

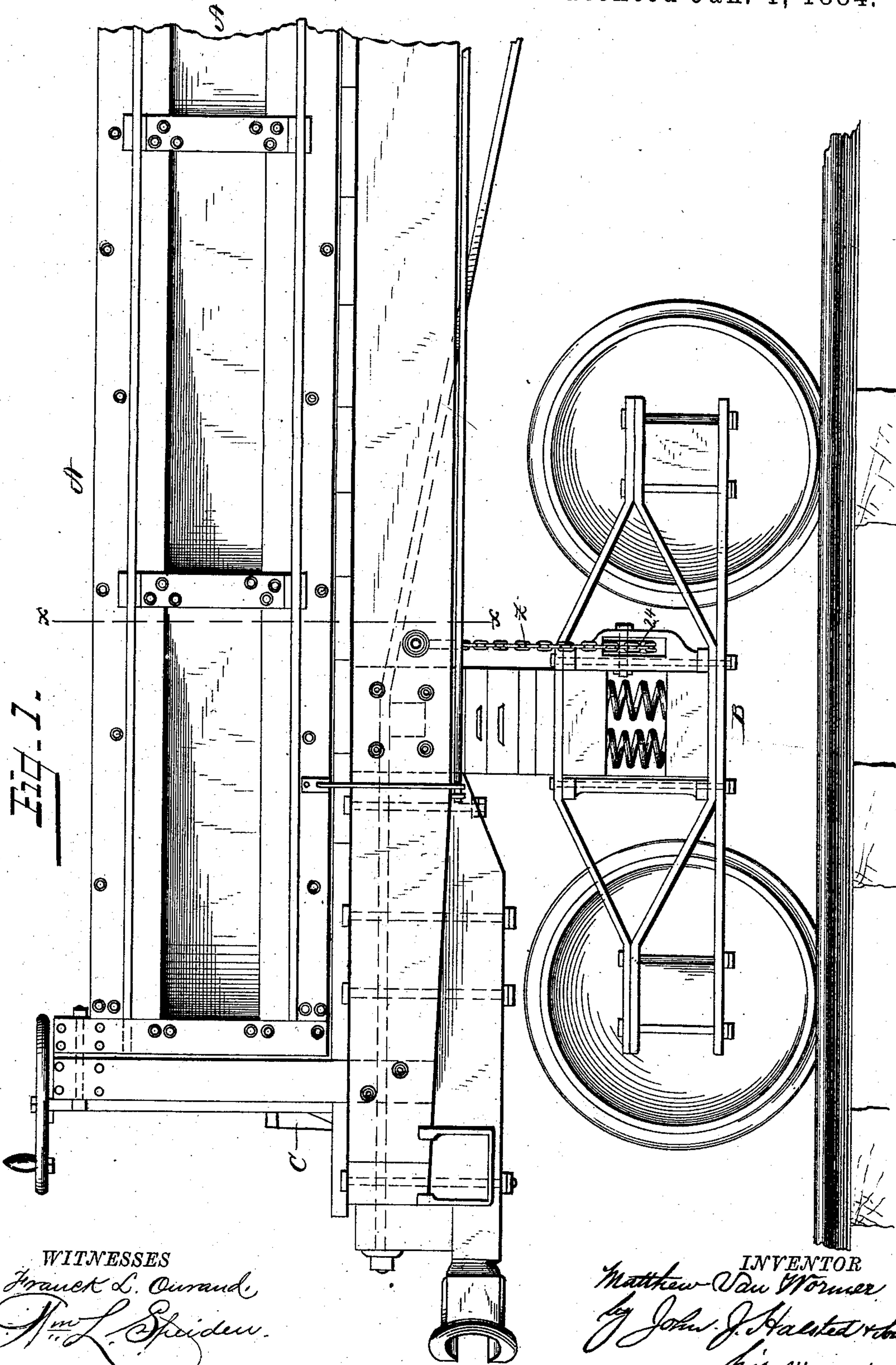
(No Model.)

5 Sheets—Sheet 1.

M. VAN WORMER.
DUMPING CAR.

No. 291,113.

Patented Jan. 1, 1884.



