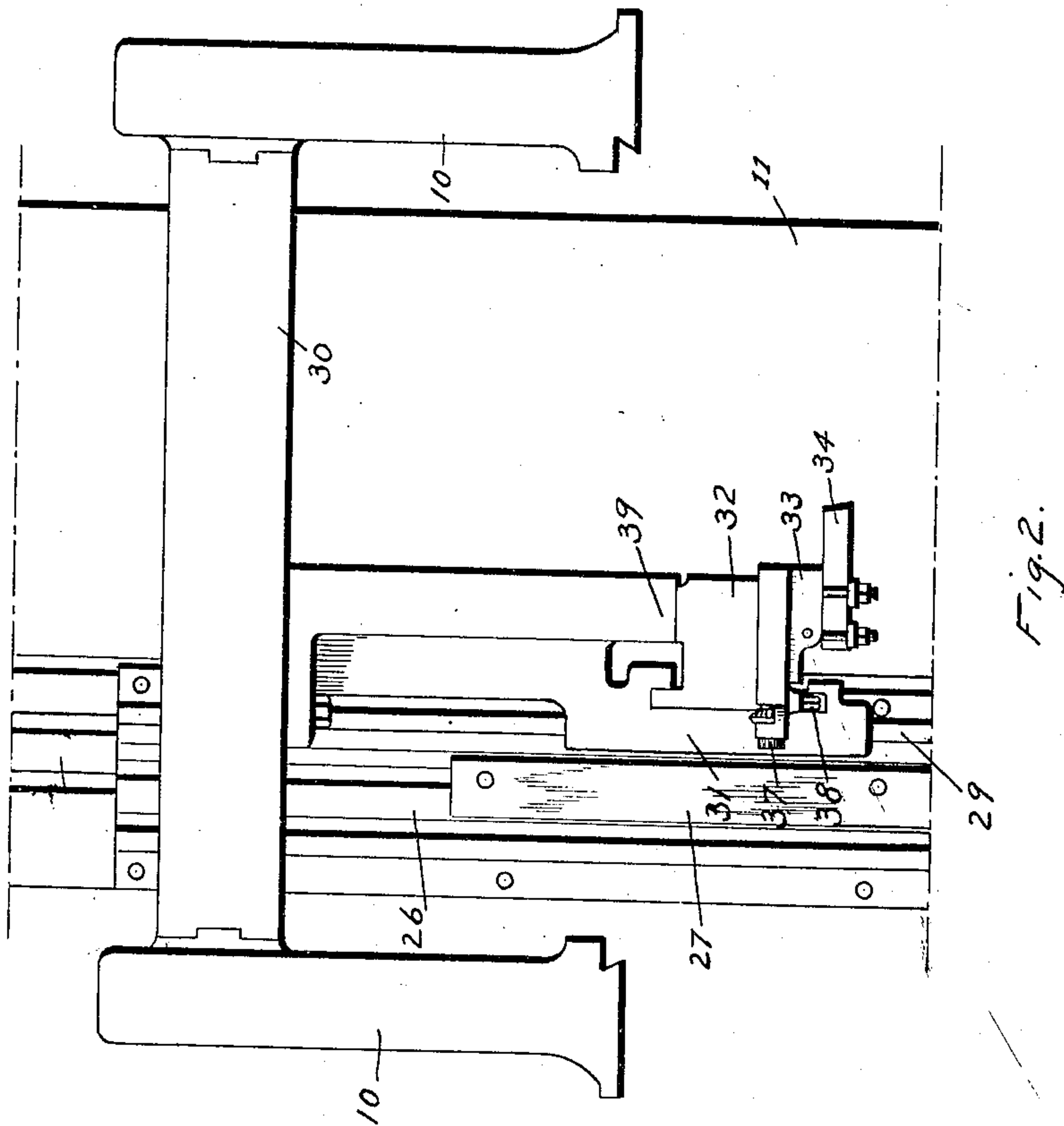


Fig. 2.

