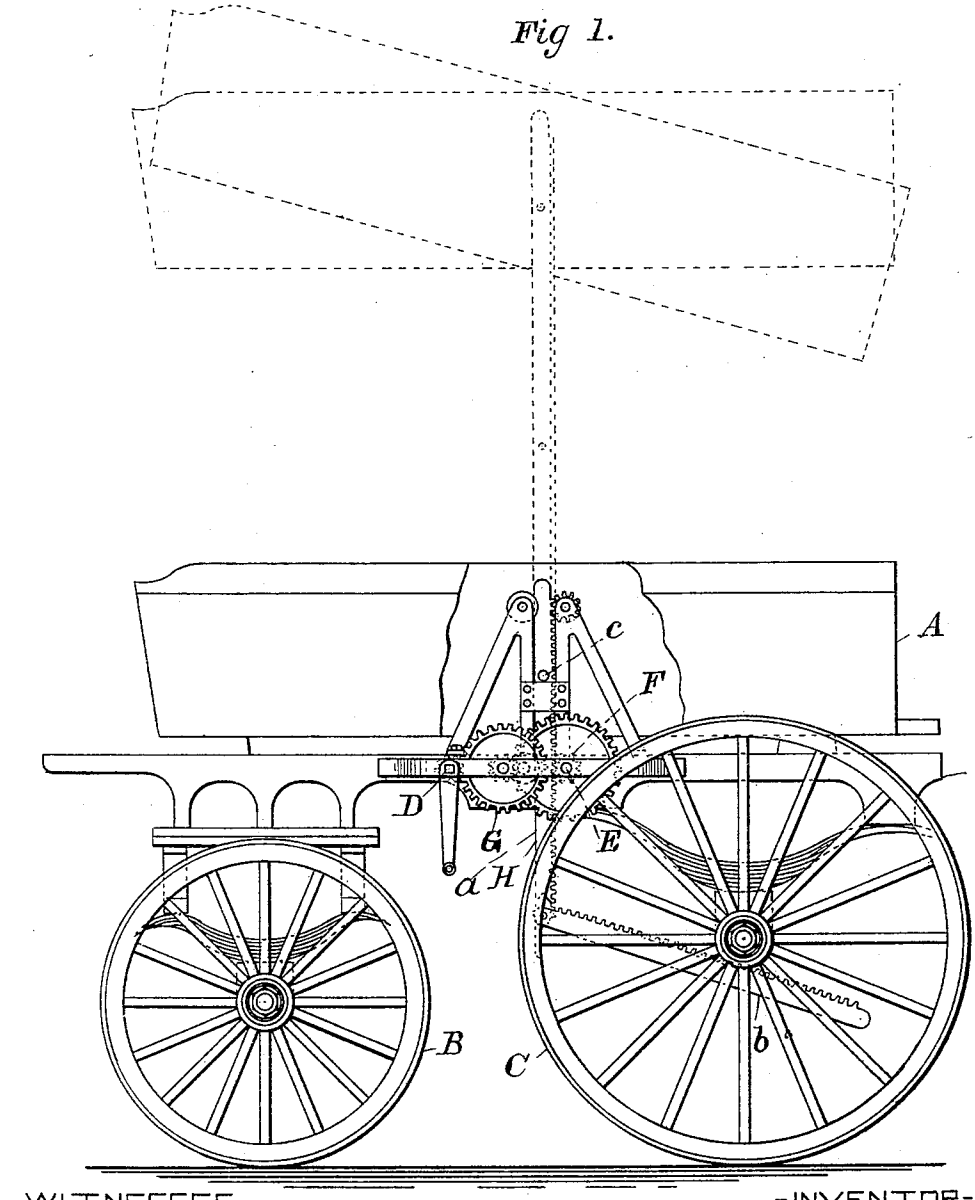
(No Model.) 2 Sheets—Sheet 1.

F. J. KUNKEL.

RACK AND PINION.

No. 602,403. Patented Apr. 12, 1898.

Fig 1.



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(No Model.)

2 Sheets—Sheet 2.

F. J. KUNKEL.

RACK AND PINION.

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Fig 2.