WITNESSES

Frank L. Curand
Wm L. Spiden

INVENTOR

Matthew Van Wormer
by John J. Halsted & Co
Attorneys

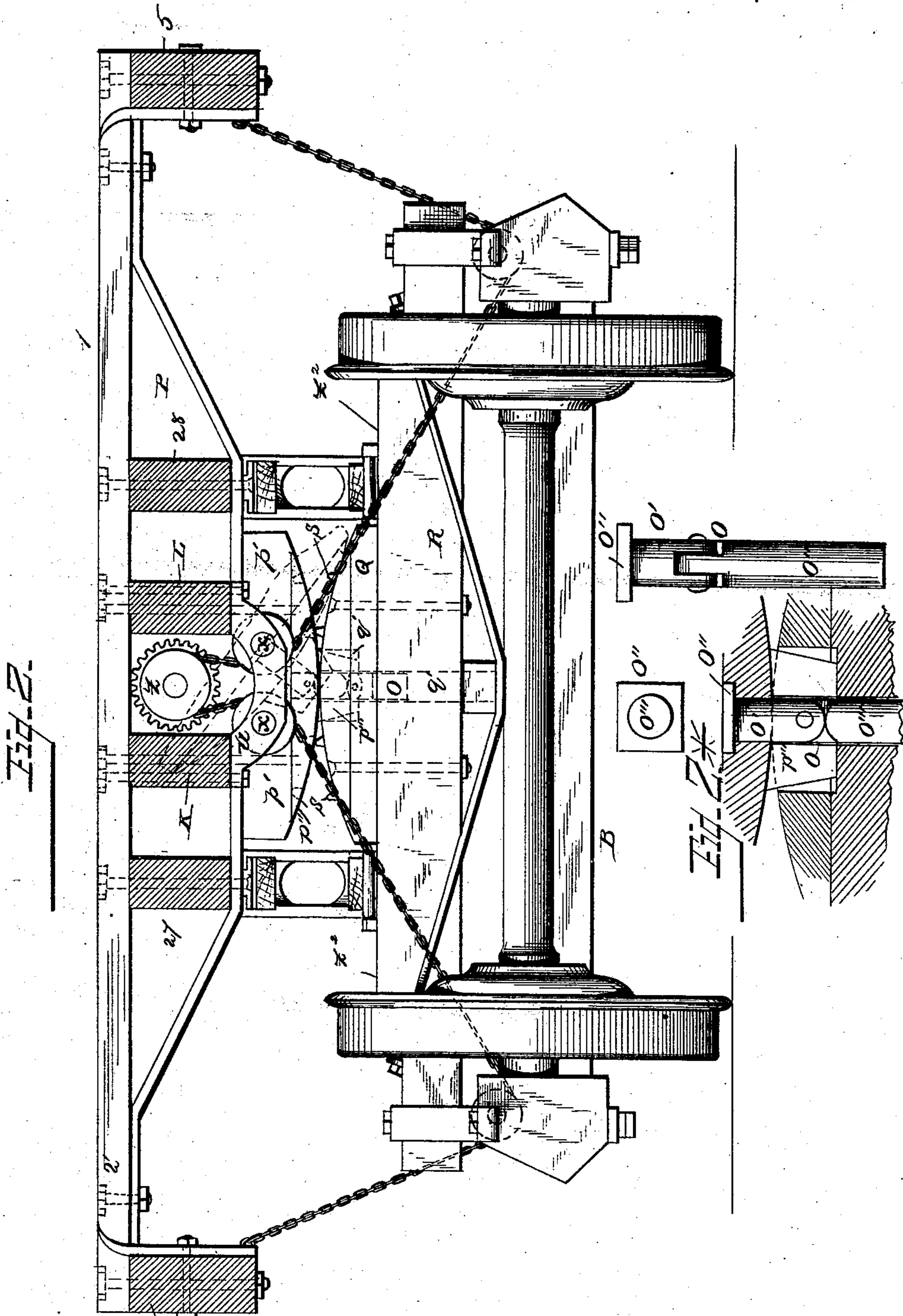
(No Model.)

5 Sheets—Sheet 2.

M. VAN WORMER.
DUMPING CAR.

No. 291,113.

Patented Jan. 1, 1884.



WITNESSES

Frank L. Curand
Wm. L. Shelden.

INVENTOR

Matthew Van Wormer
by John J. Halsted & Son
his Attorneys

(No Model.)

5 Sheets—Sheet 3

M. VAN WORMER.
DUMPING CAR.

No. 291,113.

Patented Jan. 1, 1884.