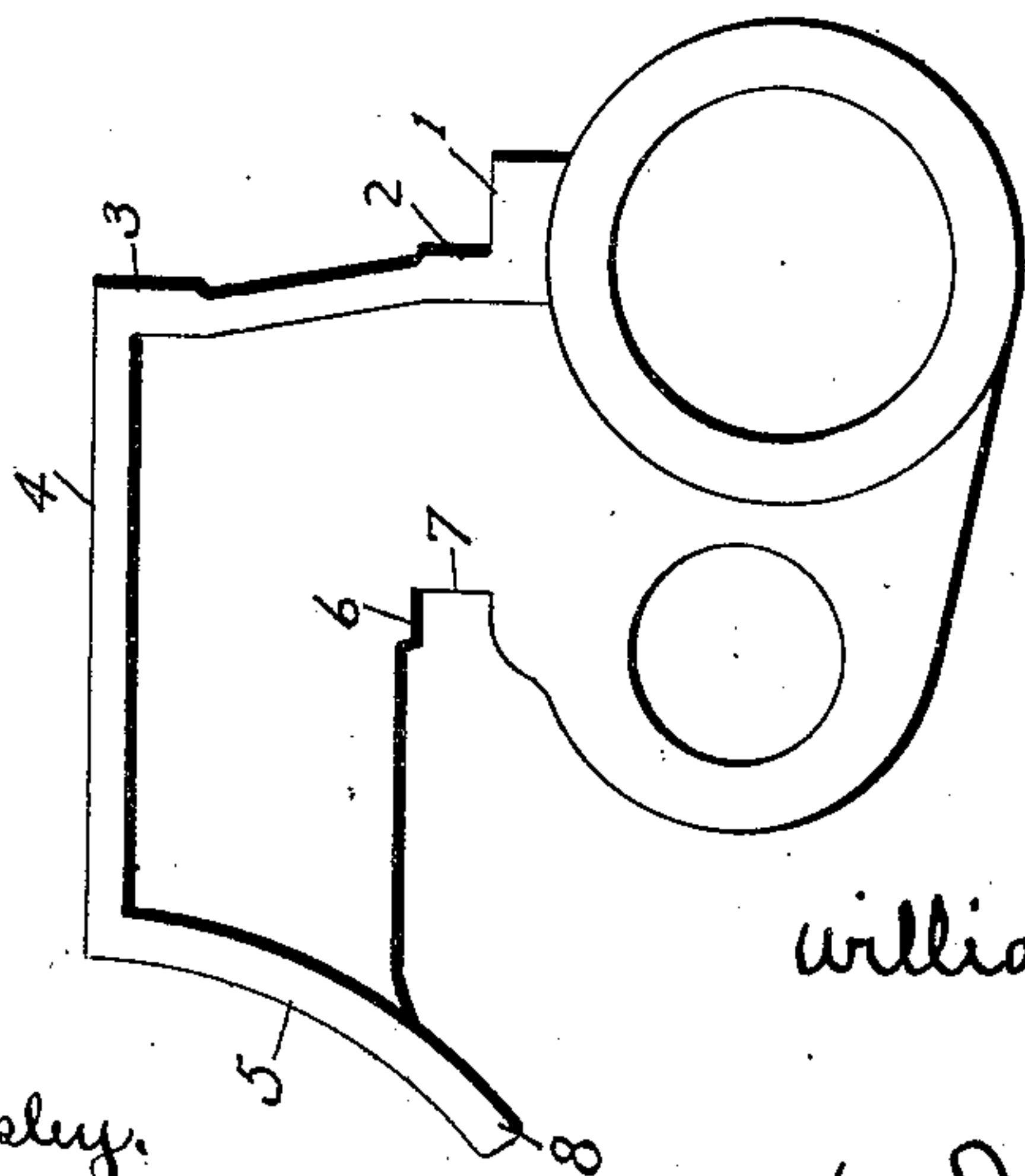


Fig. 3.

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UNITED STATES PATENT OFFICE.

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PLANER FOR LOCOMOTIVE-CYLINDERS.

No. 925,696.

Specification of Letters Patent.

Patented June 22, 1909.

Application filed August 17, 1908. Serial No. 448,917.

To all whom it may concern:

Be it known that I, WILLIAM JOSEPH HAGMAN, a citizen of the United States, residing at Philadelphia, Philadelphia county, Pennsylvania, have invented certain new and useful Improvements in Planers for Locomotive-Cylinders, of which the following is a specification.

This invention, pertaining to improvements in planers designed particularly for planing locomotive cylinders but available for other uses, will be readily understood from the following description taken in connection with the accompanying drawings in which:—

Figure 1 is a front elevation of the main portions of an ordinary metal planer fitted with improvements exemplifying my present invention: Fig. 2 a plan of the same with some parts omitted: and Fig. 3 an end view of a locomotive cylinder illustrating the peculiar character of the work designed to be accomplished by means of my improvements.

In the drawings Fig. 3 shows a form of locomotive cylinder in which the surfaces indicated, by 1 to 7 inclusive, are to be planed. It is to be noticed that in securing the casting to the planer table in such manner as to leave surfaces 6 and 7 free to be reached by a planing tool, there is a very considerable overhang at portion 8 and if this overhanging portion is not supported, then difficulty would be found in planing the concave surface 5 found in the overhanging portion.

