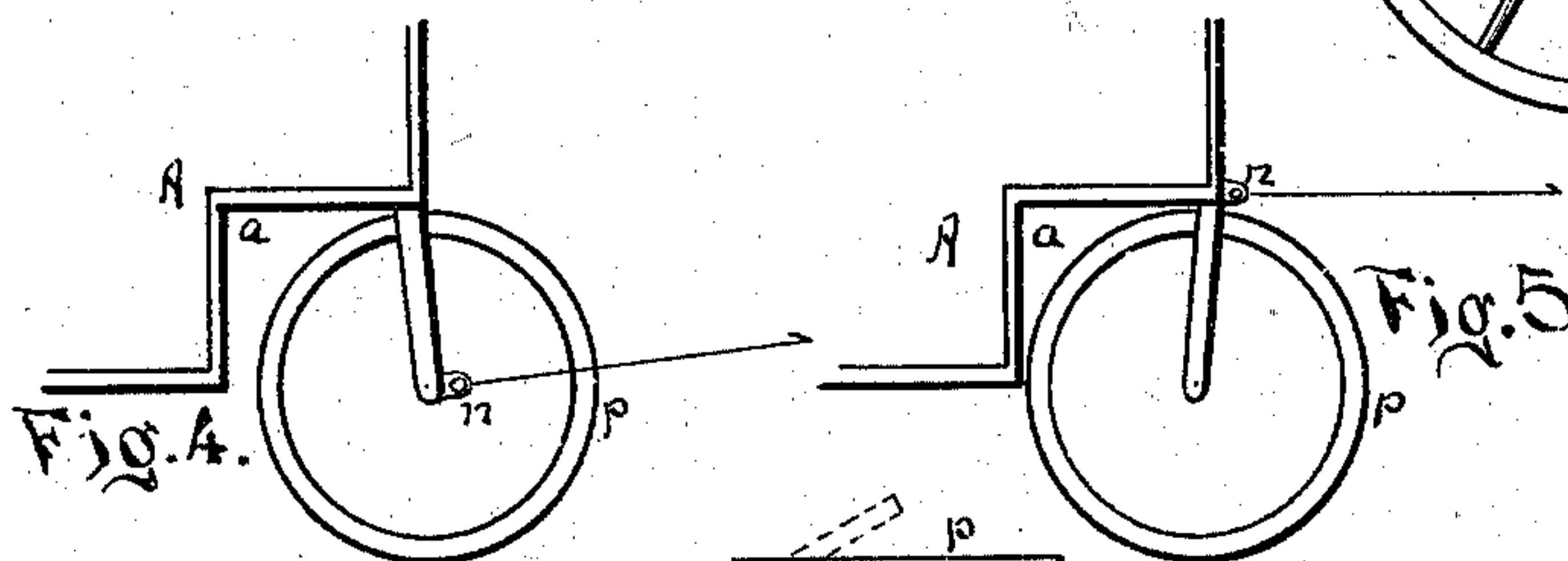