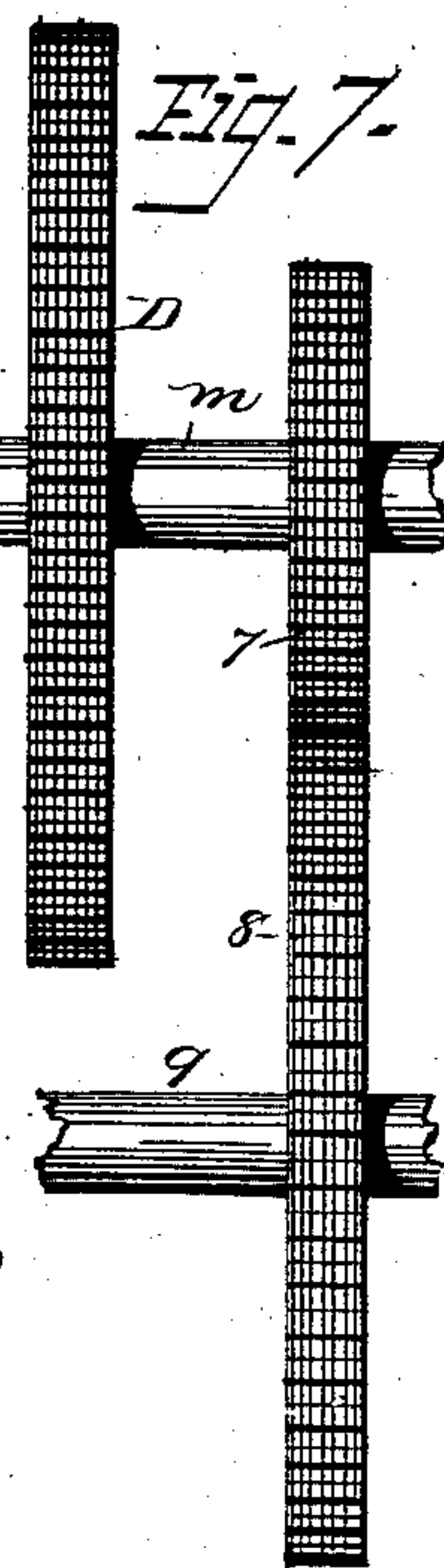
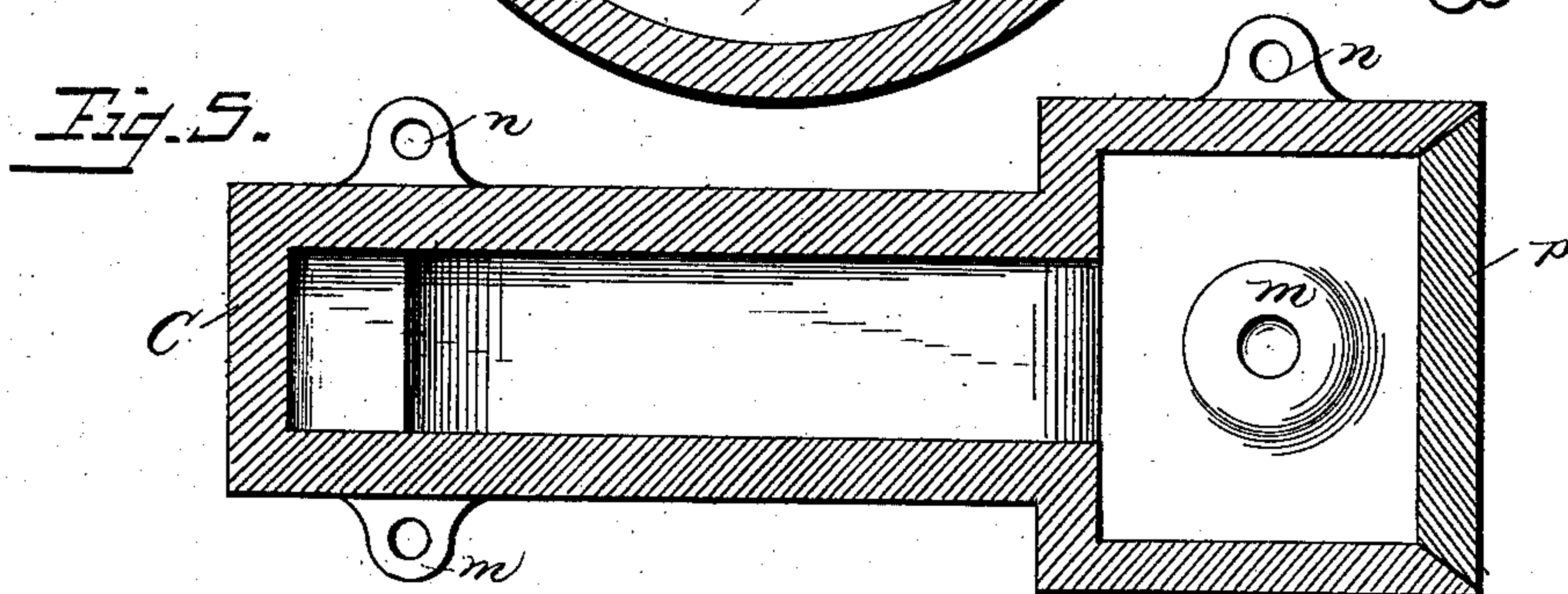
