A. C. JONES.

Car Truck.

No. 1,812. Patented Oct. 10, 1840.

Fig. 1

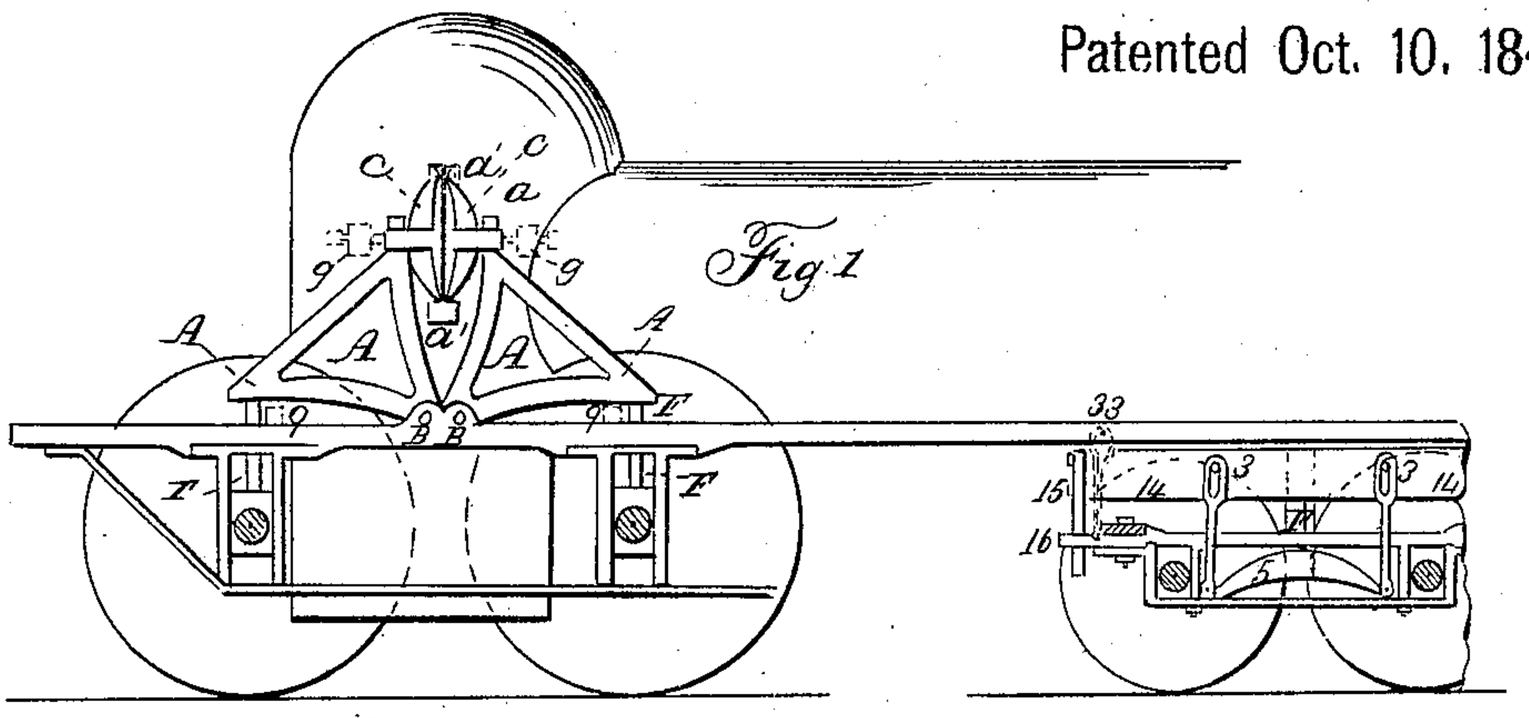


Fig. 2.