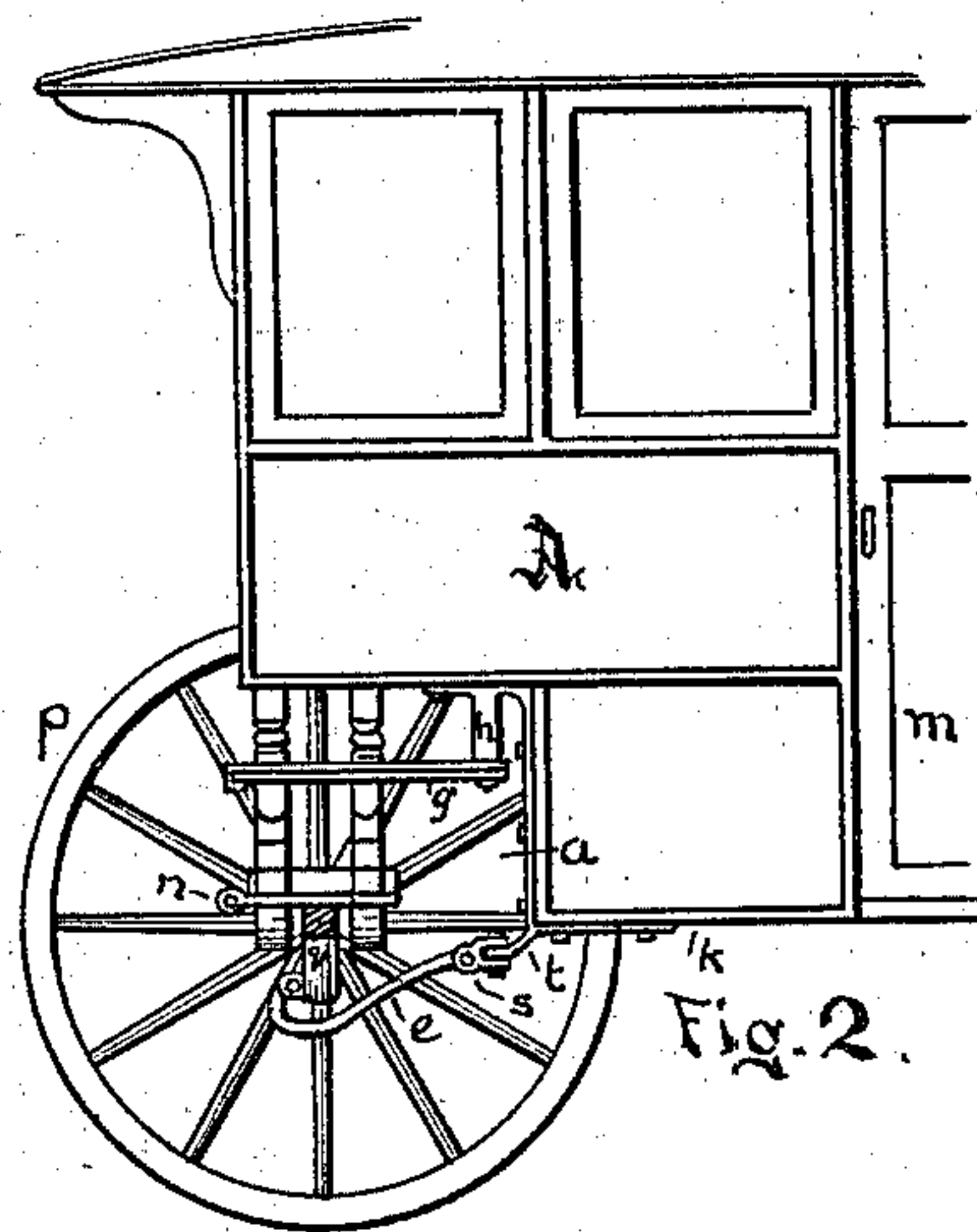
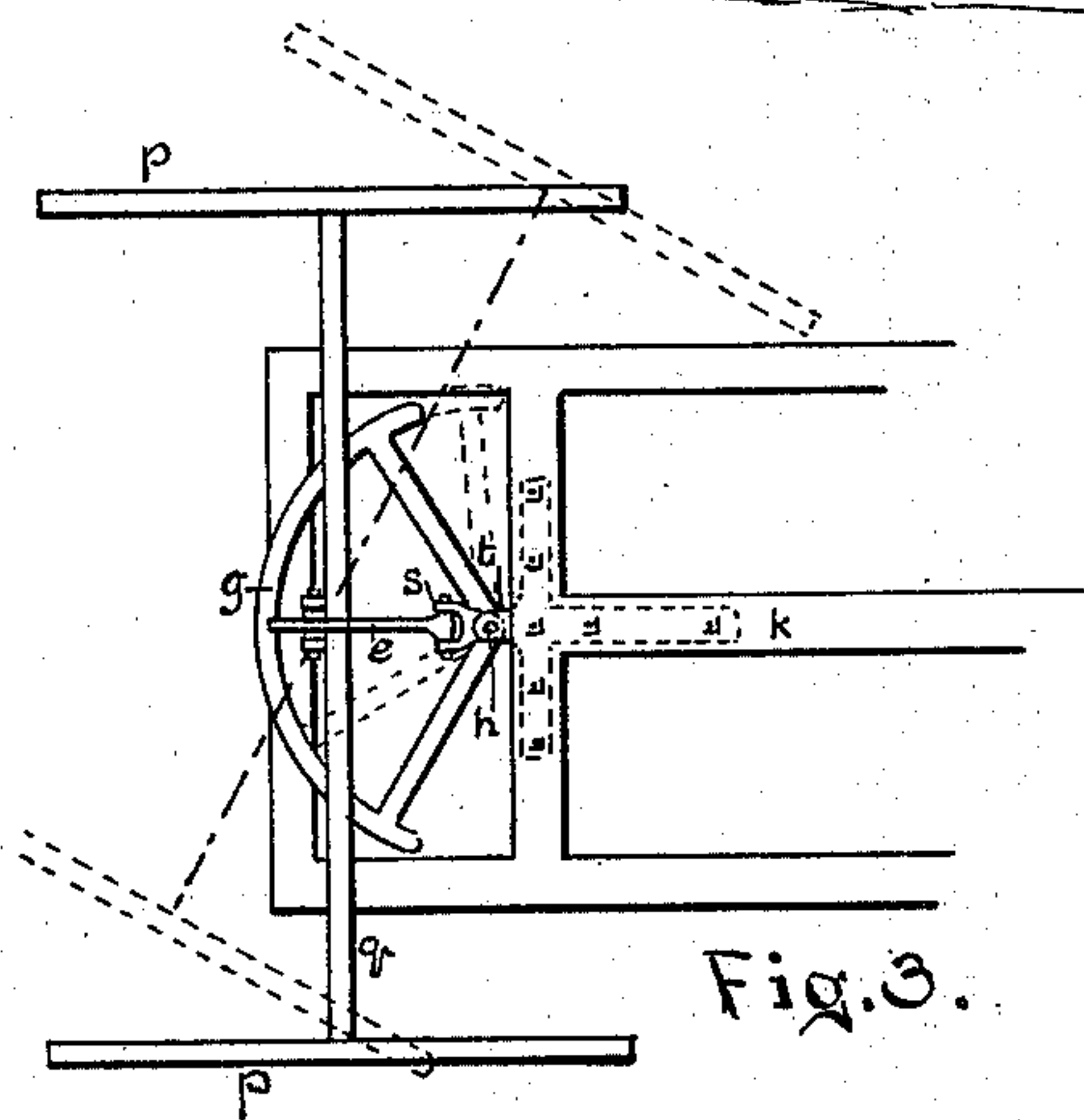