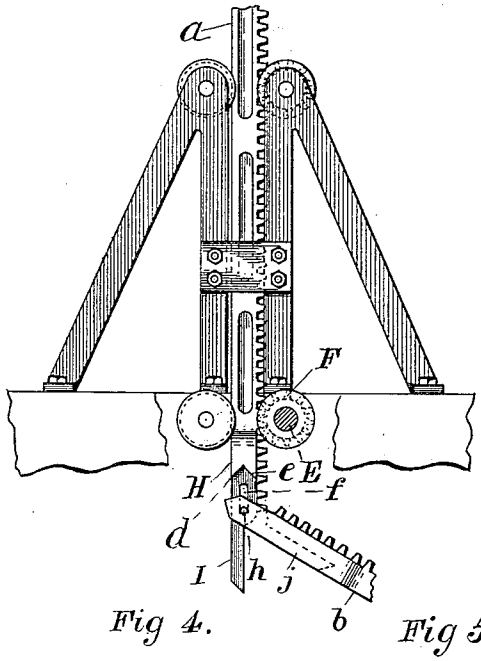


Fig 3.

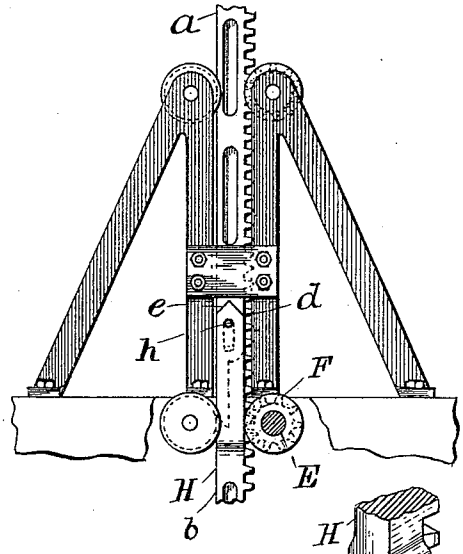


Fig 4.

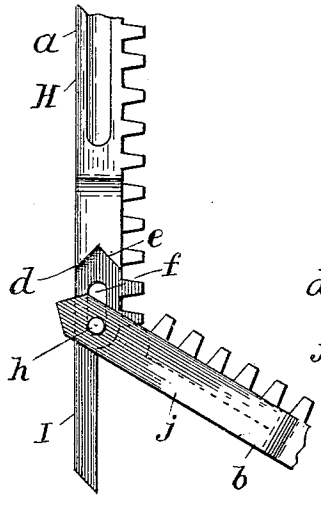


Fig 5.

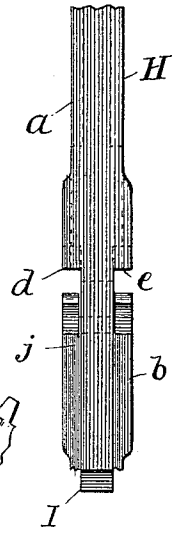


Fig 6.

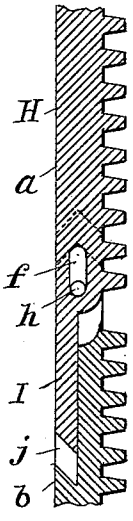
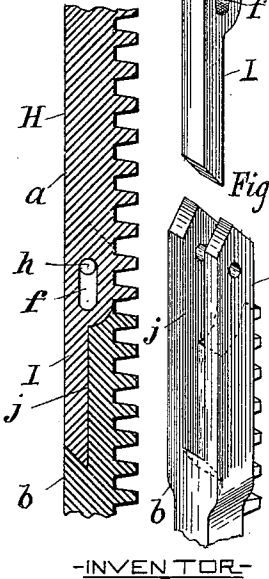


Fig 7.



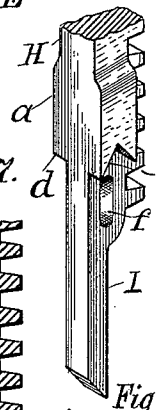


Fig 8.

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UNITED STATES PATENT OFFICE.

