

No. 794,305.

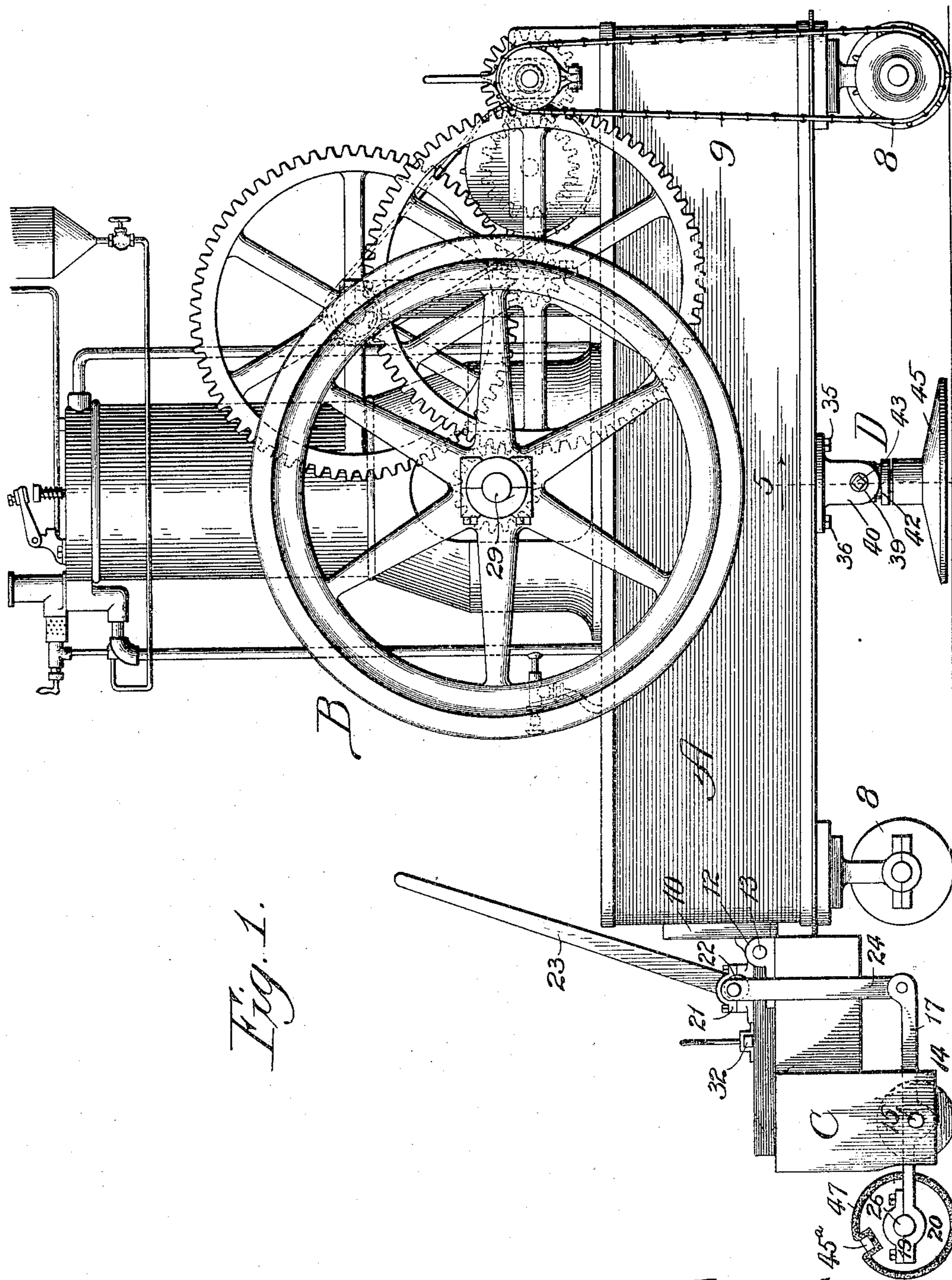
PATENTED JULY 11, 1905.

G. LYON.

FLOOR GRINDING AND POLISHING MACHINE.

APPLICATION FILED DEC. 7, 1903.

4 SHEETS—SHEET 1.



Witnesses:
E. A. Gaylord.
John Enders.