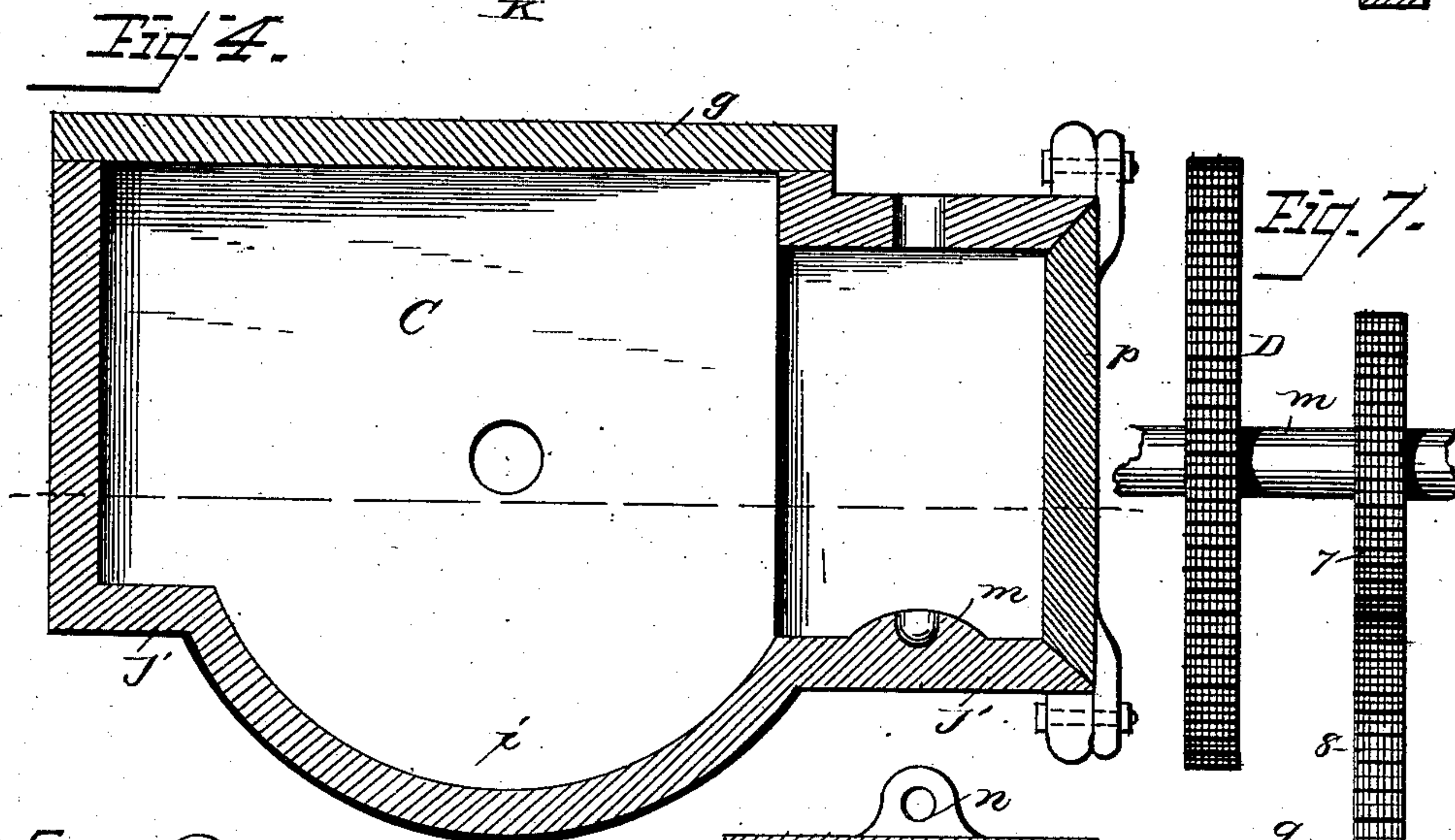
