Carkhuff & Chalfant,

Traction Engine,

No. 26,012, Patented Nov. 8, 1859.

Fig. 1.

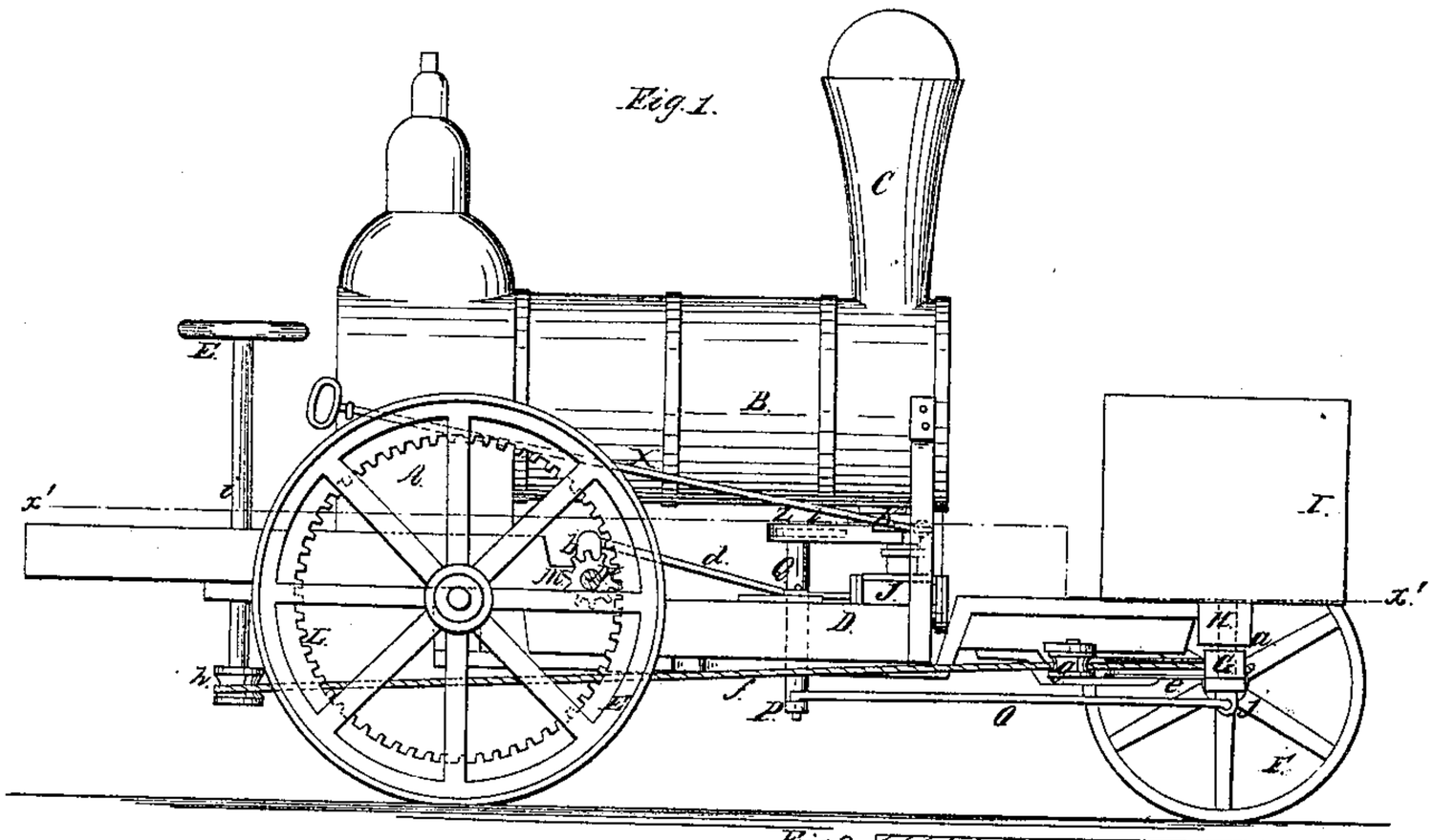


Fig 3.

Fig. 2.