Inventor
George Lyon
By Robert Catherwood.
Att'y in

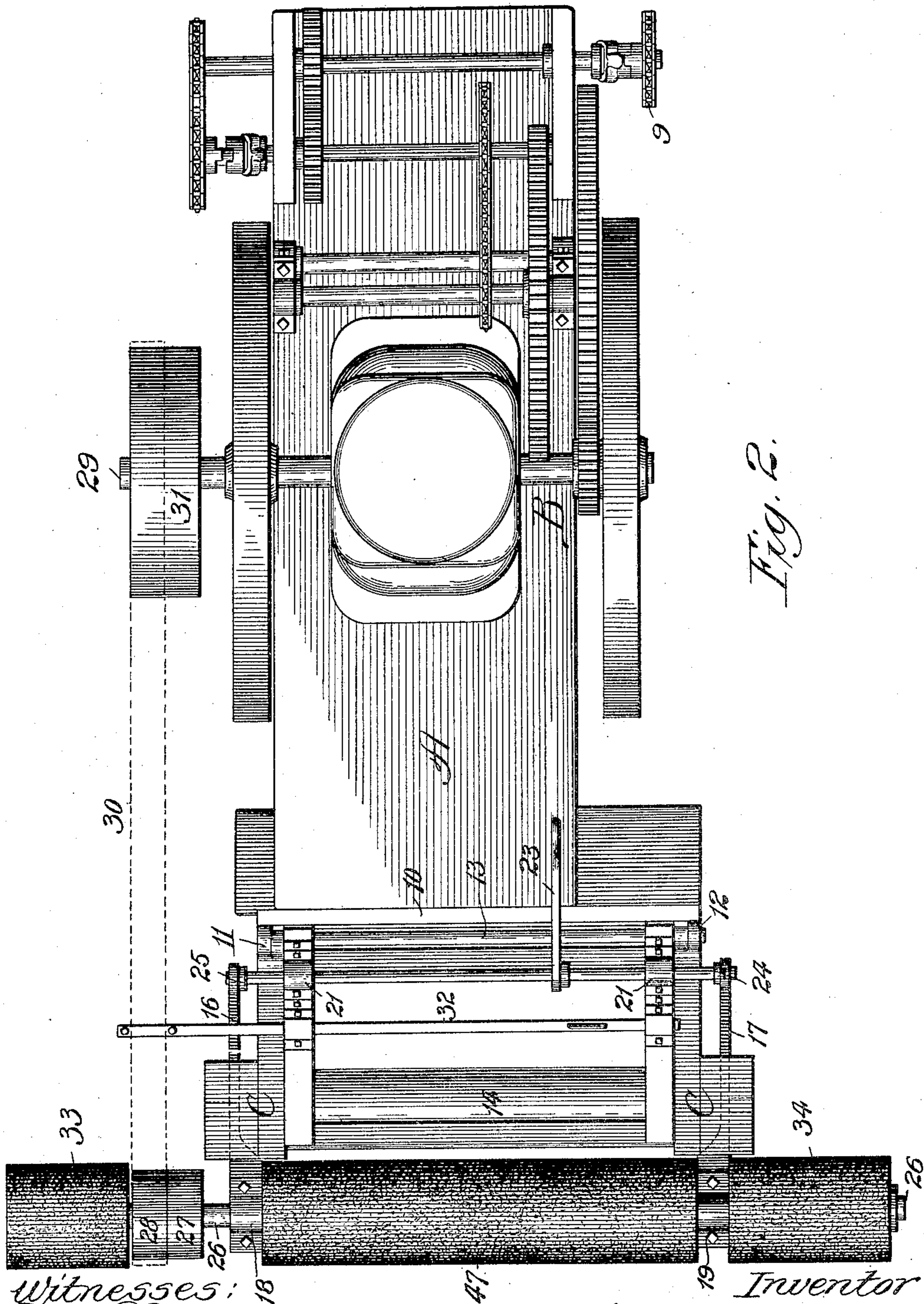
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4 SHEETS—SHEET 2.