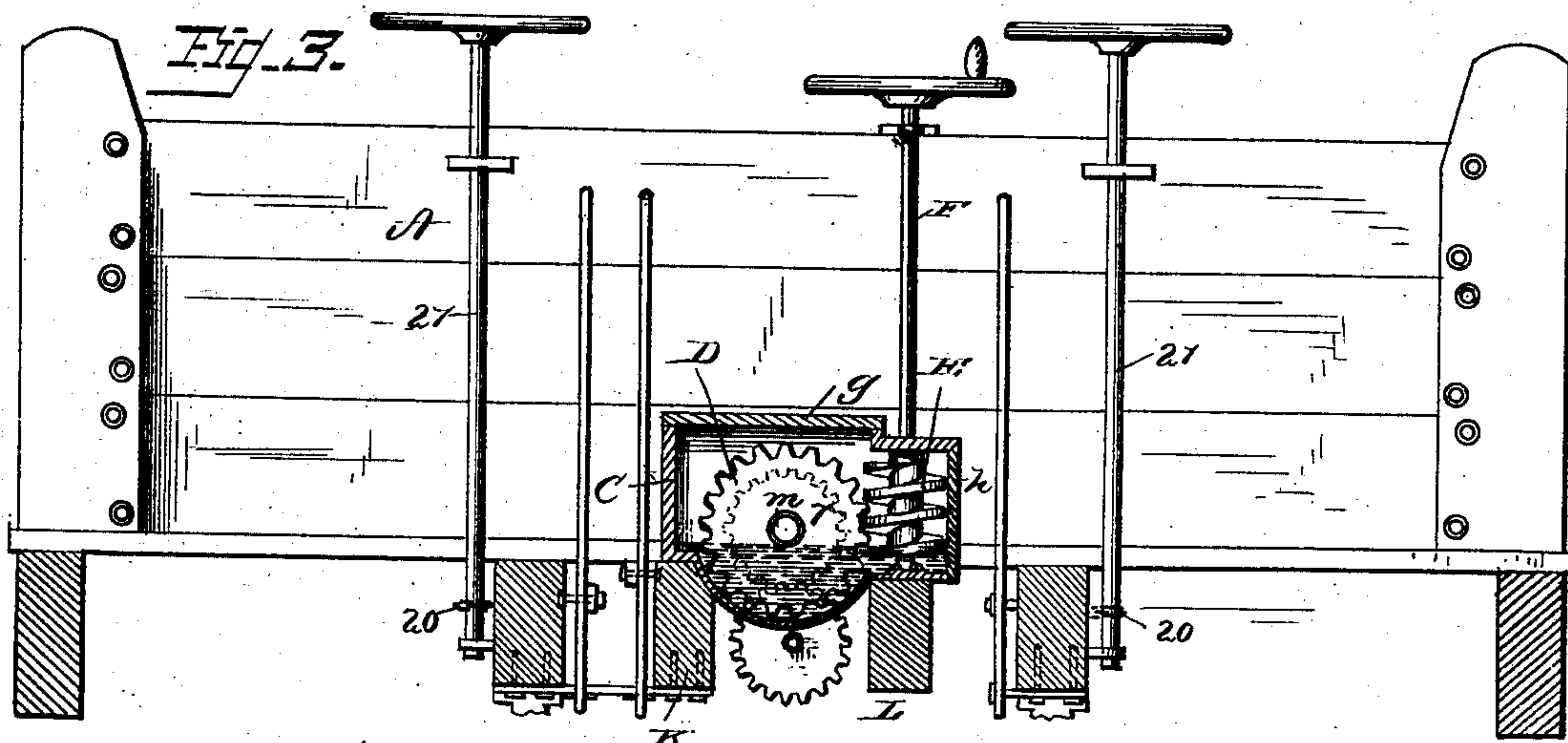
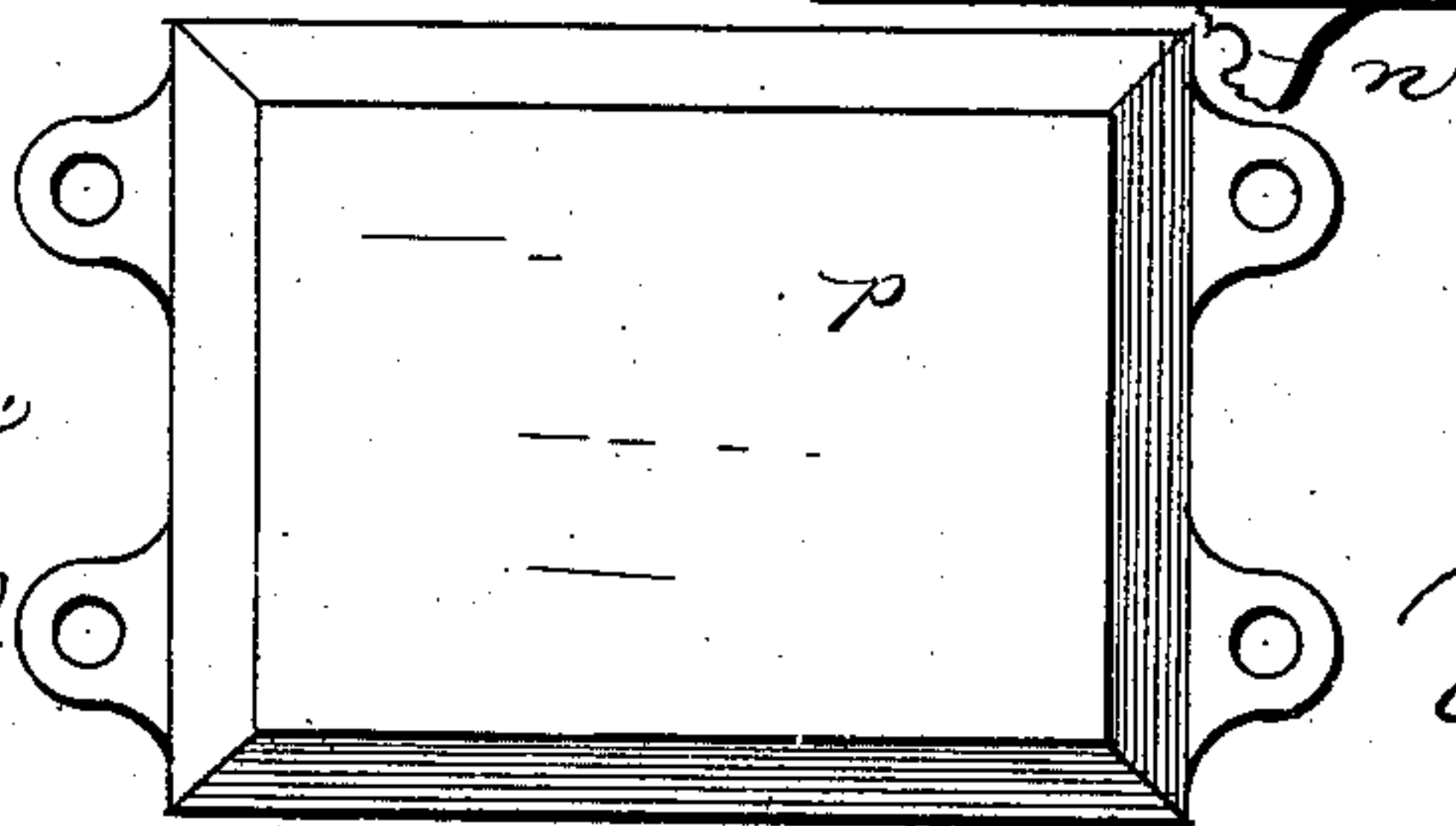