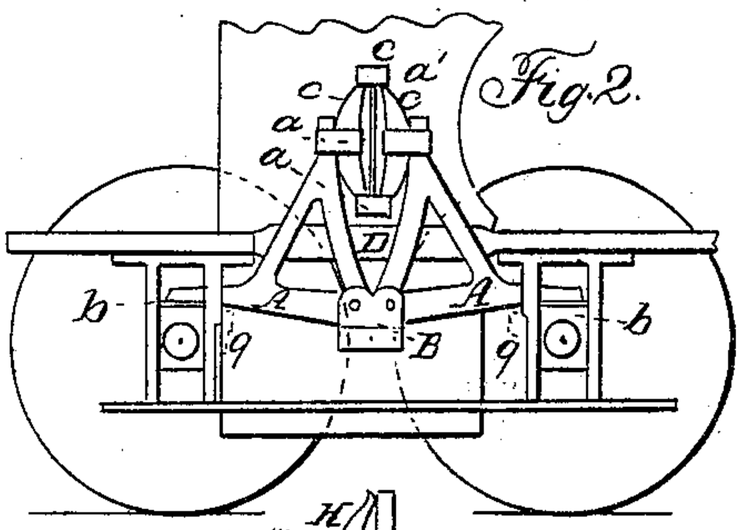


Fig. 4

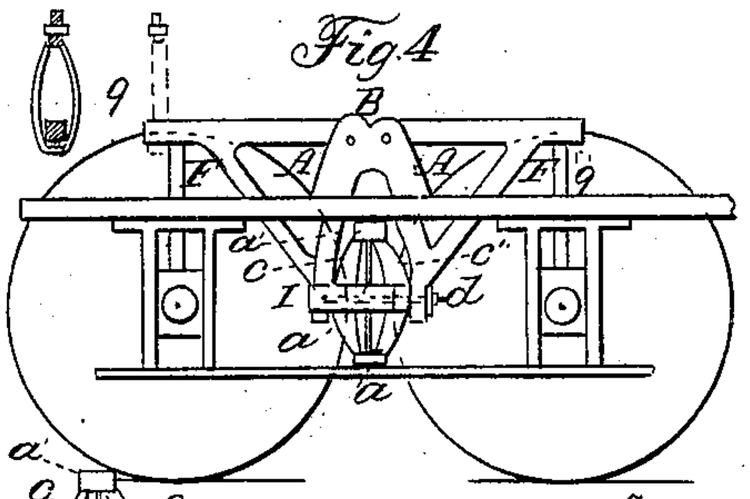


Fig. 3

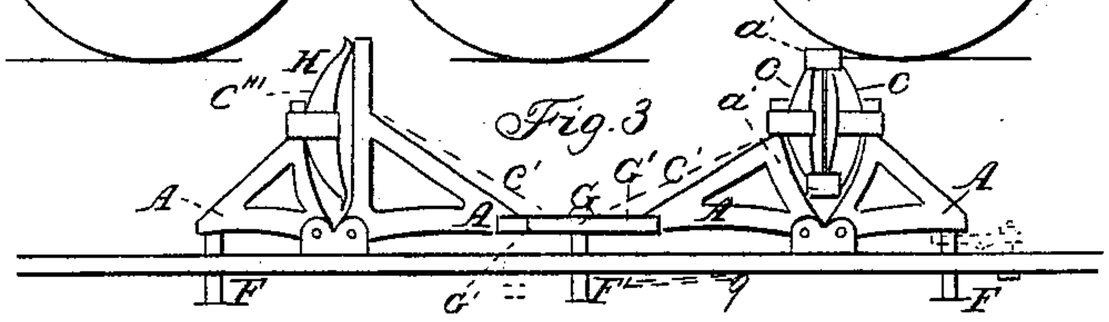


Fig. 11

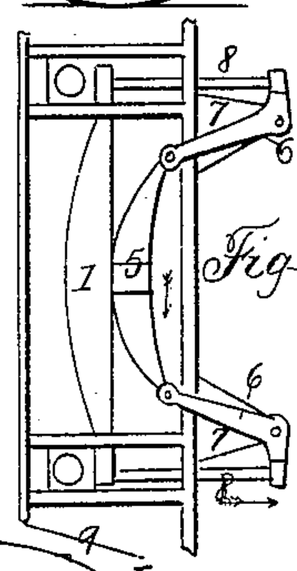


Fig. 12

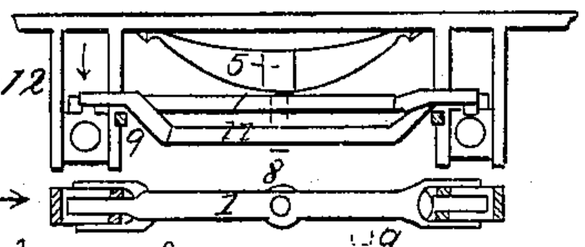


Fig. 15

Fig. 5

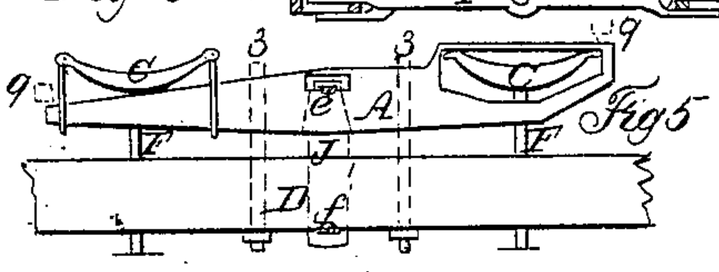


Fig. 6

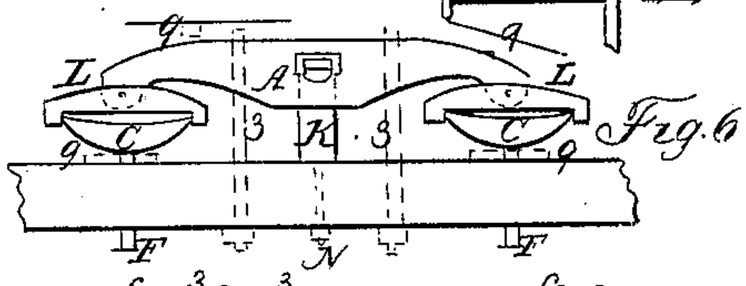


Fig. 7

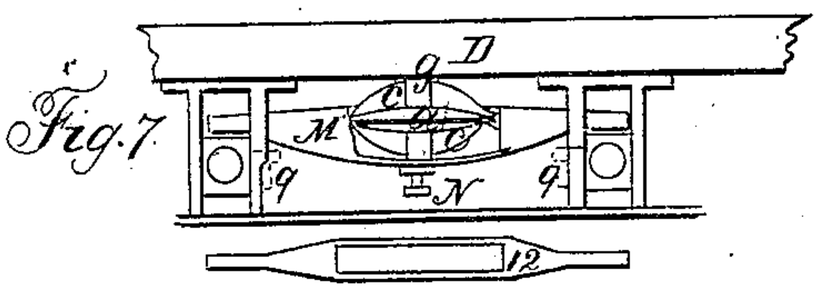


Fig. 8

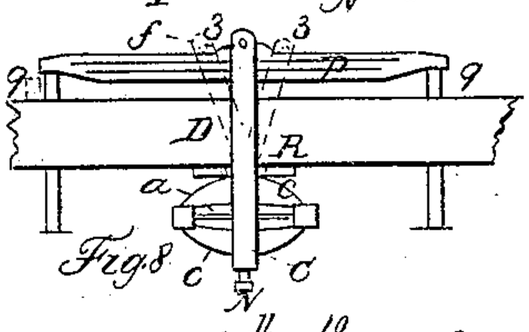


Fig. 9

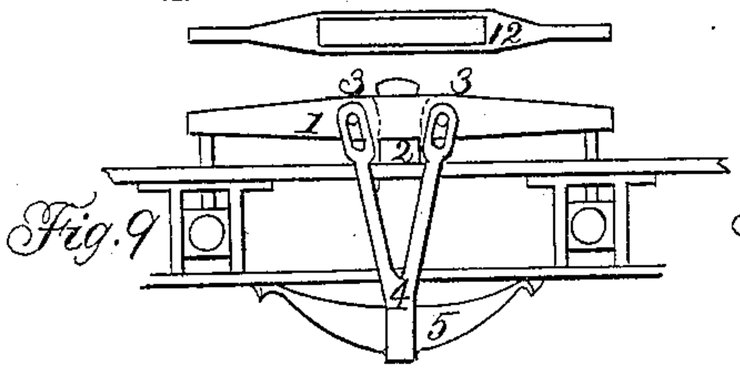


Fig. 10

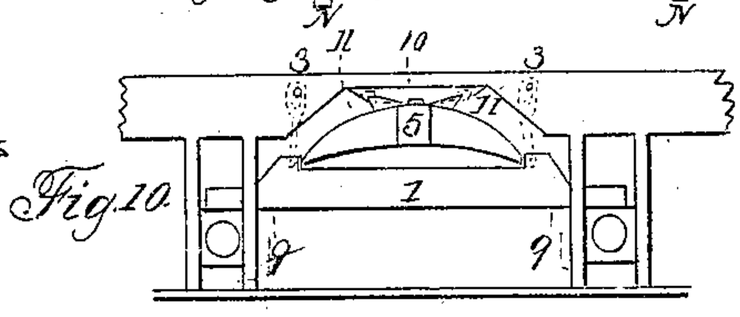
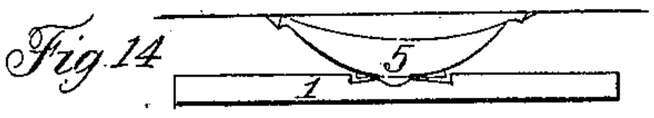


Fig. 14



UNITED STATES PATENT OFFICE.

ALFRED C. JONES, OF PHILADELPHIA, PENNSYLVANIA.

MANNER OF CONSTRUCTING LOCOMOTIVE AND OTHER RAILROAD CARRIAGES.

Specification of Letters Patent No. 1,812, dated October 10, 1840.

To all whom it may concern:

Be it known that I, ALFRED C. JONES, of the city of Philadelphia, in the State of Pennsylvania, have invented certain improvements in the manner of constructing locomotive-carriages, which improvements, under proper modifications, are applicable to cars, trucks, or other carriages used upon railroads; and I do hereby declare that the following is a full and exact description thereof.

My first improvement has for its object the more perfect attainment of an equal bearing of the driving wheels on the road, using therefor the ordinary sized springs of locomotive, or other, carriages, but so arranged and combined as to produce the intended effect, and capable of being applied to carriages of four, or of six, wheels.