Witnesses:
E. S. Chayford,
John Enders,

Inventor
George Lyon,
By Robert Catherwood
Att'y in

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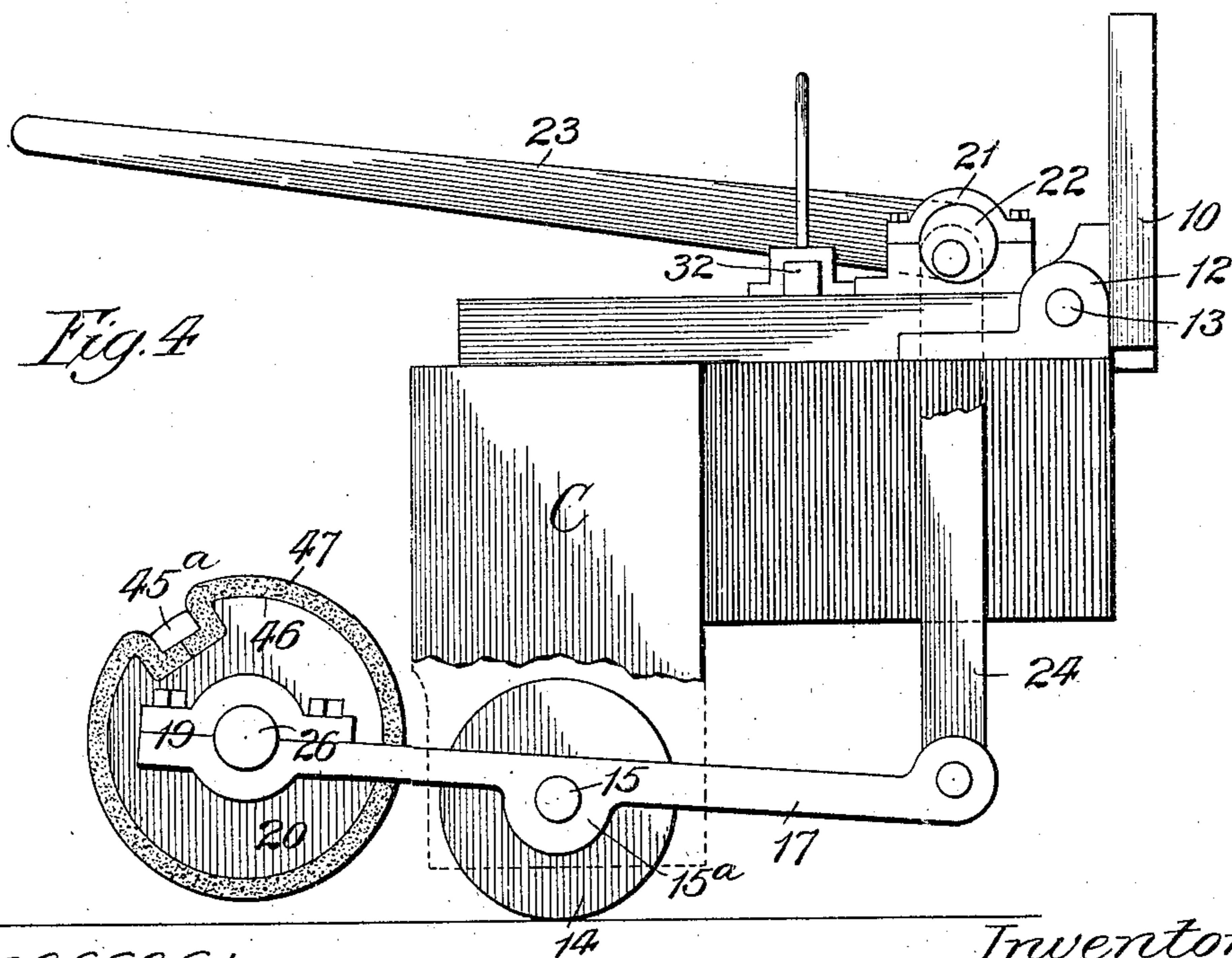
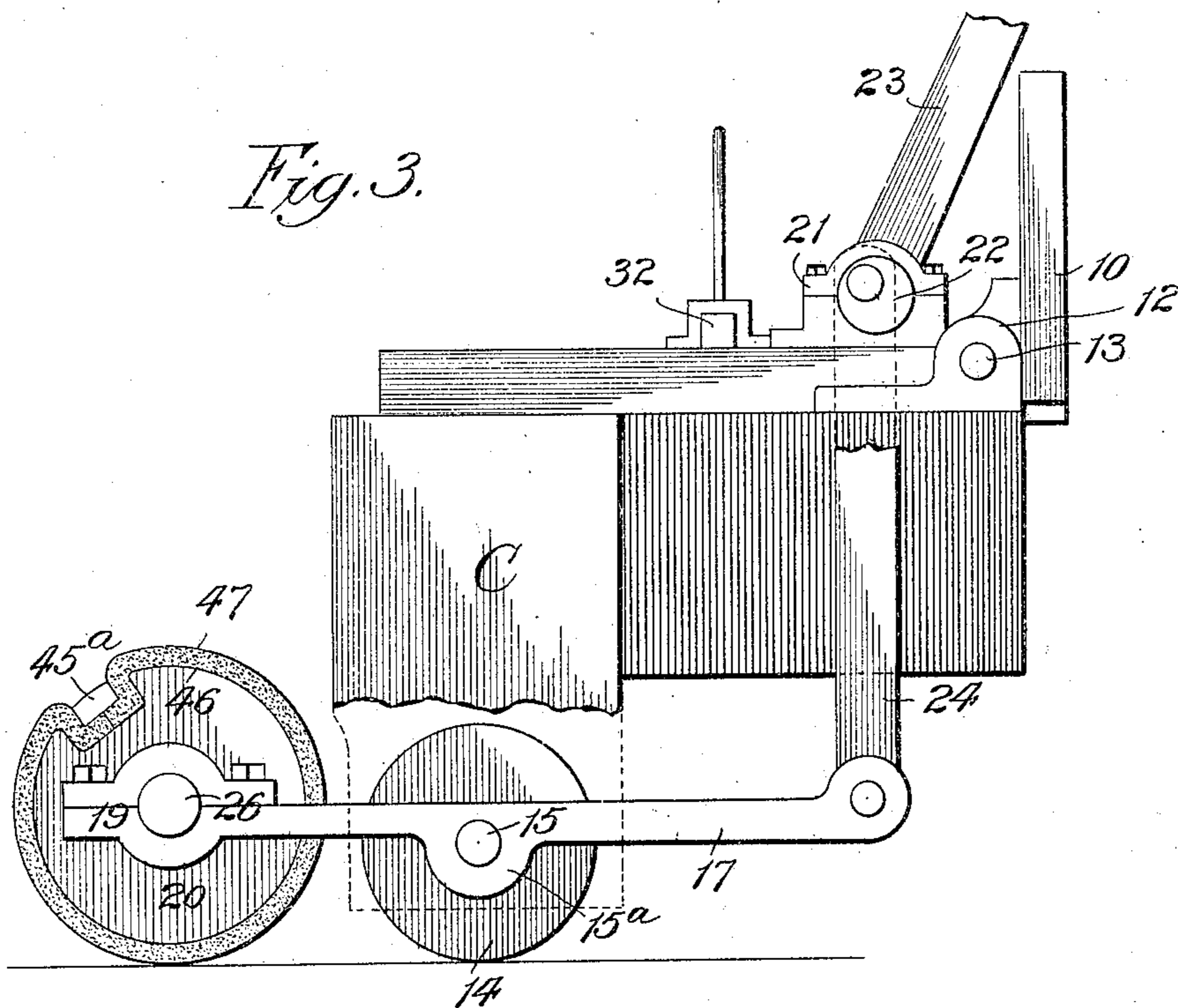
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4 SHEETS—SHEET 3.