Fig. 6.
WITNESSES
Frank L. Ourand
John L. Spindler



INVENTOR
Matthew Van Wormer
by John F. Halsted & Son
his Attorneys.

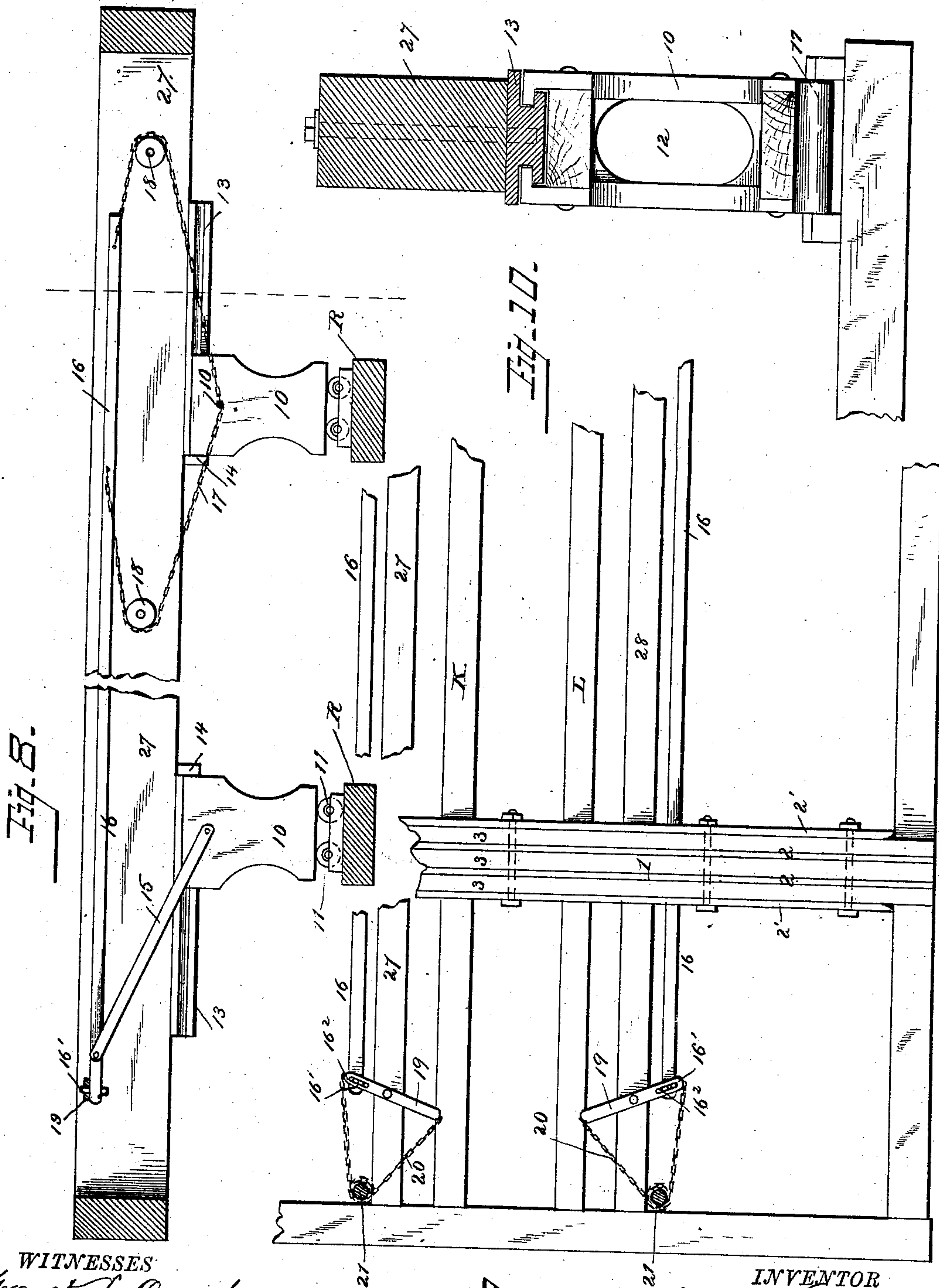
(No Model.)

M. VAN WORMER.
DUMPING CAR.

5 Sheets—Sheet 4.

No. 291,113.

Patented Jan. 1, 1884.



WITNESSES
 Frank L. Ormand
 Mrs. C. E. Ormand

21
INVENTOR
Matthew Van Wormer
By John J. Halsted & Son
his Attorneys

UNITED STATES PATENT OFFICE.

MATTHEW VAN WORMER, OF MELROSE, MASSACHUSETTS.

DUMPING-CAR.

SPECIFICATION forming part of Letters Patent No. 291,113, dated January 1, 1884.

Application filed September 8, 1883. (No model.)

To all whom it may concern:

Be it known that I, MATTHEW VAN WORMER, of Melrose, in the county of Middlesex and State of Massachusetts, have invented certain
5 new and useful Improvements in Dump-Cars; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the
10 same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My present improvements relate to a special construction of the oil-box located on the end
15 platform for oiling the worm and its gear, by which the tilting of the car is effected from the platform; to a special construction and application of the king-bolt by which the rocker is connected to the truck; to combining with
20 the two central stringers one or more hangers to serve as bearings or supports for guide-pulleys for the chain which effects the dumping; to the construction of the transoms; to the arrangement of the worm-wheel and the
25 worm on the vertical staff which actuates it with relation to other and adjacent gear on the main shaft and on the same shaft, so that only the worm-wheel and its worm shall revolve in the free oil in the oil-box, these other
30 wheels being outside of said box; to the construction of the side bearings and of the devices for actuating them, and to other particulars hereinafter set forth.

Figure 1 is a partial side elevation of the
35 car; Fig. 2, a cross-section in the line xx of Fig. 1; Fig. 2*, views of the king-bolt and adjacent parts; Fig. 3, an end view of the car-body, the oil-box and stringers being in section; Figs. 4, 5, 6, enlarged views of the oil-
40 box in vertical section, in plan with its cover removed, and of its end piece; Fig. 7, an enlarged view of gears and shafts, and Figs. 8 to 19, inclusive, are details.

A is the car-body; B, the truck; C, the oil-
45 box, made longer transversely of the car than lengthwise of it, its length, breadth, and height being adapted to receive and entirely inclose the worm-wheel D and its actuating-
50 worm E on the staff or shaft F. It has a removable cover, g , and also a removable end piece, h , to permit the introduction of the

worm E prior to its connection with its shaft F. The end piece must be made oil-tight by packing or otherwise.

