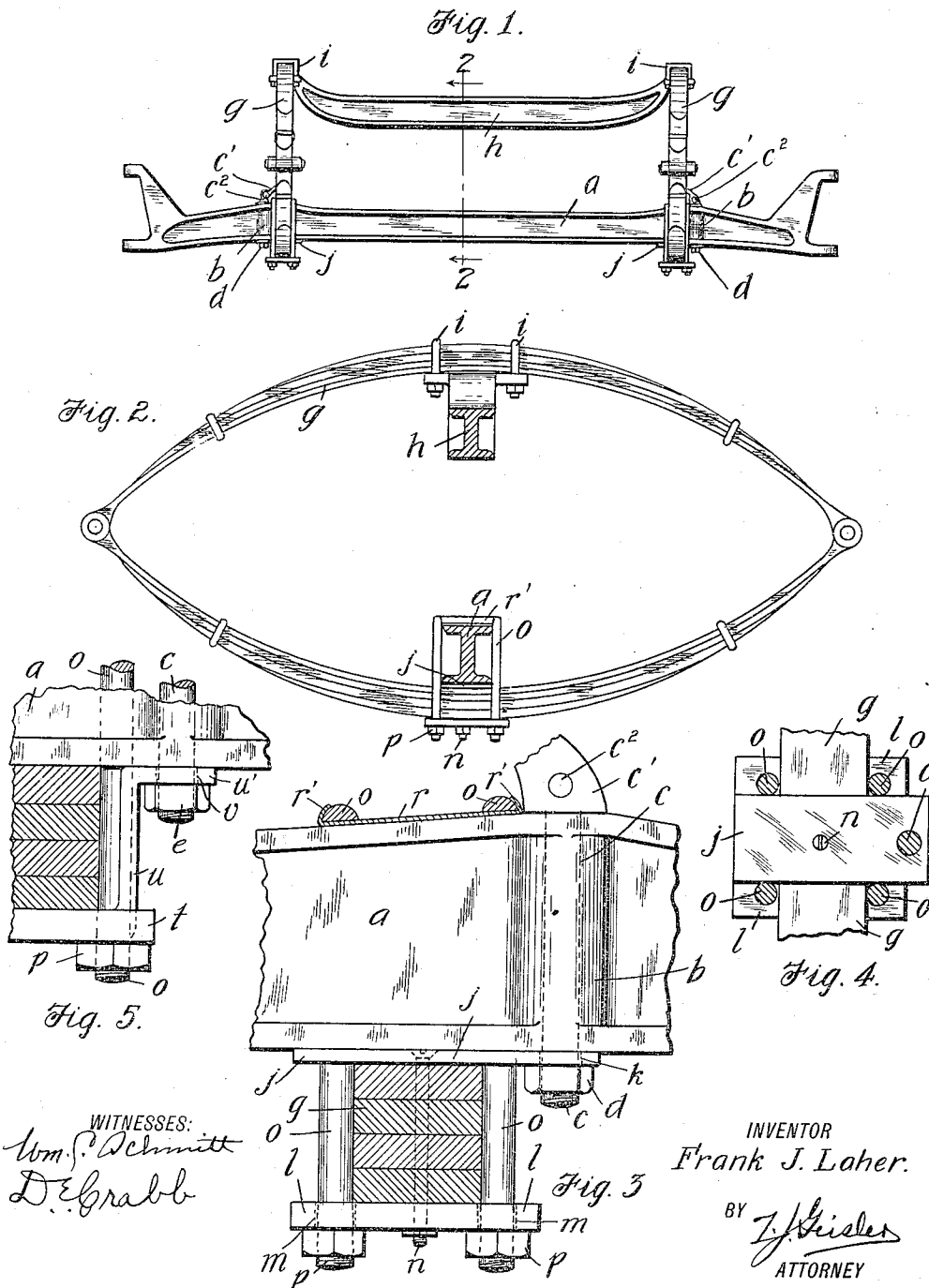


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 MEANS FOR ATTACHING SPRINGS TO THE AXLES OF VEHICLES.
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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FRANK J. LAHER, a citizen of the United States, and a resident of Portland, county of Multnomah, and State of Oregon, have invented a new and useful Improvement in Means for Attaching Springs to the Axles of Vehicles, of which the following is a specification.

My invention relates to the running gear of vehicles, and has especially to do with the providing of easy riding springs by which the vehicle body is mounted on the running gear.