Witnesses:

East & Gaylord.
John Enders.

Inventor

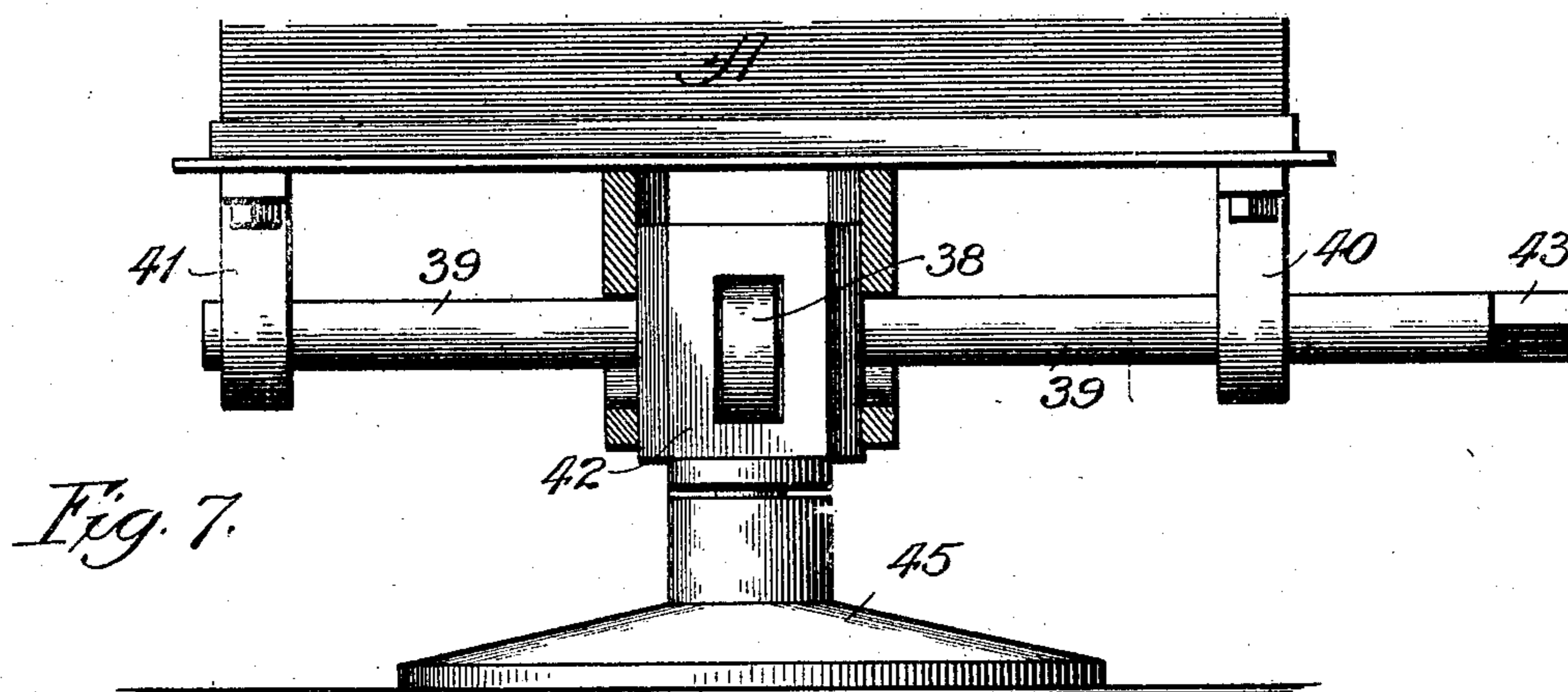
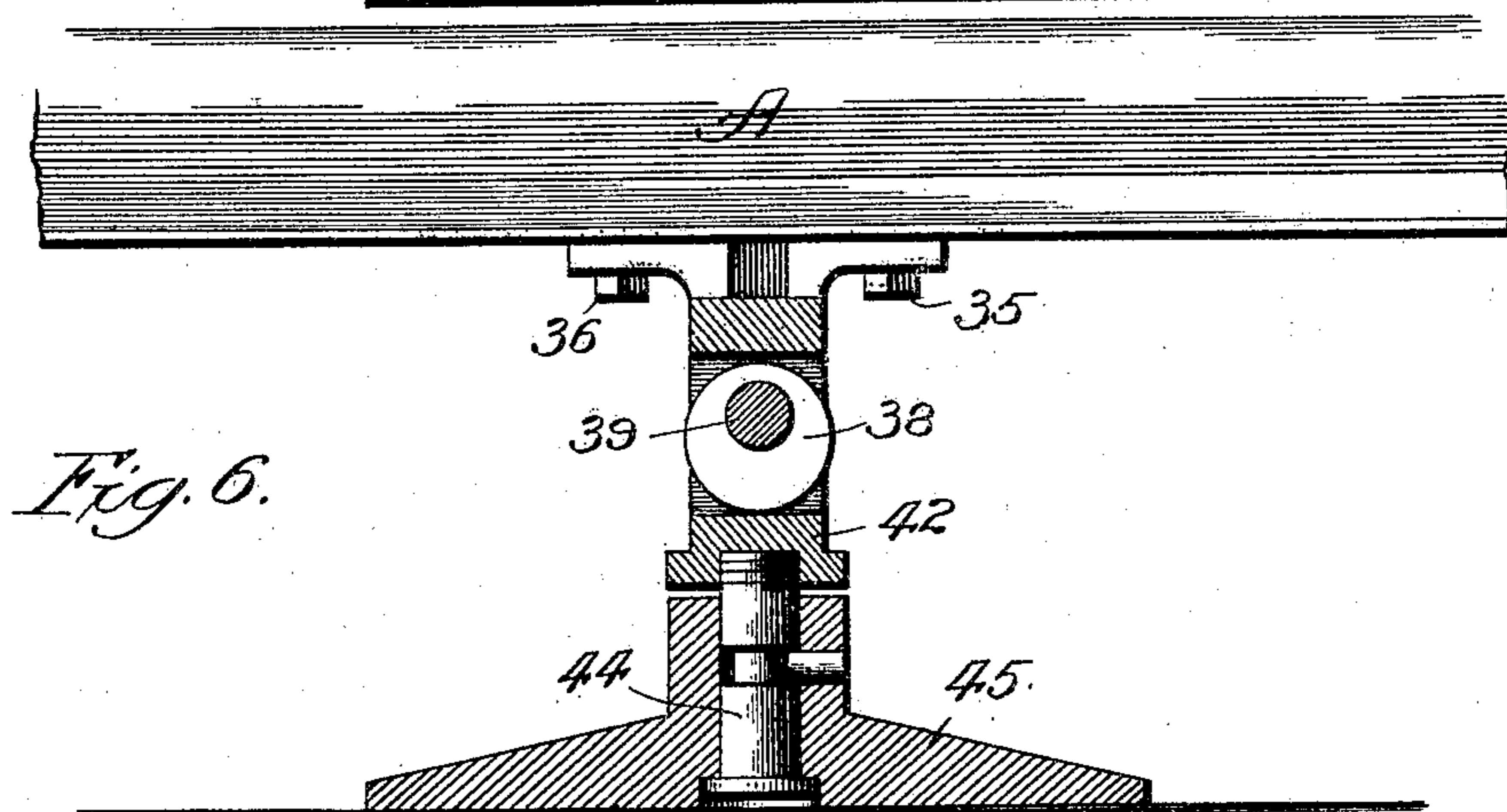