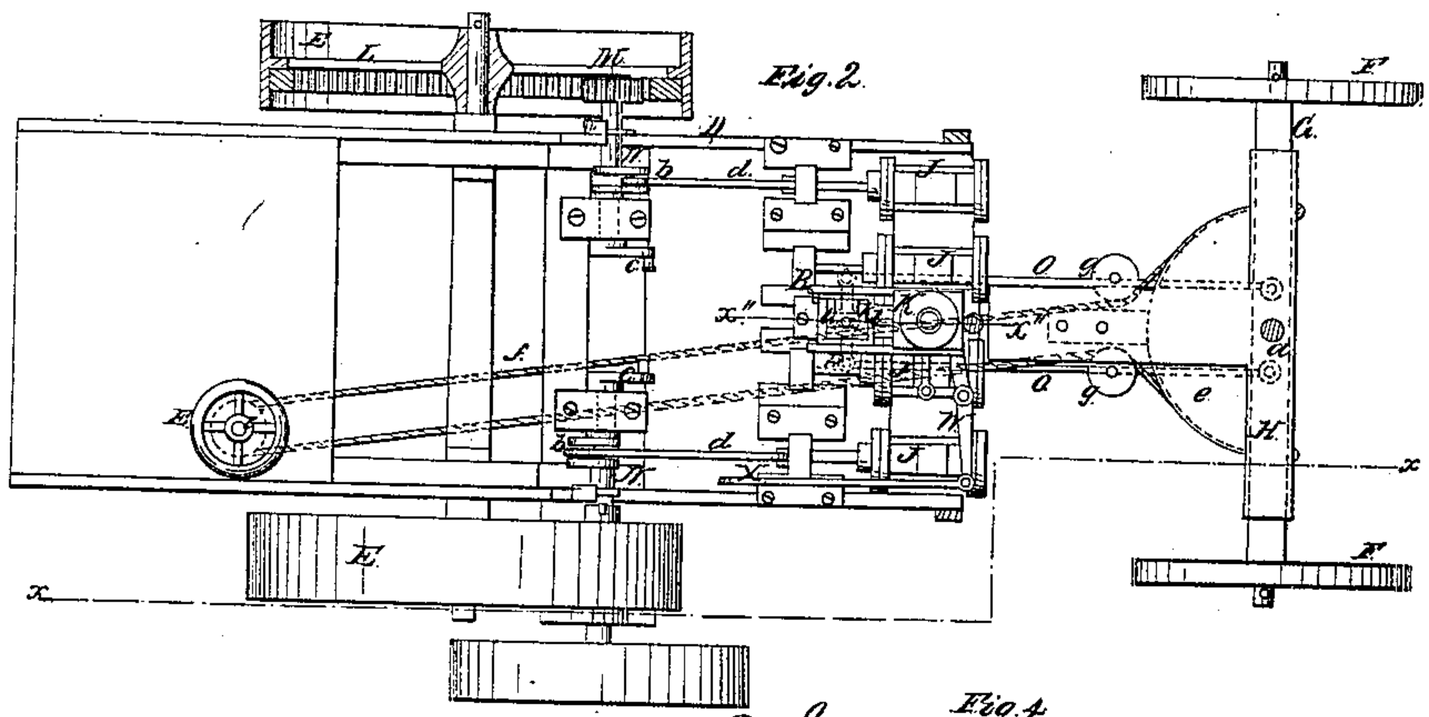
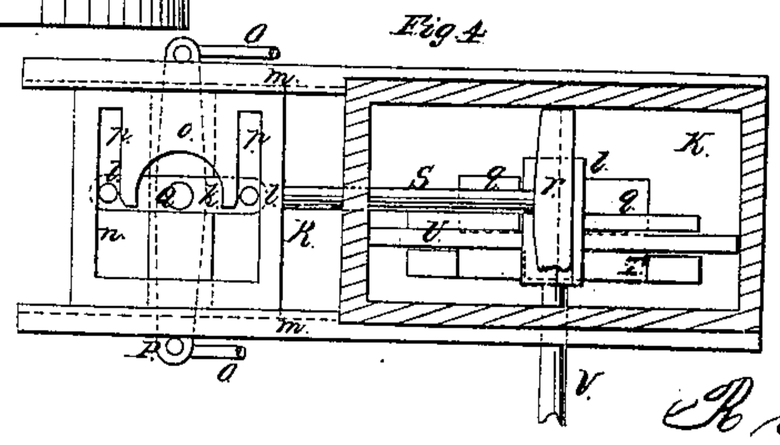


Fig 4



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UNITED STATES PATENT OFFICE.

R. CARKHUFF AND B. CHALFANT, OF LEWISBURG, PENNSYLVANIA.

STEAM-VALVE.

Specification of Letters Patent No. 26,012, dated November 8, 1859.

To all whom it may concern:

Be it known that we, R. CARKHUFF and B. CHALFANT, both of Lewisburg, in the county of Union and State of Pennsylvania, have invented a new and Improved Locomotive or Traction-Engine, Designed Chiefly as a Motor for Gang-Plows, Harrows, Seeding-Machines, and other Agricultural Implements; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1, is a side sectional view of our invention taken in the line *x*, *x*, Fig. 2. Fig. 2, is a horizontal section of ditto taken in the line *x'*, *x'*, Fig. 1. Fig. 3, is an enlarged section of the regulator of the invention taken in the line *x''*, *x''*, Fig. 2. Fig. 4, is an enlarged section of ditto, taken in the line *y*, *y*, Fig. 3.

Similar letters of reference indicate corresponding parts in the several figures.

This invention consists in a peculiar means employed for regulating and applying the power to the driving wheels of the engine, whereby the latter may be readily turned or guided and placed more fully under the control of the engineer or attendant than usual.