In Figure 1, A, A, represent two bell cranks, or crooked levers, attached to the side of a locomotive, or other carriage, by the bolts B, B, which form their fulcra, the horizontal arms of these levers bear upon the stems F, F, of the axle boxes, and their vertical arms act against, and are connected with, the two springs C, C, by suitable means. The ends of these springs are kept in their places by a center plate *a*, which passes up between the springs, and has ledges, or boxes, *a'*, *a'*, at its extremities, to receive the ends of the springs.

Fig. 2, shows a similar arrangement of the respective parts, the bell cranks having undergone such change of form as is necessary to allow of the placing of the springs lower down than in Fig. 1. To admit of this arrangement, the part D, of the frame must be so made as to allow of the bell cranks passing up on one side of it; or it may have a mortise through it, to make room for it. Its action will be the same as in Fig. 1, but instead of the ends of the levers resting on stems rising up from the axle boxes, they pass through slots, or mortises, in the sides of the pedestals, and rest on a steel, or other, plate, situated on said boxes. In this case, I make the upper side of the axle boxes either convex, or concave, forming the plate, as at *b*, *b*, to correspond with it, so as to have a wide bearing, and at the same time to admit of the necessary freedom of motion in the vibration of the lever.

Fig. 3, shows the manner in which the bent levers, or bell cranks, may be arranged, to operate on the same principle, upon a six-wheeled locomotive car, or carriage. F, F, F, are the stems of the axle boxes, and A, A, the bent levers, or bell cranks. G, G', is a cap fitted to the stem F'; in this case, the horizontal arms resting on this cap should bear a proportion to the vertical arms as 2 to 1, supposing them to extend to the center of the cap, as shown by the dotted lines *c'*, *c'*; or they may be shortened, as in the figure, and rest on a plate G', G', forming a part of the cap G. In this case, a single spring, C''', may be used for the third pair of wheels.

Fig. 4, shows a modification of the bell cranks, and other parts, acting on the same principle with the foregoing. The bell cranks are inverted, the springs placed lower down than in either of the other arrangements; and, from their position, they must be drawn together by the separating, instead of by the approach, of the vertical arms of the bell cranks. To effect this, the strap I, embraces the arm A', of the bell crank, and also passes around and embraces the spring C''; and a bolt, one end of which is shown at *d*, passes through holes in the spring C'', and draws upon the spring C, as will be understood by the dotted lines representing its situation; the action between the springs, and the stems F, F, will thus be made substantially the same as under the arrangements shown in the other figures.