FREDERICK J. KUNKEL, OF BALTIMORE, MARYLAND, ASSIGNOR TO JOHN N. KUNKEL & SON, OF SAME PLACE.

RACK AND PINION.

SPECIFICATION forming part of Letters Patent No. 602,403, dated April 12, 1898.

Application filed December 16, 1896. Serial No. 615,863. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK J. KUNKEL, of the city of Baltimore and State of Maryland, have invented certain Improvements in Racks and Pinions, of which the following is a specification.

This invention relates to certain improvements in that class of racks and pinions in which the rack is in two parts or sections hinged together, so that when the rack is in a vertical or nearly vertical position and the joint below the operating-pinion the lower section may be deflected or thrown out of alinement with the other.

The said invention consists in a peculiar construction of the hinged ends of the rack-sections, whereby when the sections are brought into alinement and power applied to the lower one the rack becomes rigid and the joint inoperative, as will hereinafter fully appear.

The improved rack and pinion are adapted to a variety of uses, but especially for the elevation of the bodies of dumping coal-wagons, and it is in connection with such wagon that the invention will be described.

In the further description of the said invention which follows reference is made to the accompanying drawings, forming a part hereof, and in which—

Figure 1 is an exterior side view of a dumping coal-wagon, with a portion of the body thereof torn away, provided with the improved rack and its pinion. Figs. 2 to 8, inclusive, are details of the invention on enlarged scales and hereinafter described.

Referring now to the drawings, A is the body of the wagon, and B and C, respectively, the front and rear wheels thereof. The train of gearing which transmits motion from the crank-shaft D to the main shaft E, on which the rack-pinion F is secured, is denoted by G. This pinion is shown in dotted lines in Fig. 1 and in full lines in Figs. 2 and 3.

H is the rack in two sections *a* and *b*, with the upper section pivoted to the wagon-body at *c*. The lower portion of the upper section *a* from the point *d* to the end is reduced in thickness, thereby forming the tongue I, which is beveled at its end, as shown in Figs. 5 and 8, the former being a geometrical side view and the latter a perspective view of the same. The shoulders *e*, formed by reducing the thickness of the rack, as stated, are notched out, the notches being of angular shape, and the reduced portion above the tongue I is provided with a slot *f*. The upper end of the lower rack-section *b* is thickened and slotted to fit over the reduced part of the upper section, and it is provided with a pin *h*, which passes through the slot *f*. The extreme upper end of the lower rack-section *b* is pointed or beveled, so as to fit into the notches in the upper section, and also with a groove *j*, which is undercut at the end to receive the beveled end of the tongue I.

When the two sections of the rack are brought together endwise, as shown in Fig. 7, the adjoining teeth of the two sections are at the proper pitch distance apart, there being no break to interfere with the correct engagement of the pinion therewith. When the lower section *b* is unsustained, it falls until the pin *h* reaches the lower end of the slot J, as shown in Fig. 6. The lower section can then be deflected or thrown out, as shown in Figs. 1, 2, 4, and 5, in which position it may be sustained by any suitable contrivance.

When the body of the wagon is to be elevated, the lower or thrown-out section of the rack is allowed to fall to the ground, and as the rack is elevated the said section gradually assumes an erect position or comes into alinement with the other. As the joint approaches the pinion the upper tooth of the lower section is caught by a tooth of the pinion and the lower section elevated until the two sections are locked, and a continued movement of the pinion raises the wagon-body, as shown in dotted lines in Fig. 1.

I claim as my invention—

1. A toothed rack in sections hinged or pivoted together and adapted to be moved relatively toward and from each other at the joint to a limited extent in a longitudinal direction, one section having a tongue with a beveled end and the other a groove corresponding with the tongue in size and shape, into which the

tongue enters as the two sections are moved endwise together, substantially as specified.

2. A section of toothed rack having a tongue with a beveled end and a slot immediately above the tongue, combined with another section provided with a groove adapted for the reception of the tongue and a hole which registers with the said slot, and a pin which enters the slot and hole to complete the union of the two sections, substantially as specified.

FREDERICK J. KUNKEL.

Witnesses:
WM. T. HOWARD,
DANL. FISHER.