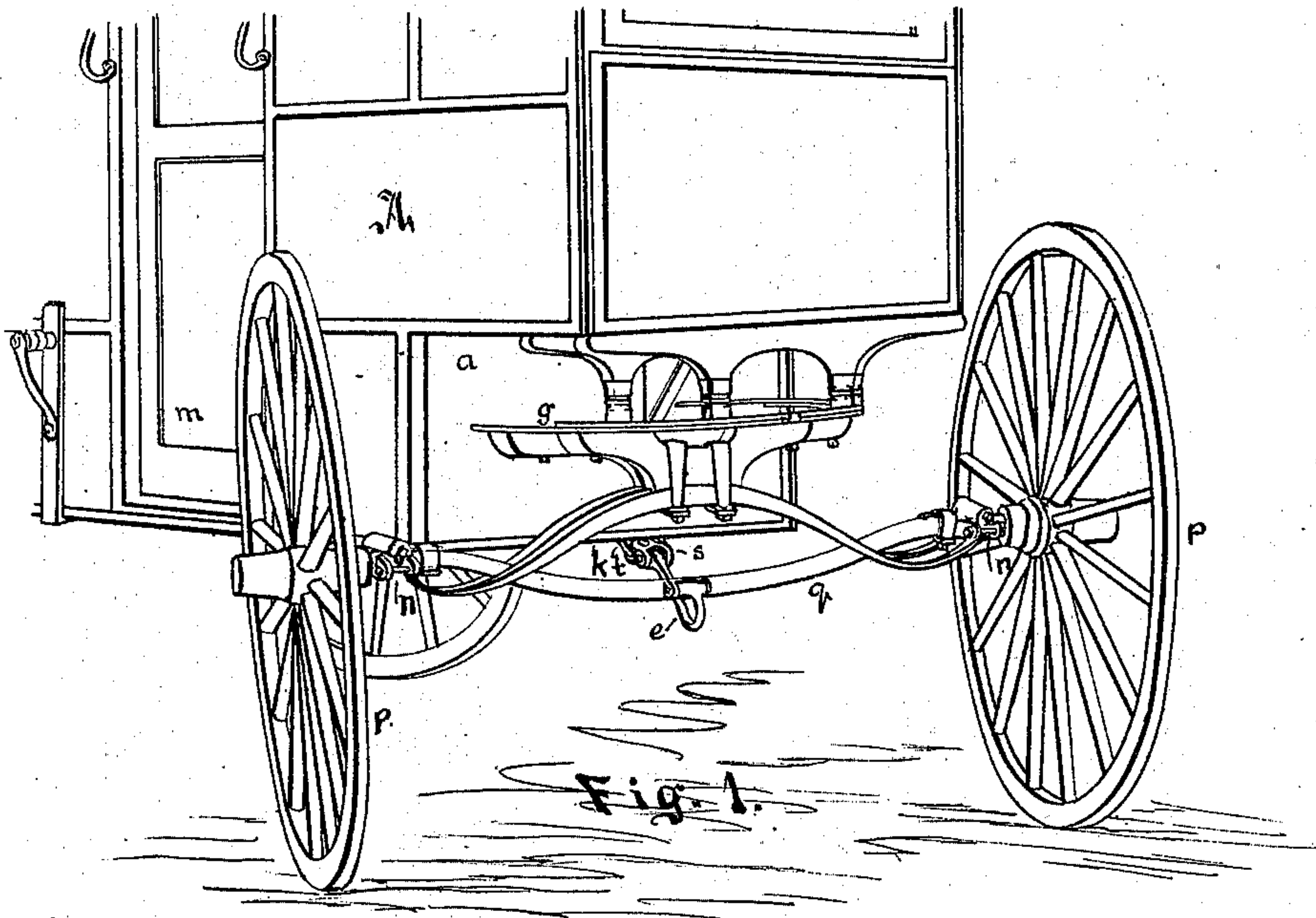