It will be seen, that under either of these modifications as applied to a four, or a six, wheeled car, carriage, or locomotive, that any shock, or other action, producing a change of position in either of the axles, will be communicated through the intervention of the bell cranks, or bent levers, to the springs, and thus, in a great degree, neutralize the injurious effect thereof.

What I claim as my invention in this part of my improvements in railroad carriages of various descriptions, is—

The application of the bell-crank, or bent lever, between the axle boxes and double, or single, elliptic springs, standing vertically, and combined and arranged as above set forth.

In Figs. 5, 6, 7, and 8, I have represented other methods of applying the springs, to produce an effect similar to the foregoing, but in which I apply levers operating horizontally, or nearly so, instead of the bell cranks, or bent levers, above described.

In Fig. 5, A, is a lever connected to the frame of the carriage by a bolt, or link, J; this link passes through a mortise hole on the lower side of the lever, in which it has room to vibrate to a small extent; it rests on the lever by a curved bearing, or fulcrum, at *c;* it passes also through a mortise in the side D, of the carriage, against the lower part of which it has a second curved bearing at *f*, the mortise being wide enough to allow of its vibrating; *c*, *c*, are springs which are shown as connected with the lever by different methods, the nature of which will be readily understood from the drawing; these springs bear upon the rods F, F, of the axle boxes, in the usual manner.

In Fig. 6, the arrangement resembles that last described but differs from it in the manner of connecting the springs with the lever. L, L, are cap pieces united to the lever A, by joint pins; into recesses in the ends of which cap pieces the ends of the springs are received. The lever A, is drawn down, and adjusted by means of the nut N, on the lower end of the link K. This lever vibrates on the bearing, or fulcrum, *f*, at the upper end of this link.

In Fig. 7, M, represents a trough-shaped lever, or bar, within a recess, or trough, of which, the elliptic springs *c*, *c*, are contained; these springs have a center plate *a*, between them, similar to that before described. The ends of the lever M, pass through slots in the pedestals, and have their bearings on the axle boxes, as set forth in Fig. 2. The rounding part of the upper spring is received within a plate *g*, adapted to it, and attached to the under side of the frame D. A strong screw set bolt N, enters a countersink made to receive its point, in the band of the lower spring, for the purpose of adjusting the springs as they become straightened by use.

In Fig. 8, the lever P, is so made as to aid the action of the springs, by its acting itself as such, to a certain extent. It is composed of a number of flat bars of iron, or of steel, welded together at their ends. To this lever, I connect the double elliptic springs by means of the strap O, which passes under them, and up on each side of the frame D, and bears at *f*, on the upper side of the lever. N, is an adjusting set screw, the use of which has been already described. There are lugs on the plate R, at the bottom of the frame, which keep the strap O, in place.

In the modification represented in Fig. 6, I claim—

In combination, the manner of connecting the elliptic springs with the lever, and of adjusting them by means of the center link K.

In the modification represented in Fig. 7, I claim—

The placing of the elliptic springs within the recess in the lever M, said springs being adjusted, and the respective parts connected together, substantially in the manner described.

It is well known that however well rail-roads may be constructed, they eventually become undulating by the passing of loads over them, so as to form hills and hollows. In the ordinary manner of constructing locomotive, and other, carriages to run upon such roads, these defects are rapidly augmented by them; and to obviate this evil, I have devised what I denominate a rail-road regulator, the intention of which is to transfer a larger portion of the weight of the carriage to a wheel which is on an elevation, and to decrease the weight upon that which is in a hollow, or depression, of the track. The principle upon which I proceed in effecting this object—that of shifting the fulcra, or bearings, upon which the load rests—I have modified in various ways, and in the annexed drawings I have represented the respective parts concerned therein by numbers, instead of by letters of reference.

In Fig. 9, No. 1, is a lever, or bar, which has a slot, or mortise, through its center, as shown by the dotted lines on each side of the stand, or guide, 2; this mortise is so formed as to allow the lever to vibrate and to have a vertical motion on said stand, or guide. At 3, 3, there are two pins which pass through slots in the upper ends of the V-shaped straps 4, which embrace both sides of the lever, and connect the elliptic spring 5, therewith. When both wheels are on the same plane, each of the arms of the strap 4, will have an equal bearing on the pins 3, 3, and the load, on a horizontal track, will be the same on each wheel. But should one of the wheels pass on to an elevated part of the track, the fulcrum would be changed; one end of the V-shaped strap would be relieved from its bearing on its pin, and the whole action of the spring would, in consequence, be exerted on the pin nearest to the elevation, and the wheel thereon would receive an additional weight in proportion to the difference between the length of the two arms of the lever from their effective fulcrum. The stand, or guide, 2, is stationary, serving only to keep the lever in its place.