The bottom of the oil-box has a concave
55 part, i , conformable in shape to the circumference of the wheel D, and flat parts $j j'$, which rest directly on the two central stringers, K L, or they may rest directly on the car-floor. This concave part may thus hang down be-
60 tween these stringers and give ample depth for the oil in the box, and it is preferred that the oil reach about up to the short shaft, which I call the "box" shaft. The worm E thus also
65 is partially immersed in the oil, so that both it and the wheel D are constantly self-lubricating in free oil, and there is no need of any cotton waste or any saturated material in the box. The box C, being inclosed at every side
70 and at its top, excludes all dust, grit, and dirt, and thus very largely contributes to save the worm and its gear from wear. This is very important, as heretofore in working these parts dry or insufficiently oiled the worm would soon wear out or lose its efficiency. The staff
75 F rests at its lower end in a cavity in a raised part, m , of the bottom of the oil-box. This raised part affords ample thickness for a sufficient depth to the cavity for the bottom bearing of this staff without any risk of such cav-
80 ity cutting through the bottom and thus causing any leakage of the oil at that point. The box may be secured to the car by any appropriate means—as, for instance, by bolts through
85 ears $n n$.

The king-bolt O, which connects the rocker
P of the car-body to the arched rocker Q on the truck, is made in two parts hinged or jointed, substantially as shown. The shorter
90 part o' , which is secured to the car-bed, has a square or polygonal head, o'' , which is inserted in a square socket or recess made in the wooden part p' of the rocker to prevent the bolt from turning around, and this part o' projects
95 downward through the iron rocker-plate p'' . The part o''' should be longer than the part o' , and as long as may be desired, and it works loosely in a cylindrical socket, q' , which extends through the rocker-bed Q, and through the bolster R. The rocker P has a stout round
100 tapering central projection, p''' , which enters a cavity, q' , in the bed Q, and serves, as is cus-

tomary, to prevent the separation of the car from its truck under ordinary circumstances; but even if the car should be by some violence raised so that this projection should be lifted out of its cavity q' , the part o''' of the king-bolt would still keep the body held to the truck. Pins or projections $s s$ are on the rocker-bed, and adapted for corresponding cavities, $t t$, on the rocker in a manner well known.

I will now describe one of the hangers u , (see Figs. 13 and 14,) which support the chain guide-pulley. Each is secured at its ends to the two inside stringers, $K L$, of the car-body, and has also dowel-pins for entering such stringers. It has also a central opening, in which are hung the pulleys $w w$ on proper bolts or journals x , which are inserted in the holes $y y$ in opposite sides of the hanger. The nearness of these inside stringers to each other and the placing of these pulleys $w w$ in such hangers very near to each other in the small space between such stringers, affords the following advantages: Each of the larger chain-pulleys z , located on the main shaft near the end of the car, is placed above the smaller chain-pulleys w in the space between the stringers, and this relation in size and position of these three pulleys permits the chain to have a hold around the greater part of the circumference of pulley z , because the chain z , after passing around z , passes between w and w and very nearly in contact with itself, and the nearness of the pulleys $w w$ to each other and to the pulley z , taken in connection with the fact that the chain in passing between pulleys $w w$ passes through the frame of the hanger, absolutely prevents the chain from getting off from any of these pulleys, and the sides of the hanger form a positive barrier against the chain getting off the pulleys w side-wise, and this helps to hold it on the pulley z . Again, because of the curved form of the hanger in connection with the location of the pulleys $w w$ between the stringers, the chain in passing from between these pulleys entirely clears the stringers.

The transoms 1, (see Figs. 2 and 11,) are made as follows: Each transom consists of several—say four—solid iron bars, 2, set edge-wise, and the space between these bars is filled up with wood 3, both the wood and iron extending across the car from sill to sill, and both being of equal depth, their bottom edges resting on the stringers, and their top edges being all flush with each other and constituting a portion of the flooring of the car. The remainder of the floor may be all of wood or iron, as preferred, these bars and wooden pieces being bolted together, as shown. These transoms, thus constituted, rest on and are bolted to the outside sills, 27 28, and to all the stringers, and they are also bolted through the lower transom, 6, and to the rocker. The outer bars, 2', of each transom, instead of resting at their extremities on the outside sills, like the other ones, are near their ends given a half

twist and a right-angled bend, and these ends then are bolted to the inside of the outside sills, as shown. This construction of transom affords great supporting strength for the load. 70

The arrangement of the oil-box C and its worm-wheel D and worm E to adjacent parts is as follows: The box-shaft m projects through the box and carries outside the box a gear-wheel, 7, which engages with a gear-wheel, 8, on the main shaft 9, which operates the dumping mechanism. The gear-wheels 7 and 9, as usual, need no oiling. If the wheel 7 were in the oil-box it would either be needlessly oiled or, being of less diameter than the wheel D, would not dip into the free liquid oil, and in either case there would be no object in placing it there. Again, if it were within the box, it would be necessary to have the gear 8 also extend up into the box, and that would allow the oil to run away out of the bottom of the box. The side bearings are shown at 10 10*. Each is made and operated in a peculiar manner, now to be described, but is shown so as to slide on grooved plates 13, similar to those shown in my Patent No. 199,761, dated January 29, 1878. 80 85 90