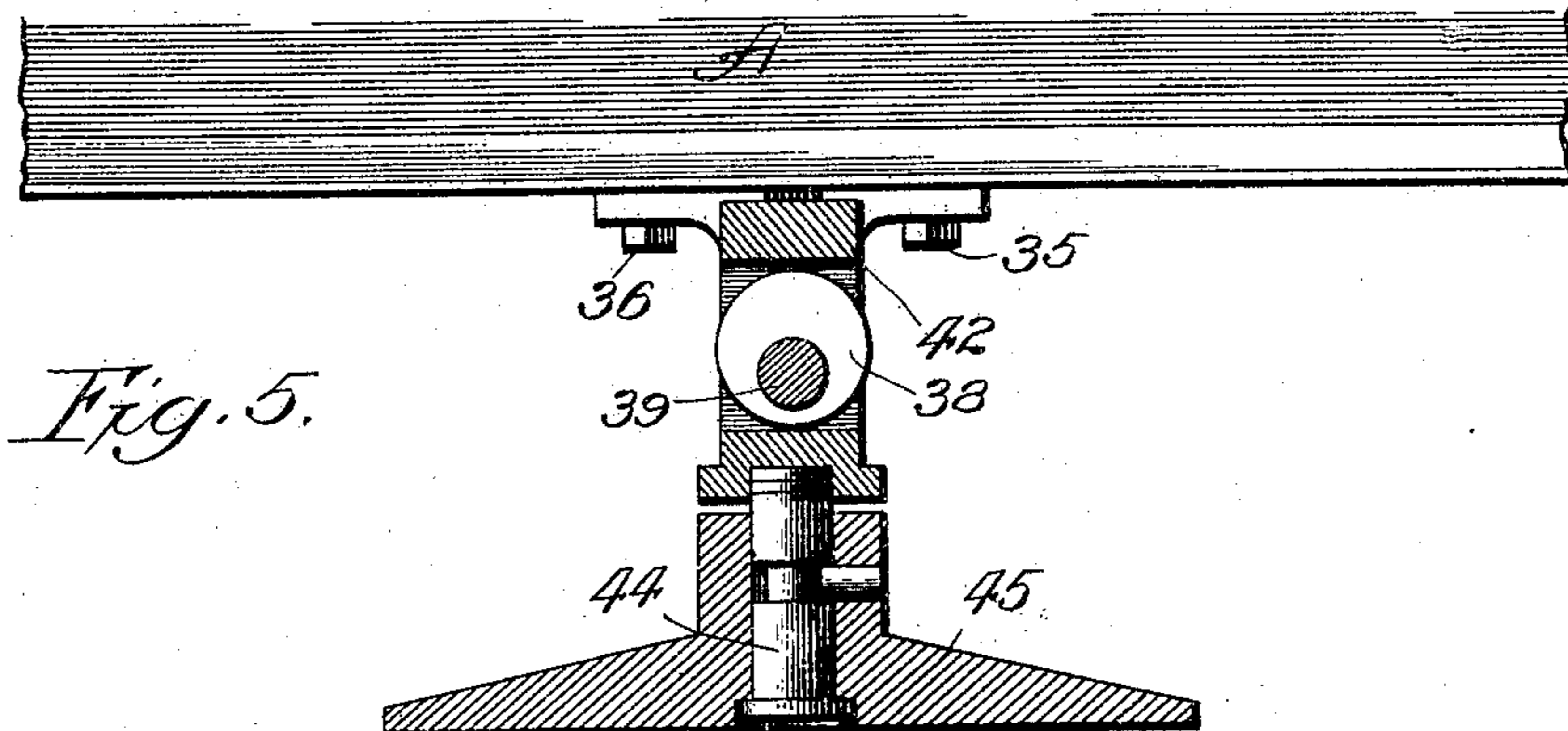
George Lyon
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Ht'y