Fig. 10, represents another arrangement for changing the fulcrum under similar circumstances; a bar, 1, has its ends resting on the axle boxes, as in Fig. 7. The rounding side of the spring 5, has its bearing in a plate 10, when the wheels are on a level, and the lugs 11, 11, which rise from the spring, are not in contact with the plate 10; but should the relation of the wheels be changed, the bearing would be transferred to one of the lugs, the effect of which would be the same as that set forth under the former arrangement. Instead of the plate and lugs, just described, a like effect may

be obtained by means of rods, or links 3, 3, which may be attached to the ends of the springs; these links are shown in dotted lines.

In Fig. 11, the ends of the spring 5, are attached to the forked ends of the bent levers, 6, 6, which have their fulcra on stands 7, 7, their short ends bearing on the stems 8, 8, of the axle boxes. These stems stand free of the bar 1, the ends of which bar pass through slots in the chairs; when the wheels are on a level, some vertical play is thus allowed before the stems bear upon the boxes, but should one wheel pass on to an elevation, the spring would be moved horizontally toward it, and produce an increase of weight on that wheel. On the return of the wheels to the same level, the spring would be shifted back to the center of the bar.

In Fig. 12, Nos. 1, and 11, are two levers, each forked at one end so as to be capable of resting on the projecting parts of the axle box, while the other end passes through a slot in one of the chairs, like the bar, 1, in Fig. 11. Should a depression take place as shown by the arrow, the forked end of 11, would be received by the adjustable stop 9, which would then become the fulcrum, and the pressure of the spring would be communicated to the other wheel through the stem 8, acting on the lever 11.

By the application of stops, which may be made adjustable, the fulcrum may be shifted under most of the arrangements described in the first section of my improvement, namely, that for equalizing the bearing on the driving wheels. Such stops are indicated by the number 9, in Figs. 1, 2, 3, 4, 6, 7, 8, and 10. In Figs. 5 and 6, the rods, or stirrups, 3, 3, will serve to show that the principle of transferring the weight may be carried into effect by means of stirrups, or stops, with which the levers A, A, may be brought into contact by the rise of a wheel on to an elevation on the rail. The dotted lines 3, 3, on Fig. 8, also represent an arrangement by which straps may be made to operate like those shown in Fig. 9. By reference to Fig. 1, it will be seen how the same principle may be, with facility, applied to a truck. No. 14, is a frame, or false truck, which has no vertical motion, but is carried round horizontally with the frame of the main truck, both having a common center. 15, is a stud attached to the frame 14, and passing through a clevis 16 attached to the main truck, and the two frames must, of course, move round together. The stems F, of the springs press on the under sides of the false truck, and the ends of the springs rest upon the frame of the main truck when on an even rail; but should one of the wheels pass into a hollow, one of the links 3, would then suspend one end of the spring, and would relieve the depressed wheel of a large portion of its load or the links 3, may be attached directly to the main truck; 14, must then move vertically.

Instead of the arrangement last described, the false truck frame 14, may be dispensed with, and the required effect be produced in the following manner. Let links, as at 33, be attached near to the ends of the truck, and let their upper ends traverse on a horizontal rod, or guide, attached to the underside of the car, so that when the truck is carried around its center, the links will remain vertical; their effect will then be the same as that already described.

What I claim as my invention in that part of my improvement which I have denominated the rail road regulator, is—

The manner in which I have applied the principle of transferring a portion of the weight of the carriage, or load, from one wheel to another, so as to increase the pressure upon the wheel which may be upon an unduly elevated part of the rail, and to decrease it on that which may be in a hollow, or depression; for the manner of carrying out this principle, I refer to the foregoing exemplification thereof, claiming the same as set forth, together with such variations thereof as are substantially similar.

ALFRED C. JONES.

Witnesses:

G. BARTRAM,

H. C. BRECKENRIDGE.