(No Model.)

W. B. STOVER.
WAGON.

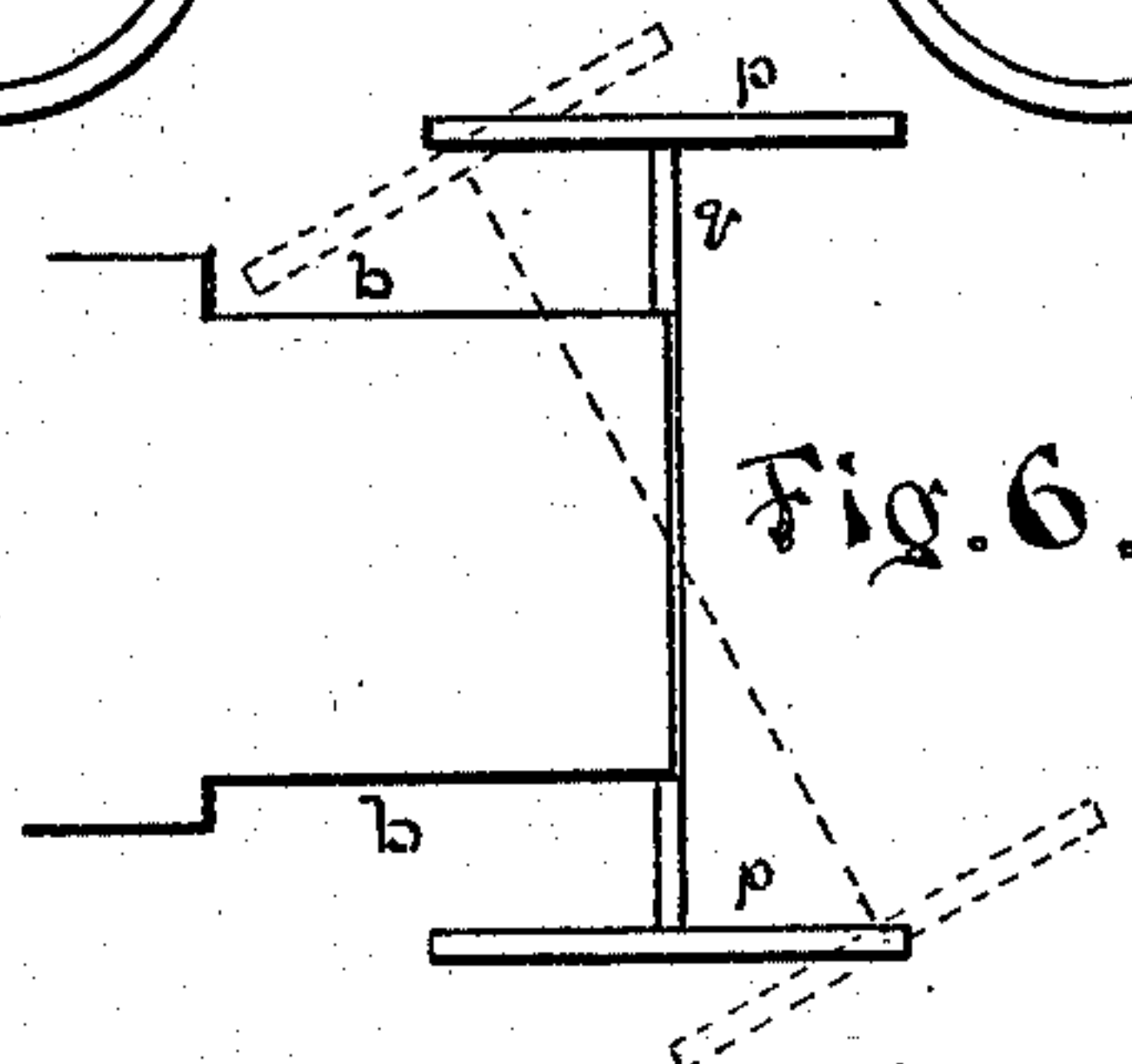
No. 562,433.