My improvements are designed to permit of the satisfactory planing of all of the stated surfaces of such a cylinder as is illustrated in Fig. 3, at one setting of the cylinder.

Proceeding with the drawings:—9, indicates the bed of the planer: 10, the housings: 11, the table: 12, the rail: 13, the saddle of one of the heads sliding on the rail: 14, a similar saddle on the rail: 15, the saddle of the side-head sliding vertically on one of the housings: 16, the complete side-head sliding vertically on the other housing: 17, the vertical feed-screw for the side-head 16: and 18, the handle shaft for turning the screw 17. All of the planer parts thus far referred to are or may be precisely as usual in ordinary planer practice and subject to any usual or suitable modifications in those parts, and the parts are adapted for working in their usual manner.

Proceeding with the drawings:—19, indi-

cates a saddle sliding on the rail: 20, a screw for adjusting this saddle along the rail: 21, a radius bar having its heel pivoted to saddle 19 and having its free end projecting inwardly in such manner that it may swing in the arc of a circle in a plane at right angles to the direction of motion of the table: 22, a bar lying over the front face of the radius bar and having its ends secured to saddle 19 to serve in steadying the radius bar during its swinging motion: 23, a tool mounted in the free end of the radius bar: 24, a pivot-bar mounted in the tool-clamps of side-head 16 and carrying at its inner end a pivot with its axis parallel with the direction of planing motion: 25, a link connecting pivot-bar 24 and the free end of the radius bar: 26, a narrow super-table secured to the planer table below tool 23: and 27, a longitudinal block secured to the top of the super-table.

The cylinder casting shown in Fig. 3 is to be secured with its base resting on the planer table and with its overhanging projection 8 resting on the block 27. Under these conditions the surfaces 1, 2, 3 and 4 can be operated upon by the usual tool-heads of the planer, say the rail-heads 13 and 14 and the side-head 15. At the same time the overhang 8 of the casting is well supported for the operation of tool 23 which is to plane the concave surface 5. The feeding motion for tool 23 can be derived from screw 17 feeding side-head 16 upwardly or downwardly. The pivot on which the radius bar swings may be adjusted to a position corresponding with the center of curve 5 by shifting saddle 19 on the rail. The length of the radius bar from the center of the pivot to the point of the tool, is to correspond with the radius of curve 5. It is to be noted that the radius bar has several selective pivot holes in its heel, thus providing for quite a range of selective radii for the radius bar. Assuming the cylinder to be resting on the planer table with its overhang 8 resting on top of block 27, it will be apprehended that surfaces 6 and 7 to be planed are within a rather small space inclosed on all of its longitudinal sides, and that the tool to plane these two surfaces 6 and 7 must operate in this confined space.

Proceeding with the drawings:—29, indicates a rail formed upon the inner face of the super-table, parallel with the direction of planing motion: 30, a strut rigidly secured to the housings and extending across over

the planer table, at a distance from the common vertical plane of all of the planing tools equal to at least the length of the cylinder to be planed: 31, a saddle engaging rail 29, the rail sliding through the saddle, this saddle being bolted to the front face of strut 30, the saddle being located forward of the strut in the general common plane of all the planer tools, a rearward extension of the saddle serving to secure it to the strut: 32, a vertical slide mounted in saddle 31: 33, a horizontally sliding tool-rest mounted on the upper portion of vertical slide 32: 34, a tool carried by tool-rest 33 and projecting inwardly: 35, a vertical feed-screw for slide 33: 36, a handle shaft for turning screw 35: 37, the feed screw for tool-rest 33: 38, the handle shaft for turning this screw: and 39, a vertical slide-bearing between the rear portion of vertical slide 32 and a portion of slide 31 projecting directly forward from the strut, the contact surfaces of this slide bearing being at right angles to the direction of planing motion.

25 The general member projecting forward from the strut and carrying vertical slide 32 and its tool accessories forms an appliance somewhat after the nature of a slotting machine and is capable of working within the confined space previously referred to and planing the surfaces 6 and 7 indicated in Fig. 3, the feed for planing surface 6 being derived from screw 37, and the feed for planing surface 7 being derived from screw 35.

35 The structure which has been likened to a slotting machine might in many cases be substantial enough for its work without other support than that derived from the strut, but by providing its forward end with the saddle 31 engaging the rail on the face of the super-table the structure may be given ample stability regardless of the reach of the arm extending forward from the strut.