Instead of having a friction-roller at its lower end, they have none, but, on the contrary, are made broad and flat at their bottom, and on the bolster beneath each such flat surface I secure two rollers, 11, on which such flat surface may rest and move. This prevents any flattening of the roller by any downward blow or concussion of the side bearings, because the roller does not touch the bolster, and as the side bearings do not carry the rollers they cannot run off the bolster. 95 100

Because of making the side bearings broad, as stated, they need not be made solid, but may be made with an opening, 12, through them, thus making them lighter. This permits the making of these side bearings cheaply, if desired, by casting complete in one piece, and of great strength, and dispensing almost entirely with machine-work. The grooved plates are shown at 13, and 14 14 are stops to limit their movements. These plates are secured to the outside sills, 27 and 28, respectively. A rod, 15, pivoted on each side bearing at one end of the operating end of the car, is connected to a rod, 16, extending length-wise of the car to the rod 16. Near its other end are connected both ends of a chain, 17, the chain also being connected to the side bearing, as at 10*, this chain extending over two pulleys, 18 18, on the stringer. The rod 16, at its other end, connects by a pin, 16', with a short slot, 16'', in the cross-lever 19. To each end of this lever 19 is connected one of the ends of a chain, 20, which is secured to a hand-staff, 21, by which the side bearings are operated. On turning this staff 21, and winding the chain on it in one direction, the rod 16 pulls the rod 15, and with it the side-bearing, to which it is connected, and carries it away from the bolster R. The same action 105 110 115 120 125 130

by means of the chain 17 causes the other side bearing on the same side of the car to move in the opposite direction and free itself from the bolster. Both these side bearings thus move 5 simultaneously toward that end of the car to which they are respectively adjacent, and by this means neither is liable to come in contact with the chain which is used for dumping, whereas if both moved in the same direction 10 one of them would be always liable to such contact, and all the inconveniences resulting therefrom. The stops 14 14 limit the sliding movement of the side bearings.

The truck-columns 22 (see Figs. 16 and 17) 15 are made as follows and in a single piece: A slot, 23, lengthwise of this piece, affords a receptacle for the chain-wheel 24, which serves as a guide for the chain z^3 , which tilts the car, the extremities of this chain being respect- 20 ively secured to a bolt on the inside of the two outside sills of the car, and the columns have, as seen, appropriate holes for the journal of this wheel, and suitable ears by which they may be fastened to the truck.

I employ a clutch, as customary, on the main shaft, in connection with the dumping devices, but which need not be shown. The fork 25, for shifting this clutch out and in for engaging and disengaging it, I make as follows: The 30 prongs 26 I curve at their extremities, as shown in dotted lines in Fig. 15, so that they shall surround about seven-eighths of the perimeter of the main shaft. This prevents any dislodgment of the fork and keeps it always 35 to place, and renders it more efficient. Instead of bending the prongs in this way they may be left parallel, and a bar or pin, 28, may be used to connect their ends, as also shown in Fig. 15.

40 I claim—

1. The oil-box C for the incasing and oiling of the worm-wheel and its worm E, constructed, as set forth, with a removable end piece and removable cover, the concave bot- 45 tom having flat parts j and j' , and the raised part m , the construction permitting the box to hold a large supply of fluid nearly up to the axis of the worm-wheel, as and for the purposes described.

50 2. In a dumping-car and in combination with the rocker a , the king-bolt O, made, as

described, in two parts, jointed or hinged together, one part being provided with a head by which it is connected firmly to the rocker and the other part being lodged loosely in a 55 socket in the rocker-bed, all as shown and set forth.

3. In combination, the downwardly-curved hangers u , made with the opening and bearings for the two small pulleys $w w$, the said 60 pulleys supported therein in near proximity to each other, the hanger and its pulleys being applied relatively to the inside stringers and to the large pulley z , as set forth, and for the purposes described. 65

4. The transom 1, constructed of the series of solid iron bars 2, set edgewise, and of the wood pieces between such bars, all these parts being firmly bolted together, the upper sur- 70 face being adapted to form a part of the car floor, some of the bars resting on the outside sills and others being twisted and secured to the inside of said sills.

5. In combination with the oil-box C and the worm-wheel D and worm-gear E within 75 the same, the gear-wheel 7 on the worm-wheel shaft and outside of the oil-box, and the gear-wheel 8 on the main shaft and also outside of the oil-box, the combination permitting the worm-wheel and its worm-gear to revolve 80 freely in the oil while keeping the oil from the other gears, all substantially as set forth.

6. The side bearings, 10 10*, each made in a single piece and with extended flat rollerless bottoms, and arranged to slide lengthwise of 85 the car, in combination each with a pair of rollers, 11 11, on the bolster, these side bearings on each side of the car being connected by rods 15 16 and a chain, 17, and pulleys 18 18, and whereby, when the rod 16 is given an 90 endwise movement, the side bearings shall move in opposite directions, as and for the purposes set forth.

7. In combination with the side bearings, 10 10*, rollers 11 11 on the bolster, rods 15 16, 95 chain 17, and its pulleys 18, the cross-lever 19, chain 20, and staff 21, the combination being and operating substantially as set forth.

MATTHEW VAN WORMER.

Witnesses:

R. LINCOLN JOHNS,
PENNINGTON HALSTED.