Patented June 23, 1896.



Witnesses

A. S. Smith.
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Inventor
William B. Stover
By his Atty.
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UNITED STATES PATENT OFFICE.

WILLIAM B. STOVER, OF SOUTH BEND, INDIANA, ASSIGNOR TO THE STUDEBAKER BROTHERS MANUFACTURING COMPANY, OF SAME PLACE.

WAGON.

SPECIFICATION forming part of Letters Patent No. 562,433, dated June 23, 1896.

Application filed January 24, 1895. Serial No. 536,050. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM B. STOVER, of South Bend, in the county of St. Joseph and State of Indiana, have invented new and useful Improvements in Wagons; and I declare that the following is a full and accurate description of the same, reference being had to the accompanying drawings, wherein—

Figure 1 is a perspective view of the front of a wagon having my improvement. Fig. 2 is a side elevation of the same. Fig. 3 is a bottom plan of the same. Fig. 4 is a side elevation showing the tendency and effect of the draft strain applied to the axle with the ordinary reachless gear. Fig. 5 is a similar view showing tendency and effect of the same strain applied to the platform. Fig. 6 is a bottom plan of ordinary gear with large front wheels and body not undercut. Figs. 7 and 8 represent different structures of free joints in the draw-bar.

The ordinary running-gear of a wagon consists mainly of a front and rear axle, connected by a "reach," and four wheels. The rear axle is fixed to the reach, at right angles thereto, and the front axle is pivoted to the front end of the reach. The office of the reach is, first, to maintain a uniform distance between the axles; second, to transmit the draft strain to the rear axle, and, third, by its lateral rigidity, secured by the hind hounds, to restrain the front axles from lateral play, to keep the front and rear wheels "in track," or in the same plane of progression.

In a variety of low-bodied wagons the reach has necessarily been omitted, and the tendency and effect of this omission are shown in Figs. 4 and 5. In Fig. 4 the draft is applied at the axle, and the front gear is strained forward. In Fig. 5 the draft is applied at the bolster or platform above the spring, and the front gear is strained backward. Both arrangements of the draft are in common use, but for reasons pertaining to the mechanics of draft, the low-down connection is much to be preferred. It is also much more wearing upon the gear when the reach is absent.

Figs. 1, 2, and 3 represent a low-down milk-wagon, that is to say, a delivery-wagon with the body hung so low that the attendant can pass in or out from the ground without the

employment of a step attached to the wagon. With a low-down body of this description, a reach cannot be used because the body occupies the space required for it. This invention is not, however, in its use confined to its application to milk-wagons. It may be employed with any wagon wherein a low body is desired. For convenience, however, I will confine this description to the milk-wagon shown in the drawings, because that furnishes an excellent illustration.