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4 SHEETS—SHEET 4.



Witnesses.
**Chas. E. Chayford.*
John Enders.

Inventor
George Lyon
By *Robert Catherwood*
Att'y

UNITED STATES PATENT OFFICE.

GEORGE LYON, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO
JOHN FRANCIS LYON, OF CHICAGO, ILLINOIS.

FLOOR GRINDING AND POLISHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 794,305, dated July 11, 1905.

Application filed December 7, 1903. Serial No. 184,091.

To all whom it may concern:

Be it known that I, GEORGE LYON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have
5 invented certain new and useful Improvements in Floor Grinding and Polishing Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

10 The object of my invention is to provide mechanism of simple and economical construction for expeditiously and evenly grinding off, polishing, or cleaning the surfaces of floors.

A further object is to construct a machine
15 which may be readily turned about and to mount the grinding mechanism so that it will operate in corners and near the mop-boards of apartments and grind evenly upon the floor independently of the rising and falling of the
20 engine-trucks as they pass over ridges or imperfections in the floor.

I have shown in the accompanying drawings a machine embodying my invention, wherein—

25 Figure 1 is a side view showing an arrangement of grinding and carrying rolls, pivot, and lifting-jack and levers for operating them embodying my invention used in connection with a gasoline-engine. Fig. 2 is a top view of this engine and of the grinding and carry-
30 ing rolls and attached parts. Fig. 3 is a side end view showing the supporting-frame for carrying the grinding-roll, the carrying-roll, the levers, and the mechanism for raising and lowering the grinding-rolls in contact with the
35 surface of the floor. Fig. 4 is a view of the same parts from the opposite end from that shown in Fig. 3. Fig. 5 is a view, partly in perspective and partly in longitudinal section, of the lifting-jack and pivot for turning the
40 machine about, showing it attached in position beneath the center of the base of the engine and drawn up from the floor. Fig. 6 is a similar view showing the position assumed by the parts of the jack and pivot when lowered in the act of raising the engine for the
45 purpose of turning it. Fig. 7 is a similar view of the jack and pivot, showing the connections for operating them.

In the drawings, wherein like letters and nu-

merals represent like parts throughout the sev- 50
eral figures, A indicates any suitable base upon which locomotive mechanism—such as an electrical motor, gasoline or steam engine—may be mounted.

B indicates a gasoline-engine, the locomo- 55
tive mechanism which I prefer to use for the purpose of propelling the machine.