To enable those skilled in the art to fully understand, construct and use our invention, we will proceed to describe it.

A, represents a fire box, B, a boiler and C, a smoke pipe which are arranged similarly to those of an ordinary locomotive and therefore do not require a minute description. The above parts are supported by a frame D, which is mounted on wheels E, E, F, F, the wheels F, F, having their axle G, arranged to turn on a king bolt *a*. On a bolster H, over the axle G, a water tank I, is placed.

On the frame D, directly below the front end of the boiler B, there are placed four steam cylinders J, all of which are shown in Fig. 2. These cylinders are supplied with steam from a supplementary steam chest K, which is shown more particularly in Figs. 3 and 4, and which will be more particularly referred to hereafter.

The wheels E, E, which are the driving wheels are placed loosely on their axle one turning independently of the other and to each driving wheel a concentric geared rim L, is attached into which pinions M, gear. The pinions M, are placed on separate shafts N, N, each of which is provided with two cranks *b*, *c*, one crank being at right angles to the other.

Each shaft N, has the piston rods *d*, of two cylinders J, connected to it, so that each driving wheel has the power of two steam cylinders applied to it. This will be fully understood by referring to Fig. 2.

To the back edge of the axle G, a semi-circular projecting plate *e*, is attached, and to the axle G, at each side of the plate *e*, the ends of a chain or rope *f*, is attached, said chain or rope being kept in proper position by guide pulleys *g*, and passing around a pulley *h*, at the lower end of a vertical rod *i*, which passes up through the frame D, and is surmounted by a hand wheel E.

To the under side of the axle G, there are attached two pendants *j*, *j*, said pendants being at opposite sides of the king bolt *a*, and having each a rod O, attached. The back ends of the rods O, O, are attached to a cross arm P, which is on the lower end of a vertical shaft Q, said shaft Q, having a cross arm *k*, on its upper end a vertical pin *l*, being at each end of arm *k*, as shown clearly in Figs. 3 and 4.

The pins *l*, *l*, are fitted within a yoke R, which works between horizontal guides *m*, *m*, attached to the back end of the steam chest K. The yoke R, is formed of a rectangular frame *n*, with a horizontal plate *o*, within it to form parallel recesses *p*, *p*, in which the pins *l*, *l*, work.

To the yoke R, a rod S, is attached. This rod passes into the steam chest K, and is connected to a slide T, which works on a guide bar U. The guide bar U, is fitted longitudinally within the supplementary steam chest K, and extends its whole length, but it is allowed to slide laterally therein so as to shift the slide T, and cause said slide to cover entirely, or more or less as may be required, of the ports *q*, of the steam chest.

The rod S, is attached to the slide T, in such a way as to admit of this lateral adjustment of the slide as will be seen by referring to Figs. 3 and 4. The end of the rod S, within the steam chest has a cross arm *r*, attached to it, said arm having a ledge *s*, on its under side which ledge fits within a grooved traverse bar *t* secured to the slide.

The slide T, has a rod, V, attached to it, said rod passing through the side of the supplementary steam chest K, and having its

outer end connected to a right angled lever W, which is attached at its outer end to a rod X, which passes to the front part of the fire box and near the rod *i*, so that both rods will be within the reach of the engineer.

The operation of the machine is as follows: As the machine passes along, each wheel is propelled by two cylinders J, J. The engineer is at the back part of the frame A, and in guiding the machine turns the rod *i*. This turning of rod *i*, actuates the front axle G, through the medium of the rope *f*, and consequently the machine will be turned either to the right or left according to the way in which the axle is turned. This guiding of the machine by the turning of the front axle is very materially assisted by the arrangement of the driving mechanism, for as the axle G, is turned the cross-arm P, will be also turned in consequence of being connected to the axle G, by the rods O, O. The shaft Q, arm *k*, with its pins *l*, *l*, turn of course with the arm P, and the yoke R, rod S, and slide T, are operated and the traverse bar *t* will cover one of the ports *q*, so as to check the admission of steam into the pair of cylinders J, which drive the wheel E, making the smaller circuit while the other port *q*, that admits steam into the pair of cylinders that drive the other wheel that makes the larger circuit will be fully opened. Thus it will be seen that the guiding of the machine is greatly facilitated, friction being greatly reduced and the runing parts made to work much more harmoniously than usual. The admission of steam into all of the cylinders may be regulated simultaneously in equal proportions to govern the speed of the machine by adjusting the slide T, laterally so that it will cover more or less of the ports *q*. This is done by moving the rod X.

The machine may be used as a stationary engine at any time by simply detaching the pinions M, from the shafts N, and taking the power therefrom.

Having thus described our invention what we claim as new and desire to secure by Letters Patent, is,

The peculiar arrangement of the slide T, and traverse bar *t*, which form the valve of the steam chest K, the bar U, and the cross-arm *r*, of rod S, whereby said valve is allowed a lateral as well as a longitudinal movement within the chest for the purpose set forth.

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