In all delivery-wagons internal spaciousness is a consideration of great importance; but this is, in common practice, controlled and limited by the necessities of the front wheels, because the wagon must be capable of turning within a limited space. Therefore, heretofore such wagons have either been provided with small front wheels and bodies A, undercut, as at *a*, so that the wheels would turn in under the body, or, if large front wheels were employed, the body-sides were indented, as at *b*, Fig. 6, to permit the wheels to cut into the side in turning. In both these instances the king-bolt is immediately over the axle.

To secure ease of draft, large front wheels are preferable to small ones and the side indentations *b* are highly objectionable, as it seriously reduces the stowage capacity of the wagon-body, especially when employed for objects of fixed size, like milk-cans, which also are wanted in the front of the wagon, where they are easily within reach of the attendant.

Thus it will appear that for the purposes described the following features are desired: first, body carried full width to its front end; second, high front wheels; third, body set low, so that no step is required; fourth, low point of draft; fifth, a reach to support and steady the front axle; sixth, a fifth-wheel whereby the front end of the body is supported directly above the axle, and, so far as I know, all of these points have never heretofore been combined in one wagon.

To avoid the objections and secure the advantages referred to, I construct my wagon as follows:

The body A is of such dimensions as may be desired, and is carried full width to the front end. It is entirely inclosed, and is pro-

vided with a door *m* in each side. The body is hung so low that the attendant can step from the ground into the door without the employment of an intermediate step. The front wheels *p* are high, and the draft-clips *n* are placed on the axle *q*. The fifth-wheel *g* is attached in the usual way, but is set with its center or king bolt *h* at a distance behind the axle. In the wagon shown the king-bolt *h* is about sixteen inches behind the axle *q*. Therefore when the axle is moved to cause the wagon to move in a curve said axle does not merely pivot on said king-bolt, but moves bodily endwise and carries the inner wheel away from the wagon-body at the same time that the rear edge of the wheel cuts toward the wagon-body. This is clearly shown by dotted lines in Fig. 3.

The axle *q* is provided with a draw-bar *e*, which extends from its middle back to the body, where it is jointed in the axial line of king-bolt. In the instance shown the joint *s* has its clip *t* fastened to the sill *k* of the body *A*. This joint must be in axial line with the king-bolt, so as to permit the axle to swing freely.

Wagons of this description are nearly always mounted on springs, and in that case the draw-bar *e* must have the joint *s* free to move in two planes, so as to accommodate the swing of the axle and the up-and-down movements of the body on its springs. The joint *s* may be made free by simple hook and eye, as shown in Fig. 7, or compound, as shown in Fig. 8, or possibly in other ways which need not be described. In practice I have usually made them compound, as shown in Fig. 8. The draw-bar *e* must also, for the same reason, be made flexible at its point of attachment to the axle. This might be accomplished by making said bar of elastic material; but I prefer to joint it to the axle in the usual way. I prefer also to curve said bar

below the axle and joint it, as shown, to the front side, because that makes the draw-bar a little longer than it would be if attached at the rear side, and as the pressure is then toward the axle, instead of away from it, it is more easy to apply an antirattling device.

The fifth-wheel affords a direct support for the front of the body *A* above the axle and springs, and by placing the load directly over the supporting member relieves the intermediate parts of strains and greatly reduces weight, which would otherwise be required to secure sufficient strength.

Having described my invention, I claim—

1. A low-down wagon-body, a front axle having the draft-clips attached thereto, a fifth-wheel, with its king-bolt behind said axle to cause the front wheels to swing laterally when said wagon changes its line of progression, combined with a draw-bar jointed to said axle and extending from said axle to the wagon-body, and having a free joint at its rear end in axial line with said king-bolt, substantially for the purpose set forth.

2. A low-down wagon-body, supporting-springs for the same, a front axle, a fifth-wheel with its king-bolt in rear of said axle, combined with a draw-bar, connecting said body and axle, said bar being jointed at its front end to said axle, and at its rear end a free joint in axial line with said king-bolt for the purpose set forth.

3. A low-down wagon-body *A*, a front axle *q* a fifth-wheel *g*, having its king-bolt *h*, in rear of said axle for the purpose set forth, combined with the draw-bar *e*, connected at its rear end to the sill *k*, by means of a free joint in axial line with said king-bolt and at its front end jointed to the axle as set forth.

WILLIAM B. STOVER.

Witnesses:

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EDWIN C. WITWER.