45 Looking at Fig. 3 of the drawing it will be apprehended that two of these cylinders co-acting as a pair on a locomotive would represent rights and lefts while the planer devices specifically illustrated are adapted for planing but one of the cylinders when they are considered as rights and lefts. But it is to be understood, first, that if it were necessary the planer shown as being equipped with the special planing devices upon one side only could be similarly equipped upon the opposite side, thus adapting it for right and left-hand work and, second, that the two cylinders of a pair, while possibly made from different patterns, and constituting right and left-hand members of a pair, may be treated as identical upon the planer by reversing one of the cylinders endwise and securing it to the planer in such reversed position.

60 In the drawing the movement of the radius-bar is illustrated as being derived from

a side-head sliding vertically on the housing, but it is manifest that the link connected with the radius-bar may derive its motion from any other device capable of giving endwise motion to the link such, for instance, as one of the saddles on the rail.

In the exemplifying embodiment of my invention the arm which supports tool 34 is illustrated as being founded on a strut having its ends secured to the planer-housings, but it is manifest that this strut may find its equivalent in any other suitable firm support for the rear end of the arm.

I claim:—

1. A planer comprising vertical housings, a cross-rail, a saddle on the cross-rail, a radius bar pivoted on the saddle, means for adjusting the pivot connection of the radius bar, a tool carried by the free end of the radius bar, a vertically adjustable saddle carried by one of the housings, and a link connecting the vertically adjustable saddle with the radius bar.

2. A planer comprising vertical housings, a cross-rail, a saddle on the cross-rail, a radius bar pivoted on the saddle, means for adjusting the pivot connection of the radius bar, a tool carried by the free end of the radius bar, a vertically adjustable saddle carried by one of the housings, a link connecting the vertically adjustable saddle with the radius bar, and means for adjusting the pivot connection of the link with the vertically adjustable saddle.

3. A planer comprising housings, a rail, a saddle mounted for sliding motion on the rail near one of the housings, a radius-bar having its free end projecting inwardly from the housing, the radius bar being adjustably pivoted on the saddle, a tool carried by the free end of the radius-bar, a pivot supported by the housing below the radius-bar, a link connecting the last-mentioned pivot with the free end of the radius-bar, and means for adjusting the last-mentioned pivot vertically, combined substantially as set forth.

4. A planer comprising housings, a rail, a radius-bar having its free end projecting inwardly from the housing, the radius bar being adjustably pivoted on the saddle, a tool carried by the free end of the radius-bar, a side-head mounted for vertical movement on the housing below said pivot, a pivot carried by the tool-holder of the side-head, and a link connecting the last-mentioned pivot with the free end of the radius bar, combined substantially as set forth.

5. A planer comprising housings, a rail, a saddle mounted for sliding motion on the rail near one of the housings, a radius-bar having its free end projecting inwardly from the housings, the radius bar being adjustably pivoted on the saddle, a tool carried by the inner end of the radius-bar, a vertically movable side-head mounted on the housing below said

saddle, a pivot carried by the tool-holder of said side-head, and a link connecting the last-mentioned pivot with the free end of the radius-bar, combined substantially as set forth.

5 6. A planer comprising, an arm projecting forwardly between the housings, a rigid support for the rear end of said arm, a tool-holder mounted on the forward end of said arm, and means at the forward end of the arm
10 for adjusting the tool-holder vertically and horizontally on said arm, combined substantially as set forth.

7. A planer comprising, an arm projecting forwardly between the housings, a rigid support for the rear end of said arm, a tool-
15 holder mounted on the forward end of said arm, means at the end of the arm for adjusting the tool-holder vertically and horizontally on said arm, a longitudinal slide-rail se-
20 cured to the planer-table, and a saddle carried by the forward end of said arm and engaging said slide-rail, combined substantially as set forth.

8. A planer comprising, a strut disposed
25 across over the planer-table and having its ends secured to the housings of the planer, an arm rigidly secured to said strut and extending forwardly, a vertical slide mounted in the forward portion of said arm, and a horizon-

tally movable tool-rest carried by said slide, 30 combined substantially as set forth.

9 A planer comprising, a strut disposed across over the planer-table and having its ends secured to the housings of the planer, an arm rigidly secured to said strut and ex- 35 tending forwardly, a vertical slide mounted in the forward portion of said arm, a slide-bearing between the rear portion of said slide and an inner forward portion of said arm, and a horizontally movable tool-rest carried 40 by said slide, combined substantially as set forth.

10. A planer comprising, a strut disposed across over the planer-table and having its ends secured to the housings of the planer, an 45 arm rigidly secured to said strut and extending forwardly, a slide-rail longitudinally mounted on the table, a saddle carried by the forward portion of said arm and engaging said slide-rail, a vertical slide mounted in the 50 forward portion of said arm, and a horizontally movable tool-rest carried by said slide, combined substantially as set forth.

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Witnesses:

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