One of the main objects of my invention is to provide means by which the springs may be mounted on an automobile of the "Ford" type without mutilating or weakening the axles in any way. As is well known, the motor vehicle known as the "Ford" is not provided with full elliptic springs, but as commonly constructed, is provided merely with a transverse semi-elliptic spring, the latter being hung from hanger-bolts which have a bearing in the axle. Now, by my combination, I am enabled to remove this semi-elliptic spring and substitute a pair of full elliptic springs, without drilling additional holes in the axle. In short, the simplicity of my means enables me to attain the end in mind. The means employed by me will be more readily understood by a description of the accompanying drawings, in which—

Figure 1 is a front elevation of a Ford front axle, showing the full elliptic springs as fastened in place. Fig. 2 is a larger-sized detail section on the line 2—2 of Fig. 1; Fig. 3 is a larger-sized elevation showing the details of construction which constitute my invention; Fig. 4 is a plan view showing certain details of construction; and Fig. 5 is a fragmental view showing an alternate form of construction to be used in place of the construction shown in Fig. 3.

In the drawings, *a* represents the front axle. Said front axle is provided with enlarged portions *b*, through which the hanger-bolts *c* extend, said bolts being provided with hanger heads *c'*, from which the old type of transverse semi-elliptic spring was hung. Nuts threaded on the lower ends of the bolts *c*, hold the latter against longitudinal movement. Said hanger heads are furthermore provided with bolt holes *c''*, through which the radius rods of the ma-

chine are fastened, but these are not shown as they have no relation to my invention. Full elliptic springs *g* are connected at the top by a transverse beam *h*, which is fastened to the upper leaves of said springs by the U-clips *i*. The beam *h* forms the support for the front end of the vehicle frame, the latter not being shown in these drawings. In the old construction, the front end of the frame was mounted directly on the transverse semi-elliptic spring which my invention displaces.

Having reference now to Fig. 3, a transverse plate *j*, adapted to bear on the lower side of the axle *a*, is provided on the upper face of the lower leaf of the spring *g*. Said plate *j* has a bolt hole *k*, adapted to register with the hanger-bolt *c*. On the lower face of the leaf is another plate *l*, which is wider than plate *j* and is provided with the bolt holes *m*, the relative location of these parts, in place, being shown in Figs. 3 and 4. The plates *j* and *l* are fastened together by the screw *n*, extending through the leaves of the spring *g*. When the device is assembled in position, as shown in Fig. 3, the plate *j* is brought into position so that the bolt *c* may be passed through the hole *k*, and the nut *d* threaded in place. U-bolts *o* are then placed so as to straddle the axle *a* and the leaves of the spring *g*, and their ends extend through the bolt holes *m*. Nuts *p* are then threaded in place below the plate *l*, so as to hold said parts rigidly in assembled position. A plate *r*, made with curved ends *r'* is located under the transverse portions of the U-bolts *o*, as shown in Fig. 3. This plate acts as a guard to prevent the U-bolts from spreading. It will be noticed, by having reference to Fig. 4, that the U-bolts *o*, will hold the springs *g*, against lateral movement relative to the axle *a*. The springs *g* will furthermore be held rigidly against longitudinal movement relative to the axle by means of the plate *j*. From the above description, it will be seen that these full elliptic springs *g*, may be readily attached to the axle *a*, by merely adapting the standard parts already in place on said axle, and thereby eliminating the necessity of drilling holes in the axle or weakening it in any other way.

The construction shown in Fig. 5 may be substituted for the one shown in the other figures. In this view, the plates comprise a

lower member t , equivalent to the plate l , and a vertically extending arm u , provided on its end with a lateral extension u' , in which is a bolt hole v , which is equivalent to the bolt hole k , shown in Fig. 3. The plate j may then be omitted. Otherwise, the construction will be the same.

I claim:

1. In a vehicle running-gear, in combination with an axle having a perforation, an elliptic spring, means for fastening said spring transversely on the axle, such means consisting of U-bolts encircling one member of the spring, a plate to which the extremities of such U-bolts are fastened, a tie-plate, a bolt inserted through said spring-member and said tie-plate, and a bolt in-

serted through said perforation of the axle and said tie-plate.

2. In a vehicle running-gear, in combination with an axle having a perforation at each end, a pair of elliptic springs, means for fastening each of said springs transversely on the axle, such means consisting of U-bolts encircling one member of the spring, a plate to which the extremities of such U-bolts are fastened, a tie-plate, a bolt inserted through said spring-member and said tie-plate, a bolt inserted through said perforation of the axle and said tie-plate and a transverse bar connecting the other members of said pair of elliptic springs.

FRANK J. LAHER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."