The base A is mounted upon trucks, rolls, or wheels 8, one of which is driven from a drive-wheel of the engine by the belt 9. Secured to 60
the end of this base by any vertically-flexible attachment is a frame C for supporting the grinding and carrying rolls and attached parts. I prefer to connect the frame and base by a pivotal attachment comprising the casting 10, 65
with lugs 11 and 12, slotted to receive the round rod 13, which is tapped into the supporting-frame C loosely in such manner that it may be raised or lowered independently of the upward and downward movements of the 70
base A, while holding the carrying-roll at an approximately fixed distance from the base. The supporting-frame C is carried by the carrying-roller 14, attached thereto by suitable bearings 15. This carrying-roller is adapted 75
to travel over the surface of the floor and is independent of the rising or falling movement of the base A, due to imperfections or ridges in the floor.

Pivotaly secured about the axis of the car- 80
rying-roller 14, at both ends thereof, are the levers 16 and 17. At the forward ends of these levers and secured to each by suitable bearings 18 and 19 is the polishing or grind-
ing roll or cylinder 20, hereinafter more fully 85
described.

Mounted upon the support C and secured thereto in suitable bearings 21 is the eccentric 22, operated by turning the hand-lever 23. The rear ends of the levers 16 and 17 are con- 90
nected to the eccentric 22 by the links 24 and 25, so that by turning the hand-lever 23 forward the eccentric 22 forces the links 24 and 25 downward, causing the levers 16 and 17 to turn upon their fulcrums 15, and the roll 20 95
is raised from the surface of the floor, while by turning the hand-lever backward in the opposite direction the rear ends of the levers

16 and 17, turning on their fulcrums 15, are raised and the roller 20 is brought into contact with the surface of the floor. Mounted upon the axis 26 of the roller 20 are the tight and loose pulleys 27 and 28, connected to the drive-shaft 29 of the engine B by means of the belt 30, which passes over the tight pulley 27 on shaft 26 and the pulley 31 on shaft 29 when it is desired to rotate the grinding or polishing roller 20. By operating the belt-shifter 32 the belt 30 may be thrown onto the loose pulley 28.

In Fig. 2 I have shown two caps or supplemental grinding rolls or cylinders, which I attach at the end of the shaft 26 in such manner that they may be readily put on when it is desired to grind or polish the floor close to the sides of the room. These caps or supplemental grinding-rolls are indicated by the numerals 33 and 34, and they are positively secured to the shaft 2 in any suitable manner, preferably in such a way that they could be readily removed when not required for use.

In operation it is frequently desirable to reverse the engine and cause the roll 20 to follow the engine. It will also be found desirable to turn the entire machine around to bring the roll 20 into operation at the other end. This is accomplished by means of a pivot and lifting-jack. I have shown the construction which I prefer to use in Figs. 1, 5, 6, and 7. This jack is usually fastened on the bottom of the base A at the center, preferably by means of screws 35 and 36. At the top of the jack is a sliding block 42, raised and lowered by means of the eccentric 38 turning with shaft 39, the ends of the shaft being supported in the bearings 40 and 41. Shaft or rod 39 may be turned by means of a lever, wrench, or other suitable handle attached to the square end 43. When the shaft 39 occupies the position illustrated in Fig. 5, the eccentric 38 forces the sliding block 42 up toward the base A. When it is turned to the position shown in Fig. 6, the sliding block is thrust downward. The bottom of the block 42 is tapped to receive the bolt 44. Surrounding bolt 44 and confined between its head and the under side of block 42 is bearing-plate 45, serving as a base or support for the machine. By turning the eccentric 38 from the position occupied in Fig. 5 to that occupied in Fig. 6 the bearing-plate or base of the jack is forced down and the entire machine is lifted off the floor. The machine may then be turned around on the base 45, the bolt 44 forming a pivot for the same, thus bringing the roll 20 to the desired point.

While I prefer to construct the supporting-frame C of cast-iron and the roll 14 of wood, it is apparent that any other suitable material may be used. The roller 20 I prefer to construct of wood, though other material may be used. When it is desired to use rolls 20 for the purpose of grinding off wooden floors,

I prefer to line them first with an enveloping coat of elastic material—such, for illustration, as carpet, felt, or rubber—and a second or outer coat of agate-paper or other material having the necessary capacity for grinding. These coats are drawn tightly about the periphery and secured in any suitable manner, preferably under the block 45^a, which is countersunk in the surface of the roll. In the drawings the numeral 46 indicates the interior coat and the numeral 47 the outer coat. When it is desired to renew these coats, they may be removed by unfastening the block 45^a. In some instances—such, for example, as scouring or cleaning operations—one or more cloth or felt coats may be used and the agate-paper dispensed with or replaced by a rubber covering.

I do not intend to limit my invention to the precise mechanism shown, and many modifications will readily suggest themselves to one skilled in the art; but

What I claim, and desire to secure by Letters Patent, is—

1. The combination of locomotive mechanism adapted to travel over a floor, a frame having one end pivoted thereto, adapted to move independently in the vertical and to follow the locomotive mechanism in horizontal progress, said frame being mounted near the other end upon a carrying-roller, a carrying-roller adapted to travel along the surface of the floor, a pair of levers having their fulcrums on the axis of said carrying-roller, and adapted to raise and lower a grinding or cleaning roll alternately in and out of contact with said floor, a grinding or cleaning roll, and means for operating said levers and rotating said grinding or cleaning roll, for the purposes described.

2. The combination of a roller and means for propelling it over a floor, a pair of levers having grinding-cylinders mounted on a shaft supported by the short arms of said levers, said levers having their fulcrums about the axis of said roller, means for rotating said shaft and for operating the long arms of said levers to raise and lower said cylinders, for the purposes described.

3. The combination of a roller and means for propelling it over a floor, a pair of levers having their fulcrums at the ends of said roller about the axis thereof, a polishing, cleaning or grinding cylinder mounted on the forward ends of said levers, means for rotating said cylinder and means for operating said levers to raise and lower it, whereby the surface of said floor is polished, cleaned or ground off.

4. The combination of locomotive mechanism mounted on wheels, a frame pivotally attached to an end thereof and adapted to hold a carrying-roll upon the surface of the floor to follow said locomotive mechanism in horizontal progress and to move independently thereof in a vertical direction, a pair of levers

having their fulcrums about the axis of said carrying-roll, a carrying-roll adapted to travel on the floor and support said frame, a grinding, polishing or cleaning roll mounted on the forward ends of said levers, means for rotating said grinding, polishing or cleaning roll and means for operating said levers to bring it into contact with the surface of the floor.

5. The combination of locomotive mechanism mounted on wheels, an independent frame or support pivotally attached to the end thereof and mounted on a carrying-roll, a carrying-roll adapted to travel over the floor, a pair of levers having their fulcrums about the axis of said carrying-roll, a grinding, polishing or cleaning roll mounted on the forward ends of said levers, means for rotating said grinding, polishing or cleaning roll and for moving said levers to bring it into contact with the surface of the floor.

6. In a floor polishing and cleaning machine, a roll and means for propelling it over a floor, levers having their fulcrums about the axis of said roll and carrying on their forward ends a shaft, one extremity of which projects beyond the side of the machine, mechanism for rotating said shaft, a grinding, polishing or cleaning roll mounted on said extremity, and mechanism for operating said levers for raising and lowering said grinding, polishing or cleaning roll for the purposes described.

7. In a floor-grinding machine, a supporting-roll adapted to travel over the floor, a lever fulcrumed thereon having on its forward end a polishing-roll, mechanism for operating said lever to raise and lower said grinding-roll, and means for propelling said machine.

8. In combination with locomotive mechanism adapted to travel over a floor, a rigid frame attached to the forward end thereof and mounted upon a carrying-roller, said frame having the capacity for vertical movement independent of said locomotive mechanism, a carrying-roller and levers fulcrumed thereon, grinding, polishing or cleaning rolls mounted on the ends of said levers, means for rotating said rolls and an eccentric and link for operating said levers, for the purposes described.

9. In a floor scraping and polishing machine, locomotive mechanism mounted on trucks and adapted to travel over a floor, a frame flexibly coupled thereto and mounted on a roller, a

shaft rotated by said locomotive mechanism having grinding-cylinders mounted thereon in substantial parallelism to said roller, levers connecting said shaft with the axis of the roller, means for operating said levers to raise and lower said cylinders upon the surface of the floor, for the purposes described.

10. In a machine for grinding floors, locomotive mechanism adapted to travel over the floor, grinding-cylinders rotated by said locomotive mechanism and attached thereto, means for alternately raising and lowering said cylinders into contact with the surface of said floor, a lifting-jack attached beneath said machine, having a pivot-bolt therein and a bearing-base secured thereto, and means for alternately operating said jack to hoist said machine off the floor and turn it around said bolt on said base and for lowering said machine to the floor and drawing said jack up therefrom, for the purposes described.

11. In a floor-grinding machine, a carriage mounted on wheels, propelling mechanism thereon, grinding-rolls attached thereto, means for operating said rolls, a lifting-jack secured beneath said carriage, a bearing-base attached thereto by a threaded bolt, and means for lifting said machine off the floor and turning it on said bolt as a pivot about said bearing-base, for the purposes described.

12. In a floor-grinding machine, an engine adapted to travel over a floor, polishing and cleaning rolls attached to said engine, means for operating said rolls, and a lifting-jack consisting of a bearing-base, a sliding block adapted to force said base upon the floor and to raise it therefrom, a pivot-bolt attached to the top of said base and threaded into said block, means for operating said block to force said base upon the floor and lift the machine and thereafter to raise said base from the floor and means for turning the machine around said bolt on said base during the elevation of said machine, substantially as and for the purposes described.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

GEORGE LYON.

Witnesses:

CHARLES L. HINE,
ROBERT CATHERWOOD.